Agenda:

• Ecological Assessment of Priority Subwatersheds

• 20 miles of Riparian Restoration!!
The Illinois River and its tributaries will be a fully functioning ecosystem, where ecological protection, conservation, and economically productive uses:

- support diverse aquatic and riparian communities,
- meet all state and federal water quality standards,
- promote economic sustainability, and
- provide recreational opportunities.
The Illinois River Watershed Partnership works to improve the integrity of the Illinois River through:

- public **education** and community **outreach**, 
- water quality **monitoring**, and 
- the implementation of **conservation** and **restoration** practices throughout the watershed.
Priority Subwatershed Strategy
### Illinois River Priority Subwatersheds

#### 2016 Impaired Subwatersheds, ADEQ

<table>
<thead>
<tr>
<th>Subwatershed</th>
<th>Impairment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sager Creek</td>
<td>Nitrate</td>
</tr>
<tr>
<td>Moore’s Creek</td>
<td>Sulfate, Pathogen</td>
</tr>
<tr>
<td>Lower Muddy Fork</td>
<td>Pathogen</td>
</tr>
<tr>
<td>Clear Creek at Lake Fayetteville</td>
<td>Pathogen</td>
</tr>
<tr>
<td>Clear Creek at Mud Creek</td>
<td>Sulfate, Pathogen</td>
</tr>
<tr>
<td>Upper Muddy Fork</td>
<td>Pathogen</td>
</tr>
<tr>
<td>Illinois River</td>
<td>Chloride, Sulfate, Pathogens</td>
</tr>
</tbody>
</table>

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**Illinois River Watershed**

- **HUC12 Boundaries Within Arkansas**
- **R:\project\7140-024\gis\plot\Map\HUC12.mxd**
- **Background: © 2010 Microsoft Corporation and its data suppliers**
Ecological Assessment of Priority Subwatersheds

(project managed by Casey Rector)
Goals:

• In-depth assessment of impaired subwatersheds

• Identify potential “hotspots” within each subwatershed

• Target outreach and education efforts

= ADEQ sampling site
Goal: In-depth assessment of priority subwatersheds for water quality and ecosystem health

• Partnered with local EAST Initiative schools

• Assessments:
  • Land use and aquatic habitat
  • Macroinvertebrate community

• In 2018, monitored four to five locations within priority subwatersheds three times
Sampled April, August, November 2018

Habitat Assessment
• Utilized EPA’s *Volunteer Stream Monitoring: A Methods Manual*
• 300 foot stream reach divided into 75 ft sections: 4 observations/reach
• Qualitative, visual data collected

Macroinvertebrate Communities
• Composite of three 3’ x 3’ riffle locations
• Site rating calculation accounts for pollution sensitivity and relative abundance of each species
<table>
<thead>
<tr>
<th>Subwatershed</th>
<th>% Urban</th>
<th>% Pasture</th>
<th>% Forest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clear</td>
<td>40.6</td>
<td>28.8</td>
<td>21.5</td>
</tr>
<tr>
<td>Moore’s</td>
<td>4.6</td>
<td>56.9</td>
<td>33.5</td>
</tr>
<tr>
<td>Muddy</td>
<td>2.9</td>
<td>66.8</td>
<td>25.9</td>
</tr>
<tr>
<td>Sager</td>
<td>30.5</td>
<td>54.5</td>
<td>11</td>
</tr>
<tr>
<td>Goose</td>
<td>11.5</td>
<td>56.2</td>
<td>25.9</td>
</tr>
</tbody>
</table>
Results: No apparent differences across subwatersheds
Results: No trend across land use types
Results: Wide Variation Among Sites

Macroinvertebrate Scores Across Sites
Results: Clear Creek Assessment

Table 1. Average 2018 seasonal water quality rating for the Clear Creek watershed.

<table>
<thead>
<tr>
<th>Season</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spring</td>
<td>Red</td>
</tr>
<tr>
<td>Summer</td>
<td>Yellow</td>
</tr>
<tr>
<td>Fall</td>
<td>Yellow</td>
</tr>
</tbody>
</table>

Figure 1. Spring 2018 WQ (Water Quality) rating for sampling sites within the Clear Creek watershed.

Figure 2. Summer 2018 WQ rating for sampling sites within the Clear Creek watershed.

Figure 3. Fall 2018 WQ rating for sampling sites within the Clear Creek watershed.
Table 1. Average 2018 seasonal water quality rating for the Moore's Creek watershed.

<table>
<thead>
<tr>
<th>Season</th>
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<tr>
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</tr>
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<td>Fall</td>
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</tr>
</tbody>
</table>

Figure 1. Spring 2018 WQ rating for sampling sites within the Moore's Creek watershed.

Figure 2. Summer 2018 WQ rating for sampling sites within the Moore's Creek watershed.

Figure 3. Fall 2018 WQ rating for sampling sites within the Moore's Creek watershed.
### Parameters tested against macroinvertebrate diversity score (% of observations where present)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Macroinvertebrate Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Algae</td>
<td>Riffles</td>
</tr>
<tr>
<td>Riparian Area Lawn</td>
<td>Riffles and Runs</td>
</tr>
<tr>
<td>Riparian Area Trees</td>
<td>Pools</td>
</tr>
<tr>
<td>Streambank Trees</td>
<td>Some Silt/Clay</td>
</tr>
<tr>
<td>Some Clay, Silt, Sand on Stream</td>
<td></td>
</tr>
<tr>
<td>Some Sand</td>
<td></td>
</tr>
</tbody>
</table>

\[ y = 1.362x + 37.635 \]

\[ R^2 = 0.2631 \]

\[ F = 0.01 \]
• Continue to collect macroinvertebrate data through 2019

• Expand project into Oklahoma:
  • Two-year baseline study
  • Followed by every other year study in AR and OK

• Incorporate flow into collected parameters

• Identify and build relationships with landowners at high priority sites
Riparian Restoration Program

(project managed by Travis Chaney)
• Re-purposed state funding for 2009 CREP program.

• 1:1 match from private sources.

• **Goals:**
  1. 20 miles of riparian restoration
  2. 2 square miles (1,358 acres) of rotational grazing systems
  3. 42,000 linear feet (7.95 miles) of fencing

• **Advantages:**
  o Flexible eligibility
  o Minimum paperwork
  o Holistic conservation plan
  o Customized options
**Eligibility:**
- Riparian areas with low rates of streambank erosion
- Within priority HUC 12 subwatersheds
- Perennial or intermittent stream must be present on parcel
- Urban or rural lands
- Public or privately-owned lands

**“Asks” from Landowners:**
- Provide 25% match (can be in-kind, financial, or sourced from other federal or state programs)
- Installation and practice lifespan will be based on NRCS specifications

**IRWP will:**
- Provide 75% of project costs
- Manage design and installation of each projects
- Provide one-year of maintenance
Possible Practices

- Riparian Forest Buffer
- Wetland Enhancement
- Fencing and Alternative Watering
- Field Borders and Filter Strips
Program advertising:
- Mailers
- Door hangers
- Field Tours
- One-on-one meetings
- Leveraged IRWP’s existing network

Designs and landowner agreements for 5.98 miles with six landowners (including BGO!).

Designs underway on additional 1.5 miles with three landowners.
53 acres, 1.43 miles of Clear Creek + tributaries

“Urban” Example: Johnson Mill Property
Restoration plan:
• 2019: Herbicide application + prescribed burn + grass seeding
• 2020: Forest management, selective herbicide + prescribed burn + grass seeding
• 2021: 2020 + wetland enhancement
Agricultural Example: Castaneda Property

80 acres, 0.85 miles on two Moore’s Creek tributaries
Agricultural Example: Castaneda Property

Planned activities:

• 5 acres: Reforest or grassed waterway on riparian areas

• 11 acres: Remove woody invasive plants species, reestablish native grasses and forbs

• 54 acres: Rotational grazing system
  o Watering facilities
  o Heavy use area protection
  o Fencing
Thank you for your time and wish us luck!

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director@irwp.org
479-422-1014