REALIZING THE MULTI-PURPOSE BENEFITS OF UNMANNED AIRCRAFT SYSTEM SURVEYS IN LEVEE REPAIRS

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REALIZING THE MULTI-PURPOSE BENEFITS OF UNMANNED AIRCRAFT SYSTEM SURVEYS IN LEVEE REPAIRS

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OUTLINE

• Program Overview
• Unmanned Aircraft System Specifications, Regulations and Policies
• Application
• Data Utilization
PROGRAM OVERVIEW

• 2016/2017 storm caused significant damage to the State Plan of Flood Control levees.
• The storms resulted in an inventory of distressed levee sites rated as a “critical emergency”.
• California Department of Water Resources working with AECOM developed
  ➢ Remedial designs
  ➢ Expedited permitting
  ➢ Emergency construction and remediation
• Unmanned Aircraft Systems (UAS) used on this project to support
  ➢ Design
  ➢ Construction
  ➢ Post-construction Monitoring
UNMANNED AIRCRAFT SYSTEMS

TYPICAL SPECIFICATIONS
- Video Resolution 3840x2160 (4k)
- Flying Time: 25 min+
- Speed: 30 mph to 100 mph
- Operating Temperature Range: 15°F – 104°F
- Weight: 3 lb. to 20 lb.
- Cost Range $1,000 – $30,000+

PHANTOM 4 PRO
- Video Resolution 3840x2160 (4k)
- Max. Flying Time: Approx. 30 min
- Max. Speed: 45 mph
- Operating Temperature Range: 32°F – 104°F
- Weight: 3 lbs.
REGULATIONS & POLICIES

- Remote Pilot FAA Certificate
- Mission Plans
- Flying Limitations
- Restricted Airspaces
APPLICATION

IDENTIFYING EROSION

IDENTIFYING SEEPAGE

*Thermal Imagery
DATA UTILIZATION

- Topography Survey Data Verification
- Environmental Permitting
- Planning
- Documentation of Pre and Post Construction Conditions
- Health and Safety
- Resolution of Claims
TOPOGRAPHY SURVEY DATA VERIFICATION

- Drone Mapping
- Drone Surveys
- Verify Survey Data
ENVIRONMENTAL PLANNING

- Prepare Environmental Surveys
- Environmental Verification
ENVIRONMENTAL COMPLIANCE

Drones can be used to document protection of vegetation such as oak trees and elderberries.
HEALTH & SAFETY

- Steep Slope/Slips Trips and Falls
- Avoiding Biological Hazards
- Support Field Investigation
PLANNING

Identify features that might not have been included in a topographical survey such as:

- Encroachments
- Levee penetrations
- Utilities
- Site Access
RESOLUTION OF CLAIMS

INSPECTOR PHOTO

DRONE PHOTO
## COSTS

| Low Initial Investment Costs | • $1,000 - $30,000  
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| Low Mobilization Costs      | • 2 Man Field Team 
|                              | • 1 Office Technician |
| Decreased Time to Complete Acquisition | • One field day  
|                               | • One office day  |
QUESTIONS?