UNMANNED AERIAL SYSTEM
CERTIFICATION TO APPLICATION

OVERVIEW
Our District’s mission is to effectively and efficiently manage the risks from vectors and vector-borne disease in order to protect public health and improve quality of life in Placer County. Part of accomplishing this mission is to pursue, develop and evaluate technologies that can support our operations.

Since 2016, our unmanned aerial system has transformed from just a vector surveillance assessment into a mechanism to more effectively and efficiently treat mosquito populations and protect public health in Placer County. In 2017, former California Governor Edmund B. Brown Jr. signed AB 527 into law which allows FAA drone certified pilots to apply pesticides from UAS. Now, our UAS is in testing to make successful treatment operations throughout Placer County.

UAS CERTIFICATION TIMELINE

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
</tr>
</thead>
</table>
| 2012 | • FAA Modernization and Reform Act passed  
      • Developed regulations to integrate unmanned aircraft systems into the national airspace |
| 2016 | • FAA released its Small UAS Rule, “Part 107”, governance of the commercial and governmental use of small UAS (<55 lbs)  
      • Provided training, operations and safety guidelines and requirements  
      • Two staff members were trained and certified as UAS pilots |
| 2017 | • In January, the Placer Mosquito Board approved to support UAS use in vector control with a resolution |
| 2018 | • District received Agricultural Aircraft Operations Certificate - Part 137 |
| 2019 | • CA Department of Pesticide Regulation released test for VCT unmanned aircraft certificate  
      • Actively testing UAS to treat mosquitoes in Placer County |
INTRODUCTION INTO EXISTING DISTRICT PROGRAM

The District used a multi-phased project to evaluate and integrate UAS in our vector control program.

- **PHASE 1**
  - Trained staff as UAS pilots

- **PHASE 2**
  - Defined specific missions beneficial to District operations
  - Developed mission profiles

- **PHASE 3**
  - Conducted multiple missions with District’s three UAS
  - Explored logistics of other mission profiles

- **PHASE 4**
  - Developing regulatory and technical capabilities to apply public health pesticides with UAS
  - Testing efficacy and conducted drone calibrations

**Benefits**

UAS offers many benefits like a zero footprint on marsh and sensitive lands, smaller and more precise aerial treatments, improved irrigation monitoring and increased detection of mosquito larvae. UAS reduces employee safety risk, noise and fuel emissions and cost of equipment and labor. Instead of a manned aircraft that requires a pilot, UAS are operated by a pilot-in-command on the ground who uses a remote transmitter, which reduces potential safety risk.

**Equipment**

DJI AGRAS MG-1S

Used for treatment with liquid larvicides only. Future capability will add granular application which would require the purchase of additional equipment. Specs:

- 2.64-gallon tank
- 8 motors
- 4 Teejet Nozzles
- 2 variable speed pumps
- Extended range fan, hollow cone nozzles
- Pump speed varies with UAS speed and swath

**M210**

Zoom camera to look for mosquito habitat and larval detection in water and to document with pictures.

**HexH2O**

Used for larval detection and lands on water.

**Next Steps & Future Benefits**

Our District will continue to evaluate treatments, conduct more efficacy testing and drone calibration trials to most effectively treat areas of concern.

A major future benefit of the UAS program is to complement associated technologies and innovations like our automated counter traps. This will provide data to inform our decision-making processes in ways we are not able to do with traditional methods and equipment. UAS treatments also fill a gap in our capabilities that exist between small hand-held applications and manned aircraft applications which makes our time management more precise.