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'Induced meandering' underway in Arroyo Chamisos

By Mark Oswald / Journal Staff Writer

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Workers with the RMCI contracting firm from Albuquerque install a post vane along the Arroyo de los Chamisos west of Yucca Street in Santa Fe, part of a project to control erosion and help develop a flood plain along the arroyo. (Eddie Moore/Journal)

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SANTA FE, N.M. — Santa Fe is getting into “induced meandering.” And it’s not part of a plan for legalizing recreational marijuana.

Induced meandering is the governing concept of a major project underway along one of Santa Fe’s major geographical features – the Arroyo de Los Chamisos, which stretches from the city’s east side foothills near St. John’s College through the city’s middle and southern sections, and beyond the city limits to the southwest.

The idea is to use often natural-looking structures to get the water rushing through the arroyo during heavy rains to slow down instead of ripping into the banks and causing further erosion, and endangering homes, backyards, roads and the popular walking/bicycling trail along the big nature-made ditch.

“As the water slows down, it will drop the sediment load and deposit it on the bank versus taking soil away,” said Eric Cornelius of Santa Fe Engineering, who’s working on the

project.



A rock wall, this one behind the Genoveva Chavez Community Center, is one of the structures being used to stop erosion along the Arroyo de Los Chamisos, which stretches through Santa Fe from east to west. (Eddie Moore/Journal)

Huge chunks of the more vertical portions of the arroyo's banks often fall off into huge mounds of crumbled dirt during rain storms. "Basically, what you want to do is avoid these deep, incised banks," said Melissa McDonald, city government's river and watershed coordinator.

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Work with a budget of \$1.6 million is underway at five locations along the arroyo, known colloquially as Arroyo Chamisos, from behind Santa Fe High School west past the Genoveva Chavez Community Center to near the Santa Fe Place mall. Additional sites are targeted in the future.

Cornelius said “the guru” of induced meandering is Bill Zeedyk, a veteran of the U.S. Forest Service, whose New Mexico consulting firm specializes in small stream and wetland restoration in the desert Southwest.

Zeedyk’s “An Introduction to Induced Meandering” from 2003 states: “The induced meandering method uses artificial instream structures, manipulation of streambank vegetation, and the power of running water to expedite channel evolution and floodplain development. Key components of induced meandering are the proper sizing and spacing of structures and the selective introduction or removal of streambank vegetation.”

“What you want is like a floodplain that is long and has vegetation,” said McDonald.

“Let the water do the work,” said Cornelius.

In some of the locations that are part of the Arroyo Chamisos project, once-steep banks have been converted to gentle slopes where “post vanes” have been introduced. In this construction, a series



Heavy equipment is part of the artillery in a city project to install erosion

of vertical juniper posts are installed eight feet deep.

control measures intended to create “induced meandering” in the Arroyo de Los Chamisos. This site is just west of Yucca Street. (Eddie Moore/Journal)

Rocks are dumped around the bases of the posts, fill dirt is added, then another layer of rocks and more fill, so only the tops of the posts are left above ground.

The result is a structure that works something like a guard rail along a highway, according to Cornelius. “As you’re changing velocity on the road, if you miss the curve and hit that guard rail and bounce back, you do slow down,” he said.

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The goal is for something like a ping-pong effect he says, as the slowed water flow is directed to the opposite bank, back and forth through the arroyo, theoretically slow enough to leave sediments behind, build a flood plain, reduce pollutants downstream and increase infiltration into the area aquifer.



“These are really simple techniques,” said McDonald of the post vanes. “Really, anybody can do them, but



This photo shows how rocks are used to shore up juniper posts to create an erosion control structure along the Arroyo de Los Chamisos. (Source: Santa Fe City Government)

we’re making them extremely deep. Some arroyos are on private property, and we’re really encouraging people to use these techniques themselves.”

Plantings will come

Riparian grasses and chamisa – somehow, that’s what the shrub that is the dominant plant species along the Arroyo Chamisos is called – will be seeded along the arroyo once the earth moving and construction is done.

“All of this work is really responsive to the citizens who wanted a more natural-like arroyo that was beautiful to look at and that was going to be effective toward the concern of ‘Don’t let it damage our homes, and properties and trails,’ ” said McDonald. “They also want it to be inviting to walk by and supportive of wildlife, where we have these kind of natural systems, which

have plants growing up between them, versus channelized situations.”

She emphasizes, “The top priority is to protect infrastructure and human safety.”

McDonald’s said she’s excited about citizen interest in the arroyo project and cites an “adopt an arroyo” effort undertaken by the Santa Fe Watershed Association.

It’s not just about picking up trash, said Andy Otto, the association’s executive director. The program is aimed at developing teams of volunteer residents or from schools to assess arroyos and then come up with solutions, “some things that are not going require a huge permitting process,” he said.

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Five teams have been formed and there was a training last fall. “The trash pick-up is important because it gets them out there and owning the arroyo,” Otto said.

Right now, some of the areas where the city’s arroyo work is taking place look less natural than before. The arroyo bed has been flattened out into a big uniform dirt surface, and



the chamisa, rocks, tree limbs,
other flotsam, sporadic
concrete chunks dumped in
the past and other junk – a
classic Santa Fe bumper



Erosion along the Arroyo de Los Chamisos, here just west of Santa Fe High School, has been eating away at the banks and threatening infrastructure. (Source: Santa Fe City Government)

sticker says “My other car’s in the arroyo” – are gone, along with island or sandbar shapes in the dirt.

McDonald and Cornelius said that will change.

“They’re going to come in and reseed all these areas where it’s appropriate,” McDonald said. “We know that chamisa spreads like wildfire out here.”

Referring to the arroyo bed, she said, “As soon as it rains, it’s all going to shift.”

“An arroyo’s a living system,” Cornelius said. “It’s always changing, it’s meandering, you get what’s called braiding in the arroyo. It’s changing. Every single storm will change it.”

The arroyo “will grow and shrink, grow and shrink,” he said.
“This adds a little control.”

Not all parts of the arroyo project use structures as “green” as the unobtrusive the post vanes. For instance, at a drop-off at one of the bridges over the arroyo behind Santa Fe High, big stacks of rock rip-rap bundled in wire are being used on both banks where there has been out-of-control erosion.

Big but attractive boulders are being used to shore up the banks at some points. There are sections where the city doesn’t own enough right of way along the arroyo to do the more sloped designs. McDonald calls the project a “gray-green” combination to harness the water flow.

“I like to think of it as a slow it, flow it, grow it,” she said. “You want to slow it, flow it where you want it and then grow things.”

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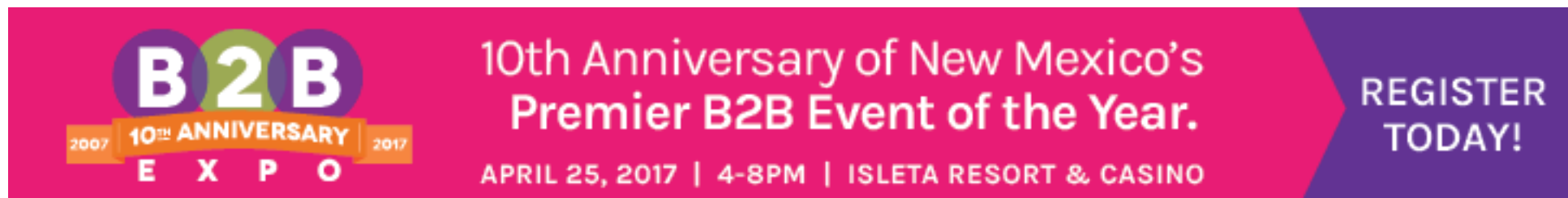
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