



## North Carolina Geographic Information Coordinating Council

### Minutes

February 13, 2019

#### PRESENT

Alex Rankin (Chair), Steve Averett, Paul Badr, Kathryn Clifton, Jason Clodfelter, Bob Coats, John Correllus, Greg Cox, John Cox, Stan Duncan, Dianne Enright, John Farley, John Gillis, Tim Mulrooney (for Joanne Halls), Matt Helms, Debbie Joyner, Bliss Kite, Camille Tyndall Watson (for Sarah Koonts), Silvia Terziotti (for Scott Lokken), Dan Madding, Rich Elkins (for Elaine Marshall), Hope Morgan, Chris Nida, Allan Sandoval, Frank Scuiletti (for Wesley Beddard), Tony Simpson, Lee Worsley and Ron York

Staff: Tim Johnson, CGIA

#### ABSENT

David Baker, Seth Dearmin, Kristian Forslin, Chloe Gossage, Dean Grantham, Pokey Harris, and Jason Hedley

#### PROCEEDINGS

A meeting of the Geographic Information Coordinating Council was held in the Board Room at Triangle J Council of Governments in Durham, North Carolina.

#### Welcome and Chair Announcements

Alex Rankin, Chair, called the meeting to order and welcomed Council members and visitors. He thanked Lee Worsley for hosting the meeting.

Mr. Rankin gave updates on Council membership and welcomed three new designees:

- State Budget Director Charles Perusse designated Bob Coats to represent the Office of State Budget and Management on the Council, replacing Nels Roseland.
- Secretary of the Department of Environmental Quality Michael Regan designated Dean Grantham to represent DEQ, replacing Michael Pjetraj.
- John Dorman has retired from state government. The Secretary of the Department of Public Safety Erik Hooks designated Hope Morgan to represent DPS on the Council.

- Alex Rankin appointed Hope Morgan to serve as Vice Chair of the Council. Ms. Morgan is IT and GIS Manager for NC Emergency Management. She is a GIS Professional, a Certified Floodplain Manager, and a Professional Land Surveyor.

## Approval of Minutes

The minutes of the November 7, 2018 meeting were approved for adoption with no changes.

## Technical Presentations

1. *Project ATLAS: Improving Project Development Through GIS* (Ryan Arthur)  
See <https://files.nc.gov/ncdit/GICC-ATLAS-Presentation-20190213.pdf>

Mr. Rankin called on Ryan Arthur, NC Department of Information Technology-Transportation GIS Unit. Mr. Ryan invited Eric Wilson, GeoDecisions, GIS Technical Project Lead, to join him in the presentation.

Mr. Arthur described a six-step process for transportation construction projects:

Step 1: Planning – Comprehensive Transportation Planning (20-25 years)

Step 2: Prioritization and Programming – State Transportation Improvement Program (10 years)

Step 3: Project Development and Environmental Analysis – Project funded and assessed for environmental impacts under the National Environmental Policy Act (NEPA) and State Environmental Policy Act (SEPA)

Step 4: Design

Step 5: Property Acquisition

Step 6: Construction

Project ATLAS (Advancing Transportation through Linkages, Automation and Screening) got started in August 2017 when the Environmental Analysis Unit (EAU) at NC Department of Transportation (NCDOT) approached the GIS Unit to request help in making project delivery more efficient. The EAU has heavy GIS users for predictive modeling, field verifications, and impact maps, but the unit needed assistance to leverage GIS to improve project delivery. The focus is Step 3 – project development and environmental analysis. The goal is to streamline project development by utilizing GIS tools, applications, and data. This is consistent with the Transportation Secretary's priorities for improved program delivery. Accelerated project delivery enhances North Carolina's economic competitiveness.

The 2020-2029 State Transportation Improvement Program (STIP) consists of 1,663 funded projects relating to highways, bicycle/pedestrian, aviation, rail, public transit and ferry purposes. Disciplines involved include wetlands, streams, protected species, historic resources, community studies, right-of-way, and utilities.

Before ATLAS, project development lacked standards for deliverables, had no spatial data in the central repository (SharePoint), had a mostly manual business process, lacked standards for GIS data across projects, and had a series of enterprise applications that were not integrated. The project needed a way to capture geospatial data. Processes are complex with many players and multiple systems.

The ATLAS project catalogued data amounting to 563 data layers from 27 sources, including NCDOT's GIS Unit, US Geological Survey, CGIA, NC Department of Environmental Quality (DEQ), US Department of Homeland Security, and US Army Corps of Engineers. Mr. Arthur emphasized that ATLAS is pulling web services from the sources to get the latest versions available, not downloading files and risking use of out-of-date versions. In addition, the ATLAS project is creating 130 new geospatial datasets.

The GIS-specific business goals are to:

- Provide the transportation project community a searchable gateway to all spatial data used in project delivery at NCDOT.
- Create a tool that screens NCDOT STIP projects against geospatial project data for significant impact areas.
- Provide a platform for project managers to view their project, their project's impacts, and other significant information related to managing that project.
- Stand-up an enterprise GIS database for NCDOT project data.
- Create enterprise GIS data for project delivery.

In April 2019, NCDOT expects to implement four new tools:

- The Search Tool (web) enables users to search for data by document type, NCDOT discipline, and keyword, download a data package in geodatabase and design (DGN) formats, and view a data package on a map. This is intended for sub-county project areas. Access is restricted.
- The Screening Tool (web) provides ways to screen against more than 60 key data layers for area impacts, screen STIP and Strategic Prioritization Office (SPOT) projects, and upload or draw a study area. The Screening Tool also produces a report that measures impact totals by individual dataset, provides the ability to download impact datasets, view impact data on a map, and produce a project report.
- The ATLAS Workbench (web) is a flexible tool that includes an advanced map viewer, is integrated with SharePoint for scoping and preconstruction, ingests standard deliverable data in PDF and geospatial formats, and displays project data in the context of surrounding projects. Contractors will be required to use ATLAS tools. Enhanced data supports better environmental model results.
- The Application Management Tool can add or remove data layers, manage deliverable types, manage Workbench questions, and update information about ATLAS, application disclaimers, additional resources and help.

Mr. Arthur explained the role of ATLAS in the GIS landscape, including data coming into ATLAS from federal, state and local data sources, and data being published as web services to the public. He emphasized the importance of continuous web access to data and services to support the business processes. Monitoring servers will be important for ATLAS and source agencies.

He added that ATLAS is not eliminating field work, is not eliminating jobs, is pushing more work earlier in the process to help scheduling, budgeting and scoping, and is helping to deliver better projects within our program delivery goals. The emphasis is on improving GIS data quality and data management and improving processes.

During discussion, Matt Helms inquired about dynamic source data. Mr. Wilson confirmed that a user would need to run a report again based on the latest web services. In response to a question by Paul Badr, John Farley explained that ATLAS is owned by NCDOT, but code could be shared with other states. Greg Cox asked about public access to the online tools. Mr. Arthur explained that the Data Search Tool is authenticated by NCID. The Workbench Tool including data upload is for NCDOT authorized users. Visitor Doug Newcomb inquired about documentation of tools used for geoprocessing steps. Metadata templates are applied, but items do not include software versions used to produce a dataset. Mr. Arthur will consider this further. He also clarified that a user defined project area for data download has a limit of 6 square miles to promote efficient data transfers for project areas. Mr. Arthur added that a memorandum of agreement is applied to some of the data sources in support of data sharing.

Mr. Rankin thanked Mr. Arthur and Mr. Wilson for the presentation.

2. *2022 Reference Frame* (Gary Thompson)

See <https://files.nc.gov/ncdit/GICC-2022-Datum-20190213.pdf>

Mr. Rankin called on Gary Thompson, Chief of the NC Geodetic Survey in the NC Department of Public Safety, to introduce the Council to the concepts of a new datum in 2022.

Mr. Thompson presented material from NOAA's National Geodetic Survey (NGS) along with specific information about North Carolina. The National Spatial Reference System is a consistent coordinate system that defines latitude, longitude, height, scale, gravity, and orientation throughout the United States. Modernization of the system includes replacement of datums currently in use (horizontal—North American Datum (NAD) 1983 (2011 realization) and vertical—North American Vertical Datum (NAVD) 1988). The new datums will be horizontal—North American Terrestrial Reference Frame (NATR2022) and vertical—North American-Pacific Geopotential Datum (NAPGD2022). The change will impact all geospatial datasets. Changes to specific datasets are likely to evolve, not all occurring on January 1, 2022, but preparation is well underway. NGS is working with software vendors on transformation parameters to enable software tools to transform to the new datums. In North Carolina, the datums will change and the State Plane Coordinate System will change.

Two of the factors behind the new datums are (1) a new measurement of the center of the earth using advanced technology is 2.24 meters to the northeast compared to the NAD1983 origin, and (2) gradual movement of tectonic plates has small but measurable distances and velocities. The estimated horizontal change in North Carolina is between 1.0 and 1.1 meter from the old to the new datum. The predicted change in the vertical datum from old to new is minus 0.25 meter or about a foot. The 2022 Reference Frame will be a fixed plate coordinate system, despite the velocity of plate movements, for some number of years before periodic adjustment to take plate movement into account.

Part of the national effort is the "GRAV-D" project designed to capture accurate gravity data and to monitor geoid change over the long term. The goal of the project is to create gravimetric geoid accurate to 1 centimeter where possible, and 2 centimeters overall. North Carolina is participating in gravity data collection in two zones covering the state. An optionally piloted aircraft system (Centaur OPA) is being used in western North Carolina. Also, gravity meters on the ground are gathering data. The state is partnering with NGS to establish 11 new absolute gravity stations in western North Carolina.

Mr. Thompson explained that the most significant impact of the 2022 Reference Frame will be changing the NC State Plane Coordinate System. The competing desires in North Carolina are to (1) change state plane coordinates as little as possible to preserve systems based on state plane coordinates (e.g., parcel numbering, FEMA floodplain mapping tiles) and (2) change coordinates by a large amount to reduce confusion between old and new coordinates and to satisfy NGS policy.

Incidentally, North Carolina was the birthplace of state plane coordinates in 1932. Mr. Thompson explained characteristics of 2022 State Plane Coordinates: minimum distortion at ground surface, a one-parallel definition of Lambert Conformal Conic, change in coordinates greater than or equal to 10,000 meters, and grid origins rounded to the nearest 1,000 meters. Any different parameters would require a request for an exception to NGS.

Mr. Thompson listed North Carolina preparations for new datums in 2022:

- The Council’s 2022 Reference Frame Working Group continues to develop recommendations and it reports quarterly to the Statewide Mapping Advisory Committee
- Working with SC Geodetic Survey, SC, NC, and VA Department of Transportation to develop common implementation plans
- Working with the National Geodetic Survey to complete GRAV-D in North Carolina
- Collecting terrestrial gravity data; completed collection of airborne gravity data
- Partnering with UNCC to purchase an absolute gravity meter
- Obtaining ellipsoidal heights on NAVD88 bench marks
- Collecting statewide LiDAR elevation data
- NGS created a 2022 Datum [web page](#)
- Doing outreach
- NGS GPS on Bench Marks project is in progress
- Planning to meet with NGS in March in Silver Springs to discuss the NC State Plane Coordinate System 2022

One caution about state plane coordinate systems: Like most states, North Carolina’s system is based on US Survey Feet, the same unit as neighboring states with exception of South Carolina that uses International Feet.

In discussion, Mr. Thompson confirmed that the new datum applies to Canada and Mexico. Also, NC Geodetic Survey is coordinating with South Carolina with the intention of developing the same solutions. He explained that airborne gravity data is accurate after calibration. On the topic of state plane coordinates, the intention of the working group is to minimize the impact on local governments where, for example, land records are indexed to parcel identification numbers that are constructed from digits of state plane coordinates. Rich Elkins added that it may take some counties years to convert datasets, based on experience transitioning from NAD1927 to NAD1983.

### Working Group on PLS and GIS

Tim Johnson gave an update on the Working Group for Professional Land Surveying (PLS) and GIS. The Council created the group a couple of years ago and it has developed a set of use cases that help clarify data development practices by the two professions. A subgroup—Kathryn Clifton, John Farley, Kent Rothrock, Alex Rankin, and Tim Johnson—has had a series of meetings with the surveyors’ committee of the NC Board of Examiners for Engineers and Surveyors (NCBEES) to work on details of use cases and definitions, and to reach common understandings of the activities of

PLS and GIS professionals. The subgroup examined 22 use cases created by the working group. Clarification of terminology and frank discussions led to a summary of use case discussions and findings about what are the respective purviews of PLS and GIS in those cases. An initial product developed by Kent Rothrock and John Logsdon is a template for a disclaimer for data produced by a GIS professional. In a conference call on January 24, Mr. Johnson agreed to finalize the document summarizing use cases. The next steps are (1) distribution of those documents to the full Working Group for PLS and GIS, (2) a panel presentation at the NC GIS Conference on February 28 that will invite feedback from attendees, and (3) bringing information to the Council through the Management & Operations Committee (M&O), highlighting areas of agreement and areas that still need work. Also, an annual check-in between representatives of the Council and NCBEES is a mutual goal to promote understanding.

## Committee Reports

***Statewide Mapping Advisory Committee (SMAC).*** Paul Badr, SMAC Chair, reported that SMAC met on January 23 and covered numerous updates from managers of Geospatial Framework datasets as well as chairs of working groups. The 2022 Reference Frame and implications for state plane coordinates continue to be discussed by the working group chaired by Gary Thompson. Project Manager Ben Shelton reported that the Statewide Orthoimagery Program delivered the 2018 products to Public Safety Answering Points and published imagery on NC OneMap on schedule in early December. Acquisition of 2019 imagery in the 21-county Southern Piedmont and Mountains region is proceeding on schedule this winter. Project Manager Hope Morgan expects LiDAR data quality review for Phase 5 of 5 to be completed soon, subject to review by project partner US Geological Survey (USGS). A future product under development is contour data derived from digital elevation models.

In addition to the usual transportation data updates, Sarah Wray reported that NCDOT's GIS Unit is working with the Aviation Division to expand its use of GIS related to data collected by unmanned aircraft systems. The Working Group for Municipal Boundaries, co-chaired by Bob Coats and John Bridgers, is assessing the level of effort to produce an improved baseline statewide dataset for municipal boundaries. From a baseline, maintenance could be achieved from a consistent data flow from local governments to the State for annexation digital boundaries and documents. Proposed methods to improve digital boundaries in annexation plats would enhance the quality of municipal boundaries. The overall approach is to test methods before recommending process changes, and to use guidance and promotion to achieve improvements before recommending changes in rules or statutes.

The Working Group for Orthoimagery and Elevation, in addition to regular updates, heard from chair Gary Thompson about the State Emergency Response Application and the acquisition of oblique imagery over high-hazard dams in selected counties under a grant from the Department of Homeland Security. First responders can access the imagery on mobile devices. The Working Group for Land Cover, chaired by Kenneth Taylor, will solicit more information about business needs for land cover data during the poster session at the NC GIS Conference.

The Hydrography Working Group, chaired by Cam McNutt, presented an update on production of a statewide dataset for streams by NCDOT's ATLAS project. The group will evaluate the data and revisit stewardship opportunities with the National Hydrography Dataset. The working group plans to propose a way to host the data in the Department of Environmental Quality and make it available to

the public. John Bridgers, co-chair of the Working Group for Seamless Parcels reported that 98 counties updated their parcels in the NC Parcels Transformer during 2018. The Metadata Committee led by Sarah Wray is producing a new workbook to guide editing of metadata.

The SMAC Work Plan includes research and reporting on data access policies and practices of private utilities. Hope Morgan is leading the effort. This is parallel to research into local government utility policies and practices by the Local Government Committee as well as Council research on federal law/policy. The next SMAC meeting will take place on April 17.

***Local Government Committee (LGC).*** Jason Clodfelter, LGC Chair, reported that the committee met on November 28 and, as a follow-up to the November 7 meeting of the Council, discussed the importance of statewide datasets, especially in preparation for emergency events. The committee discussed the power of collaboration between local, state and federal resources in disaster response and recovery. The committee discussed the need for and importance of organized GIS resources to assist local governments in impact areas, including the North Carolina Local Government Information Systems Association (NCLGISA) strike-team and others. The committee also discussed methods for making resources known to those who may need assistance and for communicating opportunities to assist to those willing to volunteer their time and expertise.

Also, the LGC is looking at public access to geospatial representations of local government utilities. The committee issued a survey to local government contacts to document information about data distribution policies and practices in jurisdictions that own and operate public water, sewer, and/or power utilities. The survey went out in mid-November to listservs including NC GIS, NCLGISA, NC Chapter of the American Public Works Association, NC Property Mappers Association, and NC Managers (i.e., city and county managers). The survey requested copies of non-disclosure or other agreements if applicable. Survey respondents totaled 63. The committee is reviewing the results and will report to the M&O Committee and SMAC. In addition, there will be a panel discussion on this topic at the NC GIS Conference involving Mr. Clodfelter and others. LGC meets next on March 13.

***State Government GIS Users Committee (SGUC).*** John Farley, SGUC Chair, reported that the limited services GIS contract is being rolled into a general Department of Information Technology (DIT) IT contract with CAI that will include GIS services for limited scope and duration. Vendors are bidding to be qualified. He asked other state agencies, if they have not, to let him know if they have used the limited services contract, to fulfill an information request for purchase orders related to the current limited services contract. The committee continues to work on a new three-year Enterprise License Agreement (ELA) with Esri. The plan is for a subset of the committee to meet with each state agency to clarify needs over the next three years in efforts to right-size the ELA for the State.

***Federal Interagency Committee (FIC).*** Silvia Terziotti reported on behalf of Scott Lokken, FIC Chair. Although the committee has not met since before Hurricane Florence, she noted that FIC members have continued regular participation on the various committees and working groups of the Council. FIC members will do presentations at the NC GIS Conference on topics including Census 2020, the 2022 Reference Frame, land cover, habitat conservation, hydrography and elevation, and open source software. Also, FIC will meet there on February 28 during special interest group time after the technical sessions.

Regarding the 3D Nation study, USGS has held one meeting for participants and plans another in late March. A state narrative for North Carolina is expected in April. The study looks at needs for

elevation and bathymetry data in the state and nationwide. The final product will be a report in the national context.

***GIS Technical Advisory Committee (TAC)***. Dan Madding, TAC Chair, reported progress on a Smart Cities document. Getting volunteer time from subject matter experts is challenging, but the outline is set, a glossary is drafted, and topics are being assigned. Mr. Madding is reaching out to the LGC to review the outline. Volunteers willing to put in as little time as a half hour are welcome to contribute.

***Management and Operations Committee (M&O)***. Mr. Rankin reported that the committee met on December 17. Much of the content of the meeting was covered by the preceding committee reports including orthoimagery and parcels. Regarding Census 2020, Local Update of Census Addresses (LUCA) submissions are under review by the Census Bureau. The Participant Statistical Area Program is in progress and is an important opportunity for local governments to define areas for which Census statistics will be published. The annual Boundary and Annexation Survey is in progress, coordinated by the Department of the Secretary of State. North Carolina's Complete Count Commission for Census 2020 was established by Governor Cooper's Executive Order 79 on October 22.

Regarding municipal boundaries, the working group is testing a new data flow for annexation data with six pilot counties, including Forsyth, with thanks to Mr. Clodfelter. The goal is to answer questions about the timeliness and practicality of data submissions to a state entity, as well as the quality of data coming from county data managers. The ability of metadata to capture and describe accuracy and currency is also being assessed. Incentives for currency and accuracy are being considered. In addition, the group is considering ways to make the source annexation documents, including plats, consistently digital and geo-referenced. For example, Mr. Clodfelter commented that MapForsyth did a comparison of what the Secretary of State had received, what the Census Bureau had on file for boundary and annexation data, and what MapForsyth (city/county) had on file. The differences were eye-opening. For example, one municipality had numerous small annexations in one year that had not been reported to the Secretary of State. His office is requesting to be on distribution lists of municipal clerks to establish a consistent flow of annexation documents. Also, NCDOT annual updates for the Powell Bill Program are involved in the process, and the working group reached out to other state agencies to identify other requests for municipal data, with the intention of making data sharing more efficient. Another factor is upcoming geospatial data management for Next Generation 911, including municipal boundaries as a required dataset.

The Council's 2018 Annual Report is still under review by NC DIT.

M&O Committee discussed topics raised by the Council presentations on GIS and Hurricane Florence on November 7. Mr. Farley echoed the challenge of GIS professionals getting into an EOC (state or local) and understanding what maps and analysis are most valuable. He suggested a daily state and local GIS conference call during emergency response to identify needs and resources, analogous to the FEMA daily geospatial call. Mr. Farley added that unmanned aircraft systems were newly deployed in a significant way. Ms. Morgan observed that the NCLGISA IT Strike Team was effective but has a limited pool of volunteers. Engaging more GIS resources will be valuable.

After the M&O Committee discussion, Mr. Rankin requested a working group for enhanced emergency response to identify lessons learned, strengthen response, and leverage what we have. He asked Hope Morgan to chair that effort and she graciously agreed. Ms. Morgan commented that she



and Jeff Brown are working on a draft charter for the new working group, and she invites volunteers from the Council and other subject matter experts involved in emergency response from local, state, and federal agencies.

The next M&O Committee meeting is scheduled for April 1.

### NC GIS Conference 2019

Mr. Johnson reported that the conference will be held February 26 through March 1, 2019 in Winston-Salem at the Benton Convention Center. Registrations are exceeding 600, the hotel blocks have been fully booked, and the event has lined up 40 exhibitors coming from North Carolina and outside of the state. For the program, 150 speakers are presenting in up to six concurrent sessions spread across two and a half days. The Herb Stout Local Government Awards for a county and a city and the Herb Stout Student Awards (17) will be announced at the conference March 1. Participating universities include Elon University for the first time. The closing lunch will include remarks by Alex Rankin, reaching out to the community to talk about what the Council can do better to serve them. The conference mobile app includes a polling function that will be used to engage participants in support of Mr. Rankin's presentation. Mr. Johnson added that the program committee has put out a call for more posters for the Wednesday evening poster session. Posters are intended to communicate the work of GIS professionals. At least 20 more spots are still available.

### GICC Member Announcements

None.

### ADJOURNMENT

There being no other business, the Chair adjourned the meeting at 2:25 PM.

Dates and locations for Council meetings in 2019:

May 8, Albemarle Building, Department of Insurance

August 14, Albemarle Building, Department of Insurance

November 6, location to be determined

Presentations and reports for this [meeting](#) are on the Council [website](#).