

MISSOURI RIVER MEGASCOUT

Summer, Fall 2006

754 river miles. Six major metropolitan areas. 22 indescribable sunsets. Dozens of small cities and villages. Hundreds of appliances. Thousands of plastic bottles. Countless great blue herons.

After five years of cleaning up trash in communities all along the lower Big Muddy, Missouri River Relief took to the river to map solid waste on its banks.

We called it the MegaScout, and it's the first comprehensive survey of trash on the Missouri River. Hop on board and take a look at what we've seen.



The first MegaScout crew surveyed trash on the Missouri River from Ponca State Park, NE, to Indian Cave State Park, NE. Later crews finished the job, passing through Iowa, Kansas and Missouri to the confluence of the Missouri and Mississippi Rivers.



Trashy Science on the Big Muddy

It was already hot when the boats hit the water at Ponca State Park, just upstream from Sioux City, IA. These were not your typical scientific vessels heading out for a data collection trip on the Missouri River. The most high-tech pieces of equipment on board were a laptop (named “Betty”), a couple of GPS units, some digital cameras and binoculars.

These boats were going all the way to St. Louis, mapping the trash they saw along the way. This trip was called the MegaScout, and it was the most comprehensive look at trash on the Missouri River ever. Along stretches of river, we fell in love with the Big Muddy all over again.

Becoming Trash Scientists

The product of the MegaScout is an evolving database about trash on the Missouri: where it tends to accumulate, what patterns in density are there in relation to population centers, where are historic and recent dumps, how are trash densities different on different stretches of the river? Basically: How trashed is the Big Muddy?

And what can we do to transform the image of the Missouri River as the last dumping ground into the treasure we all share?

What better way to answer that question than getting out on the river?

How does a MegaScout work?

- Crews boat downstream, one on each bank, scanning the banks of the river for trash.
- Each river mile is rated on a scale of 0-5 for trash density.
- Large items and dumps are recorded as GPS points linked to a photo.
- Point-source pollution inflows are photographed and GPS-ed.
- Floatable appliances and barrels are spray-painted with the river mile and date.
- Each night, data is entered into our laptop “Betty.”

Showing you what we found

The data is linked to an ARC-GIS map of the Missouri River. With software donated by the St. Charles office of ESRI, Tim Nigh, Daniel Belshe and Kim Horton (of Mo-RAP) created a linkable route file following the channel of the river. Once the data is entered, users can click on any point on the river to find out the trash rating and any comments for that stretch. Any point files or photos show up as a special icon and can be accessed by the click of a mouse.

The major innovation that Daniel, Tim and Kim developed is a color-coded line that follows each bank of the river. “Zero” trash ratings show up as a cool blue, and the colors range from yellow to orange to red as you move up the scale.

As you zoom out from the map, the patterns become obvious. On the upper reaches of the river, small trash tends to collect on the inside of the river bends. At each population center, there is a flash of orange or red, punctuated by exclamation marks as more trash ends up on the banks. Depending on the size of the city, the higher ratings often continue downstream.

For big cities, there are often pulses of trash downstream, possibly showing where high water events have dropped trash as river levels crested and fell. At points where the river widens on a sharp bend, there are often larger accumulations of trash. Some communities show an obvious dedication to cleaning up their banks, while other places are more neglected.



During the first sixteen days of the MegaScout, we ate, slept, worked and played, without ever leaving the Missouri River or its banks.

So what do we do with this information?

- **Recon and Planning** – We’re already using the maps to plan on-the-river strategy for future clean-ups.
- **Education** – MegaScout maps are an excellent education tool for showing students and adults their place in the Missouri River watershed and how solid waste affects our Missouri River.
- **Virtual Community** – Thanks to a generous donation of ARC-IMS from ESRI, we’ll be putting these maps online, for the virtual community to browse, use and comment on. Locals can add trash that they find to the database.
- **Outreach** – Maps have a way of clarifying for potential sponsors and partners just what it is that we’re doing out there when we clean-up the river.
- **Inspiration** – What better inspiration for local river rats to clean-up trash in their neighborhood than to see an exclamation point and photo on a map? We’ll be using customized maps to communicate with local groups to inspire grassroots clean-up efforts.

People on the river are happy to give...

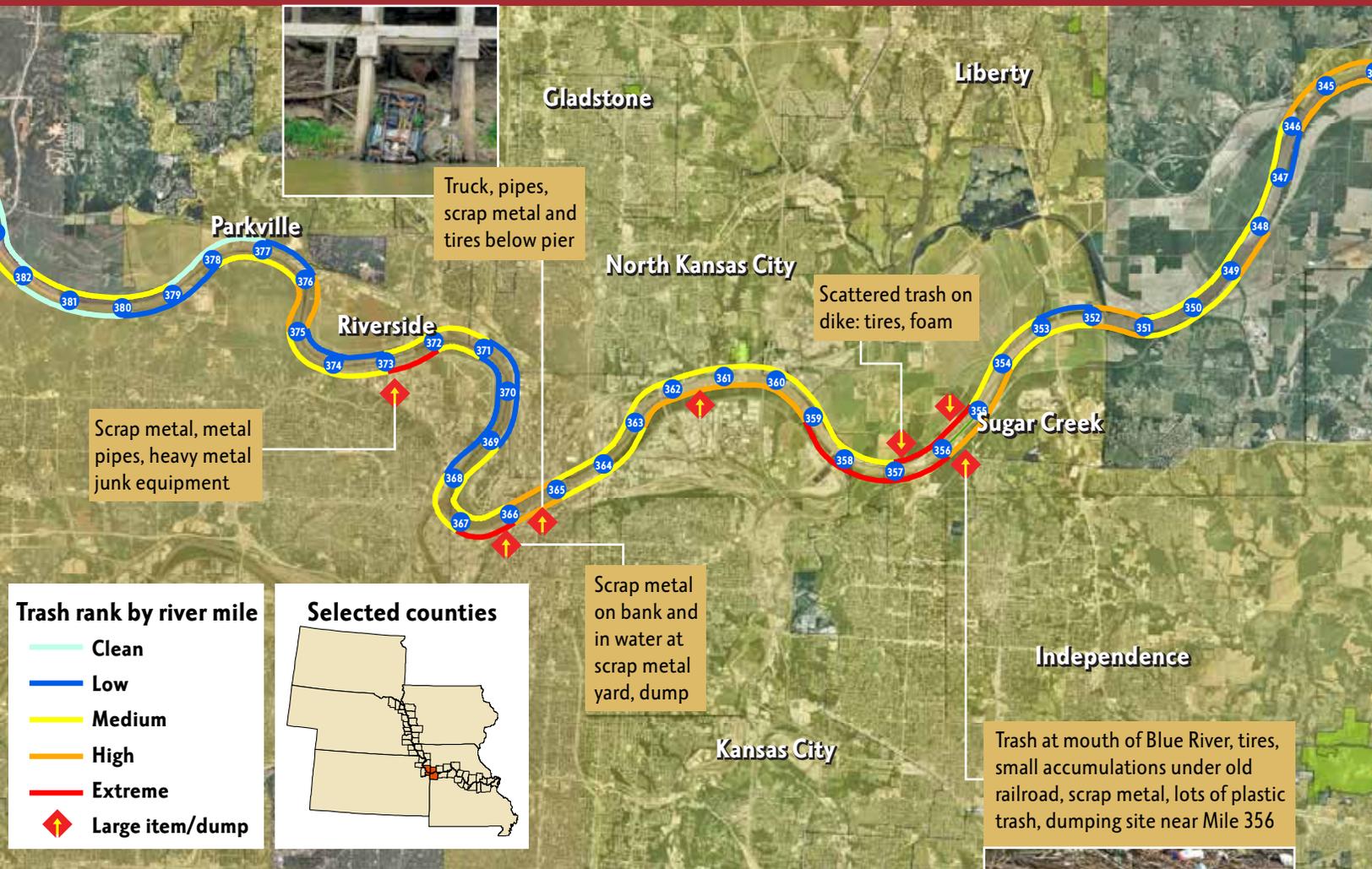
From little river towns to huge metropolitan areas, from cabins overlooking the water to power plants supplying large cities, the Missouri River strings together a patchwork of different communities and people.

When you travel by the river, you get to meet the people that love it.

The individual faces and stories of the families, fishermen, scientists and river rats we met along the way we will always cherish. We discovered a whole world of friends and allies and they were right where you’d expect them: on the Missouri River.

We appreciate the hospitality of everyone we met along the way, and hope to continue these relationships into the future.

2006 MegaScout trash map, Kansas City metro area



With the click of a mouse, the MegaScout maps link to a database describing the trash seen on that river mile with hotlinks to photos and details of specific trash items, accumulations or dumps. Other layers can be added to show boat ramps, public lands, effluent inflows, streams and points of interest. The data was accumulated from a variety of agency sources and "ground-truthed" on the river by our crews.



The MegaScout exposed us to extreme trash and extreme temperatures, from 106° days during the first stage of the MegaScout in July, 2006, to 26° nights as we completed the MegaScout in October, 2006. We learned to love all the faces of the Big Muddy.

A big, muddy thanks

A project like the MegaScout is impossible without the support of our public and private sponsors. Here's a list of our supporters that made this trip happen:

ESRI – donation of ARC-GIS and ARC-IMS mapping software
Missouri Department of Conservation – financial support, mapping assistance

Missouri Resource Assessment Partnership – mapping assistance
Patagonia – clothing donations, crew support

Bass Pro Shops – boat and motor donations
Allen P. & Josephine Green Foundation -financial contribution

Boone Electric Cooperative – boat donation
Spirit Hill Guest House, Hermann, MO, and River Refuge at Alligator Cove – lodging

Dave Stous, Geri Routh, Linda and Sid Lehrbaum, and Stew Miller – personal contributions

And a big, muddy thanks to our crew, who dedicated themselves completely to our mission and made it a life-changing experience for all of us.



Volunteer Vicki Richmond marks old car bodies with mile marker number for future clean-up.

MegaScout Blog

While on the river, we kept a weblog of thoughts and photos. Check out our entries and leave your own comments at <http://rrmegascout.blogspot.com> Here are some quotes from the bloggers on the trip...

"We've gone over 100 miles now. That's the farthest I've ever traveled on any body of water. What is a body of water? I kind of think of the whole planet as the body and this river is a blood vein. River Relief people are the scrubby cells that keep the veins clean and unclogged. Wouldn't want Gaia to have a heart attack!"

- Anthony Pettit

"Our mission out here is to survey and map the trash on the Missouri River, but we would be idiots if we didn't marvel at all the birds we see. In a way, they are the antidotes to the garbage. For every soggy couch, cast-off water heater or rusty barrel we spot, along comes a belted kingfisher, bald eagle, or yellow warbler to remind us why we're really out here."

- Charlotte Overby

"Man, have we had good media exposure; 5 TV stations have come out to do stories and a couple of Newspapers. Most of the people we meet have heard of us. The attitudes of the locals indicate a connection to the river and an appreciation of what River Relief does. Does our souls good."

- Tim Nigh

"We are fortunate to live in this time. The changes are happening right before our eyes. We meet folks everyday that are having an impact on the river and charting the changes. You can damn the channel, but we couldn't use our motors without it. We curse the wing dikes, but love the sandy beaches they create... The reporter who had never been to the ramp and needed directions from a boat full of grimy river rats from hundreds of miles away."

-Vicki Richmond

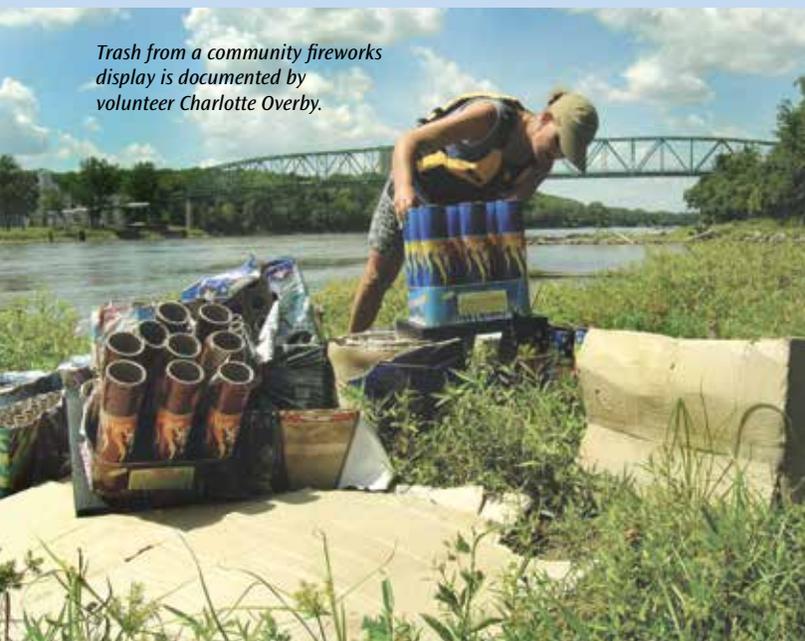
"We set up camp on a gorgeous sand bar, continuing our nightly ritual. As the sun set, a bright and already huge white cumulus cloud grew before our very eyes, turning into a monstrous and brilliant pink anvil. We chattered the night away, and sang ourselves to sleep under the clouds. In the morning, we woke up to thousands of millipedes crawling all over the sandbar, in our tents and on our persons!"

- Melanie Cheney

"The elements are working into our bodies and into our belongings. Everything we pick up leaves a sand shadow. Sand is everywhere. We sweep the boats clean, and the sand returns. It hides in every pocket and crevice and fold. Fabrics absorb the river humidity and the sun dries them quickly. Our bodies are brown from the unending bake of the sun. We swim to cool down, and the river mud enters our pores."

- Steve Schnarr

Trash from a community fireworks display is documented by volunteer Charlotte Overby.



Please contact us if you have comments, questions or requests for information.

Play a part in our mission to clean-up the Missouri River.



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