Louisiana Geological Survey

Active in East Baton Rouge Pa[illegible]h, Louisian[illegible]

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Introduction

A fault is a relatively thin boundary–an essentially planar zone o[illegible]in three dimensions–along which rocks rupture to produce two blocks that m[illegible]e to one another. East Baton Rouge Parish, which includes the capital seat of Lou[illegible]an urban area that has undergone substantial development in the past decad[illegible]ersed and impacted by at least two faults (figure 1). These faults are known to be ac[illegible]pparently do not produce earthquakes. The parish is underlain by coast-parallel [illegible]formed by deposits of the Mississippi River and smaller coastal-plain streams from [illegible]nt geologic past, and these elevated terraces are incised by the bottomlands of the ri[illegible] streams, in which sediment is still being deposited today. The Prairie Terrace is ex[illegible]ver most of East Baton Rouge Parish and is broken by the Baton Rouge fault and th[illegible]am Springs-Scotlandville fault, which are collectively referred to as the Baton Rou[illegible]t system.

The individual faults are recognizable at the surface in the parish as [illegible]pments (long slopes that are fairly continuous and comparatively steep, facing in a cons[illegible] direction and separating more gently sloping surfaces on either side) having disti[illegible]e topographic expression (figures 2, 3). They were first described in the mid-1950s,[1] [illegible]hich time they were corroborated by subsurface information that had been produced in conjunction with the exploration for oil and gas. Though they do not produce detectable earthquakes, these faults are known to be active because of the cumulative damage done to structures located on and near certain fault segments over periods of years and decades. Examples of such damage include cracked road pavements, foundation slabs, and walls.

fault. Heinrich (2000) found the same pattern of displacement for the De Quincy fault in southwestern Louisiana, though his data did not extend deeply enough to reach the initial interval of growth faulting.

Faults other than the Baton Rouge and Denham Springs-Scotlandville faults have been postulated in East Baton Rouge Parish but remain speculative. Some of these could be faults that have become inactive, and some could be active faults with very small displacements, associated with but subsidiary to the known faults. The Baton Rouge fault and the Denham Springs-Scotlandville fault not only constitute an important aspect of the geology of the area, but knowledge about them is essential to developing strategies for fault-hazard risk assessment and damage reduction. Detailed mapping of the faults at the surface provides a framework useful for formulating and evaluating such strategies in the location of structures on and near the escarpments, which are termed fault-line scarps.

Recent Investigations of Baton Rouge Area Faults

Excellent detailed mapping of the surface faults in East Baton Rouge Parish was done on lot-and-block maps at a scale of 1 inch=400 feet for the city-parish Department of Public Works in the early 1980s.[2] Later mapping done at 1:24,000 (1 inch=2000 feet) in the early 1990s was an attempt to revise the preexisting mapping at the scale of standard 7.5-minute quadrangles, based on a systematic use of consistent recognition criteria and without emphasis on structural damage as the primary criterion. This rendering of the faults made use of characteristic topographic patterns observed for the fault-line scarps and was incorporated

decrease as a result of such changes. This would have accelerated the apparent relative movement observable at the surface. The authors of the report estimated that the preexisting (pre-European settlement) rate of movement was about 2.5 centimeters (1 in.) every 400 years.

It appears that at present certain fault segments may be active and others relatively quiescent, although this is an anecdotal suggestion rather than a rigorously demonstrated finding. There are places along the trace of the Baton Rouge fault where homes 50+ years old, according to their present owners, have never had structural problems; and there are other places where homes less than 25 years old have reportedly had such problems almost from the time their construction was finished. Thus far no law requiring disclosure of faults or fault-related damage on properties, analogous to the disclosure law applicable to flood zones and flooding, has been put into effect.

Possibilities for Future Research

Research on these faults in the future will likely include the search for and experimentation with potential instrumental alter-

[4] Heinrich 1997, 2000
[5] Heinrich 2000

Sources and Additional Information

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