



Building a Responsible and Responsive Public Works Drone Program

January 22, 2026

- 11:00 a.m. - 12:00 p.m. ET
- 10:00 a.m. - 11:00 p.m. CT
- 9:00 a.m. - 10:00 a.m. MT
- 8:00 a.m. - 9:00 a.m. PT


This program is sponsored by the APWA Technology Committee

Speakers and instructors for APWA education offerings are practitioners and experts in public works and infrastructure issues and solutions. Some may have proprietary interest in services and products used by public works agencies and professionals. Speakers for APWA educational offerings agree to refrain from specific product or services endorsements or promotions during APWA educational offerings.

APWA Proprietary Interest Disclosure Statement

Today's Program is eligible for .1 Continuing Education Unit (CEU) credits.





A link to the program evaluation will be emailed to you after the program.

To receive CEU's - you must correctly answer 80% of the quiz questions.



APWA has been accredited as an Authorized Provider by the International Association for Continuing Education and Training (IACET), 1760 Old Meadow Road, Suite 500, McLean, VA 22102; (703) 506-3275.



RESOURCE CENTER

ONE PLACE where a member can access:

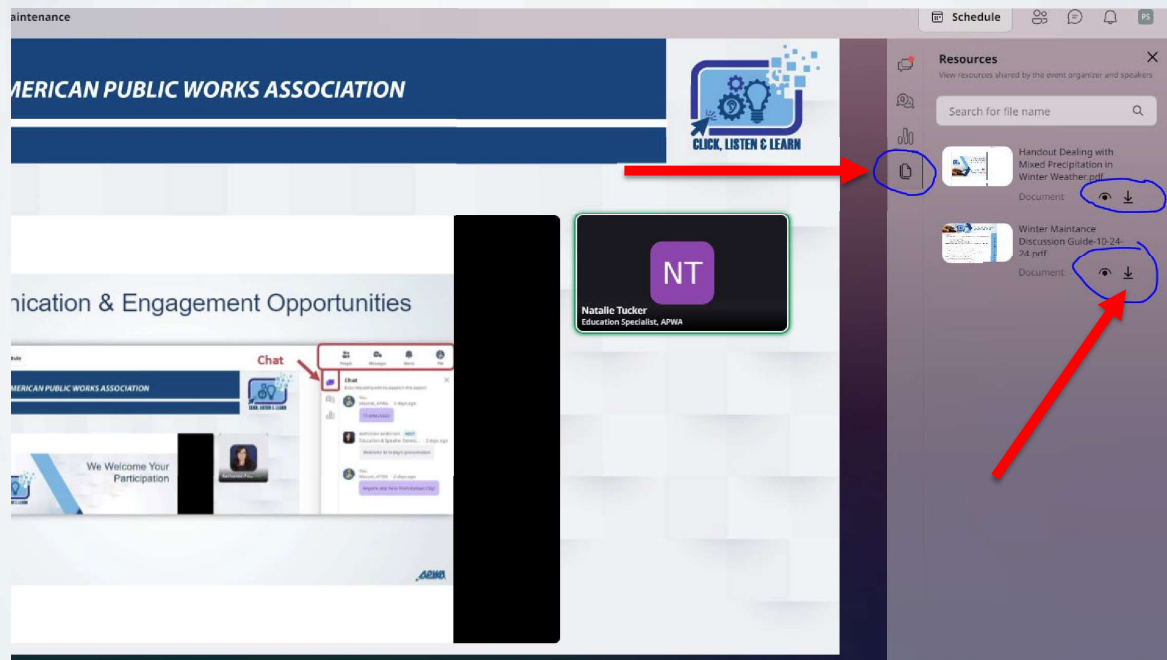
- Past Click, Listen & Learn (CLL) presentations
- Content from past conferences (PWX and Snow)

All searchable by topic. All without any extra fees beyond membership dues! No limits to how often you access or open the items in the Resource Center.

No travel. No scheduling hassles. No delays while waiting for someone else's approval. No waiting for registration payment to be processed.

For more information go online to
www.apwa.org/resources/resource-center.


Handout for Today's Program can be download from the right-hand chat panel.




Viewing the Presentation




Communication & Engagement Opportunities



AMERICAN PUBLIC WORKS ASSOCIATION



We Welcome Your Participation



Katherine An...


Chat

People

Messages


Alerts

PW




Chat

Enjoy interacting with the people in this session!



You Mascot, APWA · 2 days ago


Hi everybody



Katherine Anderson HOST

Education & Speaker Develo... · 2 days ago


Welcome to today's presentation




You Mascot, APWA · 2 days ago








Anyone else here from Kansas City?

Reactions






LIVE 04:10 2



Facing problems?

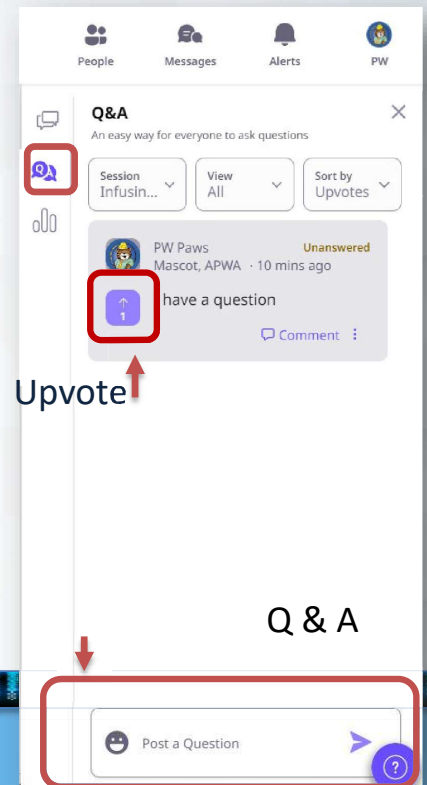
What would you like to share?



Program Questions

1. If you have questions for our speakers, you may ask them using the Q&A feature.

2. Choose to Upvote a question that is the same as your question.



Today's Moderator:



Adam Carnow
Industry Specialist for
Public Works
Esri

Learning Objectives

After completing this course, participants will be better able to:

- *Identify ways drones enhance public works operations.*
- *Explain the components included in a compelling proposal for establishing a drone program.*
- *Describe processes used in municipal drone operations.*



MAKE A DIFFERENCE.

Nominate yourself or someone else to serve on an APWA national committee, council, or as the APWA representative on an external organization!



NOMINATIONS

are now being accepted for APWA committees and external appointments.

To learn more about the open positions, go to the nominations portal at <https://my.apwa.org/s/nominations>.

Nominations are due March 31, 2026.



Nominations to join an APWA knowledge team or subcommittee are considered year-round. Share your interest via the QR code below.



Get Involved with APWA

Today's Speakers



Lilly Smith
GIS Technician
City of Salem Oregon

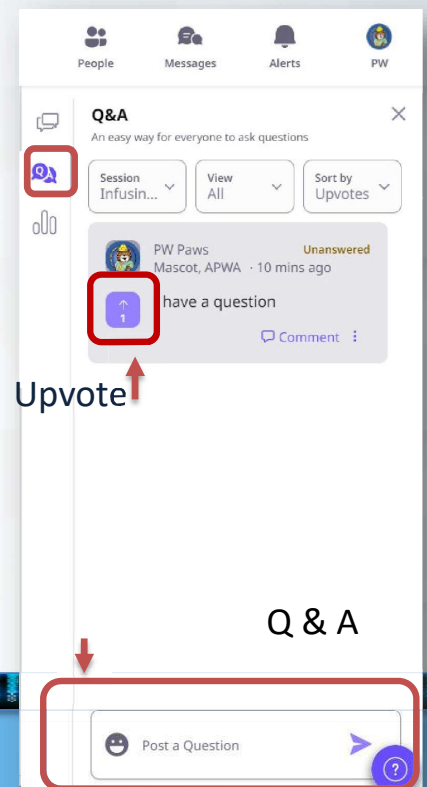


Devin Doring
Technical Services Program
Manager
City of Salem, Oregon



Q & A

1. If you have questions for our speakers, you may ask them using the Q&A feature.
2. Choose to **Upvote** a question that is the same as your question.



Please join us in
the virtual lounge
for continued
discussion





Building a Responsible and Responsive Public Works Drone Program

Lilly Smith
GIS Technician – UAV Pilot
City of Salem, Public Works

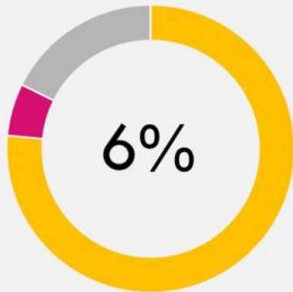


Why establish a program?

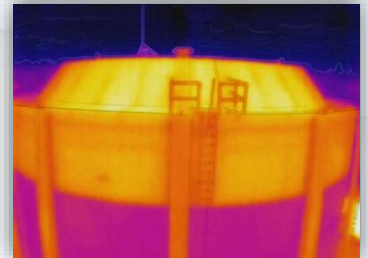
- Save money – it won't be like magic
- Increase safety – no humans in danger
- Increase efficiency – start small, fit into existing workflows
- Cool factor – cutting edge technology



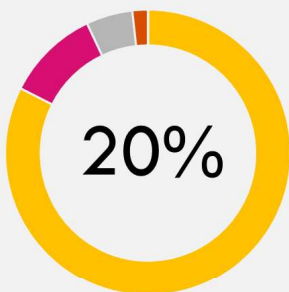
Safe Inspections



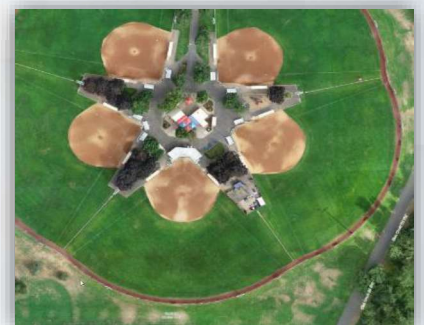
- Utility Operations
- Engineering
- Parks & Recreation
- Planning & Development
- Administration
- Mayor/Council



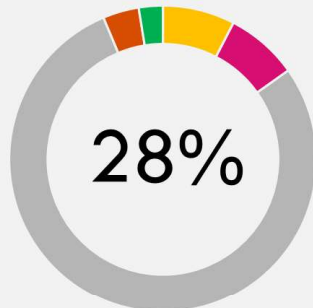
Updated Aerial Imagery



- Utility Operations
- Engineering
- Parks & Recreation
- Planning & Development
- Administration
- Mayor/Council



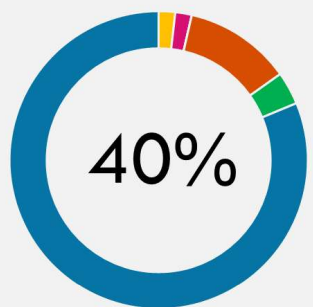
Construction Projects



- Utility Operations
- Engineering
- Parks & Recreation
- Planning & Development
- Administration
- Mayor/Council



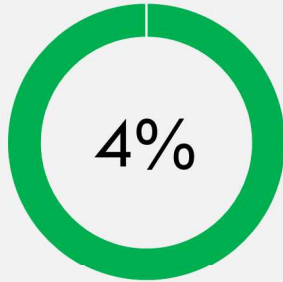
Community Engagement



- Utility Operations
- Engineering
- Parks & Recreation
- Planning & Development
- Administration
- Mayor/Council



Vegetation Assessment

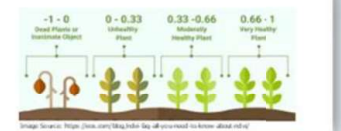


- Utility Operations
- Planning & Development
- Engineering
- Administration
- Parks & Recreation
- Mayor/Council

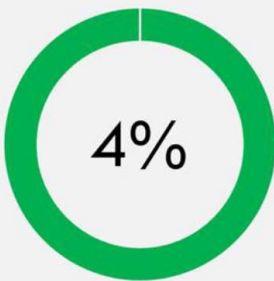


Normalized Vegetation Index (NDVI) measures the amount of red and near-infrared light that is absorbed and reflected by vegetation. Plant health can be inferred using this measurement. NDVI ranges from -1 to 1, with a larger value representing healthier vegetation.

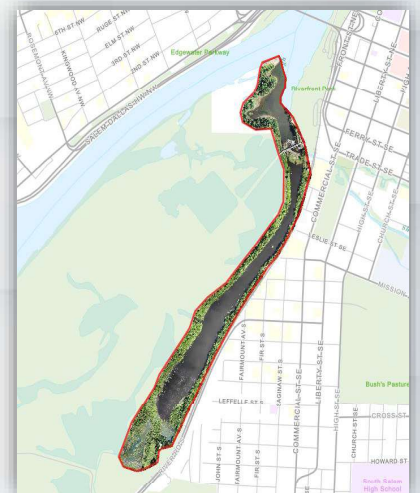
NDVI values were calculated using imagery captured on 5/17/23 using a DJI Phantom Pro V2 drone equipped with Sentera sensor.



Vegetation Assessment



- Utility Operations
- Planning & Development
- Engineering
- Administration
- Parks & Recreation
- Mayor/Council



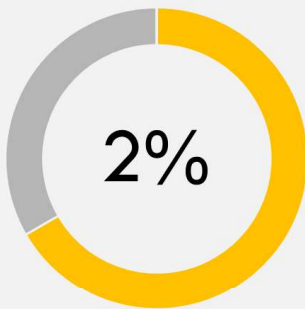
Vegetation Assessment



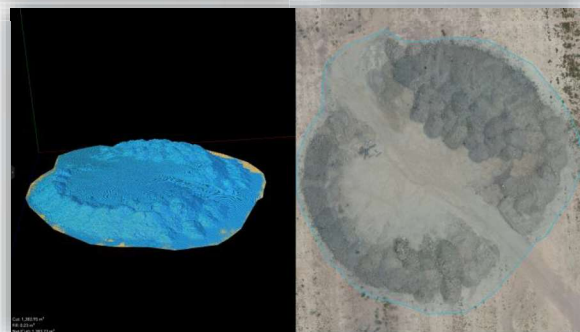
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| ■ Utility Operations | ■ Planning & Development |
| ■ Engineering | ■ Administration |
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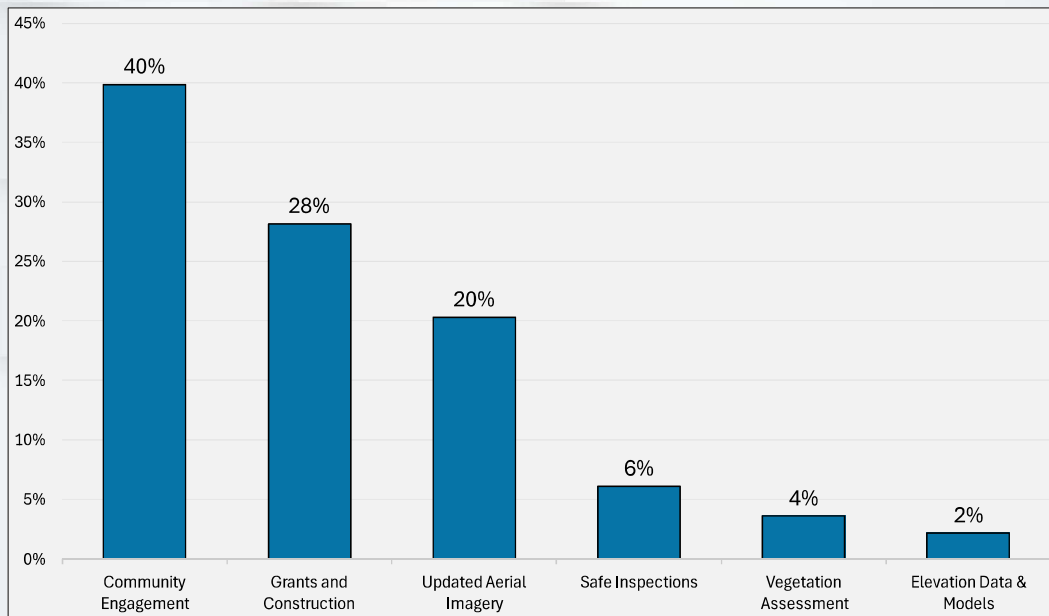
3D Products



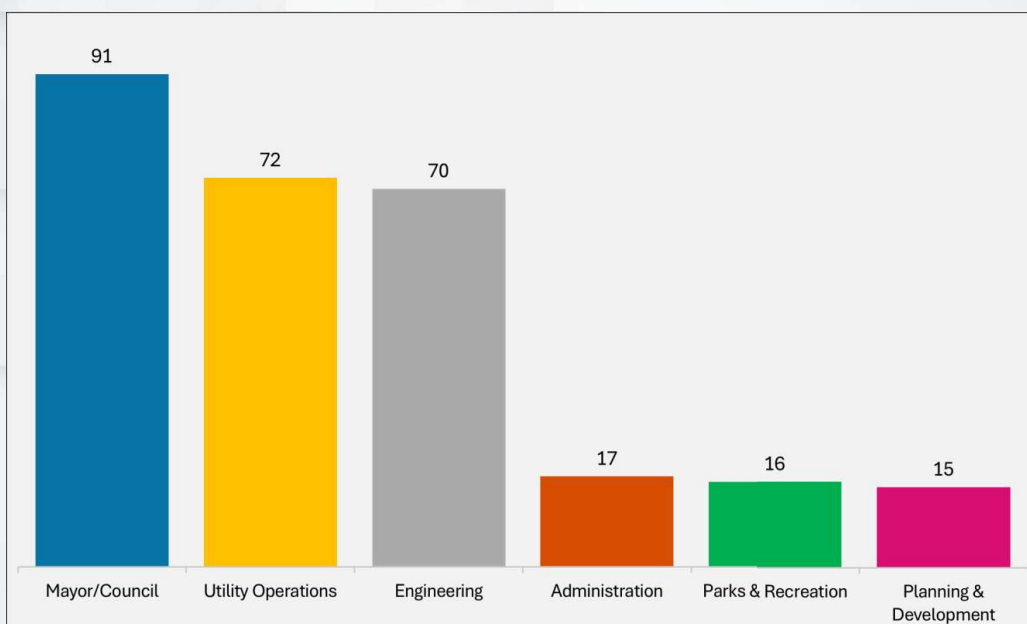
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| ■ Utility Operations | ■ Planning & Development |
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| ■ Parks & Recreation | ■ Mayor/Council |



What types of missions are we flying?



Who is requesting drone flights?



Potential Use Cases

There are numerous possibilities...

- Mapping impervious surfaces
- Conducting confined space inspections
- Assessing pavement condition
- Citywide basemap with drone imagery
- Emergency management



Legal

- Registration
 - US: FAADroneZone, local state agency
 - Canada: Transport Canada (Drone Management Portal)
- Certification
 - US: Part 107
 - Canada: Pilot Certificate (Basic, Advanced, Level 1 Complex)
- Remote ID
- Controlled airspace
- Future rules?



The Key Components



Launch

Inspired at 2016 NW GIS Conference
(started with a vision)

Having an advocate in your corner is immensely helpful!

- Facilitate collaboration
- Secure resources
- Promote the program



Making the case

- Talking with drone program leaders in other cities
- Establishing relationships with local airport authorities
- Designing legally compliant processes
- Talking with the City's risk and legal departments
- Return on investment



Growth

Initial Program

- Single DJI Phantom
- A handful of pilots

7 Years Later

- A fleet of 5 drones
- 11 trained pilots
- Over 280 successful operations
- Continuing to grow
- Don't be afraid to make mistakes



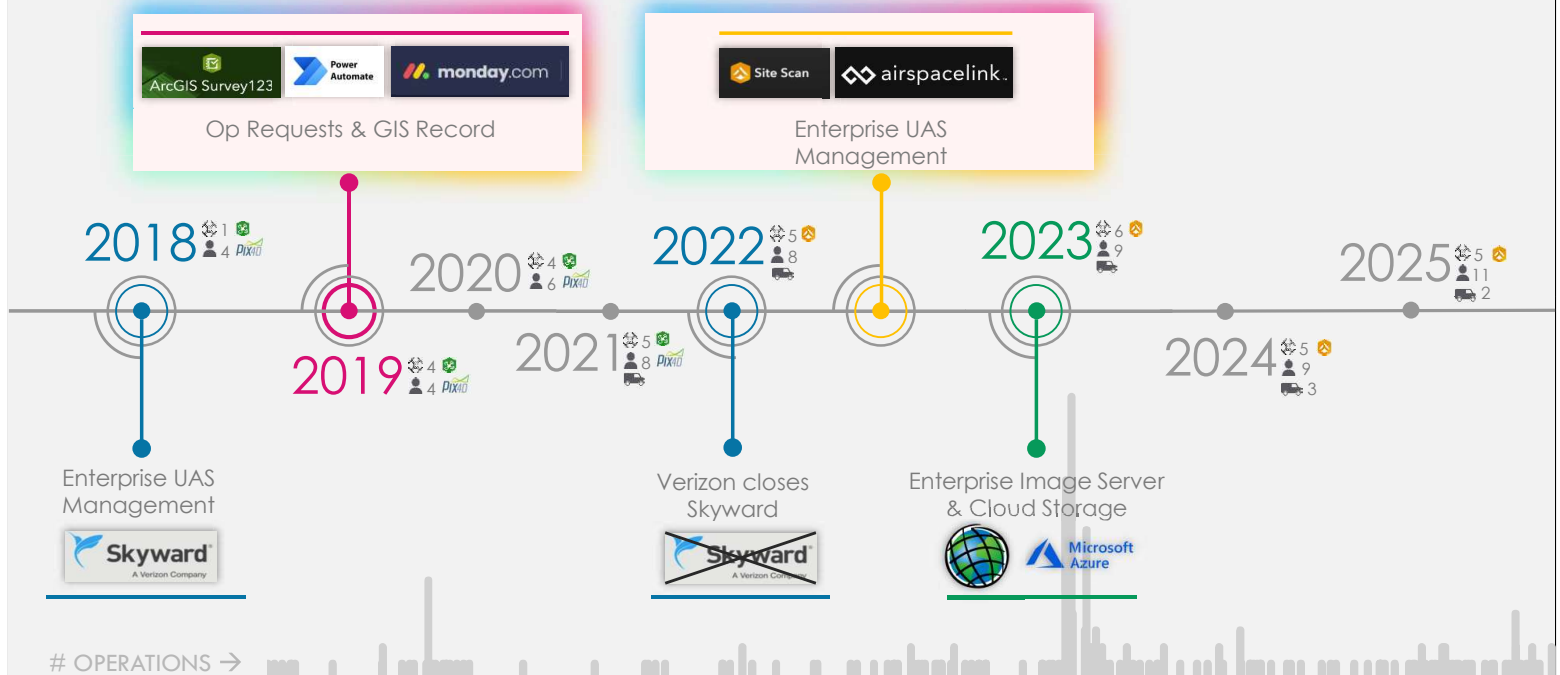
Training

- Require pilot certification
- Establish checklists
- Mentor new pilots
- Fly often!



Adapting for Change

= UAV
 = pilot
 = Vehicle
 } flight planning software



Enhancing Customer Interaction

A survey alone is not good enough



UAV Mission Request

Form to be filled out when requesting a drone flight.

First and Last Name *

Division *

If you are from outside of Public Works, please choose "Other".

Section or Work Group *

Phone Number *

Email *

Mission Date Desired *

Date you wish mission to be flown. Minimum of two week notice should be given. Note - there is no guarantee this can be accommodated.

On Site *

Do you wish to be onsite when mission is flown?

Mission Description *



Customer Experience Demo

Aerial Data, Fast & Convenient
264 Completed Operations

Operations Map View Aerial Imagery Request Learn

Bridge Strengthening Project 2025
Status: Completed
Date: 2025-11-24
Request: Requesting aerial images of Mission Street SE bridge over Pingle Creek and 17th Street NE over Mill Creek. These two bridges were joined with the Bridge Strengthening Project.

Shelton Ditch Improvements
Status: Completed
Date: 2025-11-17
Request: Document the work that has been completed on Shelton Ditch with an overhead and side view drone photos and video. Follow the same locations and documented areas as before.

Sunnyview & Hollywood Ped Crossing (Post Construction)
Status: Completed
Date: 2025-11-10
Request: This project installed a new RRFB crossing on the east side of the Sunnyview Rd & Hollywood Dr crossing. I'd like to get some post construction photos similar to what was done for the pre-construction flight (5/7/2025).

State St & 25th St SE Intersection Project - Post Construction
Status: Completed
Date: 2025-11-10
Request: I'm looking to get some post construction drone photos for this project. Project limits are from roughly 150 west of the intersection to 450 east of the intersection. There was a pre-construction flight on 5/2/25. Please get similar photos.

Mackley 49th and Caplinger Post Construction
Status: Completed
Date: 2025-10-28
Request: Drone flight to document post construction conditions. There are 3 different sections to be flown, 1- Caplinger Rd SE: Between Mackley Rd and Fruitland Meadows Apartments entrance 2- Mackley Rd SE: From Caplinger Rd SE to 200 feet west of the



Conclusion

How did we build a responsible and responsive drone program?

- Finding program advocates
- Return on investment
- Adapting for change
- Working with customers



Thank you!

Lilly Smith

GIS Technician – UAV Pilot (Presenter)
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