

# Showdown On The Grand Prairie

by Steve Taylor

*What is the Grand Prairie Area Demonstration Project? Learn about this controversial irrigation proposal in this in-depth report.*

**T**he interests of farmers, duck hunters, politicians, anglers, conservationists and others merge—maybe *collide* is a better word—in eastern Arkansas, where the debate over the U.S. Army Corps of Engineers' \$319 million Grand Prairie Area Demonstration Project is hotter than the August sun. A compromise earlier this year put on hold the Corps' plans to draw water out of the White River to irrigate about 240,000 acres of cropland. Other parts of the project are under construction now.

Arguments over environmental impacts on the river and its wetlands versus the water needs of the agriculture-based economy on the Grand Prairie continue, however. How we decide to manage water for farming, recreation and municipal and industrial use in the nation's leading rice-producing region will largely determine the Grand Prairie's economic and environmental future. And the Grand Prairie project isn't the only Corp project with the potential to change the White River—there's an even bigger set of snarls to untangle in the years ahead.

## How We Got Here

By 1927, studies already showed that irrigation for rice farming was draining groundwater from the prairie's alluvial aquifer faster than nature could refill it. Fifty years ago, Congress authorized the Corps of Engineers to step outside the boundaries of its typical missions and design an irrigation plan for east Arkansas. Since then, a series of studies and decisions to stop and re-start projects has taken us right back where we started. The aquifer shrinks more every year, and the lack of sustainable water still threatens the region's agriculture-based economy. And the notion of pumping water from the White River, which feeds one of the richest ecosystems on earth, onto the Grand Prairie still raises the hackles of outdoorspeople and scientists.

No matter how heated the debate becomes over details, no one quibbles with the Corps' most alarming predictions. By 2015, the alluvial aquifer

won't be able to sustain irrigation. If we do nothing, rice production will drop to 23 percent of current levels as farmers switch to crops that demand less water. Because Arkansas produces 40 percent of the country's rice, it would be a national issue with international trade implications. Farm revenues might shrink by \$46 million annually, in turn decreasing employment, farm equipment sales and service, land values and tax revenues. The reduction in rice acreage also would deplete a major food source for migrating ducks, which bring hunters, tourists and tens of millions of dollars into Arkansas every winter.

Studies also predict that farmers' pumps would run bayous and tributaries of the White dry in summer. A lowered aquifer and less surface water will threaten the Grand Prairie's wetlands. They're a resilient resource harboring incredible populations of fish and wildlife despite our efforts to transform a true prairie into farmland during the past 100 years. And once the unquenchable cropfields have depleted the alluvial aquifer, environmentalists fear the region's drinking water supply (the Sparta aquifer) will be next. All these consequences could occur by 2015 if we don't change water management on the Grand Prairie, shift away from its farm-based economy or accomplish some combination of the two.

## The Irrigation Project

The proposed solution is the Grand Prairie Area Demonstration Project, through which Congress has authorized the Corps of Engineers "to protect and preserve the Alluvial and Sparta Aquifers, to allow for continued irrigated agriculture in the Grand Prairie, and to provide waterfowl conservation benefits," according to the plan. The project would serve 1,000 farmers in Arkansas, Lonoke, Monroe and Prairie counties, although it took some strong politicking to get a meager 52 percent majority to support it. After completion, the White River Regional Irrigation Water Distribution District,

*Does a proposed irrigation project on the Grand Prairie threaten the lower White River basin, one of the largest floodplain forest ecosystems in the U.S.? That's one of many questions being asked about this controversial project.*



Keith Sutton

the project's local sponsor, would be in charge, operating equipment and metering and charging each farm for water.

The project's goals are straightforward, but the way it would accomplish them is controversial. A pumping station near DeVall's Bluff would draw water from the White River into a 650-mile network of canals, pipelines and existing waterways that would lead to irrigation and storage systems on farms. Plans include about 8,800 acres of water-storage reservoirs and other features to help farmers capture and recycle water. The Corps and a multi-agency environmental team have considered impacts on wetlands and wildlife. The project will provide fisheries in irrigation canals, build weirs in White River tributaries to conserve water and replace any wetlands destroyed with an equal number of acres with the same value to wildlife.

The most controversial feature is the DeVall's Bluff pumping station, capable of drawing 1,640 cubic feet of water per second from the river. The station would be required to stop pumping when the river falls below minimum flow levels established by the state Soil and Water Conservation Commission. The Corps calls water above those levels "excess," amounts it says can be removed without causing significant harm anywhere along the river. However, removing any water is the point that most upsets project opponents. The lower White River creates diverse habitat on par with the Amazon or Everglades, and its annual spring and fall floods feed wetlands that teem with plants, fish, birds and mammals.

Project sponsors have stated they will increase the acreage of harvested rice fields flooded each winter. The reservoirs, to be located on cropland in

most cases, would provide fish and bird habitat, reduce irrigated acreage and double existing storage capacity. With help from the Arkansas Natural Heritage Commission and University of Arkansas at Pine Bluff, 3,000 acres of canal right-of-ways will be planted with unique native grasses, sustained from special seed source plots. Farmers and the highway department may eventually use seeds from the plots to plant cover on levees and along highways, according to Edward Lambert, the Corps' project biologist.

Project funds will help farmers pay for more efficient water storage and use on their property. "Right now, they're building these features on their own with minimal federal help," says Jim Bodron, the Corps' project manager. "It's a 65 percent federal cost share for this project, so it will cost farmers less." And there are other economic benefits for farmers, according to Craig Uyeda, chief of the Game & Fish Commission's River Basins section. "When you get water and cost-shared water conservation features for your farm under the project, you also can use them for fishing lakes or duck hunting or to

create a dove hunting area and lease them out. We're trying to get farmers to realize there are some very positive economic benefits attached to features that support fish and wildlife. One farm at a time, when people see what their neighbors are doing for fish and wildlife, they're going to jump on the bandwagon, too."

Dr. Jim Bednarz, president of the Arkansas chapter of the Wildlife Society, says, "We support putting some marginal cropland into wetland conservation programs" to reduce irrigated acreage and rice production and drive up prices.

Colonel Dan Krueger, district engineer for the Corps' Memphis office, acknowledges the project's controversial nature and the Corps' duty to "control the project in accordance with the appropriations and authority that Congress and the president pass into law. I hope the public will keep in mind the concerns about impacts they've heard about, but I also hope they will think in terms of what not doing anything to protect the aquifer means. It's an out-of-sight resource that's so important to the eastern Arkansas agriculture-based economy."



Keith Sutton



Keith Sutton



Keith Sutton

*The Grand Prairie economy is driven by agriculture, and agriculture requires immense quantities of water for crops. Unfortunately, water demand has exceeded the supply. Underground aquifers are drying up, and new sources of irrigation water must be found if the region's farming is to thrive.*

## White River Withdrawals

Representatives from state and federal agencies helped plan the project, and environmental watchdog organizations have voiced concerns about removing water from the river, impacts on fish and wildlife, wetlands changes and water quality. Tom Foti of the Arkansas Natural Heritage Commission led a multi-agency team that studied the White River at Clarendon—the site of a reliable gauge—to model the potential impact of removing water from the river in an effort to answer questions beyond results of the Corps' hydrological studies. "One foot of water can make a significant difference in those flat bottomlands," he says.

The study examined years of historical climatic conditions and actual flows through the area near Clarendon. It also modeled how flows would have been without the dams—Beaver, Bull Shoals, Norfolk, Greers Ferry and others—upstream. Those dams release water from huge reservoirs to control flooding and generate electricity, which cause fluctuations out of synch with natural fall and spring flooding in bottomlands. "It's actually like a small flood in the summer in some places in that the water doesn't get up into the cropland, but it gets in the bottomland. Consequently, there have been stresses on hardwoods," Foti says.

Because the project would remove river water during summer, the peak time for irrigation, "it would actually move those waters back more toward their natural seasonal levels," Foti says. The results surprised Uyeda, the Game & Fish Commission's river basins expert. "We did the study as objectively as we could, expecting the results to be very different from evaluations based only on Corps hydrological data," he says. "The study showed us the project wouldn't have as many adverse impacts as we envisioned in the beginning." However, Foti warns, "The caveat to all this is that it only applies to the river upstream and downstream of the pump. We can't say for sure that the project is all good or all bad."

## Wildlife And Fisheries

The Corps promises to flood rice fields in winter to provide quality food and habitat for the world's largest concentrations of wintering mallards, but there are concerns about enough water for bottomlands further downstream. "From a duck perspective," says Foti, "if the project pulled water out of the bottomlands, there would be much less habitat for those birds to use to get ready to return to the breeding grounds." Lambert's answer on the behalf of the Corps is, "We could reduce or stop pumping at certain times during the waterfowl season." The Corps says pumping demand will be negligible during November ("only used for flooding rice fields for waterfowl"), and the pumping station will not operate in December. "Demands in January also are small and would, on average, impact the river by one-tenth of a foot or less."

Allan Mueller of the U.S. Fish and Wildlife Service warns that "any wetlands loss will be damaging to wildlife," but admits "fisheries values in the area are

pretty low." Some tiny, larval fish could be sucked into the pumping station, but the situation would be monitored, Lambert says. The construction of 250 weirs—partial dams in tributaries of the White to create pools of water for irrigation—may disturb or destroy native mussels. Bednarz, of the Wildlife Society, says, "The loss of a mussel species doesn't have the economic impact, as, say, the waterfowl, but there's an environmental and intrinsic value for the people of Arkansas in having those mussel species around. If you extirpate a species, you'll lose your chance to ever know what it could provide to help people." The society, which represents biologists and wildlife managers, has publicly opposed the project, as has the American Fisheries Society.

The U.S. Fish and Wildlife Service performed mussel surveys for the project and found potential impacts to be insignificant. The Corps has committed to additional surveys if deemed necessary by an interagency environmental team, and says, "Mussels would be relocated from weir construction sites as necessary."

## Prairie And Wetlands

"The impacts to the Grand Prairie will be minimal from pipes and canals," says the Natural Heritage Commission's Foti. "The Grand Prairie has a high ridge down the middle from north to south, and if the canal system stays on that ridge, it seldom has to cross many wetlands or riparian (streamside) areas." Lambert says, "We try to choose the alignment of pipelines to minimize their impact on woodlands. For example, we narrow the right-of-way from 50 to 25 feet in places where pipelines cross woodlands."

About 440 acres of agricultural land on multiple sites the multi-agency environmental team approved will be restored to bottomland hardwoods to mitigate wetlands losses from pipelines and storage reservoirs. Mueller understands why some landowners might resist placing reservoirs on existing cropland. "If I'm a farmer, I don't want to put a reservoir on the flat cropland I just cleared," he says. "I want it in that swamp over there." If reservoirs and other project structures damage wetlands, the Corps must mitigate this loss through bottomland hardwood restoration. But the results of such mitigation aren't immediate. "Restoration takes several years to get an area up to a functional level" that supports a rich variety of plants and animals the same way natural wetlands do, says Gregg Patterson, chief of the Arkansas Department of Environmental Quality's Environmental Preservation Division. The Corps doesn't have a formal system for monitoring the long-term results of mitigations, but "if the mitigation team suggested that we monitor the results of mitigation afterward, we would certainly work that into the project," Lambert says. The Corps does have "certain tree survival percentages that must occur before anyone could just walk away from a mitigation site."

The project plan promises minimum flows in the natural streams that would be used to gravity-flow water toward farms. The result would be more water available in some wetlands areas, especially

in summer when farmers sometimes pump small streams dry. There's also some risk of damaging those waterways by running too much irrigation water through them, Foti warns.

## Water Quality And Monitoring

"The Natural Resources Conservation Service is working on plans for every farm in the project area," says Bodron. "Each plan is more than just construction; it's a water needs analysis and complete water management plan." He says almost every farm will have a tailwater recovery system, which captures runoff in a pit and pumps it back onto fields or into storage. "Recycling water is a great idea," says Patterson, "but every time you recycle it, it becomes less clean and can contain more fertilizers and other chemicals." Fish and Wildlife Service spokesman Mueller agrees: "A classic problem with agricultural water projects is the buildup of salt and other contaminants that may leach into water from the soil. You use less water, but you can increase contaminants."

The University of Memphis Ground Water Center performed water quality analyses to address these

issues. According to the Corps, these analyses "of existing reservoirs where water has been 'recycled' for years did not indicate any buildup of insecticides or pesticides."

The project appears to—or eventually will—provide a monitoring program for almost any issue anyone raises. The quality of farm runoff water, the groundwater in the aquifers, siltation in natural streams that will carry irrigation water, populations of mussels, movement of upland hardwoods toward bottomlands due to changes in water levels, impact on migrating shorebirds and ducks and many more potential environmental and wildlife impacts are candidates for monitoring and reports.

## A Project Compromise

Earlier this year, major players in the project met with U.S. Representative Jay Dickey and reached a compromise that ensures no water will be pumped from the White River—for now. Randy Young, executive director of the Arkansas Soil and Water Conservation Commission, suggested the compromise, which halted construction of the pumping station, canals, pipelines and other infrastructure.

Meanwhile, the Natural Resources Conservation Service continues to develop farm plans. Construction of on-farm water conservation systems is underway, with an immediate goal of reducing groundwater use on a farm-by-farm basis. The Corps is conducting an engineering review of other water sources, including the Arkansas River. "The engineering review is to make sure we haven't overlooked other water resources to protect the aquifer and protect the agricultural-based economy that we're all working to ensure for the future," says the Corps' Krueger.

"The Arkansas River was originally considered (for the Grand Prairie project), and we'll look at today's conditions or concerns and see if we need to change our project," Bodron says. The Arkansas already has a minor role; Dickey asked Congress for money to divert water from the river to the International Paper Company plant in Pine Bluff to quell the plant's daily thirst for millions of gallons of groundwater. Even the most vehement project opponents have applauded the compromise, which may signal a new chapter of better cooperation in this project's long and convoluted history.

## The Even Bigger Picture

Believe it or not, there's an even bigger, more complex picture. "There are at least six (Corps) projects, basin-wide, in the Delta region of Arkansas alone," says Hugh Durham, director of the Game & Fish Commission. "We need to understand the impact of all of them." That's why the Grand Prairie project carries the "demonstration" designation. If it's built, it'll prove whether other projects should mimic some of its features.

Not all the projects are active, though. One that involves Bayou Meto is underway, and the Corps' Memphis district is studying ways to channelize the White River for barge traffic—another hotly debated idea with benefits that appear to serve only a small group. The Little Rock district is studying minimum

## East Arkansas Aquifers

Aquifers are geologic formations that store and transmit water underground. Millions of years ago, the Mississippi River formed our Alluvial Aquifer, deep layers of gravel and sand that hold enough water to irrigate about 240,000 acres of Grand Prairie cropland annually—for now. By 1927, less than 25 years after we started pumping water out of the aquifer onto rice fields, studies proved alarming declines in groundwater. We continue to draw water from the aquifer much faster than nature can recharge it.

On average, the Grand Prairie has 10 or 12 inches of topsoil under which lies a layer of clay 10 to 100 feet deep, an ideal situation for rice farming because the clay tends to keep water near the surface. However, because water drains so slowly through the clay cap, the underlying aquifer also refills slowly. The Alluvial Aquifer lies below the clay and holds billions of gallons of water in layers of sand and gravel 60 to 140 feet thick.

The Sparta Aquifer lies even deeper in the Grand Prairie and stores more water in layers of sand under the Alluvial Aquifer. It provides municipal water for east Arkansas communities and industry. When the Alluvial Aquifer no longer can provide enough water for irrigation, many conservationists fear farmers will turn to the Sparta and deplete it, too. That's why better management of water and opportunities to convert farmland to other profitable uses are so critical to the Grand Prairie's economic and environmental future.



Susan Brenholts

*The entire breadth of Roth Prairie Natural Area is captured in a single photograph. Seeing this tiny remnant of the original Grand Prairie surrounded now by farmland, one can better understand the enormous changes the region has undergone during the past century. What changes will we witness in the future?*

flows on the upper White to benefit trout fisheries, which would likely change flows in the lower river.

"The days of looking at individual projects through the narrow scope of each project, without looking at the overall effects on entire watersheds, are over," says Gregg Patterson. "You just can't dole out water resources to single stakeholders without considering all the others."

Lambert understands. "If the Grand Prairie project were in place, you'd have to look at the effects of any newly authorized projects along with the effects of this project."

Many project participants hope Congress has funded a comprehensive study of eastern Arkansas's water and environment by the time you're reading this article. "By itself, the Grand Prairie project may not have much impact, or it may be the one straw that broke the camel's back," Durham says. "The comprehensive study has the broader view we need to understand the impact ... of all the projects. Until all the studies unfold, we don't have an official position on the Grand Prairie project."

Although Krueger says, "We're not in favor of stopping all efforts and waiting on the comprehensive study," he admits, "We see there is merit for it." The Corps' Lambert also supports the study, but warns, "The groundwater shortage is critical." Everyone understands that a comprehensive study needs to be thorough and quick, a difficult combination for any bureaucratic project.

Opponents might be surprised by this assurance from Krueger: "If there's a better project out there to be undertaken in terms of water resources, we want to look for that. We want this to be the best project for Arkansas when many perspectives are taken into consideration."

But it may take years to work through all the details and controversies. And, as the Game & Fish Commission's Uyeda says, "When you're working with nature, there are always uncertainties. You do the best studies you can, design a good monitoring plan and hope it turns out right if you build a project like this one." ■