Water Quality Demonstration & Educational Program for the Illinois River Watershed – Green Infrastructure

Grant #13-300
Project Period: July 1, 2013 – June 30, 2016
500,000 + Stakeholders

Arkansas, Oklahoma
Cherokee Nation
20+ cities, 7 Counties

1.1 million acres
1,700 square miles
AR Priority Watershed: As Determined by ADEQ
Table 2.2. Summary of 2006 land use/land cover for the UIRW (from the Center for Advanced Spatial Technology).

<table>
<thead>
<tr>
<th>Land Use</th>
<th>Percentage of UIRW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forest</td>
<td>41%</td>
</tr>
<tr>
<td>Pasture</td>
<td>46%</td>
</tr>
<tr>
<td>Urban</td>
<td>13%</td>
</tr>
<tr>
<td>Row Crops</td>
<td>&lt; 0.1%</td>
</tr>
<tr>
<td>Water</td>
<td>&lt; 1%</td>
</tr>
</tbody>
</table>

The Illinois River and its major tributaries in Arkansas (Osage Creek, Clear Creek, Baron Fork, and the Muddy Fork) exhibit a range of conditions, from areas with dense riparian forest buffers illustrating exceptional beauty and ecological value, to areas of exposed and eroding stream banks with no vegetated buffers.
The Illinois River and its tributaries have many designated uses set forth by the Arkansas Pollution Control and Ecology Commission (APCEC):

- Fisheries
- Primary and secondary contact recreation
- Drinking water supply
- Agricultural and industrial water supply

However, portions of the Illinois River and its tributaries have been cited as not meeting these designated uses due to impairment from bacteria, sediment, and/or nutrients.

The goal of the watershed-based plan is to improve water quality in the Illinois River and its tributaries so that all waters meet their designated uses both now and in the future.
<table>
<thead>
<tr>
<th>Impaired Reach</th>
<th>Designated Use Impaired</th>
<th>2008 Pollutant of Concern</th>
<th>2010 Pollutant of Concern</th>
<th>2012 Pollutant of Concern</th>
<th>HUC12 Name</th>
<th>Predominant Pollutant Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>11110103-020</td>
<td>Aquatic Life Fisheries</td>
<td>Sediment</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Lake Frances – Illinois River</td>
<td>Surface Erosion</td>
</tr>
<tr>
<td>11110103-023</td>
<td>Primary Contact</td>
<td>Pathogens</td>
<td>Pathogens</td>
<td>Pathogens</td>
<td>Illinois River – Lake Wedington</td>
<td>Agriculture</td>
</tr>
<tr>
<td>11110103-024</td>
<td>Primary Contact</td>
<td>Sediment, pathogens</td>
<td>Sediment, pathogens</td>
<td>Sediment, pathogens</td>
<td>Illinois River – Lake Wedington</td>
<td>Sediment: Surface Erosion Pathogens: Agriculture</td>
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<tr>
<td>11110103-025</td>
<td>Primary Contact</td>
<td>Pathogens, total phosphorus</td>
<td>Pathogens</td>
<td>Pathogens</td>
<td>Lower Muddy Fork – Illinois River</td>
<td>Agriculture</td>
</tr>
<tr>
<td>11110103-029</td>
<td>Primary Contact</td>
<td>Pathogens</td>
<td>Pathogens</td>
<td>Pathogens</td>
<td>Lake Fayetteville – Clear Creek</td>
<td>Urban</td>
</tr>
<tr>
<td>11110103-029</td>
<td>Primary Contact</td>
<td>Pathogens</td>
<td>Pathogens</td>
<td>Pathogens</td>
<td>Little Wildcat – Clear Creek</td>
<td>Urban</td>
</tr>
<tr>
<td>11110103-932</td>
<td>—</td>
<td>Nitrate</td>
<td>Nitrate</td>
<td>Nitrate</td>
<td>Sager Creek</td>
<td>Municipal Point Source</td>
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<tr>
<td>11110103-013</td>
<td>Primary Contact</td>
<td>Pathogens</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Upper Baron Fork</td>
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<tr>
<td>11110103-027</td>
<td>Total phosphorus</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Upper Muddy Fork – Illinois River; Lower Muddy Fork – Illinois River</td>
<td>Unknown</td>
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<tr>
<td>11110103-028</td>
<td>Primary Contact</td>
<td>Pathogens</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Headwaters Illinois River, Goose Creek – Illinois River</td>
<td>Unknown</td>
</tr>
<tr>
<td>11110103-030</td>
<td>Primary Contact</td>
<td>Pathogens, total phosphorus</td>
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<td>Not listed</td>
<td>Osage Creek – Illinois River</td>
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<tr>
<td>11110103-930</td>
<td>Total phosphorus</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Headwaters Osage Creek – Illinois River</td>
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<tr>
<td>11110103-933</td>
<td>Primary Contact</td>
<td>Pathogens</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Little Osage Creek</td>
<td>Unknown</td>
</tr>
<tr>
<td>11110103-931</td>
<td>Primary Contact</td>
<td>Pathogens, total phosphorus</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Spring Creek – Osage Creek</td>
<td>Unknown</td>
</tr>
<tr>
<td>Swepco Lake</td>
<td>Aquatic Life</td>
<td>Unknown</td>
<td>Unknown</td>
<td>Unknown</td>
<td>Middle Flint Creek</td>
<td>Unknown</td>
</tr>
</tbody>
</table>
There are about 1,100 miles of streams in the UIRW, and about 103 miles of impaired streams are caused by these pollutants, or about 10% of the total number of stream miles.

About 91 stream miles are impaired by pathogens, 4 stream miles impaired by sediment, and 8 stream miles impaired by nitrate.
Green Infrastructure Grant 13-300

Pictures provided by Razorbackgreenway.com
Project Goals:

**Design and build** at least five green infrastructure projects to improve water quality.

**Educate and encourage** communities to implement such practices on their property and change behaviors that contribute to water pollution and improvement of water quality.
Razorback Greenway = 36 Miles

77% Greenway runs through IRW

16 miles run along waterways
- 7.6 miles impaired (2008 303d list)

Data collected using ArcGIS (2016)
Mercy Trailhead area
Weekly Avg: 664

Lake Springdale
Weekly Avg: 594

Crystal Bridges/Amazeum
Weekly Avg: 2,370

Gordon Long Park
Weekly Avg: 1,560

Johnson/Scull Creek
Weekly Avg: 1,407

2015 Annual Trail Use
http://www.waltonfamilyfoundation.org/our-impact/home-region/nwatrails
Amazeum, Bentonville, AR
Amazeum, Bentonville, AR
Amazeum, Bentonville, AR
SCOTT FAMILY AMAZEUM, IRWP COLLABORATION
MITIGATE POLLUTANTS

Amazeum | Comments

Amazeum, Bentonville, AR
“Great things happening here! We just surpassed our 250,000th guest this year (July-June), far surpassing what we originally planned. And the museum is alive with voices and laughter. We recently hosted the Girl Scouts to have a special time for science exploration themselves - see some photos below.

We also see a number of people (a) riding bikes up here from area homes and (b) launching off from here to hit the trails. Thank you so much for helping us to integrate the museum into the great things along the greenway.” - Sam Dean
Project Highlights:

7,700 SF of rain gardens to capture water from roof.

10,535 SF Bioretention area with floodplain wildlife mix incorporated to treat parking lot runoff.

2,975 Native Plants planted.

120 Native Trees planted.

Educational signage installed.
Mercy Trailhead, Rogers, AR
Mercy Trailhead, Rogers, AR
Volunteer Tree Plantings at Mercy
Award: Small projects winner and Grand Conception Award in the Water Resources category, selected by American Council of Engineering Companies of Arkansas
ADOPT A RAIN GARDEN

Franci Kravetsky
Maintains this Rain Garden
Rogers Parks Department
479-631-3350
Project Highlights:

5,400 SF of impervious area treated by a 1,800 SF bioswale.

531 native plants planted.

18 native trees planted at parking lot site.

400 Square yards of native grass area sod.

2 community events at trailhead with 975 participants.
Mercy Hospital Partnership established to continue to work on phases of riparian restoration along their urban properties that border the Razorback Greenway and headwater ephemeral streams of Osage Creek.

935 linear feet riparian restored with 400 Native tree seedlings.
City of Johnson Trailhead, Johnson, AR
12' to 18' TALL SEGMENTAL BLOCK WALL

5 bergamot

11 swamp milkweed

I red osier dogwood

3 swamp milkweed bergamot?

AREA OF EXCAVATION FOR RAIN GARDEN SLOPE SOUTH TO NORTH WITH 3:1 SLOPE TO A DEPTH OF 12' AT THE NORTH END. MAINTAIN 12' DEPTH TO THE BOTTOM OF RETAINING WALL WITH 1:1 SLOPE TO EXISTING GRADE FOR TOP OF WALL.

3' WIDE X 3' THICK CRUSHED ROCK PATH

EXISTING WATER LINE EASEMENT

Change to Redbud?

common rush

11' bluestem
Project Highlights:

- 445 Square foot rain garden installed.
- 136 native plants installed in rain garden.
- 12 Native trees (1-2” caliper) installed in partnership with the Arkansas Forestry Commission.
- 240 square feet of pervious pathway installed.
- 600 square feet of pervious pavers installed.
- Educational signage installed.

132 people contributed 252 volunteer hours (Clean Ups).
7 additional native trees (1-2” caliper) planted along Clear Creek.
Lake Springdale Trailhead, Springdale, AR
Lake Springdale Trailhead, AR
Lake Springdale Trailhead, Springdale, AR
In addition to the trailhead improvements, IRWP is working with 13 EAST (Environmental and Spatial Technology) groups from the Springdale School District to use GIS software to map areas of the Razorback Greenway that connect near waterways to prioritize and plan riparian restoration projects. Lake Springdale/Spring Creek was identified as a priority area to work to restore riparian. IRWP obtained permission from the City of Springdale and since have planted over 1,000 linear feet of urban stream with grasses grown by Springdale EAST students in their classroom and native tree seedlings grown at IRWP tree farms.
Project Highlights:

4,000 SF impervious parking area draining to a 2,500 square feet bioswale.

649 native plants installed to filter and treat parking lot runoff.

33 native trees planted in partnership with the Arkansas Forestry Commission, City of Springdale, Kawneer, Springdale EAST and IRWP.

1,000 native grasses planted at riparian area,
300 tree seedlings planted from IRWP tree farm,
along 250 linear feet of streambank.

Educational signage installed at Trailhead.

Lake Springdale Trailhead, AR
Gordon Long Park, Fayetteville, AR
Gordon Long Park, Fayetteville, AR
Gordon Long Park, Fayetteville, AR
Project Highlights:

- 12 Parking spots designed with 1,546 SF of pervious pavers.
- 894 square feet of additional pervious pavers installed.
- 600 square feet of grass pavers.
- 90 linear feet of flush curbs.
- 5,178 square feet of land acquisition by City of Fayetteville.
- 390 square foot bioswale installed.
- 50 native plants and 3 trees planted.
- Permeable paver demo cube and educational signage installed.
- 96 volunteer contributed 179 hours to conduct creek clean ups at Scull Creek.
Gentry Pocket Park, Gentry, AR
Public Education and Outreach efforts have helped to raise awareness and promote Green Infrastructure within the Illinois River Watershed.

Information / Education /Awareness from 2013 – 2016 :

12,707 participants
71 Field Days
37 Training Sessions
39 Events
113 Outreach Meetings

Efforts continue to reach the public through campaigns, events and programs within the Illinois River Watershed.