



GIS EXCELLENCE AWARDS 2018



November 7, 2018

GIS EXCELLENCE AWARDS 2018

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AGENDA

1. OPENING INTRODUCTION

WANDA GIBSON
CHIEF TECHNOLOGY OFFICER, DIRECTOR,
DEPARTMENT OF INFORMATION
TECHNOLOGY

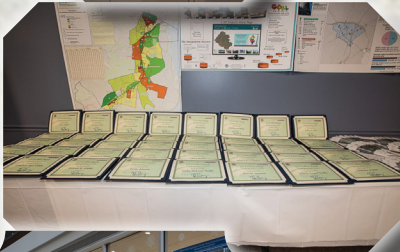
2. FEATURED SPEAKERS

CHAIRMAN SHARON BULOVA
FAIRFAX COUNTY BOARD OF SUPERVISORS

3. PRESENTATION OF AWARDS

SHARON BULOVA
WANDA GIBSON

4. CLOSING





Foreword

The use of GIS technologies in the County has led to the work you see honored here at the GIS Excellence Awards and posted in the Awards Gallery.

As part of the GIS Day celebrations, the GIS Excellence Awards are given annually for outstanding uses of GIS technology by Fairfax County employees and agencies. The awards were created to recognize and celebrate those County employees and agencies that are effectively and innovatively using GIS technology. This year, 35 submissions were received for the six categories of recognition.

As with previous years, a judging panel from outside Fairfax County Government donated many hours of their time evaluating the entries. This year, judges were from Fairfax City GIS, George Mason University and Northern Virginia Community College.

The awards have three categories recognizing individual and/or team accomplishments and three categories recognizing agency accomplishments. The following section lists the categories and their descriptions.

Awards Category Descriptions

Individual/Team Categories

First, Second and Third Place Awards for Each Category

Best GIS Cartographic Product/Presentation

This award is intended to showcase the power of GIS tools in creating accurate, instructive, and visually-pleasing maps. Criteria used to evaluate the entries include:

- clarity of purpose and intent
- the use of GIS tools, methods, and operations to go beyond basic cartography
- visual balance and appeal
- inclusion of necessary map elements and conventions
- quality control for typos or other errors

Best Use of GIS for Analysis

This award is intended to showcase the power of GIS tools in undertaking sophisticated spatial analyses that aid County operations and answer significant questions. Criteria used to evaluate the entries include:

- complexity of analysis; use of tools, scripting, model-builder, etc.
- ingenuity/creativity/originality of GIS methods used
- project benefits to a team or department
- effective demonstration of the information and insight gained (e.g., diagrams, maps, presentations, report, text)



Best Web Application

This award is intended to showcase the ever-increasing presence of GIS web applications. Whether on the intranet or internet, these applications are a significant foundation for bringing maps, geospatial data, and tools to a varied audience of County staff and residents. Criteria used to evaluate the entries include:

- effectiveness of the web application in meeting stated purpose
- benefit to the public and/or agency
- incorporation of application into business practices
- aesthetics and ease of use
- use of well thought-out cartography
- inclusion of innovative and unique tools

Agency Categories Awards Presented to Agencies

Most Significant Data Contributor

This award is presented to the agency that has created or refined the most significant spatial data for the County. Criteria used to evaluate the entries include:

- significance of the data for the county and/or agency
- importance to agency's long-term business processes
- level of effort required to create/maintain the data
- sophistication of process to create/maintain the data

Best Use of GIS for Public Outreach

This award is presented to the agency that best utilizes GIS to Serve the Public with map documents, customer service operations, press relations, or public events. Criteria used to evaluate the entries include:

- effectiveness of the GIS work to the outreach effort
- degree to which a difficult message was clearly communicated
- complexity of cartography, data analysis, customization and/or programming
- adaptability to future expansion/modification
- contribution of GIS as a planning tool for the outreach effort

Best GIS Integration (two awards)

This award is presented to the agency that has integrated GIS into their operations to the greatest degree. Agencies that have a long history of GIS, as well as agencies that are in the beginning stages of GIS integration, will be evaluated separately. Criteria used to evaluate the entries include:

- effectiveness of the integration in meeting its stated goal
- increased use of GIS in the agency, either directly or through agency-generated GIS products
- increased agency efficiency as a result of GIS
- demonstration of significant effort to train staff in GIS
- ingenuity/creativity/originality of GIS methods utilized
- ability to gain insights into data/project/issue as a result of the integration
- potential for further GIS-related growth



Excellence Award Entries

(alphabetically by title)

Advanced Civil Enforcement System (ACES) - Kimberly Ramm, Sheriff's Office

Aerial Imagery and Computer Assisted Mass Appraisal - Yorka Crespo, Tax Administration

As-Built Sharing Integration - Yilia G. Vega-Claudio, Capital Facilities

Creating Data Driven Mapping Applications to Communicate Economic Success in Fairfax County - Joseph L. Bui, Office of the County Executive

Cross Jurisdictional Comparison of Key Indicators - Sophia Dutton, Office of Strategy Management for Health and Human Services

CSB PACT and PACT Eligible Population - Laura Haggerty-Lacalle, Community Services Board

CSB Priority Population Maps - Laura Haggerty-Lacalle, Community Services Board

DCCS Inspection Enforcement Branch – Implementation of Expanded Inspection Program - Praveen Tewari, Cable and Consumer Services

Ellanor C Lawrence Park Trail Maps - Andrew DeLuca, Park Authority

Embark Richmond Highway Story Map - Alexis Robinson, Department of Planning & Zoning

The Evolution of North Hill - Navneet Sohi, Housing & Community Development

Fairfax County Government Center Campus Stormwater Management Facilities - Matthew D. Kaiser, Public Works Director's Office

FRD Emergency Response Maps for the Fountainhead Regional Park Mountain Bike Trails - David May, Fire and Rescue

FRD Management System for Emergency Vehicle Preemption (EVP) Program - Yong Kim, Fire and Rescue

Guidelines For Development: Reston Transit Station Areas - Christopher McCarthy, Office of Community Revitalization

Heritage Building Client Access for 2017 Fiscal Year - Dennis Rojsuontikul, Health Department

Integrating GIS into Land Development Services - Brett Martin, Land Development Services

Land Survey Branch's Contribution to National Geodetic Survey "GPS on Bench Marks" - Yilia G. Vega-Claudio, Capital Facilities

Medallion - Sophia Dutton, Office of Strategy Management for Health and Human Services

Mobile Mosquito Management - A GIS Mobile App Initiative - Lauren Lochstampfer, Health Department

Northern Virginia Training Center Line of Sight Analysis - Daniel E. White, Department of Planning & Zoning

Opportunity Zones - Sophia Dutton, Office of Strategy Management for Health and Human Services

OSM GIS Integration - Sophia Dutton, Office of Strategy Management for Health and Human Services

Reston Safe December DWI(D) Enforcement and Education Initiative - Brandi T. Horita, Police

Routine Mosquito Trap Sites 2018 - Lauren Lochstampfor, Health Department
Services for Older Adults and Persons with Disabilities - Sophia Dutton, Office of Strategy Management for Health and Human Services

Site Analysis Case Tracking Application - Dahae Hwang, Fire and Rescue

STAMP Program Web Application - Lauren Lochstampfor, Health Department

Transportation Plan Data - Thomas A. Wampler, Department of Transportation

Use of ArcGIS 3D Analyst and the Fairfax County 2009 Digital Elevation Model for Walkway Preliminary Engineering Design - Daniel C. Stevens, Department of Transportation

Utilizing Collector for ArcGIS, a GoPro, a Bike, and an Intrepid Intern to Rapidly Assess Hundreds of Miles of Trails - Keith Appler, Public Works Director's Office

Woodglen Lake Emergency Spillway - Chip Galloway, Public Works Director's Office

Worlds Collide: Roads & Sewers, Utilizing GIS to Analyze Utility Impacts of the Transform I-66 Outside the Beltway Project - Tom Grala, Capital Facilities

Awardees by Category with Project Description

Best GIS Cartographic Product/Presentation Individual/Team Awardees

Third Place

FRD Emergency Response Maps for the Fountainhead Regional Park Mountain Bike Trails

David May

Fire & Rescue

Purpose:

The mountain bike trails at Fountainhead Regional Park and the Bull Run Occoquan Trail are a popular and challenging destination for the region's mountain bike enthusiasts. Unfortunately, these challenging trails also mean bike accidents that sometimes require emergency medical responses by Fairfax County Fire and Rescue Department (FRD) units and personnel.

We created these maps to assist in the location of medical emergency victims and to determine the fastest access routes and extrication points. Previously, too much time



was spent in the woods searching for the mountain bikers who needed assistance. Even with the cell phone coordinates of the caller obtained by the 911 dispatcher center and provided to the first responders, there was difficulty in determining the quickest way to the patient and the best way to remove them. Using an internet-connected device to access trail maps wasn't the answer. Often cell phone service and internet connectivity isn't available due to the terrain and remoteness of the trails. After Fire Station 41 received a new Utility Vehicle (UTV), we started looking for ways to better utilize it on the mountain bike trails when responding to emergencies within Fountainhead Regional Park. Hardcopy maps or digital maps stored on standalone devices was the answer.

The resulting large maps reside in the Battalion Chief's and EMS Supervisor's vehicles. In addition, these detailed maps can be accessed in the field on FRD-issued iPads as well as at the Department of Public Safety Communications (DPSC) 911 dispatch center. With a more generalized format in smaller size, each fire vehicle also carries a letter-size printed version.

Process:

The existing publicly available Fountainhead Park trail maps that were previously carried were accurate trail maps (to scale) but lacked details about points along the trails that were significant to first responders. We used Fairfax County's Geographic Exploration & Mapping (GEM) application and other software tools to create these maps. The GEM application was used to obtain the background base map image because it provides a good shaded relief elevation base.

Using the Windows Snip tool, the map extent was snipped from the GEM application and used as the background image in Visio. For the "Black Trail" map, elevation data could be custom snipped. Other maps required snipping from individual GEM tiles. Additional data specific to the mountain bike trails was georeferenced and retraced onto the elevation background. Finally, additional specific data and the new access routes were entered using GPS coordinates.

Second Place

Ellanor C Lawrence Park Trail Maps

Andrew DeLuca, John Shafer

Park Authority

Ellanor C Lawrence Park contains an expansive trail network that is heavily used by residents. To improve the visitor experience at the park, new trail wayfinding maps and signage were created and installed at the park. Any out of date data on the existing trails and trail related facilities were updated via field data collection to provide the most accurate and up to date maps. Four maps were created for placement at key trailheads as part of this project. These maps varied in orientation based on which direction trail users would be entering the park. For example, trail users entering from the North would first encounter a South oriented map to more closely match their vantage point. Trail and park elements in these maps have been put into focus along with reference information to provide general orientation. These maps also include a code which can be provided to 911 dispatch in the event of an emergency to direct first responders to the caller's location. Additionally, the maps include a QR code link to the Trail Buddy web application which provides trail and hiking information for residents on their smart phone. These new maps are a welcome addition at the park and provide the county's residents with better information to improve their hiking experience.

First Place

Routine Mosquito Trap Sites - 2018

Lauren Lochstampfor

Health Department

The Disease Carrying Insects Program (Health Department, Division of Environmental Health) performs weekly adult mosquito surveillance for West Nile virus from May through October at 74 static locations throughout the County. At all 74 locations, two types of mosquito traps are utilized (CDC Miniature Light Trap and Gravid trap). A third trap type (BG Sentinel® trap) is set at 29 of the 74 locations. Mosquito traps are set for 24 hours, requiring two work days for setting and picking up the traps. For operational consistency, routes are created to divide the trapping schedule between morning and afternoon routes. The maximum number of traps per route is currently limited by space available in the trucks that we use. The routes are set up so that technicians can run a route in the morning, return to the office (located in the City of Fairfax) for their lunch break, and then run the afternoon route.

In 2018, using the Network Analyst extension of ArcMap, we created 7 trap routes based on our existing trap sites. These routes were created using the constraints of time, the number of traps for each route, and the time spent at each trap location. Our eighth route was specifically created for a Police training facility, which we perform additional services at while setting and picking up traps.



The resulting Routine Mosquito Trap Sites map was created to show all the trap locations and routes. This map was created as a wall map to use for our operations. Routes and trap sites are color coordinated. Where routes overlap, hashed colored lines were used. We can easily glance at to see if there is a BG Sentinel® trap at a site, the trap site names and numbers, and which major roadways are utilized for each route. The latter is important when there are traffic incidents and we need to re-route technicians in the field.

The final maps are laminated and can be written on to add notes, to highlight particular sites or to point out other locations and their proximity to existing sites. One additional fun feature of the map that we would like to point out is the utilization of our custom DCIP logo as a compass.

Best Use of GIS for Analysis Individual/Team Awardees

Third Place

Worlds Collide: Roads & Sewers, Utilizing GIS to Analyze Utility Impacts of the Transform I-66 Outside the Beltway Project

Tom Grala & Team

Capital Facilities

The Transform I-66 project is a \$3.7 billion public-private partnership between the Virginia Department of Transportation, the Department of Rail and Public Transportation, and private partner I-66 Express Mobility Partners. This design-build project is currently underway and is scheduled for completion in December, 2022. This project has the potential to impact County owned sewerage facilities in the project area. Because of the design-build approach and the high-profile nature of the project, efficient methods to review the impact of the project were needed to balance the quality of review with timeliness.

The project team assembled to coordinate the review of this project developed methods to understand where changes related to the project were taking place. A new geodatabase was established for the project which included a polygon feature class to relate project activity locations to county sewer assets. GIS analysis for this project included aspects relating to the county sewage system and analysis related to the I-66 project review process.

When an I-66 review package is received, the county's existing sewer related GIS data is used to understand existing pipe attributes and condition. When plans are

reviewed with comments made, or approvals given, our geodatabase is updated to track the status of the project. The GIS environment setup for the project allows team members to analyze the status of the project by understanding color-coded location status, querying the status of various impacted locations, and using hyperlinks to have access to the latest information. This information serves as the basis of our understanding of the status of our assets and the potential impact of the I-66 project on our facilities.

The team is currently using this information to administer and analyze the I-66 project coordination effort. It is anticipated that use of this information will continue, with potential further enhancements over the duration of the project through 2022.

Second Place

Northern Virginia Training Center Line of Sight Analysis

Dan White

Department of Planning & Zoning

In the planning phase for the Northern Virginia Training Site located along Braddock Road, staff and the taskforce proposed to create a 3-D model of the site to visual impacts on the neighboring communities. In the past similar exercises, have been performed by our GIS staff to visualize the impacts in terms of massing models. When the idea was brought to our attention, we decided to take it a step further and utilize the LIDAR data the county acquired to perform a line of site analysis.

In this scenario, we created extruded buildings from the buildings GIS layer and then created a series of multi-patches for the proposed buildings, observer points and the target sites of the proposed buildings. Once those items were created a series of geo-processing tasks were performed to create the site lines and finally to run the line of site obstruction.

In conclusion of the analysis, we could see where the existing tree canopy (Full Leaf) would provide a good buffer for the proposed development even with the increased height of the new construction. However, this not take into effect other factors, such as, winter (leaf off) and tree removal that would affect the neighboring communities.

The taskforce was presented with slides, a video created using ArcGIS Pro that showcased a couple of scenarios and different vantage points and Web Scene application that anyone could access and view the analysis and data. The taskforce really enjoyed the presentation and valued the effort put forth to address their concerns. Ellen J. Hurley, Planning Commissioner for Braddock District, stated “This is fantastic. I hope to see more representations like this at our Planning Commission meetings”.



First Place

Utilizing Collector for ArcGIS, a GoPro, a Bike, and an Intrepid Intern to Rapidly Assess Hundreds of Miles of Trails

Keith Appler & Team

Public Works Director's Office

The Fairfax County Maintenance & Stormwater Management Division (MSMD) maintains over 230 miles of asphalt trails spread across almost 400 square miles. A full trail inventory assessment had not been recently completed so many unknowns existed regarding urgent trail conditions or safety concerns. Due to limited personnel and budget to inspect, assess and prioritize trail maintenance activities, a pilot project was developed to have an efficient and repeatable inspection process. This came in the form of a bicycle equipped with an iPad mini with ArcGIS Collector, a GoPro Hero 6 camera and an engineering student intern.

The ArcGIS Collector application utilized a simple qualitative rating system to assess each trail segment and allowed the inspector to capture point observations of maintenance concerns to be quickly addressed by county staff. A GoPro Bluetooth remote was affixed to the handle bar to enable the rider to capture clear, representative geotagged images of trail conditions as they rode.

An ArcGIS Online Operations Dashboard was setup to track project metrics, monitor the location of the rider while in the field utilizing a bread crumb layer and view geotagged photos captured with the GoPro. The GoPro photos were transferred to a network folder each night, mapped to points and appended to a feature service using an ArcGIS Pro geoprocessing tool so staff could access the prior days' work in the dashboard. The pilot program was successful in assessing the full trail inventory in little more than two months at a fraction of the cost it would have been if contracted out. It demonstrates a repeatable inspection process that can be expanded if necessary and the application potential of GoPro cameras in mobile field assessment.

Best Web Application Individual/Team Awardees

Third Place

FRD Management System for Emergency Vehicle Preemption (EVP) Program

Yong Kim & Team

Fire & Rescue

The Fairfax County Fire and Rescue Department (FRD) responds to over 103,000 incidents a year resulting in over 230,000 individual unit responses and 53,000 patient transports. A critical factor to the successful mitigation of incidents is the length of response time (the time it takes units to travel to the incident). As the county continues to transform from a suburban to an urban community, the population density increase results in increased traffic congestion which adversely affects these response times. The challenge to responding FRD units is how to reduce response times and travel to the incident safely without increasing risk to the community. Safely responding to emergency incidents and reducing risks benefits both the first responders and the public.

FRD has response time objectives to deploy emergency medical resources to medical emergencies within 5 minutes and suppression resources to a structure fire so that the first engine company arrives within 5 minutes, 20 seconds from dispatch. To reduce response times, the Fire and Rescue Department began an initiative to install emergency vehicle preemption (EVP) technology at signalized intersections. There are approximately 1,000 signalized intersections within Fairfax County and when EVP technology is added to a traffic signal it gives priority to FRD units while in an emergency response mode. Based on studies in other jurisdictions it is predicted that the implementation of EVP technology at signalized intersections within Fairfax County will decrease FRD's response times to incidents, thus enabling the FRD to improve upon the key mission objectives of protecting life, property and the environment. In 2015, the FRD began an initiative to increase the deployment of EVP at traffic intersections throughout Fairfax County. FRD's EVP project team collaborates with many internal and external stakeholders: the Board of Supervisors, the County Executive, the Virginia Department of Transportation (VDOT), the Washington Metropolitan Area Transit Authority (WMATA), as well as Fairfax County's Department of Transportation (FCDOT) and Department of Planning and Zoning (DPZ).

After FRD launched the EVP Program, it became apparent that multiple people in different sections of the agency all needed access to information about the program to ensure the program's continued success. Within FRD, uniformed staff officers, administrative staff, planners, programmers and analysts all play a role in maintaining the program and the information associated with the program. In 2018, a team of FRD programmers and analysts developed a multi-faceted application and an associated data model to improve the FRD EVP business process. This FRD EVP Manage-



ment System allows FRD staff to track and manage all aspects of the program. FRD staff track funding, proffers, new installations, and ongoing maintenance and repairs. Correspondence, meeting agendas and minutes, agreements and memorandums of understanding (MOUs) must all be filed and maintained as well. The EVP Management System supports all this and includes a GIS-based dashboard that provides staff with the current location and status of the signalized intersections and preemption devices. This GIS functionality is integrated within the application.

During the conceptual phase of the EVP project, FRD GIS became integral by assisting with codifying EVP data. FRD GIS staff created a comprehensive signal data layer to support the project using datasets from multiple agencies. FRD now maintains this GIS dataset and makes it available to its partner agencies. A component of the EVP Management System is a GIS application which allows FRD staff who are not GIS analysts to maintain this signal dataset layer.

Second Place

Opportunity Zones

Sophia Dutton, Alexandra Krafchek

Office of Strategy Management for Health and Human Services

Within the Federal Tax Cuts and Jobs Act of 2017, a new tax incentive program called Opportunity Zones was created by Congress to encourage economic development and revitalization in targeted areas across the country. This program allows private investors to receive tax benefits in return for investing in qualified areas through established Opportunity Funds. Nine tracts located in the Route 1 corridor, and in the East and North parts of the county were designated as Opportunity Zones within Fairfax County. The tracts include North Hill, Hybla Valley, Mount Vernon Woods, South County Center, Willston Center, Bailey's North/Glen Forest, Skyline Plaza, Herndon South and Lake Anne.

Overall, this web mapping application will be used to increase the economic vitality in the county by increasing awareness among the community and existing businesses on this new tax incentive program, attracting managers of Opportunity Zones funds and their investors to Opportunity Zones located within Fairfax County as part of a targeted promotion and marketing campaign, and as investments are made, providing access to data to track the changes and progress in each designated community over time. County staff, non-profits and community groups can also use this data to influence and ensure that future policies and investment decisions within Fairfax are in line with the social and racial equity focus of the One Fairfax Policy.

Esri Business Analyst software was used to develop the Opportunity Zones web mapping application. This application allows users to pinpoint the location of the nine identified Opportunity Zones (census tracts) in Fairfax County. Each Opportunity Zone in the map includes a pop-up with a customized interactive infographic containing census based data related to their demographics, race and Hispanic origin, housing, at risk populations, education and employment. As a comparison, information on Fairfax County as a whole was also provided as an infographic. In addition, a PDF version of the infographics and a link to an in-depth report created by Opportunity 360 in partnership with PolicyMap are also offered in each pop-up.

Layers on the map with the Commercial Revitalization Areas and Districts show where multiple incentives could come into play and benefit investors, and where new local incentive zones can be included in the future as they are established. In addition, a layer with undesignated low-income communities allows users to see if there are other residents nearby who could benefit from services based in an Opportunity Zone and plan accordingly.

First Place

Embark Richmond Highway Story Map

Alexis Robinson

Department of Planning & Zoning

The Embark Story Map is a web application that combines the attributes of a written narrative with a digital map whose features allow the audience to learn specific details about the Embark Comprehensive Plan amendment within the context of the community's geography. In its design, the story map brings to life written narrative and summaries of the approximately 300-page plan through interactive maps, three-dimensional renderings, videos, and other visualizations. This is not the first story map to be used in this manner by the department, but it is the first to include a high level of detail about a planning process, especially of this scale. The platform distills multiple, complex aspects of the plan reducing the reliance on technical jargon. The total viewership of the story map reached almost 1,200 in just ten months, capturing the impact of the story map on accessibility.

Individual sections describe the location and character of the corridor and the corridor-wide and community business center (CBC) guidance and vision elements, with links to the comprehensive plan and related projects. Story map viewers can easily identify attributes, such as the study boundaries and existing land uses, and relate them to conceptual maps in the new plan. Interactive maps of the corridor are a main focus, with consistent elements such as the CBC boundaries, potential bus rapid transit (BRT) station locations and ½ mile radii. Additional elements that are seen at different zoom levels include public facilities, public open space, and current transportation facilities. Each tab also includes a narrative of high-level details that would be found on the project website or handouts on each topic.

Graphics such as renderings and images of current and conceptual development



within the Corridor, specifications for urban design, street facilities networks, open space facilities, and videos of community outreach materials and related projects are also included. Over 30 visuals and interactives are used in the story map to give as much detail as possible about the plans. One of the more challenging aspects of this story map is the two additional story maps that are built into it to better convey the information in the Guidance tabs. Those tabs use a layout that allow the viewer to scroll through different views of the map, focus on specific CBCs, and pop up larger graphics pertaining to the bookmarked topics.

Most Significant Data Contributor Award Presented to Agencies

Land Survey Branch's Contribution to National Geodetic Survey "GPS on Bench Marks"

Yilia Vega-Claudio & Team

Capital Facilities

Land Survey Branch (LSB) is responsible for GIS spatial data control. Physical monuments are spatial control for quality control and analysis of contractor supplied photo imagery, LiDAR data, and spatial control for engineering development and construction. National Geodetic Survey (NGS) maintains nation-wide mathematical adjustments of spatial values, x, y, and z, or latitude, longitude, and elevation. NGS adopts a new mathematical model representing the Earth, and publishes values on known points around 2022 when they introduce North American-Pacific Geopotential Datum of 2022 (NAPGD2022).

2022 preparation requires defining the new GEOID18. A geoid is a surface approximating the shape of Earth. Through "GPS on Bench Marks," NGS sought data from surveyors across the country to define the geoid. Our data improves the geoid, especially in the mid-Atlantic region.

Through this project, our monuments contribute to NGS's models defining the geoid and NAPGD2022. This significantly improves our stormwater run-off calculations and accuracy predicting flood inundations. Fairfax will have the best possible transformation to future elevation models. Every county mission and private undertaking using elevation data benefits.

LSB will submit GPS observational data from 39 monuments for NGS to include in NAPGD2022 and publish future positional values. Including our monuments in

NGS's database shifts publishing the evolving positional data of these points to NGS. LSB retains responsibility for physical monuments. Without this work, Fairfax would be without spatial control data after NGS adopts the new models. NGS will support only monuments with new observations submitted to this dataset. These control monuments in NAPGD2022 insure accurate spatial control for GIS and for construction and land development in Fairfax County.

Simultaneously observing GPS monument constellations in sessions over four hours, twice or more, on each of 39 monuments created "network observations." GIS aided collecting, categorizing, and reporting the network observations. Story Map aided planning these 39 monument observations. Explorer for ArcGIS web map assisted planning over 200 effective routes to recover and visit monuments during network observations. Survey123 housed collected observation metadata. We processed GPS data through an NGS application, OPUS (On-line Positioning User Service), then shared with NGS pertinent data for "GPS on Bench Marks."

Best Use of GIS for Public Outreach Award Presented to Agencies

Embark Richmond Highway Story Map

Alexis Robinson

Department of Planning & Zoning

The Embark Richmond Highway story map is a dynamic web application that significantly enhanced community engagement during the Embark Richmond Highway comprehensive planning study and subsequent implementation efforts, and overall has promoted greater public understanding of the plan recommendations. The recent adoption of the revised Richmond Highway plan is viewed as a major milestone in the revitalization of the corridor, and the story map has been commended by the Lee and Mount Vernon Supervisors as an influential and technological step forward for community outreach. The easily accessible, aesthetically appealing, and user-friendly platform invites a broader range of community members to understand the comprehensive plan recommendations at their own pace and convenience.

The story map brings to life written narrative and summaries of the approximately 300-page plan through interactive maps, three-dimensional renderings, videos, and other visualizations. The platform distills multiple, complex aspects of the plan (for example, the remixed land uses, innovative urban design and placemaking concepts, multimodal transportation improvements, including the county's first bus rapid transit system and a road widening project; and environmental considerations), reducing the reliance on technical jargon. Individual sections describe the location and character of the corridor and the corridor-wide and community business center guidance and vision elements, with links to the comprehensive plan and related projects. Story map viewers can easily identify attributes, such as the study boundaries and existing land uses, and relate them to conceptual maps in the new plan. A section of the story map also is dedicated to the planning process and community outreach events, high-



lighting outcomes of community meetings.

The story map was published the first week of January 2018 before one of the most significant community meetings. While the story map has sustained regular viewership since then, over three-hundred views were recorded on the night of the Planning Commission public hearing. Viewership of the story map increased to over 800 views on the night of the Board of Supervisors' public hearing and the total viewership steadily increased for weeks after. Since publication the story map has been updated with progress of the Embark Richmond Highway project and related projects, and the platform certainly will be considered in the future as an effective public outreach means for other planning studies.

Best GIS Integration Award Presented to Agencies (two awards)

Advanced Civil Enforcement System (ACES)

**Kimberly Ramm & Team
Sheriff's Office**

The Fairfax County Sheriff's Office, in collaboration with the three Fairfax County Courts (Circuit Court & Records (CCR), General District Court (GDC), and Juvenile & Domestic Relations District Court (JDRDC)), the Fairfax County Department of Information Technology (DIT), the Fairfax County Geographic Information Systems (GIS), and the Fairfax County Court Technology Office (CrTO), implemented the Advanced Civil Enforcement System (ACES), a ground-breaking, hybrid solution automating and integrating the civil enforcement processes between the Sheriff's Office and the three Fairfax County Courts. The system provides a comprehensive civil process solution, with real-time workload management capabilities while prioritizing, tracking, serving and executing legal documents on individuals and businesses in civil matters throughout Fairfax County. ACES interfaces with the Fairfax County Geographic Information System (GIS) ArcGIS improving the Sheriff's Office efficiencies with real-time automated document sorting into service areas with custom routing, mapping, and geofencing. As papers are transmitted or entered into the system, the GIS ArcGIS validates all addresses, reducing time spent on manual verification. The system runs within a secure, stable cloud infrastructure that includes automated redundancy and backup features. ACES is an innovative solution transmitting service data over cellular and Wi-Fi networks to create an easy-to-use, state-of-the-art civil process system.

Mobile Mosquito Management - A GIS Mobile Map Initiative

Lauren Lochstampfer
Health Department

The Health Department performs routine mosquito inspections of county-maintained stormwater dry ponds where inspectors check ponds for immature mosquitoes and treat with a larvicide, as needed. The inspection program began in 2016.

In 2017, over 8,100 site inspections were performed, 35,000 mosquito larvae were collected and identified, and about 675 pesticide applications were made. In early 2018, staff began working on a mobile solution to field and site navigation, as well as field and lab data collection, using two ArcGIS mobile applications: Collector and Survey 123. A staff member taught herself how to customize Collector and Survey123 with the goal of leveraging available technical and software resources to increase staff efficiency in the field and lab by reducing reliance on over 1,400 physical maps and scores of handwritten forms (inspection, larval identification, pesticide treatment records) while maintaining consistent, reliable data collection. Previously, all handwritten forms were later entered into electronic spreadsheets, which took at least 100 staff hours. The apps were customized for program-specific needs and field trials were performed by program staff prior to rollout in Spring 2018.

The geodatabase developed for Collector was based on the physical maps and inspection forms. A point layer captured basic site information (e.g., site identifier, site address, access comments, and photos) for all existing routine inspection locations. Three additional layers were created that related back to the point “site” layer: inspections, treatments, and identifications.

Survey123 was leveraged to eliminate paper forms and documentation. Each related layer had a survey created within Survey123 to capture the required inspection information based on the site conditions present. Other functionalities include photo documentation, area measurements based on physical location and aerial imagery, and conversion calculations (e.g., square feet to acres) when determining pesticide application rates/quantities.

Using Collector, custom URL callouts launch the requisite survey in Survey123 and pull through relevant record information such as site GUID, site identifier and site address. The URL callouts greatly reduce data entry error and allow for consistent information to pass from the site into each survey.

Work progress can be monitored in real-time with minimal data clean-up. Field staff benefit from having previous inspection information available to them. Program staff can share information cross-agency with DPWES and more easily respond to public complaints or inquiries regarding mosquito concerns and dry ponds. As the program expands, additional apps to monitor non-routine inspections will be created.



Thank you for attending the 2018 GIS Excellence Awards Ceremony. We hope to see you next year!

