North Carolina
Geographic Information Coordinating Council

Minutes
May 11, 2011

PRESENT

Chair, Dr. Lee Mandell. Members: Deborah Barbour (for Gene Conti), Jay Bissett, Michael Brown (for David Hoyle), Ronald Brown (for Bliss Kite), James Caldwell, John Dorman (for Reuben Young), Ryan Draughn, Dianne Enright (for John Farley), Jeff Essic (for Hugh Devine), Jerry Fralick, John Gillis, Derek Graham, Steve Kornegay (for Saundra Williams), Kelly Laughton, Yongjun Lei (for Allan Sandoval), Dan Madding, Tom Morgan (for Elaine Marshall), Anne Payne, Sarah Porper, Steve Puckett, Andy Raby (for Melodee Stokes), Linda Rimer, Colleen Sharpe, Julie Stamper, Richard Taylor, Mary Penny Thompson, Rebecca Troutman and Ron York

PROCEEDINGS

A meeting of the Geographic Information Coordinating Council was held in the Board Room of the Department of Public Instruction in Raleigh, North Carolina. Chair Dr. Lee Mandell called the meeting to order. Dr. Mandell noted that the meeting will be recorded to facilitate the preparation of the minutes and asked that everyone speak into the microphones.

The minutes of the February 9, 2011 meeting were approved with no changes.

Dr. Mandell referred the members to a letter in the packet from Governor Perdue about Executive Order No. 34 that requires Board appointees to attend at least 75% of a board's regularly scheduled meetings, unless extreme circumstances make this order difficult to follow.

Dr. Mandell reported some changes to the Council's membership. Rodney Bunch, Assistant County Manager of Pasquotank County, a Governor's appointment recommended by the NC Association of County Commissioners who has served since May 2005, will be leaving the Council. A replacement will be identified soon. Bill Gilmore, Director of the Ecosystem Enhancement Program in DENR, is retiring from state government. Dr. Mandell recognized Mr. Bunch and Mr. Gilmore with certificates of appreciation and thanked them for their service. Dr. Mandell noted that Steve Kornegay, Associate Director for Systems and Networks for the NC Community College System, is here today in place of Saundra Williams.

"GIS Serving North Carolina" Day in the legislature will take place May 18. Dr. Mandell described it as a mini-GIS Conference. It will take place in the 1200 Courtyard of the Legislative Office Building. There will be wireless coverage thanks to the General Assembly Information

Technology Division and ITS. The purpose is to continue the Council's education efforts with the General Assembly. Dr. Mandell said that it was not reasonable to expect General Assembly members to attend the NC GIS Conference, which was tried at the 2009 conference. Unfortunately only three members attended. Dr. Mandell noted that other groups have scheduled events or displays in the legislative office buildings and legislators will stop to be briefed.

Dr. Mandell listed the agencies that will present either a poster or a computer demonstration. Wake County will feature its IMAPS map viewer, developed in collaboration in with the City of Raleigh. The City of Durham will present its interactive map application for economic development. Forsyth County will share its analysis of home foreclosures. City of Asheboro will present its E311 mobile application. The City of Charlotte will display the dashboard it developed for the Police Department for crime analysis and response. The Western Piedmont COG will display its assessment of youth gang activity.

For state government, the Department of Health and Human Services will display patterns of health statistics. The Wildlife Resources Commission will present an interactive map viewer for gamelands and boat access points. CGIA will present the GICC poster, which describes the full breadth of the activities of the Council and its committees. The poster will give the Council a chance to talk about its role and accomplishments. The GeoMAPP team, representing State Archives and History, will display a poster on the value of retaining geospatial data. The Geospatial and Technology Management Office will display a poster of the 2010 statewide orthoimagery project. NC DOT will present a poster of its Spatial Data Viewer.

Dr. Mandell said the event features a wide variety of GIS applications and will hopefully capture the interest of legislators. The event will take place from 10:00-2:00 on May 18 and he encouraged Council members to drop by.

Dr. Mandell congratulated Gary Thompson, NC Geodetic Survey, and David Wyatt, Eastern Band of Cherokee Indians, for being named to the National Geospatial Advisory Committee. The NGAC is a national board that advises the federal government on geospatial programs and policies. He reminded the members that Zsolt Nagy, formerly the Coordination Program Manager at CGIA, previously served on the NGAC. He noted the value of having North Carolina members on this board.

Status and Discussion of Priorities Before the Council

Priority #1: NC OneMap Implementation
(see NC OneMap implementation file at GICC website - http://ncgicc.net/Meetings/tabid/138/Default.aspx)

Tim Johnson introduced David Giordano, the NC OneMap Database Administrator, and Brett Spivey, the NC OneMap Applications Developer. Mr. Giordano reminded the members that at the last Council meeting he described an enhanced method for NC OneMap users to search for, preview and utilize map services. The tool was a preliminary or stop-gap measure in anticipation of a more robust solution. He introduced Mr. Spivey to describe the latest developments.

Mr. Spivey said that since the February Council meeting, Mr. Giordano and he have been working on a couple of related activities. First, he reminded the members that the NC OneMap pre-planning project was completed in late 2010. The report identified several preliminary

business requirements. There were about 14 technical items that were identified and the user groups were asked to rank them as low, medium or high priority. From that cumulative list, 12 items were ranked as high. The priority items focused on three general themes – better and timelier information; more ways to discover and use the information; and, as with everything on the Internet, that access be easy, quick and intuitive.

During the last several months, the CGIA NC OneMap technical team has been primarily involved in supporting the statewide ortho imagery project, doing data processing and loading imagery to the servers in preparation for disseminating the imagery. Recognizing that the orthoimagery is a popular and valuable data set, the team began to consider the best way to make that data discoverable and to provide access to it. Merging the statewide ortho project and the NC OneMap revitalization project, the team evaluated a tool called GeoPortal Server, an open source application recently made available by Esri, which provides a one-stop shop for the discovery, previewing, download and use of GIS data and web services. In addition, GeoPortal supports other geoprocessing tools and links to other catalogs. For example, a user searching NC OneMap for a particular theme such as water would not only discover web service holdings and data available through NC OneMap but would also get results from the federal level. The tool will enable the NC OneMap user to harvest results from other data catalogs.

Mr. Spivey said that this concept is one that the NC OneMap team wanted to embrace for some time and the team wanted to explore how this concept would address the high priority requirements. The team determined that nine of the 12 requirements could be addressed by implementing the GeoPortal solution. These include:

- Data preview
- Email notification that data is ready to download
- Draw a box on the map to select download area
- Multiple methods of locating information
  - Browsing (content type, category)
  - Searching (keyword, geographic area)
- Customized search results to show vital, concise metadata information
- Immediate feedback of web service status
- Updates/notification via RSS, social media

The solution addresses those three general themes that Mr. Spivey described previously – several options to discover and use the data and easier and more intuitive solutions.

Esri is coming on site next week to install, configure and train CGIA staff on GeoPortal with a target release date of the end of May. Initially the tool will support the 2010 statewide imagery service. Following that, the solution will incorporate the existing 120 or so NC OneMap data sets and services and integrate those to build a central repository for users.

Obviously discovery is important but a second, related activity is the challenge of providing access to the imagery and other data. Mr. Spivey described two methods. One is a new format from Esri, called image service that will support two Open Geospatial Consortium (OGC) specifications. NC OneMap is currently based on Web Mapping Services (WMS). WMS simply delivers a picture or image of the data, not the data itself. The second specification is Web Coverage Service (WCS). With WCS, the user is actually accessing the data. WCS will enable

users to conduct raster analysis and to calculate slope, elevation and viewsheds. Since the image service is built on the Esri platform, it will support any projection or datum that ArcGIS supports, which will provide great versatility to users.

Mr. Spivey reported that speed will be significantly better than currently. Current estimates are that GeoPortal will support 300 concurrent users with a processing time on the CGIA servers of about 0.75 seconds. He noted that once the data leaves the CGIA network, other variables will affect the speed, but for a typical user with a DSL connection the response time will be less than two seconds.

The second method of accessing data will be download, which will be supported through the GeoPortal. For imagery, a user will be able to select from three different formats – a TIFF with JPEG compression, JPEG and JPEG 2000.

After this solution comes on line for the 2010 statewide imagery, the next priority will be to integrate existing NC OneMap data and services into GeoPortal Server. The next step will be to engage new partners to contribute their services and data. NC OneMap partners include many counties and local governments, but several are not participating. The team will recruit new partners, both at the local and state level.

Another task will be to develop specific requirements for an updated viewer. The general need to improve the viewer was emphasized during the pre-planning project, but the input was not very specific. For example, suggestions included the very general recommendation to make the viewer simple and fast. Mr. Spivey said that the team plans to go to another level of specificity to develop technical requirements.

Finally, the team plans to explore the capacity for existing and future partners to enter their services and data directly into the GeoPortal. The GeoPortal will support this capability on May 31 but implementation will require further investigation.

As Mr. Giordano reported at the February Council meeting, a blog and RSS feed was added to NC OneMap. Mr. Spivey invited users to regularly visit the blog and subscribe to the RSS feed. These links will be the main vehicle for communicating new updates and enhancements. By subscribing to the RSS feed, new information will be automatically pushed out to a user, who would not need to regularly visit NC OneMap to get the latest information. Equally important, NC OneMap is a partnership and it is important for partners to submit comments, suggestions and concerns to the blog to build a real community.

Dr. Mandell noted that the expectation of the pre-planning project was that it would lead to sustained funding to support NC OneMap. The current economic and budget realities make this unrealistic. But the pre-planning project identified many important requirements and enhancements that need to be made and cannot wait several years when funding may become available. Some work needed to be accomplished in-house and he praised Mr. Giordano's and Mr. Spivey's work to implement some of the requirements. He emphasized the importance of NC OneMap, pointing out that it has become the Council's most visible initiative, its public vehicle. Most people are not going to see the Council's work on policies and standards. More and more, the people looking at NC OneMap are not just the Council members and the GIS community but the general public. Therefore, it is in the Council's self interest to make NC OneMap a useful

resource for the public as well as for the GIS community, especially if we want to obtain sustained funding in the future. Legislators must recognize that NC OneMap is valuable and worth investing in. The input of the GIS community in preparing the general business requirements and the in-house work by Mr. Giordano and Mr. Spivey represent important steps forward.

Priority #2: NC OneMap Governance
(see NC OneMap Governance Charter at GICC website - http://ncgicc.net/Meetings/tabid/138/Default.aspx)

Dr. Mandell said that if NC OneMap is going to be the Council's public vehicle, then the Council needs a better oversight method than currently in place. The pre-planning project, for the first time since NC OneMap was implemented in 2003, led the Council to consider not only the business requirements but the programmatic requirements. Two of the recommendations from the pre-planning project are to 1) develop an on-going governance process for NC OneMap; and 2) develop and implement a communications plan for the Council, including NC OneMap.

Staff have prepared an outline of a communications plan. The Management & Operations Committee (M&O) will review the plan and submit it to the Council soon. The communications plan will not be limited to enhancements to NC OneMap but will promote successes and projects by the GIS community across North Carolina. As examples, Dr. Mandell mentioned the agencies and applications that will be featured at the "GIS Serving North Carolina" Day in the legislature next week. Promoting success stories is important. The anecdotal approach often works best in generating recognition of the value of GIS and geospatial data.

Regarding NC OneMap governance, Dr. Mandell reminded the members that they received a draft version of the NC OneMap Governance Charter, prepared by the M&O. The document represents the recognition of the need to be more formal in planning the future, making decisions, and seeking funding. Dr. Mandell noted that the GICC already has a lot of committees so the M&O recommends that the governance function should be part of the responsibility of the M&O. To keep it separate, the NC OneMap governance work will occur after the M&O meetings adjourn. Governance will be managed by the M&O members and possibly others who may bring special expertise. Day-to-day operational issues of NC OneMap will be managed by this group but if an issue rises to the policy level, it will be presented to the Council. The work will not usurp the role of CGIA staff. Rather the committee will provide a higher level oversight role and provide direction on priorities, which CGIA has requested.

DECISION #1 A motion was made and approved to adopt the NC OneMap Governance Charter.

Presentation: "Young Citizen Scientists: Tracking Eastern Box Turtles in the Lake Raleigh Area"
(see video and pdf file at GICC website - http://ncgicc.net/Meetings/tabid/138/Default.aspx)

Mr. Johnson introduced Juliana Thomas, sixth grade teacher at the Exploris Middle School in Raleigh. Ms. Thomas and her students presented at the 2011 NC GIS Conference. Ms. Thomas thanked the Council for the invitation and expressed her pleasure for the opportunity to present at the NC GIS Conference. She introduced the three student presenters, Peter Fortunato, Katie Garceran and Sam Smith. She said the project is being done in collaboration with the Wildlife Center at Centennial Campus and she introduced Kim Burge, NC Wildlife Commission, who

supports the project. This is the fourth year of the project and the current students are the fourth group of sixth grade students who have contributed to the work.

The purpose is to introduce students to real scientific research and to collaborate with scientists that are interested in the biology of the Eastern Box Turtle. This species is not on the endangered species list but their habitat is being destroyed and turtles are being killed by construction and other human activities. The students are collecting data on the behavior of the turtle and the impacts of development on the future of the species.

Ms. Thomas first showed a video about the project, produced entirely by the seventh grade students who worked on the turtle project last year. In the video, Ms. Thomas said that each student in the class has a role in the research and that the students learn to work as team. Each part is essential to the results.

Peter Fortunato began the presentation by describing the purpose and objectives. The project involved collecting data on eight different Eastern Box Turtles. The students collect real data about the turtles and participate in an authentic learning experience. Students learn about the Eastern Box Turtles, its habitat, behavior, and issues by asking questions, doing research, and collecting data. Students get hands-on experience in using technology and tools to track turtles and to collect data. Finally, the students create a map and analyze data related to movement and home range of the turtles.

Mr. Fortunato said that as in all scientific research, researchers, in this case the students learn by asking questions.

The students' questions included:

- How much do turtles move?
- How big is their home range?
- Do all turtles have the same size home range?
- Do some turtles move more than others?
- Is their movement related to availability of food?
- Why do they hibernate?

After developing the questions and doing research in the classroom, the work moved into the field. The students attached radio transmitters to the shells, or carapace, of eight turtles. Mr. Fortunato showed a picture of Waldo, one of the turtles in the study, with the transmitter attached to his carapace. The transmitter enables the students to track and plot his movement and to locate him later.

Sam Smith continued the presentation. He said that the students use a number of different tools to track the turtles and to collect and record the data. With the help of Mr. Fortunato and Katie Garceran, he demonstrated the radio telemetry equipments, including the antennas and the receiver. The receiver picks up the signals sent out by the transmitter. Once the turtle is found, a GPS unit is used to determine the coordinates of the turtle's location. The GPS and the data from the telemetry equipment enable the students to plot the turtle's movement.

A soil tester measures moisture in the soil and the light at a specific location. A thermometer gun measures the turtle's body temperature. Another tool, called a kestrel, measures air temperature,

wind speed and wind direction. A psychrometer measures relative humidity. All of the data are recorded for each turtle in a notebook. The date and time are also recorded.

Ms. Garceran continued the presentation. Data for four years, 2007-2010, have been collected for several turtles. The data, including the turtles' name and the coordinates of their locations, are entered into Excel spreadsheets. The students also learn how to plot the coordinate values on a map. She showed an aerial image of the study area and transparency overlays showing the movement of the turtles. The transparencies enable the student to observe the movement of individual turtles and, by combining the transparencies, to visualize the movement of all eight of the turtle, shown in different colors.

Ms. Garceran showed the map of Waldo's movements and then some of the other turtles. The map of Waldo's movements shows that he is more active than any of the other turtles. She noted that the original maps could have been generated by GIS software but that it was important that the students learn to plot locations by hand.

Ms. Garceran reported that back in the classroom the students reached some conclusions based on the data. Most turtles move in the same area - their home range – although some turtles have a larger home range than others. The home range can vary between 1 and 21 acres.

Waldo is the turtle that has moved the most. She noted the big difference between his movement and other turtles' movement. This is likely due to the fact that Waldo is not native to the study area; he had been injured, rehabilitated and later released. Recently his movement has been more concentrated indicating that he has found a home area after being introduced.

The study raised new questions, a common result of scientific study. Many turtles like the area close to the lake. Is this due to food availability? Vegetation they like? Does relocation have a negative impact for a turtle? Does a turtle typically move around more to find its niche and place? Is construction affecting the turtle population? She noted that one of the turtles in the first year of the study had been killed after being hit by a car.

The students will continue collecting more data to answer new questions and find more information and plan to create a map of the turtles' movement using a GIS program. They have also created a blog site that will enable students or teachers to post data and new observations on each individual turtle and to comments on the results.

In response to a question, Ms. Burge said that Eastern Box Turtles can live between 50 and 100 years. A turtle's age can be determined by examining markings on the shell, much in the same way as counting tree rings.

Dr. Mandell thanked Ms. Thomas and the students for a fascinating presentation.

2010 Statewide Orthophotography Project, NC 911 Board
(see file at GICC website - http://ncgicc.net/Meetings/tabid/138/Default.aspx)

Mr. Johnson noted a relationship between the children's class project and the statewide ortho project. Both projects involved working as a team. He also said that a new 2010 aerial photograph is now available for the Lake Raleigh area.

The statewide ortho project involved a partnership among state and local government agencies and organizations. All 59,000 tiles are now complete. As the members will recall, the first set of county imagery was delivered to Durham County at the February Council meeting.

Mr. Johnson briefed the NC 911 Board on February 25 and April 29. The project team met with military representatives from the US Marine Corps, Seymour Johnson AFB, and the Coast Guard on February 23 in New Bern and received instruction on handling the data for military bases, particularly in regard to data that cannot be released. At a later date, the team followed up with the US Army at Ft. Bragg.

Jeff Brown and Darrin Smith from CGIA provided the project deliverables to the 911coordinators at a series of 26 meetings at regional clusters around the state. The presentations included an orientation on the products on the portable drives and what will be available through NC OneMap. Delivery of the imagery to all 100 counties was complete by April 28.

The final 1% of field quality checking by the surveying firms is being completed. Loading the data to the NC OneMap servers is now 97% complete. The only images not loaded are the areas on the military bases and a small area in northeastern North Carolina that will be loaded soon.

Following delivery of the data, counties will have 90 days to review the data and provide feedback and comments. Following receipt of the comments, the contractors and the project team will have 90 days to consider the comments and possibly make changes and resubmit revised data to the counties.

The deadline for providing access to the data by download or imagery services over NC OneMap is May 31. The project team will then evaluate the performance of the imagery services. Operations and maintenance will continue between July 2011 and June 2012.

Mr. Johnson thanked the project team for their perseverance, diligence, and commitment to the project. The team discussed and resolved policy and technical issues as they arose. This helped the team stay on track with the aggressive project schedule. He specifically cited Keith Johnston, NC DOT; Richard Taylor, NC 911 Board; Tonya Pearce and Duane Therriault, Durham County; John Dorman and Hope Morgan, NC GTM; Tom Morgan, Secretary of State's Office; Gary Thompson, NC Geodetic Survey; and the CGIA staff.

Dr. Mandell said the project is a major success story. This was enough of a success, clearly demonstrating the value of the project not just to the 911 community but to the State as a whole, that the NC 911 Board is considering providing some funding for a continuation of the project, possibly for 25% of the state annually beginning in 2012.

Ryan Draughn asked if counties had comments about the quality of the data. Mr. Johnson said the feedback has been good so far but that the team is awaiting comments from recipients during the 90-day review period.

Dr. Rimer asked how people will know about the release of the data on NC OneMap. Mr. Johnson said that the GIS community will be informed through the various GIS list servs and that Jeff Brown, CGIA Coordination Program Manager, will develop a strategy for communicating the information.

Regarding the coordination with the military services, Dr. Rimer asked if that took place at the level of the Commanders Council. Mr. Johnson said the services were asked to identify key contacts. Mr. Taylor said there were several contacts with the military bases and the team had some difficulty identifying the appropriate contacts. The project team eventually contacted the Governor's Office. The recently appointed Governor's Military Liaison met with the Commanders Council and obtained good participation from everyone, except initially the US Army. Since then, the team has also met with the US Army at Fort Bragg and made good progress. Some of the areas, such as Sunny Point in the Wilmington area, are crucial areas for 911 centers but at the same time are military properties. Most of the concerns have been resolved and the project team now has good contacts with all the services.

Presentation: "Next Generation 911 to the Regional GIS Rescue"
(see video and pdf file at GICC website - http://ncgicc.net/Meetings/tabid/138/Default.aspx)

Mr. Johnson introduced Rachel Kilby Bello, IT Manager for Guilford Metro 9-1-1. Ms. Bello was also a presenter at the NC GIS Conference and gave a wonderful presentation on what Next Generation 911 is all about and its relationship with GIS.

Ms. Bello said it is an exciting time to be in both the 911 and GIS fields and it is even better when one can do GIS for 911. There are a lot of new developments in both areas and there is a chance to prepare for these developments, to develop partnerships and lay the foundations to integrate these fields successfully - or not.

The presentation covers the current 911 system, an overview of the Next Generation 911 and the role of GIS in Next Generation 911, including the problems and challenges at the local level of integrating GIS data.

The current 911 system is built on aging, 1968 technology, supporting only voice and wire land line calls. That world does not exist anymore and it is time to change. Currently, GIS does not enter the equation until the operator forwards the land line call to the appropriate call center. It is only then that the location is plotted using GIS or Computer Aided Dispatch (CAD), the very last step before a unit is dispatched to the call. Ms. Bello cited a congressional report that states:

> "*Today's 911 system is built on an infrastructure that does not support many of the features that most Americans expect are part of an emergency response.*"

Telephone numbers are associated with a civic address. Once the telephone record gets to the 911 center, it is queried against the GIS data to determine the location. If the 911 center experiences a power failure or if there is a major event that results in overflow calls, the calls will route to another call center, which does not have the GIS data for that original call center to validate and plot the location.

The public expectation is that the 911 center will know the caller's address based on the phone call. Today that capability does not exist. A call center cannot receive a text message or a picture. In this day and time, when a person can send a picture of their child to the child's grandmother in California, the caller expects that the call center can receive a text message or picture. There is a discrepancy between what people expect and reality. The technology needs to be updated to meet the public's expectations. Advances could include the ability to identify the caller's location; to accept text and

instant messaging from almost any device; the capability to view imagery or videos and to receive information from car navigation systems; and even the ability to access medical records and other data. She noted that over 60% of today's 911 calls are wireless.

Ms. Bello said the role of GIS in Next Generation 911 will become paramount and will be the single most important component of the system. GIS will be fully integrated into the system and will provide sufficient graphical information to locate the caller and correctly route 911 calls. When the call is made, the location will be known and then automatically rerouted to the nearest call center. If the Public Safety Answering Point (PSAP) boundary or the street centerlines or other GIS data are inaccurate, the call will be handled wrong. The master address file, a static file that was used previously to send calls, and the street file need to be integrated rather than maintaining two separate files. She emphasized how cumbersome it is to maintain two separate files and keep them in sync.

In Next Generation 911, the location will be used to rout the call rather than using the telephone number. The center can make on-the-fly response changes through a consolidated GIS in the event of a power failure or an overwhelming number of calls to one call center due to a large event such as the recent tank fire on I-40. Next Generation 911 will then have the flexibility to effectively respond to emergencies.

Ms. Bello showed a diagram of the Next Generation Architecture. The GIS will be integrated into the Emergency Call Routing and the Location Validation functions where the caller source is queried against the GIS data to determine where the call needs to go - which state, region, county and city. The location comes with the call, much earlier in the process than with traditional 911, and the PSAP can respond quickly and with the appropriate resources.

The other exciting development in Next Generation 911 is the ability to manage calls from cell phones and other communications technologies that traditional 911 could not handle. If a caller moves from North Carolina to Kentucky and does not update the address on their home voice phone, a call to 911 will identify the person as being in North Carolina because the device is not location aware. She cited an example of a call received by Guildford Metro 9-1-1 from Korea. With the advent of Next Generation 911, the location will come with the call, leading to faster response in life saving situations.

Regarding GIS data, the goal for Next Generation 911 is much like any other GIS application, access to up-to-date, high quality data that is freely accessible and meets quality control standards. The goal is reduced duplication of effort, with one dataset supporting many applications. This requires a mentality change, particularly at the grassroots level, where there is a tendency to focus on creating and maintaining local data without regard to the needs of adjacent jurisdictions. With the ability to route a call to a bordering city, county, region or state, the 911 center needs access to regional data. A regional approach requires new partnerships, establishing the protocols for accessing data for bordering jurisdictions, and developing standards so that data can be integrated. The process must begin early and all processes, especially data maintenance, must become regional.

Ms. Bello said her big concern is that while there is a general understanding within the 911 community of the need to collaborate and work on data standards and data sharing, few people are actually doing anything. Collaboration and cooperation is currently lacking and will be the key to a successful transition.

Ms. Bello said when she started work in this field GIS data was not widely available. In ten years this situation has changed radically. She displayed a slide showing the variety of agencies and organizations that provide GIS data. Unfortunately many local governments are not aware of the availability of data online and rely on personal contacts with adjacent jurisdictions. A solution is to invest time in developing partnerships.

Ms. Bello emphasized the need for accuracy standards. Organizations may develop data to meet their own needs but the data may not be suitable for the needs of other organizations or other applications. Guilford Metro 9-1-1, after acquiring data from other jurisdictions, frequently finds that the data does not meet their needs. She cited an example of street centerline data not being broken at jurisdictional boundaries, which is necessary for the call center to route a call to the appropriate responder. Guildford County, the cities of Greensboro and High Point and Guildford Metro 9-1-1 all mange their own street centerline files. Guilford Metro 9-1-1 will update the data to meet their requirements but this is a duplication of effort and a bad way to do business. Someone needs to impose standards, ensure cooperation and incorporate the needs and requirements of all the agencies that use a common data set. The current situation is not very efficient.

She cited the value of adopting national standards for street types and data schema will make data transfer efficient. To represent avenue, one county may use "Ave" while another uses "Av.". This may seem minor but multiply that by 100 counties and the process of managing data becomes cumbersome and overwhelming. Standardization of 911 databases will ensure interoperability and allow exchange of data with local, regional, tribal, state and federal agencies.

Ms. Bello displayed several examples that lead to problems for 911 response. One situation arises when a new development is underway. A city may have a policy of not adding a new street to the centerline file until construction is complete and curbs and sidewalks are installed. She showed an aerial photograph of a new development under construction. The streets and partially constructed homes are clearly visible. Contractors are working in the area but in the event of a construction accident the 911 communications center does not have access to street and address data because the new streets have not been added to the city's street database. From the city's point of view, the data is not GIS ready but Guildford Metro 9-1-1 must be ready to respond to a call from this area.

She cited the fact that address points are not common but they are critical for accurately locating a call location. Regional or broader collaboration is required to develop accurate address databases.

Another example involves voluntary or partial annexation. Ms. Bello displayed two aerial photographs. One showed small, non-contiguous areas of annexation. Another showed a new neighborhood in which lots were laid out but only some homes had been constructed. The city only annexes those lots that have been occupied for one year so the city boundary will change monthly. In both situations, knowing the boundary between the city and the county is critical for Guilford Metro 9-1-1 to forward an emergency call to the response unit with responsibility for that area.

Ms. Bello displayed an aerial photograph of a city boundary line that runs through a cafeteria and its parking lot. A person is in the dining room is in the city; a person in line getting their food is in the county. Who does Guilford Metro 911 dispatch in the event of an emergency call? The same dilemma applies to an accident in the parking lot. Negotiations with the city police department and the county sheriff department led to an agreement on who responds in this area. Guildford Metro 9-

1-1 knows this arrangement but if the 911 call is forwarded to another call center, the protocol may not be clear unless the data follows accepted standards and is well documented.

She also cited spatial discrepancies between adjacent counties. She showed an aerial photograph of a road that crosses back and forth over the county boundary. Each county has a different street centerline file and the alignment of the road in the two datasets is close but not perfect. However, the GIS cannot route a vehicle or provide directions because the street centerlines do not actually meet. Guilford Metro 9-1-1 cannot simply combine these existing datasets and use them for 911 response without editing the two data sets. Imagine resolving these kinds of problems in Guilford County, which abuts five other counties.

Ms. Bello cited another problem that is particularly scary. Synchronizing the Master Street Address Guide (MSAG) and the Automatic Location Information (ALI) databases to a geospatial database of street centerlines is critical to accurately dispatch emergency responders. ALI records are used to determine the call location. She cited a county in the northeast that has 67,000 ALI records and 13,000 could not be found in the GIS database. There is one in five chance that the Next Generation 911 center will not be able to route that call unless addresses are accurately matched with street centerlines. A match of 80% may be good for some applications but not in an emergency response situation. It is very time consuming for each PSAP to have to synchronize and maintain these databases.

Ms. Bello brought up one final item that needs to be addressed at a higher level than just locally. When she started working at 911, the map consisted of city limits and streets. As technology has changed, the use and consumption of information has increased. The call center needs to "paint a picture" for first responders. The map means more when it looks real. Building footprints, floor plans, edge of pavement, sign and signal locations and parks give lines on a map meaning. This information is much more useful in helping the call center operator locate a person who may not know exactly where they are. Moreover, it enables the incident commander on the scene to better react and to find the best evacuation route.

Ms. Bello listed ancillary data that can be critical in life-saving situations – trails, parks, boat landings, waterways, greenways, forest roads, railroads, and power lines. These non-traditional resources provide a quick way for first responders to find people. A boat slip in a marina is an address in a different form and seeing the boat slip can save valuable time. Unique markers on park trails can provide a GPS location for first responders in non-urban areas. Capturing this type of information in a GIS and educating the public on these resources is all part of Next Generation 911.

Ms. Bello said there is an opportunity to make a difference but there needs to be a voice to guide the way.

Julie Stamper asked about those small, rural counties that have limited staff, GIS resources and data. Ms. Bello said this is a real problem. Kelly Laughton noted that the Council has been deeply immersed through its committees and initiatives in the effort to address data quality and data standards. The Council does not have the authority to require agencies to adopt standards and develop data to meet the needs of all agencies. The Council can encourage and inspire and educate users to address the issues that Ms. Bello raised. She asked Ms. Bello what the Council can do.

Ms. Bello said that many organizations around the country are trying to address these challenges. The 911 and GIS communities are painfully aware of the problems that exist regarding data. It is the decision makers that need to understand. Her suggestion is opening a dialogue with decision makers and opening their eyes to the benefits of addressing these problems and developing better GIS data.

John Gillis observed that county government is a good place to start because it is the local authority that controls the resources, the funds and the personnel. The municipal level can be important but it is only a subset. Today technology is more widely understood; every county commissioner has a cell phone. In an emergency, the county commissioner, as with anyone else, will dial 911 on their cell phone. If you can educate the county commissioners and get them to talk to the local fireman and policeman, they will begin to understand that the problems affect the day-to-day performance of the first responders. The commissioners and council members can then begin to bring the resources of local government to bear on the problems. Ms. Bello strongly agreed.

Mr. Gillis cited an example in Cumberland County. His farm was annexed by the city but the law delegates the responsibility for law enforcement on the farm to the county sheriff department even though the farm is in the city limits. City police responding to a car accident in which the car rolled into a farm field had to call the sheriff's office to service the accident. The issue is complex and the politicians do not always understand the practical implications. Ms. Bello suggested that the politicians are beginning to understand that the public has a growing awareness that they are not receiving the services that they need. She suggested the need for the decision-makers and the 911 and GIS communities to come together to address the problems and that currently there is no organization with responsibility to solve the problems.

Mr. Gillis recommended that this presentation be made to the County Commissioners Council. Mr. Taylor acknowledged Ms. Stamper's observations and said that as someone who has been in every 911 center in North Carolina he has witnessed the exact situations that Ms. Bello described. The 911 Board is guided by statute as to what is allowable as a 911 expense. Maintaining GIS in 911 centers is an allowable 911 expense. Money is available to address some of these problems even if the powers that be do not always allocate money appropriately. Someone needs to update and maintain data and this is an allowable expense.

Dr. Mandell thanks Ms. Bello for her presentation. He suggested that the Council consider the issues that Ms. Bello raised and the role of the Council in the area of 911 on the GIS side. The Council must be careful about interjecting itself into the business of the 911 community but there is much more of an overlap between GIS and 911 responsibilities than ever before. How can the Council leverage the outcomes of the statewide ortho project and its relationship with the NC 911 Board to enhance the role of GIS in Next Generation 911?

ACTION #1 GICC should consider what role it could have in the Next Generation 911 discussion and subsequent actions.

John Dorman asked if there has been a requirements analysis by the 911 centers on exactly what GIS data they need. For example, GTM has collected building footprints. Mr. Taylor said no although this has been discussed and the 911 study has addressed the question of what GIS data is needed. Ms. Bello said that there are efforts at the national level to develop a list of recommended GIS data layers for 911 and the list should be available in the next few months. Dr. Mandell asked Mr. Johnson to track this development.

ACTION #2 Staff will track the work of National Emergency Number Association (NENA) in its preparation of a list of recommended GIS data layers for 911.

Committee Reports

All Council committee representatives reported on their group's activities.

Management and Operations Committee (M&O). Dr. Mandell said that the M&O devoted much of its time to developing the NC OneMap Governance Structure Charter, which was discussed earlier in this meeting. He reported that the House budget has been passed and that House Bill 152, which conforms the GICC's enabling statute to reflect the 2009 legislative changes, is in the queue of the House Appropriations Committee. The committee meets Tuesday, Wednesday and Thursday at 8:30. Dr. Mandell will alert the members when House Bill 152 shows up on the committee's agenda and encouraged members to attend to show support for the legislation.

The M&O, along with all the other committees, has been working to revise its bylaws. Copies of the revised bylaws for all the committees were distributed to the members two weeks ago. Dr. Mandell asked if there were any questions about the changes to the M&O bylaws, which were mainly structural to conform to the recently adopted GICC bylaws.

DECISION #2 A motion was made and approved to adopt the M&O bylaws.

Local Government Committee (LGC). Julie Stamper, chair of the LGC, reported that Steve Strader asked the LGC to help get local government representatives to respond to the National Enhanced Elevation survey, a nationwide effort. Mr. Strader was directed to get responses from only three people but the LGC felt this would not provide adequate review and input so the LGC convened three teams, representing the coastal, piedmont and mountain regions. The team leader for each group compiled the response and completed the survey.

The LGC appointed two new representatives to the Working Group for Orthophotography Planning, Chris Koltyk, Moore County, and Jerry Simmons, Pender County, both LGC members. Both are enthusiastic about participating on the WGOP. The appointments were made the day of the last WGOP meeting but Chris was able to attend in person and Jerry joined the meeting by phone.

The LGC is pleased with the number of local government presenters at the GIS Serving North Carolina Day at the legislature.

The LGC requested that the SMAC initiate a dialogue with the Census Bureau on various programs in anticipation of improving the collaboration between the Census Bureau and local governments in North Carolina. Anne Payne will report on this during the SMAC report.

The LGC prepared revised bylaws and requested that the GICC approve them.

DECISION #3 A motion was made and approved to adopt the LGC bylaws.

***Federal Interagency Committee (FIC*).** Dr. Rimer, chair of the FIC, said that the FIC is very pleased that David Wyatt, Eastern Band of Cherokee Indians and a member of the FIC Executive Committee, was appointed to the National Geospatial Advisory Committee. The FIC submitted a letter of recommendation on Mr. Wyatt's behalf in October.

The FIC held a very successful meeting at NOAA's National Climatic Data Center (NCDC) in Asheville on April 28. The topic was climate change adaptation. All federal agencies are under direction of the Council on Environmental Quality, within the Executive Office of the President, and NOAA to develop climate change adaptation strategies. The federal agencies in North Carolina are working on this effort and the FIC wanted to get a handle on the ongoing activities and perhaps take a coordinating role in these activities. At the FIC meeting, staff from NCDC presented their work. Steve McNulty, US Forest Service, presented an amazing decision support tool called TACCIMO – Template for Assessing Climate Change Impacts and Management Options.

John Dorman presented the sea level rise study NC GTM is conducting, which will bring an amazing amount of new data online. Greg Dobson with UNC Asheville's National Environmental Modeling and Analysis Center (NEMAC) described the visualizations tools NEMAC is developing for decision support tools that address climate change.

Relevant to these activities and in light of the federal directive, Dr. Rimer said the Southeast Natural Resource Leadership Group, a consortium of federal agencies, is also beginning to address climate change adaptation. The group held a workshop two weeks ago at which the federal agencies began to look at the geospatial data requirements and resources needed for developing climate change adaptation strategies. One outcome of the workshop was a recommendation that the Albemarle Pamlico region of North Carolina be the site for assessing the requirements and necessary resources. The State of North Carolina, through DENR, is working to develop a statewide strategy. Dr. Rimer has been telling her federal colleagues that the GICC is a unique coordinating body and she anticipates that the FIC can play an important role in communicating ongoing activities and coordinating efforts among the various players.

She reported that Mr. Johnson asked the FIC to coordinate an effort to update the federal land ownership layer in NC OneMap and that the FIC Executive Committee will discuss this issue at its June 14 meeting.

The FIC prepared revised bylaws and requested that the GICC approve them.

DECISION #4 A motion was made and approved to adopt the FIC bylaws.

Statewide Mapping Advisory Committee (SMAC). Anne Payne, chair of the SMAC, reported that the Committee had a very full meeting on April 13. Mr. Johnson reported on GICC and M&O activities and there were reports by the SGUC, the LGC and the FIC.

As Ms. Stamper mentioned earlier, the LGC representative asked that the SMAC consider taking a role in planning for updates to the Local Update for Census Addresses. The SMAC appointed a small group to develop a structure and process for dealing with this issue. Tom Morgan, Alex Rickard along with a CGIA staff person and probably another LGC representative will develop recommendations on how to proceed.

There were also reports on NC OneMap, the Floodplain Mapping Program, the GeoMAPP archiving project and the statewide ortho project.

Working Group for Orthophotography Planning. Gary Thompson, chair of the WGOP, said that in addition to ongoing work on the state wide ortho project, the WGOP is working on three other items. One is the Color Infrared issue paper. The first draft was only 4-5 pages but it has expanded to 18 pages. The paper is essentially complete but not quite in time to bring it to the SMAC for review. It will be presented to the SAMC at its July meeting. He thanked the committee members for their hard work on this effort.

The second item deals with Geodesy, specifically the definition of datums. A datum is a set of reference points on the Earth's surface against which position measurements are made. For example the imagery that was recently collected is referenced to NAD 83 NRSF 2007, which is the readjustment of the NAD 83 in 2007 that adjusted all GPS control points in the U.S. National Spatial Reference System (NSRS) to the Nationwide Continuously Operating Reference Stations (CORS) network. There are different realizations of the 1983 datum. Previous readjustments occurred in 1986, 1993, 1995, and 2001.

Software used in GIS has transformation parameters that will go between different realizations except for 2007. The reason that it is not available is that the Nation Geodetic Survey (NGS) has not yet provided the transformation parameters. The WGOP recommends that the GICC contact NGS and ask them for their assistance in developing these parameters, particularly since a new adjustment will be realized in 2011. The WGOP drafted a letter for the Council. Mr. Johnson acknowledged that the letter is ready to be sent.

ACTION #3 Send a letter to the National Geodetic Survey urging them to develop transformation parameters for NAD 83 NRSF 2007.

The third item, which Mr. Thompson raised at the February Council meeting, involves a request by a company called LightSquared for a waiver from the FCC to take the radio spectrum used for satellite communication and use it from a ground based transmitter to develop a nationwide broadband wireless network. Mr. Thompson reminded the members that this very powerful broadcast may interfere with GPS. The request by LightSquared has generated a tremendous amount of concern across the country in the private sector and in the federal government. The WGOP has drafted a letter for the Council to send to the FCC voicing the Council's concern about the potential interference with GPS.

Dr. Mandell asked when the decision will be made. Mr. Thompson replied that the FCC has provided conditional approval subject to tests by the company that demonstrate that there will be no interference. Mr. Taylor reported that the company did tests in New Mexico over the last couple of months. He expects to meet within the next month with officials with LightSquared as well as public safety officials. The public safety officials have indicated that the tests did not demonstrate that there will be no interference. He said that from the point of view of 911 response, this is potentially a huge problem. Ms. Payne said that it could be a huge problem for everyone.

ACTION #4 Send a letter to the Federal Communications Commission voicing the Council's concern about the potential interference with GPS if LightSquared's request for a waiver is granted.

Working Group for Seamless Parcels. Tom Morgan, co-chair of the WGSP, gave an update on the activities of the WGSP. Mr. Morgan reported on the ongoing effort to get a contract in place for the EPA grant. Several weeks ago EPA notified the committee that the funds are not obligated and the federal government is looking to take back all un-obligated funds. EPA proposes to provide the funds to DENR, which would then administer the grant and manage the money. The money would then be treated as obligated. DENR has submitted a letter to EPA requesting this action.

If this is approved, a whole new set of problems are created as the committee will have to initiate the State's mandated approval process for an IT project. Ms. Payne noted that the requirements have been developed and other information is in place to go through the State's process. In addition, there will be greater local control and the committee will be able to eliminate one level of subcontractors.

Working Group for Roads and Transportation. In the absence of Alex Rickard, co-chair of the WGRT, Ms. Payne reported for the WGRT. In light of the developments with the WGSP's EPA grant, the WGRT will have to consider other options for completing the FGDC grant. The WGRT has already received an extension from FGDC in the hope of working collaboratively with the WGSP to develop transformation tools that would support both groups.

The WGRT still hopes to coordinate with WGSP but will have to move forward to develop a translator for roads data.

Ms. Payne continued the SMAC report. The NC Board for Geographic Names completed the work on four renaming requests in Wake, Iredell and Brunswick counties. Four pending requests remain.

At the February Council meeting, Ms Payne reported on the SMAC's effort to improve the process for reviewing, vetting and approving standards. The decision is to establish another committee, the Standards Working Group. Tom Morgan will chair the group. Kelly Eubank from Division of Archives and History, Steve Strader from USGS, John Farley form DOT, James Armstrong form Richmond County and David Giordano from CGIA will comprise the committee. This will be the core group but if in reviewing a particular standard the working group determines the need for subject matter expertise, they may bring on other members. The first step will be to define the process for reviewing standards. The second task will be to consider the Water and Sewer standard that the SMAC has been working on for several months.

Ms. Payne reported on new business. There is a need for a comprehensive, common railroad layer for the state. NC DOT and the NC Railroad Company raised this issue to the SMAC. If DOT is to maintain the layer, they will need to define the business case and custodianship responsibilities. Since it is a transportation issue, Ms. Payne assigned this task to the WGRT. Chris Tilley, who is with DOT and is co-chair of the WGRT, will take the lead on this and has already contacted DOT's railroad division to get their input.

The SMAC prepared revised bylaws and requested that the GICC approve them. The only substantive change is the addition of an official representative of the FIC.

DECISION #5 A motion was made and approved to adopt the SMAC bylaws.

State Government GIS Users Committee (SGUC). Dianne Enright reported on behalf of John Farley, chair of the SGUC. She said the SGUC Executive Committee has begun work on the definition of a technical architecture for geospatial applications, the aim of which is to clarify key elements and identify an approach that will achieve consistency in regard to system design and security. A successful state effort may lead to shared services and other features that will be attractive to local government as well. This work will be coordinated with ongoing work related to technical architecture by the TAC and the State Technology Officer. The SGUC Executive Committee will meet again regarding this work on June 13.

Members are working with ITS to update the agency inventory of all Esri licenses under the Enterprise License Agreement for the next fiscal year renewal.

The SGUC held a general meeting on May 5 and had an update on the statewide ortho project and presentations on AGILE project management and the use of geospatial data by state agencies in response to recent tornados.

The SGUC prepared revised bylaws and requested that the GICC approve them.

DECISION #6 A motion was made and approved to adopt the SGUC bylaws.

Technical Advisory Committee (TAC). Colleen Sharpe, chair of the TAC, said the committee met yesterday. The discussion focused on the NC OneMap revitalization project and the prioritization of requirements. The TAC asked CGIA staff to continue working on the nine requirements that Mr. Spivey referenced in his presentation. The TAC will meet in June to review progress, determine which requirements remain incomplete and prioritize those.

The TAC also discussed the statewide GIS technical architecture that the SGUC is assessing and the initiative led by the Chief Technology Officer (CTO) to update the statewide document, an effort that is backed by statute. There was significant discussion about the role of the TAC in these efforts. She recommends that the TAC participate in the CTO effort as a review body to add value and that the SGUC also participate in that work. Since the CTO's work has the authority of the statute behind it and will have a GIS component, it makes sense to take advantage of the work of professionals in this area. The TAC is coordinating with Mike Fenton, TAC member from ITS, in this effort.

The TAC also discussed their work plan and will finalize next year's work plan next month. The TAC prepared revised bylaws and requested that the GICC approve them.

DECISION #7 A motion was made and approved to adopt the TAC bylaws.

GICC Member Announcements

Ryan Draughn alerted the members to House Bill 825, which is not directly related to GIS but is indirectly related. The bill is scheduled to be heard today. The bill will not completely halt annexations but will hinder new annexations. Cities will have to bear the full coast of annexation to include providing water and sewer to the annexed residents, including from the meter to the

home. In addition, a 60% opposition by proposed annexed residents would halt the annexation. While it is not directly related to GIS, Ms. Bello's presentation outlined some of the issues related to annexation. Laws that have been on the books for about 60 years will be changing.

2011 NC GIS Conference

Mr. Johnson reported that the conference was very successful with more than 880 attendees and 44 vendors, almost record levels despite the budget and the overall economic climate, which demonstrates the value of the conference to the GIS community. He referred the members to a map of the attendees in the packet. The conference planning committee is currently looking at locations and dates for the 2013 conference.

He highlighted the Herb Stout awards, which are sponsored by the GICC. The 2011 Herb Stout Awards for Visionary Use of GIS by Local Government in North Carolina were presented to the City of Asheboro, Wake County and the Metropolitan Sewerage District of Buncombe County recognizing their GIS applications at the local level.

Referring to the map, Dr. Mandell said he was delighted by the out-of-state participation. He asked if there are many other GIS conferences around the country. Mr. Johnson said yes but that the North Carolina conference is among the biggest if not the biggest.

ADJOURNMENT

There being no other business, the meeting was adjourned. The next meeting will be August 10, 2011 from 1:00-3:00 pm at the Department of Public Instruction Board Room, Room 755, 301 N. Wilmington Street, Raleigh.

PowerPoint presentations and reports are on the Council Web site: www.ncgicc.org . Click on "Meetings." Presentations and documents presented during the meeting are available in a Zip file for easy download.