

**ADEQ** *and*

# **The Buffalo River Alliance**

July 8, 2016



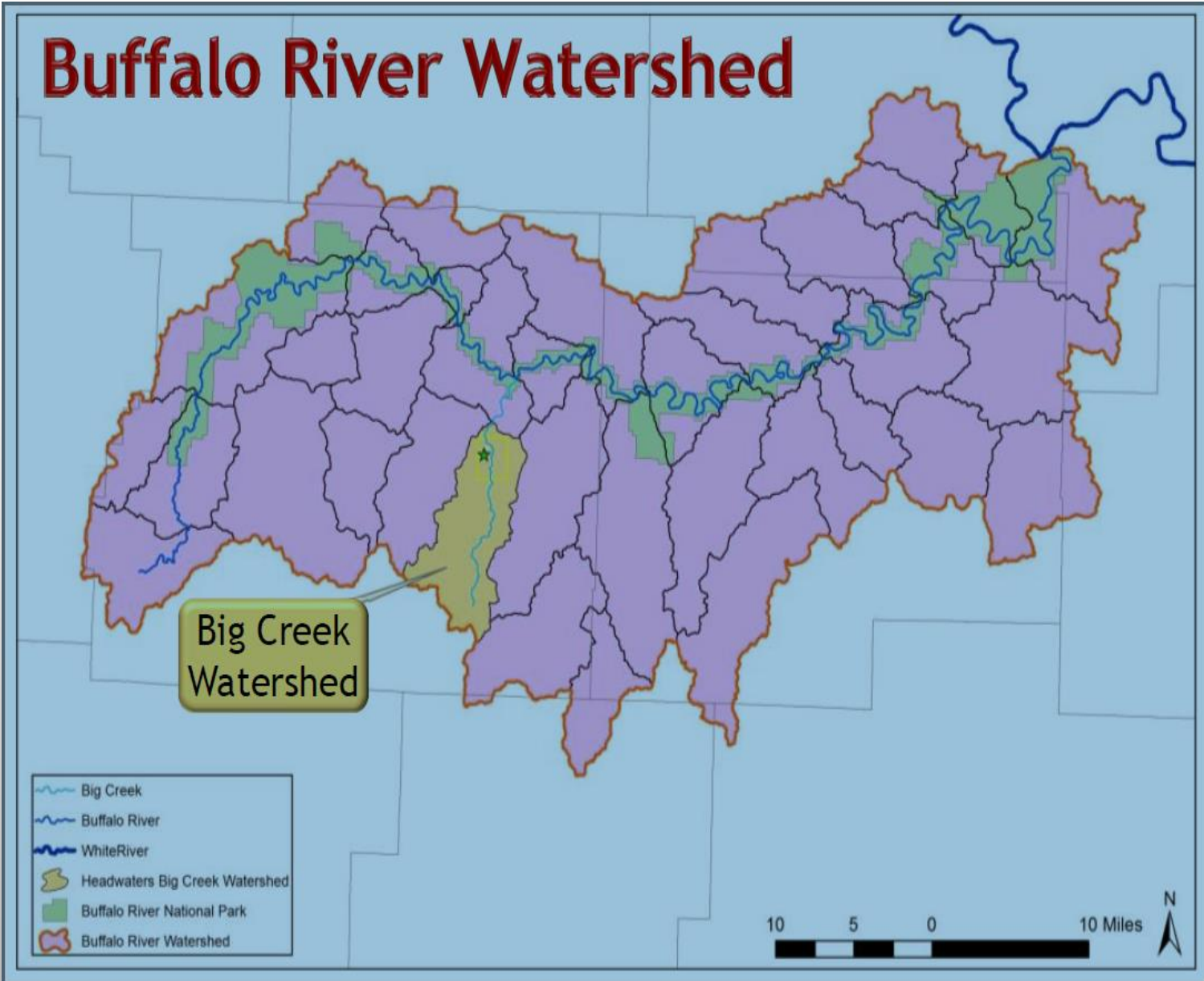
**ADEQ**  
**ARKANSAS**  
Department of Environmental Quality

# OVERVIEW

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- Introductions & Opening Comments
- Purpose/Goal
- Resistivity Overview
- Plan Overview
  - Location
  - Proposed Measurements
  - Plan Components
  - Contractor
  - Transparency

# Buffalo River Watershed



Big Creek  
Watershed

- Big Creek
- Buffalo River
- White River
- Headwaters Big Creek Watershed
- Buffalo River National Park
- Buffalo River Watershed



# ELECTRICAL RESISTIVITY IMAGING (ERI)

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## Fact about Resistivity and Conductivity

- Lower Resistivity = Higher Conductivity
- Wet clay has lower resistivity, thus higher conductivity than dry clay
- Pore water has higher conductivity than solids and air

## Recommendation from OSU Professor Halihan:

- Drilling to investigate potential fracture
- Location of interest is W/SW of the ponds

- **Below 50 Ohm-meters** represent fine soils, microbial mass, and/or electrically conductive fluids and referred to as *very electrically conductive*.

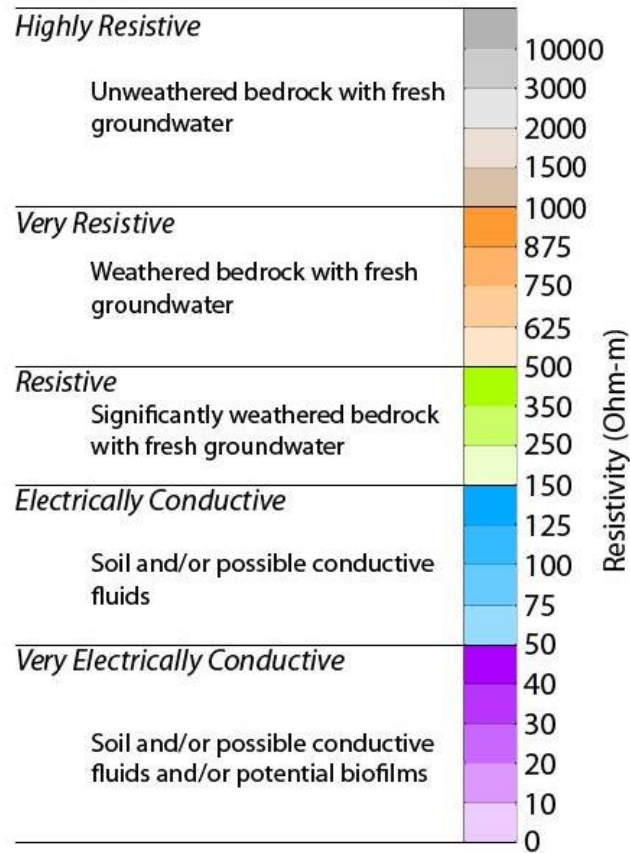
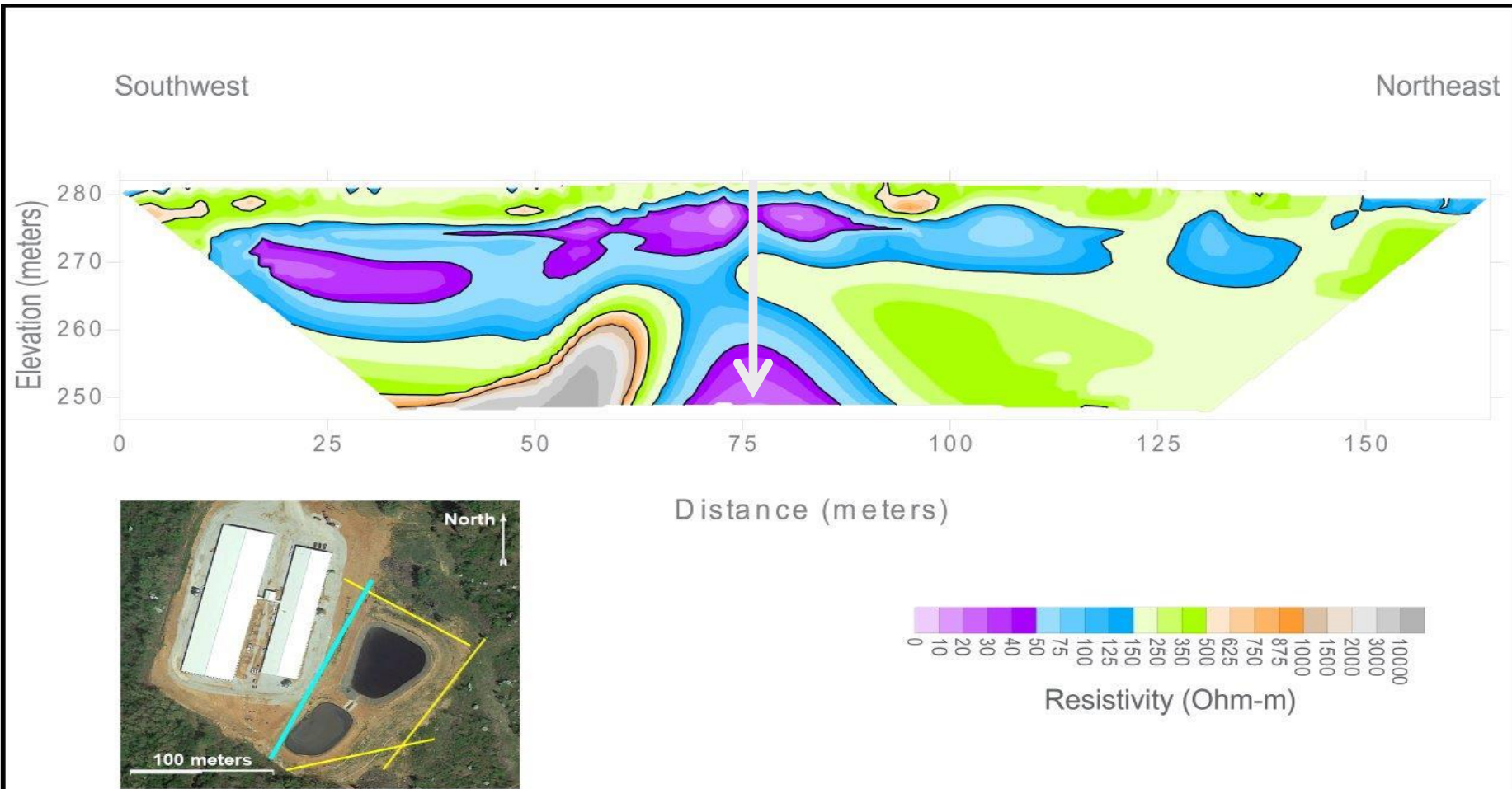


Figure 9 – Resistivity scale for Mount Judea ERI datasets. Cool colors are used to indicate more electrically conductive subsurface locations and warm colors are used to indicate more resistive locations.



Holding  
Ponds

Transect  
MTJ108

This transect has a 3.0 meter spacing between the electrodes  
(1.5 meter resolution).

Figure  
A108

# PLAN OVERVIEW

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- Location
  - ~75 m NE from SW corner of the west transect
- Proposed measurements of hollow stem, split-spoon core and groundwater samples
  - Nitrates-N
  - Fecal Coliform Bacteria or E-Coli
  - pH
  - Conductivity
  - Mineral Ions
  - Ammonia-N
  - Total Organic Carbon

# PLAN COMPONENTS

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- Scope of Work
- Drilling Work Plan
- Quality Assurance Project Plan
- Sampling and Analysis Plan
- Health and Safety Plan
- Conduct the Exploration
- Findings Report



# POTENTIAL CHALLENGES

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- Timing of contractor vs. lagoon management
- Chances of hitting a vertical fracture at >30m with surface approximation of borehole location
- Encounter competent rock above target depth
- Inclement weather

# REPORT

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- Executive Summary
- Methods and Materials
- Results
- Discussion
- Conclusions
- Appendices
  - Analytical data
  - Subsurface profile from retrieved core

# CONTRACTOR

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- ADEQ will contract with an outside contractor from the list that Office of Land Resources will be provided to do the study
- Anticipated schedule
  - 30 days to notice to proceed
  - 30 days to mobilize field work

# TRANSPARENCY

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- Scoping discussions
- ADEQ will post documents on a presentation and material website. Review time due to constraints of project timeline
- Field study observation and oversight
- Split samples