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Sustainable Solutions for the San Jacinto

Article by Wendee Holtcamp, Photos by Wendee Holtcamp and Bryan Carlile/Legacy Land Trust (c) 2006

Seeing the San Jacinto River from a bird's eye view made one thing clear: although sand mines have eaten huge chunks out of the bottomland hardwood ecosystem, extensive swaths of forest still remain. Early biologists delineated the San Jacinto as the Big Thicket's historic western boundary, and today the forested region between Spring Creek and the San Jacinto is known as the "Little Thicket." The Bender family heirs own most of the Little Thicket. In the 1800s this logging family floated logs downriver to a sawmill where the Bennigan's restaurant at Highway 59 sits today.



At 20,000 acres, this forest is literally Houston's last remaining roadless wilderness. Without active preservation, it won't stay long. Besides the 3,000 acres of sand mines along its edge and suburban development starting to eat away at its interior, most of the land is for sale. The Bender heirs just sold the several thousand-acre Bahr tract, which borders the confluence of Spring Creek and the San Jacinto directly across from Harris County's Jesse Jones Park and Nature Center, to a development company.

Several rare species use the Little Thicket and the riparian forests along the San Jacinto, including nesting bald eagles, wood storks, white ibises, and Swainson's warbler. A stopover for neotropical migratory birds just crossing from the Gulf of Mexico, the forests boast a stunning diversity of tree species -- including the American hornbeam, two-winged silverbell, river birch, black tupelo, southern magnolia, sugarberry, cottonwood, flowering dogwood, sumac, black cherry, mulberry, bald cypress, hollies, elms, ashes, hickories, oaks, and pines, to name a few.

In 1858, Phillip Paxton wrote the following about the Big Thicket:

Thank heaven there will long be many a dense thicket, where bears and panther, wolf and wild cat, may find refuge; many a prairie where gentle doe and timid fawn may rest in peace; many a broad league of primeval forest, where stalwart oaks and lofty pines will rear their lofty heads proudly, and in safety from the desecrating axe.

Paxton miscalculated how quickly the original Big Thicket -- and the wildlife it sheltered -- would become fragmented and disappear. Less than 150 years after Paxton recorded his thoughts, only 300,000 acres of the original 3 million remain, with but 97,000 acres of this primeval forest preserved within the Big Thicket National Preserve. The bears and panther, wolf and wild cat that Paxton speaks long since have vanished from most segments of the forest -- though bobcats still roam the Big and Little Thicket.

Forested watersheds not only provide wildlife habitat, they also help protect human life from flooding and improve downstream water quality. New York City opted to permanently protect over 143,000 acres of upstream forest rather than building a new water treatment facility. According to the World Bank/World Wildlife Fund 2003 report, *Running Pure: The importance of forest protected areas to drinking water*, a new plant would have cost \$6-8 billion to build plus \$300-500 million annual operating costs, whereas preserving the land cost \$1-1.5 billion over ten years.

The WWF report analyzed watershed protection in several international cities including Houston: "Protected areas play no role in supplying the city with water. ... The EPA's Index of Watershed Indicators has determined that a major Houston-area watershed, the Buffalo-San Jacinto Watershed, has serious contamination problems."



The Buffalo Bayou segment of the San Jacinto watershed lies in a heavily developed area. The research is indisputable: forests clean water and protect watersheds, and removing riparian forests has the opposite effect. According to the report, "The majority of the world's population live downstream of forested watersheds and therefore are susceptible to the costs of watershed degradation." The report discusses the 'payment for ecological services' (PES) system used in Latin America, with interest growing throughout the world, where landowners are paid for the ecological services forests provide. "The central principles of the [PES] approach is that those who provide environmental services should be

compensated and those who receive the services should pay for their provision," writes Stefano Pagiola, Environmental Economist with the World Bank, in the report. (*Photo by Wendee Holtcamp*)

Could PES be used in Houston to make it economically worthwhile for the Bender heirs or other landowners to protect and preserve the forest rather than lease it to sand miners or sell it to development companies? "Although the approach is intuitively appealing, putting it into practice is far from simple," writes Pagiola. "A large number of building blocks need to be in place, including a strong understanding of the underlying relationship between land use and service generation, an economic analysis of the benefits these services provide to users and of the cost to land users of providing them, and the creation and strengthening of the institutions required."

The system makes most sense when upstream actions affect downstream flooding or water quality (versus if the downstream region is undeveloped). Also the report explains, "Water benefits are easiest to capture when users are already organized...and when payment mechanisms are already in place. Payments for the water service can then simply be added to existing channels – for instance domestic water users can be charged an additional fee for conservation, or more generally part of the revenue for water fees can be allocated to conservation."

Houston's drinking water via Lake Houston, fed by the San Jacinto, has had taste and odor problems and the costs of cleaning it have been triple that of other water treatment facilities for Houstonians' water. Removing additional forest from the watershed – for sand mines or development - will inevitably continue to increase runoff and degrade water quality.

Citizens downstream bear the brunt not only of poorer water quality but of increased flooding caused by upstream actions. Flood risk increases when forests are replaced – whether by housing communities, or sand mines.

"The best thing is to let the floods happen the way mother nature intended," says SJRA's Reed Eichelberger. "These are floodways and you don't build in them." Despite this widespread knowledge, developers continue to build homes next to rivers and in low-lying flood-prone areas. Several new developments are underway in the Little Thicket and along the San Jacinto River, including Spring Trails master planned community and a Friendswood Development Corp. subdivision near Kingwood. Midway cut forests right up to the river's edge to build Kings Harbour, a mixed-use waterfront village in Kingwood.

"New development is regulated with the intent that it does not create any new flooding potential, either for itself or anyone else," explains Mike Talbott, Director of Harris County Flood Control District (HCFCD). Developers must create stormwater detention ponds to offset the impact of their developments on runoff, and some will elevate land out of the floodplain by adding soil, or build their development outside of the 100-year floodplain on the FEMA maps.

But Mother Nature isn't a fine connoisseur of map lines, and her watery downpours fall as they may. Catastrophic flooding in 1994 in the Atascocita-Kingwood area - causing \$32 billion in damages, 22 deaths, 15,775 homes damaged - exceeded the 100-year floodplain by 1.1-1.8 times. Extensive flooding occurred in the same region again in November 1998.

Development and sedimentation in the San Jacinto watershed exacerbated the 1994 flooding, according to the 2000 report, *Regional Flood Protection Study for Lake Houston Watershed Flood Program*, completed for the City of Houston, San Jacinto River Authority (SJRA), Harris and Montgomery Counties. The study reported that sedimentation decreased the conveyance volume of the watershed by 3,100 acre-feet since the 1970s, and raised the 100-year floodplain by one foot elevation. The report characterizes this as "relatively small."

The tragic Mississippi River floods of 1993 in the Midwest U.S. – deluges that killed 38 people, caused \$15 billion in damage, and left more than 100,000 people without homes – catalyzed a flurry of research on our nation's flood-control methods. The landmark 1994 interagency Galloway Report recommended a shift in the national approach to flood control toward more non-structural methods, including rainwater detention ponds, voluntary buy-out of homes along the waterway and returning floodplains to their natural state. It discouraged building in heavily flood-prone areas in the first place.

After hurricane Katrina in 2005, retired Corps of Engineers Brigadier General Gerald Galloway said in a TV interview that the interagency Galloway report's major recommendations were largely ignored, although the federal government did increase funding for buyout of flood-prone homes. "What's the most interesting thing about floods, the half life of that memory of the flood is very, very short.... They've gone on to some other crises," Galloway laments in the interview.

After the Galloway Report, some state flood control agencies shifted toward more sustainable approaches. Harris County Flood Control District (HCFCD) aims for "no adverse impact," which is also a nationwide campaign of the Association of State Floodplain Managers. "The Flood Control District recognizes the natural and beneficial values of riparian forests and has a program to acquire floodplain property when appropriate," says Talbott.

Houston lies in one of the most flood-prone regions of the U.S.. In a 2005 paper, Marshall Frech, head of the Flood Safety Education Project with the Corps of Engineers, recites facts learned while producing the documentary *Texas Flood: Texas leads the nation in flood-related deaths and damages almost ever year; 6 out of 12 of the world's record rainfall rates in 24 hours or less are from Texas; and Texas has nearly 8 million structures in floodplains.*

Frech recognizes that flood safety messages – especially 'Don't build in the floodplain' – can sound anti-growth or anti-business. "One of the most pervasive problems in floodplain management is that so many layers of business have profited substantially from developing (and later redeveloping) housing in floodplains...Local entities have also profited greatly from the increased taxation on this whole chain of events. Most all these entities have the added luxury of not being liable for the ultimate flood risk, which is passed on to the homeowner (and the general taxpayer in the case of disaster declaration)."

Reclaiming the pits

Preserving forests along watersheds can protect downstream citizens, but so can reclaiming abandoned sand pits. Once sand mines have harvested all the sand in an area, they leave a massive scarred landscape behind. Because they do not replace topsoil, and no law requires reclamation in Texas for sand mines, nothing regrows naturally.

The EPA offers Brownfields redevelopment grants to make polluted and mine-scarred lands more marketable for redevelopment. According to the EPA website, "EPA's preliminary view is that 'mine scarred lands' are those lands, associated waters, and surrounding watersheds where extraction, beneficiation, or processing of ores and minerals...has occurred."

According to the 2000 report on the San Jacinto River "These sites typically have low assessment of property values and no development potential." Brownfields funding could be used to get abandoned

sand mines into a shape where they could be restored and preserved as nature preserves or sold to environmentally sensitive developers.

The Mineral Information Institute website shows several reclamation success stories where abandoned sand pits were converted to wetlands, upscale housing projects, golf courses, resorts, office parks, and recreation facilities. Such projects have occurred nationwide, including Ohio, Indiana, New York, Georgia, North Carolina, Illinois, California, Colorado and Michigan. One such project even exists in San Antonio, where they turned a century-old limestone quarry into the Quarry Golf Course (although because golf courses contribute so much water use and chemical herbicides, such reclamation would not necessarily be an optimal solution upstream of Houston's water supply).

Sand mines can operate in a far more sustainable manner than occurs in Texas. Despite excavating 100 feet away from the Applegate River in Oregon, a 1997 flood merged the river with Copeland Sand and Gravel's borrow pits. The company met with state agencies and developed an enhancement project that would allow them to continue mining while enhancing wildlife habitat and preventing declines in water quality. "Copeland hauled in logs to provide fish habitat in the alcoves, put topsoil on the banks and planted willow, cottonwood and alder trees along the banks to provide stability, shade, and wildlife habitat" says the MII website. "This project showed that industry and regulatory agencies can seek solutions together in the face of environmental concerns." The company earned multiple awards for the project.

Another option for reclaiming old pits involves carbon sequestration, whereby utility companies plant trees to offset their carbon emissions, and/or to invest in the global carbon trade market. Similar to PES – Payment for Ecological Services – carbon sequestration involves reforesting land versus payment for keeping the forest in place. Such efforts have taken place worldwide and throughout Texas and the U.S., and projects could benefit some landowners with abandoned sand pits on their property. The Greater Houston Partnership and HARC held a conference on carbon sequestration in November 2005 to raise awareness and enhance interest in such projects for Houston, and according to Beth Whitehead of GHP they have already discussed putting on a second workshop.

The Little Thicket: The Big Thicket's Salvation?

In 1960, Texas Governor Price Daniel visited Yellowstone, which piqued his interest in increasing tourism to Texas via the Big Thicket. He said that with the restoration of native game such as bear, bobcat, and mink, a park in the region could rival Yellowstone. It took over forty years, 28 Congressional bills and one murdered champion magnolia tree before the Big Thicket National Preserve was finally established in 1974. Rather than a single large park, the National Park Service (NPS) preserved a "string of pearls" which set aside separate Units along the rivers. But today, the Big Thicket National Preserve suffers from anonymity among more prominent national parks nationwide. Price had predicted over 2 million visitors, but today, the park receives just over 100,000 visitors annually, a mere 5 percent of what was hoped for.

Senator Hutchison just got \$2 million allocated to acquiring lands for the Big Thicket for the 2006 Congressional budget, a pattern repeated over the past few years. Adding land near the existing preserve helps protect the existing 'pearls' as timber companies have started parceling off and selling the surrounding forested lands, but could preserving the Little Thicket as a new Unit – just minutes from Houston's Intercontinental Airport - be the Big Thicket's salvation?

The San Jacinto River is the Big Thicket's historic western edge, according to a 1938 survey by biologists Victor Cory and Hal Parks. The Sierra Club dubbed the Little Thicket a "Special Place of Texas" in a recent report on the state's most critically endangered landscapes. Preserving the Little Thicket would not only reduce the region's flood risk and protect citizen's drinking water, it could preserve wildlife habitat, create recreational opportunities, provide tourism income to the city, and even become a national treasure.

The travel industry brings in \$44 billion annually to the Texas economy and many Houston plans - Houston Environmental Foresight, Imagine Houston, Blueprint Houston - have decried the lack of greenspace in the city. Texas ranked 49th in per capita spending on parks, according to a 1998 study. Is it perhaps time to stop spending time and money on more plans and visions, and start implementing

them?

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LINKS

World Bank Environmental Economics Page: www.worldbank.org/environmentaleconomics

Reclamation Stories on the Mineral Information Institute:

www.mii.org/sandg/sandgr.html

www.mii.org/reclindus.html#Sand%20and%20Gravel

Association of State Floodplain Managers

www.floods.org

Flood Safety Education Project

Houston Carbon Sequestration Workshop

Special Places of Texas Report

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