Statewide Mapping Advisory Committee Meeting

Minutes

Wednesday, January 18, 2017; 1:30 PM – 3:30 PM
NC Department of the Secretary of State
Conference Room, 4701 Atlantic Ave, Raleigh, NC 27604

Welcome/Introductions – Gary Thompson, Vice-Chair, called the meeting to order and welcomed Kenneth Taylor, Alice Wilson, Marcus Bryant, John Bridgers, Rich Elkins, Sarah Wray, Tim Mulrooney, Joe Sewash, David Giordano, Jeff Brown, as well as guests Craig Pederson and Kathi Cotney, and on the phone Silvia Terziotti, Stephen Dew, and Steve Averett.

Mr. Thompson reported that the GICC Chair, Stan Duncan, has appointed Council member Joseph Sloop (Geographic Information Officer, MapForsyth—Forsyth County and Winston-Salem) to serve as Chair of the Statewide Mapping Advisory Committee (SMAC). Mr. Sloop will chair the meeting next time.

Minutes
The committee approved the July 20, 2016 Minutes as submitted. Mr. Thompson noted that the October meeting was cancelled due to involvement of several members in Hurricane Matthew response and recovery.

Framework+ Datasets
Mr. Thompson called on members to report on opportunities, development, maintenance, and issues for Geospatial Framework datasets for North Carolina.

- *ORTHOIMAGERY*

Jeff Brown (CGIA) provided a brief status report on the Orthoimagery Program on behalf of Tim Johnson who is meeting with the Georgia GIS coordinating committee today.

In the coastal phase (2016) imagery is packaged for delivery for all 27 counties after successful processing and visual quality control. Project Manager Darrin Smith (CGIA) emphasized the significant decrease in the number of visual quality issues reported in the quality control process by state and local governments. Visual quality problems are mostly related to transportation and seamlines. For phases 2012-2015, between 10 and 13 percent of imagery tiles contained one or more issues for the contractors to resolve. However, in 2016, only 4 percent of all tiles did not pass inspection. Looking at coastal region in 2012 and 2016, even with more total tiles in 2016, the number of tiles with issues needing resolution decreased from 841 to 415.

The primary factor in the improved quality is the greater precision, accuracy, and currency of digital elevation models derived from LiDAR and used in orthorectification. The improved elevation models reduced visual quality issues, saving much time for the project team, contractors and local government reviewers. This represents a tangible return on investment of state and federal funding that supported the Quality Level 2

LiDAR in the coastal region. Also, the current contractors have been selected in an annual qualifications based selection process for consecutive phases and are applying their experience with the project management requirements and the quality expectations. In addition, state and local visual quality reviewers have gained experience with the visual quality review criteria for more effective review as regions get updated in the second four-year cycle.

Starting today through next week CGIA is holding a delivery meeting in each of the four study areas (Elizabeth City January 18, Washington January 19, New Bern January 23, and Wilmington January 24). This includes delivery of imagery captured over installations of the US Marine Corps, not for publication.

Release of 2016 imagery on NC OneMap will take place February 1, including image services for that region alone, for the latest imagery (including 2016 for the coastal region), and Orthoimagery All (1995-2016). The server address is https://services.nconemap.gov/secure/rest/services. Also, NC OneMap will have county mosaics (MrSID format with a 50-to-1 compression ratio) available for download as an alternative to downloadable tiles and the image services. David Giordano pointed out that mosaics are downloadable for only the most recent year available.

The Eastern Piedmont phase (2017) is in progress. Acquisition over the 26-county region is scheduled to begin February 1. The study areas are set and will be covered by Spatial Data Consultants, Sanborn Map Company, Surdex Corporation, and Atlas Geographic Data. The latter's study area includes all of Fort Bragg and Camp Mackall. CGIA did outreach to all local governments in June and again in November to inform them of opportunities to piggy-back on the state contracts for other imagery-related products.

Kenneth Taylor commented that as a member of the Association of American State Geologists, he has learned that other states have acquired orthoimagery first and LiDAR second, missing out on the benefit of better digital elevation models supporting better quality orthoimagery. He shares the lesson learned with other states, particularly those like Florida that lack both high quality imagery and LiDAR on a statewide basis. He points his counterparts to NC OneMap and the Floodplain Mapping website to show what can be accomplished. Dr. Taylor suggested that North Carolina could offer brief statements to communicate success stories to share with other states. Even in flat coastal areas, LiDAR can reveal geologic features such as sinkholes to support proactive measures. He observed that other states appreciate what we do here in North Carolina.

As examples of success stories, Alice Wilson added that the Local Government Committee published short pieces on the value of statewide datasets that were informative.

- *TRANSPORTATION*

Sarah Wray (NCDOT) reported on behalf of John Farley. All public roads are now available for download and as services from the NCDOT website. The services are discoverable on NC OneMap as are links to the download site. The next update will be

published March 13. The new linear referencing system for all public roads is built on the Roads and Highways extension of Esri software and complies with the Federal Highway Administration (FHWA) requirements and funding mechanism. Work continues on conflating public roads not maintained by the state to the roads network. The geometry of a source dataset for local roads may have been modified in the integration of local and state roads, with the location of state roads taking priority in representing all road centerlines. Local roads need to be updated and edited in the aggregated set of centerlines. The March 13 dataset will include edits in the new software system. NCDOT continues to have issues to resolve in the software system. She invited reports of issues found by consumers.

On the topic of local source data for centerlines, Ms. Wray explained that NCDOT is looking into the work of the Working Group for Roads and Transportation several years ago to inform a solution. Functionality like that of the NC Parcels transformation tool will be considered. The working group and NCDOT need to look at processes and requirements. Translation of local centerlines for integration is complicated by requirements related to geometry and the road network. Unlike parcel boundaries that are accepted as-is, change detection in source centerlines over time is essential to fit new segments to the network and not redo previous geometry editing. Also, representations of the locations of state maintained roads requires documentation.

For the Working Group for Roads and Transportation, NCDOT expects to be able to provide leadership for the group in the near future after internal data issues and federal reporting requirements are resolved. Work on updating the state centerline standard will inform the design of local data update processes and tools.

Rail datasets will be updated March 13. Also, at the NC GIS Conference there will be a session on statewide transportation data including all public roads, statewide rail data, and the statewide bicycle/pedestrian data model. For the latter, NCDOT is managing the data model now.

Dr. Taylor observed that during the wildfires in western North Carolina last fall, fire fighters discovered that road and trail maps were not always current and accurate in terms of location, surface type, maintenance, and connectivity. Particularly in National Forests the roads may change but not get updated in maps. Ms. Wray added that NCDOT wants to include the maintenance type in the new road data model. Also, the data model allows for time series and representation of previous centerlines and conditions. This could be a valuable future effort. Dr. Taylor confirmed the value of historic data on mines and shafts and related roads.

- *CADASTRAL*

Jeff Brown and John Bridgers (Working Group for Seamless Parcels) reported that 99 counties updated their parcel datasets in 2016 in the NC Parcel Transformer, 82 of which were updated in the fall as part of semiannual maintenance. 46 counties are now registered with the Transformer for self-maintenance. Accomplishments in 2016 also included continuous operation of the cloud application by the Carbon Project, Inc.;

technical assistance from the Working Group for Seamless Parcels and CGIA including the NC OneMap team; cost share from NCDOT, NCDA&CS and CGIA; and outreach including a presentation at NC Property Mappers Association (NCPMA) in October.

For spring 2017, the plan is to update all 100 counties in the NC Parcel Transformer, maintain statewide parcels in NC OneMap, operate and maintain the Transformer (Carbon Project, Inc.), provide technical assistance, continue to build the stock of "do-it-yourself" counties, continue to improve population of priority data fields, find a solution for sustainable, full funding to operate and maintain statewide parcels, and consult with the Working Group for Seamless Parcels about the schema and promotion of county participation.

Mr. Bridgers added that he is working on setting up a presentation to the NC Association of Assessing Officers to promote full participation. Alice added that the Local Government Committee discussed doing outreach to counties that less readily update their parcels. Gary observed that updated parcel data along the border with South Carolina will be important to integrate in the statewide NC Parcels collection.

- *ELEVATION*

Mr. Thompson reported on behalf of Hope Morgan (Department of Public Safety) on North Carolina LiDAR. Contractors are finishing LiDAR acquisition for Phase 4 of the 5-phase, 4-year statewide project. Collection of LiDAR for Phase 5 in the western-most counties will begin soon. Completion of Phase 5 during leaf-off conditions depends in part on winter weather conditions. Snow or standing water interfere with point collection. Sun angle is not a factor, as collection can occur day or night. Data for the first three phases are available from the spatial data download site.

- *HYDROGRAPHY*

Cam McNutt of the NC Department of Environmental Quality (DEQ) commented below in the report on the Stream Mapping Advisory Committee.

- *GEODETIC CONTROL*

Mr. Thompson (NC Geodetic Survey) reported that the working group on the 2022 Reference Frame met in December and is working on statements in favor of a fixed-plate solution as opposed to a dynamic-plate solution. One item to resolve is the preferred timespan between reference frame adjustments in the fixed-plate solution to reflect changes over time. The group will meet again in March. Mr. Thompson is in the process of talking to counterparts in neighboring states. A multi-state recommendation may be practical and effective, and a regional solution would be beneficial.

- *GOVERNMENTAL UNITS*

Regarding the state boundary, Govern McCrory signed the Executive Order on December 5, 2016 as the final step to approve the state boundary with South Carolina, effective January 1, 2017. New plats have been recorded where needed in affected counties with the exception of pending plats in Brunswick, Columbus and Mecklenburg. The statute requires recording notices of affected parcels, which is being done along with the

recording of new plats. Progress is good and the processing should be complete soon. Changes in property taxes began January 1, 2017. Discussions with Virginia are underway in a similar process for the common boundary there.

Mr. Thompson reported that NC Geodetic Survey is working with 13 counties on county boundary surveys. Lenoir and Greene are completed. NC Geodetic Survey has shared the new boundaries with numerous organizations (including 911 providers) and will update the shapefiles it publishes for statewide county boundaries, available in two projections.

Regarding municipal boundaries, Ms. Wray reported that NCDOT is working with the Department of the Secretary of State on a comprehensive set of statewide municipal boundaries, including efforts to reconcile differences between county datasets, annexations recorded with the Secretary of State, and Census datasets. NCDOT will publish a new set of Powell Bill municipal boundaries on March 13 that will cover most municipalities in the state. Mr. Bridgers added that the Land Records Management Office continues to work with municipalities and counties to clean up annexation boundaries and submit annexation information to the Secretary of State consistently and in a timely fashion.

- *ADDRESSES*

Joe Sewash (CGIA) reported that the *AddressNC* project is wrapping up the user story interpretations and planning requirements for the Department of Information Technology's Touchdown project management system. The project team is coordinating with NCDOT and NC911 Board staff on data maintenance alternatives and opportunities to avoid duplication of efforts related to statewide datasets. The project team is also coordinating outreach to local governments. The team is partnering with the Carolina URISA addressing work group, including a survey last fall that got good results for both teams. At the NC GIS Conference there will be sessions by the US Census Bureau and *AddressNC* project manager Luis Carrasco, as well as a meeting of the CURISA addressing work group.

At the national level, in October the Federal Geographic Data Committee recognized and established the Addressing Theme Subcommittee. There are approximately 40 participants. Mr. Sewash represents North Carolina, and there are six other states represented. Work is underway and meetings are scheduled in February to develop a committee charter and technical requirements for a National Address Database (NAD).

In a related topic, Mr. Sewash announced that the National Emergency Numbering Association (NENA) published a GIS Data Schema for Next Generation 911. He circulated an email earlier this month encouraging review and comment. The standard is open for public review through February 28, 2017. The schema identifies required, highly recommended, and recommended data layers with the designation based on the utility for GIS datasets required for geospatial call routing in the NextGen911 i3 architecture.

In brief, this is going to replace copper lines with fiber and replace traditional switching methods with a GIS point in polygon operation to direct 911 calls to the correct Public

Safety Answering Point (PSAP). The email included links to the NENA website to access the standard as well as a 40-minute NSGIC webinar that provides background information on the content of the standard as well as the mechanics for submitting comments. In promoting this opportunity, Mr. Sewash recommended that SMAC members stress that (1) comments need to be highly specific (e.g., provide a specific alternative to an unclear sentence) and (2) the NENA website offers access to all of the comments submitted so that a reviewer may echo or amplify the comment of another, adding weight to that comment when all comments are adjudicated. The more instances of a comment, the better the point gets across and the greater the weight.

Mr. Sewash advised that having more individual jurisdictions submitting similar comments will carry more weight in the public review process than would the same comments from a single organization representing many jurisdictions such as the Local Government Committee. In terms of coordination, the GICC like any organization is welcome to comment to NENA, but its comments would not carry more weight than an individual comment. For a standard like this, comments could amount to as many as 8,000 nationwide. The more comments from North Carolina, the better. Mr. Brown mentioned that the NSGIC webinar is very informative as a starting point. He will work with Kat Clifton and the Local Government Committee on responses. Mr. Sewash will send out a reminder early in February about the February 28th deadline.

In response to a question from Silvia Terziotti, Mr. Sewash explained the schema for the recommended hydrography layer is based on the layer definition and fields directly from the most current version of the National Hydrography Dataset (NHD) schema. He further explained that one of the primary purposes of the NENA GIS schema is to provide an interchange format. For example, regarding a fall survey for *AddressNC*, he found that 14 different computer-aided-dispatch software vendors in North Carolina had their own schemas optimized for their respective systems, not designed for integration with other systems. For the coming i3 architecture and the GIS schema, the intent is not to ask vendors to rebuild their systems but to translate vendors' versions of GIS data for aggregation into statewide layers and offer opportunities for interchange between neighboring PSAPs. The intent of the schema for the hydrography layer was to provide a target that is based on NHD.

Standards and Practices

Mr. Brown reported that the standard identified for update is the data content standard for street centerlines (2005). In response to a questions about work on standards for 2017, SMAC members did not suggest revisions of any other standard at this time. As for the street centerlines, there is a new context—the NENA GIS Schema, the FHWA standard applied by NCDOT, and the NCDOT data model for roads and highways are now factors. Mr. Sewash explained that the FHWA requirements are based on All Roads Network Of Linear Referenced Data (ARNOLD). The National 911 Program is also located in USDOT. There is a high degree of overlap and integration between the requirements for state transportation departments and requirements for 911 call centers. The notable exception is the issue of address ranges. In transportation systems address ranges are optional, but for NextGen911 address ranges are essential for call routing to the correct

side of the road and to the correct jurisdiction for response. Other states are dealing with how to integrate address ranges in street centerline data. Ms. Wray confirmed that ARNOLD requires address ranges in the schema but does not require that the field be populated. There is no funding tied to reporting address ranges to FHWA. If address ranges (as "events" on a linear reference system) become important to more federal agencies (including the Census Bureau) and needs are consolidated, federal guidance will be needed by states to develop reporting solutions. The Transportation Research Board met recently and may have more information. Mr. Sewash agreed that inconsistent messages from multiple federal agencies can be problematic. From his recent conversations through NSGIC, he observed that states making the most progress are looking internally to local governments for authoritative sources and maintenance processes and for ways to make it easier for local governments to maintain address data.

Ms. Wray asked the SMAC if efforts in 2017 to update the 2005 standard for street centerlines would be worthwhile to get to the standard consistent with NCDOT's current data model, even if modifications are likely in the years ahead to keep up with changing requirements? Mr. Sewash observed that this is a good time to update the standard based on synergy and stability afforded by MAP-21 **(**the Moving Ahead for Progress in the 21st Century Act, P.L. 112-141) and ARNOLD as well as the NENA GIS Schema and NextGen911. NC has an opportunity to sort out the details and integrate and maintain one dataset for transportation and NextGen911 purposes. The SMAC's approach has been to assign the detailed work to the Working Group for Roads and Transportation.

Working Groups

WORKING GROUP FOR ROADS AND TRANSPORTATION

Ms. Wray had no additional information from the working group. She will share the discussion about the street centerline standard with John Farley.

METADATA COMMITTEE

Ms. Wray, chair, called on Tim Mulrooney of North Carolina Central University (NCCU) to introduce the graduate student assigned to NCDOT to assist with the metadata project—Craig Pederson, NCCU. Dr. Mulrooney explained that NCDOT is funding Mr. Pederson to help on all aspects of the metadata efforts.

The Metadata Committee made minor modifications to the State and Local Government Metadata Profile to clarify the descriptions and recommended practices in the document and modify the order of elements for ease of use. It was circulated to SMAC for information prior to the meeting. After presenting it to SMAC today, it will be posted on the metadata webpage. Subgroups looking at GIS themes recommended the addition of "use constraints" as a required element. There is more information on XML format and feature catalogs in appendices.

The committee conducted four training sessions in the fall. Trainings were completed in:

- Carolina Beach: NC Arc User Group, September 27, with 15 participants
- Greensboro: NC Property Mappers Association October 4, attended by 41

- Greensboro: 12 GIS practitioners from the City of Greensboro and Guilford County on October 4
- Raleigh: 20 state government GIS users on December 1

These four sessions amounted to 88 participants. Ms. Wilson added that the Local Government Committee heard good feedback from training session participants.

Outreach in 2016 included a presentation by Sarah Wray and Lynda Wayne at URISA GIS-Pro in Toronto (November 2).

The plan for 2017 includes a 90-minute session at the NC GIS Conference next month. The Committee plans to deliver more in-person training at locations including NCCU. Also, the Committee with Mr. Pederson will develop online training opportunities, instructor-led and self-learning, to reach more GIS data managers. The committee will look also at communication via NC OneMap website, listservs and other means of marketing the available resources. The group will also look to streamline user guides and templates customized by metadata editing tool. Mr. Pederson will help with logistics, documentation, and tools. Long term, a validation tool will be valuable after forthcoming developments in XML schema for ISO metadata standards.

STREAM MAPPING ADVISORY COMMITTEE
Cam McNutt (NCDEQ) reported in brief that there are no changes to what DEQ is doing for hydrography but there has been an integration of stream data from the Division of Water Resources into an enterprise database as a technology improvement.

Mr. McNutt will schedule meetings for the Stream Mapping Advisory Committee for 2017 soon. He noted that DEQ has been discussing watershed boundary data that is part of NHD. Some groups in the department are willing to take over maintenance and editing of watershed boundaries internal to DEQ. This has staff and administrative issues to resolve. DEQ is developing a business case and a governance model to bring to the Stream Mapping Advisory Committee.

NC BOARD ON GEOGRAPHIC NAMES
Mr. Giordano pointed to the revised version of the Geographic Name Change Process and Communication Plan circulated to SMAC prior to the meeting. This version was modified based on SMAC comments in 2016 on previous versions, mainly to clarify the respective roles of the US Board on Geographic Names (USBGN) and the NC Board on Geographic Names (NCBGN).

Dr. Taylor commented that the USBGN has contacted the NC Geological Survey for an opinion on a name change, independent of communication between USBGN and NCBGN. Dr. Taylor as State Geologist and SMAC member has pointed USBGN to the SMAC process and encouraged timely coordination using the state structure. The NCBGN plan should acknowledge that USBGN may consult with whoever they wish in gathering facts and opinions. He suggested a flow chart would help explain how the process best works nationally and in North Carolina. Although there may be instances

where a name change process does not adhere to the recommended process for a variety of reasons, it is worth following the NCBGN process.

Dr. Taylor made a motion to approve the document with the understanding that there will be a statement to acknowledge that the USBGN may find it necessary to work outside of the described process depending on circumstances. Staff will clarify the statement with Dr. Taylor. With a second by Ms. Wilson and no further discussion, SMAC approved adoption of the revised Geographic Name Change Process and Communication Plan.

ORTHOPHOTOGRAPHY PLANNING

Gary Thompson reported that the working group met by phone in December and met in person January 12. The working group realized that it did not have a charter. The GICC authorized the working group under the SMAC in 2003 with a focus on orthophotography and direction to develop a business plan for imagery. The working group has met consistently since that time and produced a business plan for the statewide imagery program. The group's expertise and interest has also led it to report and share information about another Framework layer – elevation. Imagery and elevation overlap to some extent and other remotely sensed data may be discussed at times. The group has a draft charter under review and expects to recommend a proposed charter to the SMAC in July. The working group is making progress on sharpening requirements for derived elevation products and finding ways to generate the products from the new LiDAR data.

In addition, the National Oceanic and Atmospheric Administration (NOAA) is offering access to a copy of the North Carolina LiDAR as part of the Digital Coast website and resources. NOAA has contributed good technical information to the working group.

Ms. Wilson pointed out the digital elevation models are very useful for generating additional elevation products for mapping purposes. Digital elevation models are included in the elevation products plan as an essential element.

Regular Status Updates

NATIONAL GEOSPATIAL PROGRAMS OFFICE

Silvia Terziotti reported that the USGS is about to make awards for LiDAR acquisition. Meanwhile, USGS continues to work on integration of elevation and hydrography data (EleHydro). Five pilots are in progress and two contractors are generating streams at scales of 1:24,000 and 1:5,000; the latter is comparable to the hydro created in western North Carolina counties. LiDAR is collected at Quality Level 2. The pilot work will inform USGS about costs of acquiring elevation and hydro data together for a truly integrated dataset.

NC ONEMAP

David Giordano reported that NC OneMap changed map services published from the NC OneMap database to use https instead for http for greater security. He pointed to the NC OneMap Blog for instructions on how to consume services using https. In addition to security reasons, the change enables easier integration of services with web applications that also use https. He displayed the new URLs and urged users to get information from

the Blog.

NC OneMap upgraded to ArcGIS Server 10.5 and ran into problems. A bug in the Esri software resulted in downloads of imagery tiles that did not include world files. A fix from Esri is expected soon. A work-around is to download a county mosaic for the location of interest; search on "mosaic" and navigate to the county of choice.
Also, ArcGIS Earth 1.3 does not allow image services to be consumed if the image service (or web service) contains a date field. This is a bug that Esri plans to fix.

Work Plan Prioritization and Other Data or Mapping Items from the Group

No additional discussion.

Adjourn --The meeting adjourned at 3:15 PM.

2017 SMAC Meeting Dates
Wednesday, April 19
Wednesday, July 19
Wednesday, October 18

Locations are to be determined in consultation with the Chair.