



# Pilot Project: Managing Stormwater with Drones

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## The Port of Tacoma's Environmental department has recently created a drone program

The purpose of this project is to implement the use of drones into the Environmental department to assist with environmental mapping, modeling, and monitoring. The use of this technology is a cost-effective solution that will allow the gathering of data without putting humans or the environment in harm's way, while saving tens of thousands of dollars in staff time per year.

# Justification



## Problem:

Some inspections of SW infrastructure gets deferred due to safety

## Examples:

- Railroads
- Piers
- Ditches
- High-traffic areas (terminals)



## Solution:

Inspect Port's assets more frequently, efficiently, and safer using drone technology

# Advantages



- Real-time, up-to-date, high-resolution data
- Repeatability
- Promotes inspector safety
- Time & cost efficient
- Innovative
- Transparency in projects
- Real-time up-to-date imagery
- Ability to easily reach inaccessible areas

# Using Drones for Permit Compliance



Drones can assist with Municipal, Industrial, Construction, and Sand & Gravel Permit inspections required for compliance

## Examples:

- Outfall inspections
- Ditch inspections
- Source control inspections
- Spill tracing
- Construction inspections
- Post-construction BMP inspections
- Derelict Vessel inspection

# Wapato Creek

## Outfall Inspection



Drone provides easy  
access to structures

# Bullfrog Junction Ditch

## Site Conditions Inspection



Easy to underestimate severity of conditions without this footage.

Better data= better decisions

# Derelict Vessel Inspection



# Derelict Vessel Inspection



# Future Plans



- Integrate drone imagery with ArcGIS
  - Field-verify stormwater assets in GIS
    - Projected to reduce costs by 83% (approx. \$38,000)
  - Oriented Imaging Catalog of all Port-owned shoreline
    - “Google Streetview” of shoreline
  - Photogrammetry of Port-owned parcels and assets
    - Use repeatable and automated flight plans
    - Create deliverables to be used for project decision-making
      - Digital Elevation Models, Point Clouds, Orthomosaics, etc.
      - Increase transparency with stakeholders

# Resources Available



## WA GIS Association Special Interest Group- Drones

- Meets 3<sup>rd</sup> Thursday of every month on Zoom

Other agencies that have implemented similar drone programs into their organizations:

- Pierce County
- City of Tacoma
- Thurston County
- City of Port Orchard
- WSDOT Environmental Services
- King County

Want to learn more?



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