MetroGIS Policy Board
Wednesday, April 25, 2018, 7:00 – 9:00 pm
Metro Counties Government Center, 2099 University Avenue, St Paul

Meeting Minutes (as Approved on April 24, 2019)

Policy Board Members Present:
Debbie Goettel, Chair, Hennepin County
Mary Texer, Vice Chair; Metro Chapter – Minnesota Association of Watershed Districts
Chris Gerlach, Dakota County
Jim Kordiak, Anoka County
Steve Elkins, Metropolitan Council
Peter Henschel, Carver County
Renee Heinbuch, Washington County
Barbara Weckman Brekke, Scott County
Brad Aho, City of Eden Prairie
Peter Lindstrom, City of Falcon Heights

Guests:
Mark Kotz, Metropolitan Council
Nancy Read, Metro Mosquito Control District
Randy Knippel, Dakota County
Katie Gilmore, PAAP

Staff:
Geoff Maas, MetroGIS Coordinator

1) Call to Order
Chair Goettel called the meeting to order at 7:02 PM

2) Approve Today's Meeting Agenda
Motion: Texer; Second: Elkins; No discussion, motion passed.

3) Approve Meeting Summary Minutes from 2017 Annual Meeting
Motion: Texer; Second: Elkins; No discussion, motion passed.

4) Brief Welcome to New Policy Board Members – Introduction
Chair Goettel welcomed the group to the meeting and welcomed newest members, Peter Lindstrom, mayor of the City of Falcon Heights and Brad Aho, City Councilman for the City of Eden Prairie. Both Lindstrom and Aho are representatives from the Metro Cities organization and were nominated to the MetroGIS Policy Board by the Metro Cities Executive Committee. Both new members provided brief introductions of themselves and their current positions, both in public service and in their employment.

5) Benchmark Award for Anoka County Commissioner James Kordiak
Chair Goettel presented a short overview of Commissioner Kordiak's distinguished and productive 46-year career in public service for Anoka County and, with Coordinator Maas, thanked him for his consistency in participating in the Policy Board for the past 21-year period and presented him with the MetroGIS Benchmark Award.

Commissioner Kordiak spoke about his experiences during his tenure with the Board, from the early days when the decisions to share data were more contentious and the costs of the technology were substantially higher. He indicated that he very much enjoyed participating on the Board, learning a great deal about geospatial technology and its applications to government work and was glad to be a part of the recent movement toward free and open public geospatial data.

6) Brief MetroGIS Project Updates
Coordinator Maas provided brief updates on the progress of MetroGIS work project from 2017 and what is planned and underway for calendar 2018, including a briefing on the collaborative's past and current budget.

6a – MetroGIS 2017 Work Plan and Budget
At its fall quarterly meeting in 2017, the MetroGIS Coordinating Committee decides upon its work priorities for the coming year and programs its budget to align with work plan priorities.

In 2017, MetroGIS received $86,000 from the Metropolitan Council Information Services department for projects with regional significance in 2017. Maas reported on the budget allocations as follows:

Project or Initiative	Budget Allotment
Total Budget Allotment	$86,000
Contract with Metro Counties	$28,000
MetroGIS Website CMS Upgrade	$2,800
Support to Geospatial Commons	$4,071
Total Spent	$34,871
Unspent funds in 2017	$51,129

Maas indicated that the collaborative is fortunate to have most of its work met through in-kind work and the contributions of the staff of the collaborative partners.

Maas went on to list the seven project priorities identified by the Coordinating Committee for the 2018 Work Plan cycle and the current proposed budget to support those efforts.

Project Priorities:

- **Address Point Data Aggregation**
- **Metro Regional Centerlines (Roads)**
- **Park and Trail Dataset/Data Standard**
- **Address Point Editor Tool (v. 4.0)**
- **Addressing Resource Guide**
- **Statewide Centerlines (Roads)**
- **Metro Stormwater Data Project**

Project Priorities in "Maintenance Mode"

- **Support for the Geospatial Commons**
- **Free and Open Public Geospatial Data Initiative**

For 2018, MetroGIS received $50,000 from the Metropolitan Council Information Services department for projects with regional significance. This decrease in the budget is not an indication of MetroGIS "falling out of favor" with the Metropolitan Council, rather, the Council has had to make cuts in many areas of its operation. Maas re-iterated that the collaborative seldom uses its entire budget allocation in a given year and the reduction in budget was not critical to the effective function of the collaborative. Maas and Metropolitan Council GIS Manager Mark Kotz confirmed that if a project arose of regional significance and regional need where funding was needed beyond the current allotment, they could approach the Metropolitan Council and request that funding.

MetroGIS Budget allotment for calendar 2018 was described by Maas as follow:

Project or Initiative	Budget Allotment
Total Budget Allotment	$50,000
Contract with Metro Counties	$28,000
Address Editor Tool Upgrade (Vendor)	$15,200
Total Spent	$43,200
Unspent funds remaining in 2018 budget	$6,800

Agenda Item 6b: Address Point Aggregation, Address Point Data Standard, Address Point Editor Tool and the forthcoming Addressing Resource Guide

These four initiatives are closely related as they work with the creation, maintenance, management and availability of address point data. Development and aggregation of address points has remained a high priority of the metro level geospatial community in the past several work planning cycles. Address points are a vital data resource for emergency services dispatch, delivery systems, geocoding, density analysis, applications development, tracking development and permits among many other uses. The metro counties have taken on the role of 'trusted aggregator' of their various cities data and the Metropolitan Council aggregates this data (twice per year) and publishes it as a regional dataset on the Geospatial Commons.

As of April 2018, all Seven Metropolitan Counties are participating in the creation and aggregation of address point data with nearly 1.2 million data points known in the Twin Cities Metropolitan Region. The Seven Metropolitan County GIS Departments have set a general goal date of May 15, 2018 to have their address point data translated from the current Metro Address Point Data standard to the newly adopted Minnesota Address Point Data Standard (discussed in full below). Metro counties work closely with their cities to aggregate address point data within their county.

Metropolitan Council GIS Staff have agreed to serve as regional validators and aggregators of the data and will publish the standardized data of the seven metro counties on the Minnesota Geospatial Commons. This validation and aggregation effort is anticipated to be near-fully automated for the collection and processing of data, with a goal of running nightly updates.

The Statewide Address Point Data Standard was adopted on December 6, 2017. This adoption reflects the culmination of many years of work of the metro partners and partners in Greater Minnesota. Metro partners began working on an address point specification in 2004 and adopted their first formal version of the standard in 2010. The State-911 interests began working on a data specification to meet their needs in 2015 with an outreach effort to Greater Minnesota. Partners in both the Metro and State efforts saw the opportunity to work toward a statewide standard; incentivized in large part to satisfy the needs of NextGen9-1-1 interests who need this data for the optimal function of their systems.

Maas indicated the goal was for a metro-wide standardized data set, potentially including Isanti and Chisago Counties, to be available late in 2018, with the partners involved moving toward processes which promote automation to streamline the work.

Agenda Item 6c: Metro Regional Centerlines

The Seven Metropolitan Counties, with the Metropolitan Council and Metro Emergency Services Board have been working together since May 2014 to develop a road centerline data model and dataset to meet their collective needs. After three years of development, the first version of this dataset was published for full public consumption on the Geospatial Commons during April 2017, with a significant upgrade and enhancements to the data being published during February 2018.

Next steps for the Centerlines initiative include working toward automated nightly upgrades of the dataset and finalization of an agreement between the Counties and Metropolitan Council and enhancements for aggregation and validation of the data. Additionally, a Best Practices Document of all that has been learned in the process of the project in the creation and maintenance of the data has been drafted and will be made publicly available. Finally, additional projects which help aligning this data to the specific needs of the NextGen9-1-1 community are anticipated.

As this effort includes working closely with the Metro Emergency Services Board, it is anticipated that the counties of Isanti and Chisago will also be included in a future version of this metro road centerline dataset.

The metro road centerline resulted in a data standard which, with some minor modifications, has been incorporated by the state's NextGen9-1-1 Standards Workgroup and promoted as a candidate for a statewide centerline standard. The Geospatial Advisory Council's Standards Committee has published this derived standard (the Minnesota Road Centerline Standard or MERS) for a 60-day public review period (April 9, 2018 through June 8, 2018). Once comments are received, the Standards Committee will review them and make further recommendations for the adoption of the proposed standard.

Agenda Item 6d:

Metro Park and Trail Dataset and Metro Regional Park and Trail Dataset

Building upon the success and working model of the metro road centerlines data effort, metro partners embarked on a similar effort in developing a data specification and dataset representing the range of park, recreational land and trail networks of the metropolitan region.

The project began in 2016, refined their data schema and process through calendar 2017 and were able to pull together an initial version of this unique dataset and publish it to the Commons in March 2018. The group has chosen the National Recreation and Park Association (NRPA) data model (with some minor modifications) as its basis for its dataset. Next steps for the part and trail data initiative include populating additional attributes, minimizing overlapping data among the participating jurisdictions and identifying a schedule for periodic updates

Agenda Item 6e: Metro Stormwater Geodata Project
The development of a stormwater data standard was initially begun in 2008, made progress until 2010 but has been largely shelved during that time. MetroGIS has been informally collecting information on the need for this dataset since 2013 and has elevated the project to its seventh (7^{th}) priority in the 2017 and 2018 work cycle. With other initiatives moving into maintenance mode or requiring less effort, there is now capacity to work on this initiative.

On Tuesday, April 17, 2018, partner agencies of MetroGIS, the Hennepin County GIS Office and the Ramsey-Washington Metro Watershed District convened a 'Metro Stormwater Geodata Summit' at the Hennepin Council Emergency Management Center in Medina.

This 2.5-hour session was well attended, with 62 participants from city, county, regional, state interests as well as watershed district, private engineering, and public works personnel present.

The event featured presentations on the current work of Hennepin County to draw together data from its constituent cities, an over view of the past effort (2008-2010) and orientation presentation about the anticipated future project.

Two small-group break out session took place, the first to identify specific technical needs and business needs of the participants for data, the second, to identify specific needs regarding policies governing the availability and licensing of this data.

The goal of the project will be to work toward an eventual sustainable, stakeholder-supported method for the on-going collection, standardization, aggregation and availability of geospatial stormwater system data in the Twin Cities Metropolitan Region to meet specifically identified stakeholder needs across jurisdictions.

From the participants an 18-member Steering Team was formed of volunteers. This group will convene beginning in June 2018 with the goal of prioritizing first steps from the input received during the April 17 sessions input.

Agenda Item 6f: The Parcel Data Transfer Standard
Coordinator Maas, who also serves as Chair of the Standards Committee of the Geospatial Advisory Council (GAC), announced that the GAC had approved a statewide parcel data standard at its last meeting on March 28, 2018. This approval represents the successful culmination of effort by the geospatial community beginning with the original work of the Seven Metropolitan Counties in 1999 to define a parcel data standard. Maas provided a concise history of the development and advancement of the standard. By 2002, the metro counties had developed standard and began producing data in it. In the years between 2004 and 2014, state partners built upon the metro parcel data standard to develop a statewide equivalent. From 2015 through 2017, this state-level standard was modified, reviewed formally through the stakeholder process established by the Standards Committee, aligned with the Address Point Standard and reviewed a final time in early 2018, being adopted in late March. This standard forms an important resource for the aggregation and federation of parcel data in the state.

Agenda Item 6g: Minnesota Geospatial Commons Update
The Geospatial Commons, a state-maintained geospatial data clearinghouse and portal was originally launched in the summer of 2014 and its availability and function remain a priority to the not just the metro interest but the entire statewide geospatial professional community.

The MetroGIS collaborative identifies the maintenance and support of the Commons as a work plan priority, however one that is tied more to maintenance rather than active work now that the resource is established. Periodically, MetroGIS will contribute a portion of its funds to help bolster the continued maintenance of the Commons.

As of April 24, 2018, the Commons presently provides access to 736 individual resources produced by 29 different agencies and is maintained by a coalition of state-level partner agencies. The Commons can be accessed at https://gisdata.mn.gov

Agenda Item 6h: Free and Open Data Initiative Update
Coordinator Maas indicated the free and open data effort has transitioned to a maintenance operation of on-going research, outreach and communication to partners in Greater Minnesota. He displayed the map of Minnesota counties now making their data available as of April 24, 2018; with 28 of 87 counties are making their data open and discussed how the decision of the MetroGIS Policy Board on October 23, 2013 has led to a cascade of open Maas has volunteered to serve as 'steward' in maintaining the core resource 'white paper' resource (entitled: "Free + Open Public Geospatial Data in Minnesota: Questions, Answers, Concepts and Resources for Practitioners") that is updated periodically and published on the MetroGIS website as a guide for geospatial around the state. This document is updated periodically in response to questions posted from geospatial professionals or changes to laws and administrative rules governing geodata data availability. Maas indicated that he and other member of the metropolitan geospatial professional community have been tapped to speak and present at various conferences and events on the advance of open data in the state. Upcoming conference events where this material will be discussed include the National State's Geographic Information Council in Duluth, MN (Oct 1-5, 2018) and the Minnesota Society of Professional Surveyors conference in Minneapolis in February 2019.

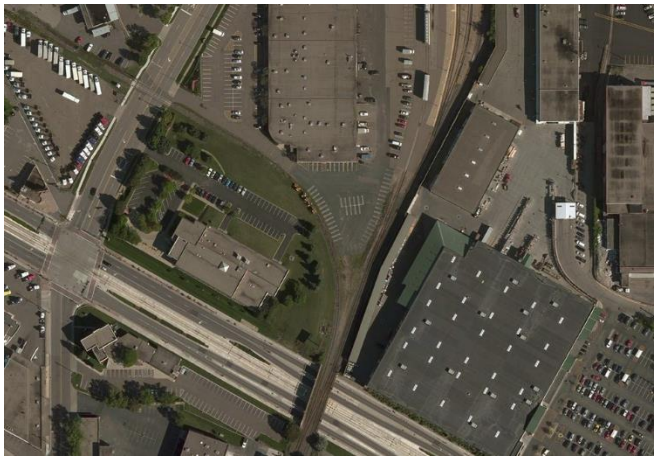
Agenda Item 7: Special Presentation
Drones: Technology Overview, Policy Issues and Practical Applications for Local Government

Randy Knippel, GIS Manager for Dakota County and Katie Gilmore of Precision Approach Aerial Photography of Apple Valley, Minnesota provided a two-part presentation on the advance of drone technology and what that means as a resource for municipal and county governments to conduct their business.

Knippel began by providing a thorough overview of aerial image technology over the past 30 years—from the end of film to the advance of digital technology—and described how drones can be seen viewed as the next advancement to be capitalized upon and how drone technology can potentially fit in or compare with traditional aerial photography methods for meeting the needs of governments who consume this data.

He outlined the various techniques and transformations needed to acquire make of use of this data for government applications, such mosaicking the captured data, removing distortion through orthogonal rectification and adjusting the imagery to adapt to the changes in terrain.

Further, he described the need at the municipal and county level for a consistent aerial imagery product to be able to measure features and observe changes in the landscape over time.



He provided an overview of the difference between *relative accuracy* and *absolute accuracy* and provided a set of examples showing imagery captured at different time periods with various methods and how they compared against the understood features such as digital parcel boundaries.

He described a pilot project where a 5-acre portion of of Dakota County was identified and imagery was captured via drones. This imagery included not only the aerial imagery but also point cloud data to generate a triangulated irregular network for generating three-dimensional imagery. Through this project they determined that drone imagery was suitable enough in quality to be used for small areas in the same way traditional aerial imagery is generally deployed. Key practical limiting considerations of using drones included the height restrictions of drone flights (they have a flight ceiling of 400 feet, although most flights do not need to exceed a flight height 250 feet) and considerations of cost. Average cost for traditional aerial imagery was described at about $100/sq. mi where the use of drones was at $100/acre. While more expensive, the time and operation constraints of deploying drones was considerably less than traditional aerial imagery flights.

Knippel summarized the 'lessons learned' from their drone experience that the drone imagery resulted in imagery of comparable quality and delivered a real mapping product of suitable quality to be relied upon for small area projects; that the drone imagery processing software was very easy to use, and that the resulting data was very high accuracy, however, one caveat was that the amount of data generated was an order of magnitude higher than traditional aerial imagery. Drone capture would not be appropriate for an entire county from a functional, practical or data storage standpoint.

He went on to further describe how the Dakota County Sheriff's Department has begun to utilize drone technology for a variety of public safety and crime investigation applications. Drones are being deployed for specific tasks such as search and rescue operations and crime scene documentation. He further stressed the opportunities for the drone community and geospatial community to be aware of the potential to work together and leverage the abilities of each other.

Katie Gilmour of PAAP provided short history of drone development, from the original 'drone boat' in 1898 through the advancement of the technology in World Wars I and II to the current state of the technology. She indicated her company, PAAP, was among the first in Minnesota to offer their services and said her business is balanced at about 50% providing drone training and 50% offering drone image capturing services.

She indicated that in recent years over 80,000 pilots have earned their drone license. In Minnesota there are over 4000 licensed aircraft pilots, of which 1600 are qualified as unmanned aerial vehicle pilots.

In her presentation, she outlined many of the key uses of drones in the commercial sphere namely inspections, documentation, emergency applications and first response uses, site development and design, railway alignment inspections and she discussed how Xcel Energy is making use of drone for line-of-sight work. Additionally, she outlined how non-profit interest such as Air Bears (airbears.org) provide drone assistance for disaster relief applications.

The outlined and reiterated the advantages of drones in that they are much faster and cheaper to deploy than traditional aircraft and can reduce human risk for inspecting dangerous features. She provided several examples including steep roofs and bridges for restoration and repair work, facilities management and large roadway project inspections. She also highlighted the value of drone imagery and films as vital PR resources for showing complete projects for marketing and portfolio work.

She outlined the various technical aspects of using drones in the field and processing the imagery after capture. Typical drone flight height is 100 feet, for mapping a flight ceiling of 250' generally used, and though drones may go up to 400' this is rarely used for most common applications.

In terms of processing drone imagery, Ms. Gilmore indicated that the data is brought together using a 'quick stitch' technique in graphics software for a visual inspection. This imagery is not geo-rectified but can be brought together quickly for initial visual analysis.

Drones are also able to capture other data, such as multi-spectral bands and infrared bands of data which are useful for applications such as assessing vegetation health, chlorophyll activity, drought management, water resource identification (dry area identification), fire risk, tree degradation and canopy closure as well as DSM (digital surface model) and DTM (digital terrain model) data for terrain analysis and examination. She showed numerous examples of data captured and analyses conducted including tree canopy analysis, lake shore edge capture and went on to explain how data captured from drones can be exported into a variety of formats for use. General uses for the 3D data available include building modeling for basic change detection, public safety uses, site security planning and evacuation planning applications.

Ms. Gilmore also explored the regulatory realm of drones, citing two major categories of drone use, these being 'Hobby' and 'Commercial' and noted that FAA regulations govern both of these use categories. Drone operators must notify airports in proximity to where they are being used. She noted that the Twin Cities metro region was a busy aircraft area, much of which is a no-fly zone for drones without authorization. She encouraged all who wish to contract with drone pilots to ensure they have airspace authorization prior to working with them and cited a recent example of a man stopped by City of Bloomington Police for flying a drone from the top level of the Mall of America parking lot.

She went on to describe how many municipalities are creating their own ordinances and noted that a key feature to keep in mind is that the federal government owns the airspace, even if municipalities can govern the specifics of take off and landing, but not the flight. She outlined a number of general issues related to drone policy ranging from collision avoidance, to law enforcement to privacy law and indicated that this was a continually evolving piece of the drone technology realm. She recommended that municipalities not issue a blanket ban on drones, but to make it part of a permit and ensure existing laws and rules are known, understood and abided by.

If municipalities are looking to contract with drone vendors, it is recommended that they find vendors with the proper federal and state licenses, airspace authorization, certificates of insurance, a suitable number of hours of flight experience, and a demonstrable safety record.

Ms. Gilmore went on to invite those interested to the upcoming 'Minnesota Drone Day' in Eagan on Saturday, May 5 and thanked the Board for the invitation to speak and made herself available for questions.

Elkins: Can you describe the kind of battery life of these drones?

Gilmore: When we are contract for a job, we plan on what we will need to capture it all. We bring many spare batteries and our drones are programmed so that when they hit 30% life remaining they automatically return, this can be around the 20 to 25 minute mark. Weight and flight time are considerations for battery life.

Goettel: Are there special considerations or techniques you use for inspections with drones, for public works department, bridge inspections, to discover wear and tear on bridge**.**

Gilmore: We actually do very little of that work, it is expensive and high liability, very few contractors are doing that work; MnDOT generally does all their own work on this, but yes, we would actually use a mix of both RGB (Red-Green-Blue basic visual imagery) and thermal imaging to capture data and information.

Aho: Could you describe the basic pricing your services?

Gilmore: We have a basic day rate and hourly rate, generally we charge $2400.00/day or $200.00/hour for between 5 to 8 miles worth of high quality work. If we are adding multi spectral imagery, there would be an additional charge.

Lindstrom: I had heard in Warren, Minnesota they offered a very unique service, having flown drones over the entire city and provided maps to all residents show heat loss in their homes. Would this begin to enter into the realm of privacy issues?

Gilmore: The issues of surveillance are continually part of the policy discussion, but for thermal imaging work and building inspections, drones capturing this information can be incredibly useful and helpful to home owners and business owners.

Goettel: I have heard of the various other applications for thermal work as well, such as finding lost children, counting deer, moose and other wildlife census activity with thermal uses, there are many great applications of this technology. Are there any other questions for our guest? Thank you for an engaging presentation!

8) Other Business

Participants and attendees were encouraged by Chair Goettel to advance any thoughts or ideas they may have relevant to the current or future work of MetroGIS. No additional topics were raised or offered for discussion.

9) 2018 Annual Policy Board Meeting

Chair Goettel announced that the next MetroGIS Policy Board meeting would be held on Wednesday, April 24, 2019, 7:00 pm at the Metro County Government Center
2099 University Avenue St. Paul, Minnesota 55104

10) Adjournment

Goettel and Maas thanked the participants and guest speakers for their time and participation. Chair Goettel adjourned the meeting at 8:54 pm.