



Missouri  
Department of  
Natural Resources



# CHARACTERIZING CONTAMINATION

through

# AIRBORNE HYSPECTRAL IMAGERY

# PILOT PROJECT

**October 2004 - November 2005**

**Environmental Protection Agency - Office of Solid Waste and Emergency Response**

# **ADMINISTRATIVE ITEMS**

- **Sign-in/Name Tags**
- **Restrooms**
- **Coffee, Tea and Water**
- **Lunch**
- **No Phone for Incoming Calls**

# AGENDA

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**9:00 - 9:15**

**Welcome**

(Joe Engeln, Office of the Director, DNR)

**Pilot Project & Workshop Objectives**

(Nick Carbone, HSI Project Manager, HWP)

**9:15 -10:00**

**What is Hyperspectral Imagery (HSI)**

(Clayton Blodgett, Univ Missouri, Columbia, MoRAP)

**10:00 - 10:45**

**ARCHER - Airborne HSI System Capabilities and Applications**

(Col Alexa, HQ Civil Air Patrol (CAP) Director Advanced Technology Group)

**10:45 - 11:00**

**Break**

**11:00 - 12:30**

**Site Development Panel (UMC, CAP, EPA)**

Mining, Tires & Landfills, Surface Contamination, Radiological Contamination, EER

**12:30 - 1:30**

**Lunch**

**1:30 - 2:15**

**ASPECT - Characterization of Airborne Contamination**

(Tim Curry, EPA Region VII)

**2:15 - 2:30**

**Break**

**2:30 - 4:30**

**Site Development Panel (continued)**

Attendee questions, site conditions

# PILOT PROJECT

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- **DNR and Missouri Wing (MoWING) Civil Air Patrol (CAP)**
  - Handheld Imagery of DNR Sites
  - Projected Acquisition of HSI System
- **EPA Office of Solid Waste and Emergency Response (OSWER)**

## **Sponsor**

- Twice Yearly Innovative Projects
- EPA Region VII Technology Lead
- **Fall 2004 OSWER Themes**
  - **Chemical Contamination**
    - Hazardous Waste Program (DNR/HWP)
  - **Homeland Security**
    - Environmental Emergency Response (DNR/EER)

# OBJECTIVES

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- **Explore HSI Applications**
  - Environmental Emergency Response (EER)
  - Contamination Characterization
    - Field Screening
    - Contamination Levels
    - Vegetation Stress versus Actual Contaminant
- **Identify Options for Follow-on Use**
  - Civil Air Patrol ARCHER
    - EER (SEMA Memorandum of Understanding (MOU))
    - Non-Emergency Missions (DNR MOU)
  - Commercial Airborne Collection
    - Cooperative Tasking

# PILOT PROJECT PHASES

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**September 2004 - November 2005**

- **Phase I - Research Existing Environmental Applications**
  - Universities
  - Commercial Vendors
  - Government Agencies
- **Phase II - Develop Prospective Sites (Mar - Jun '05)**
  - Variety of Contaminants and Conditions
  - Other Departments, State and Federal Agencies
  - Steering Group to Optimize Collection
- **Phase III - Collect Hyperspectral Imagery (Jun - Sep '05)**
  - June mission for ground contamination and vegetation stress
  - August-September mission for contamination runoff
- **Phase IV - Analyze and Report (Oct - Nov '05)**
  - Univ. MO Columbia through MoRAP
  - PMs work with UMC during analysis, if desired

# WHY IS IT IMPORTANT

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- **CAP Is Deploying ARCHER**
  - 16 Around the U.S.
- **HSI Has the Potential to Offset Staff Shortfalls and Save Funding**
- **Applications Are Extendable to Other States and Federal Agencies**



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# SITE DEVELOPMENT

# WORKSHOP

**Pilot Project - Phase II**



# WORKSHOP OBJECTIVES

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- **Learn About HSI and How it Works**
- **Discuss ARCHER (CAP) and ASPECT (EPA)**
  - Availability
  - Capability
- **Evaluate Contaminants and Conditions**
  - Develop Prospective Sites
    - Anyone can input sites
  - Identify Project Managers