Volume 28

Louisiana Geological Survey

NewsInsightsonline

2018

The Louisiana Geological Survey (LGS) was originally set up in 1869 and was later officially established by the Louisiana legislature in 1934 (Act 131). LGS is presently a research unit affiliated with Louisiana State University having been legislatively transferred in 1997 from the Louisiana Department of Natural Resources. LGS currently reports through the Executive Director of the Center for Energy Studies to the LSU Vice President of Research and Economic Development.

LGS Mission Statement

The mission and goals of LGS are to preform geological investigations that benefit the state of Louisiana by:

- Encouraging the economic development of the natural energy, mineral, coastal, water, and environmental resources of the state through appropriate research projects;
- Provide unbiased geological information on natural and environmental hazards and other issues as and when called upon to do so by state, federal, or other agencies and private companies and citizens;
- Ensure the effective transfer of geologic information through research publications, presentations at professional conferences and other meetings, production of geologic maps, etc.

LGS currently has 13 full time and 3 part time staff including all categories of personnel.

Louisiana Geological Survey
Earth Science Serving Louisiana
1934

The Louisiana Geological Survey

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The LGS NewsInsights is published annually and made available to professionals, state agencies, federal agencies, companies, and other organizations associated with geological research and applications. It is accessible at lgs.lsu.ed.

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In this issue

LGS Mission Statement

The goals of the Geological Survey are to perform geological investigations that benefit the state of Louisiana by:

(1) encouraging the economic development of the natural resources of the state (energy, mineral, water, and environmental);

(2) providing unbiased geologic information on natural and environmental hazards; and

(3) ensuring the effective transfer of geological information.

The Louisiana Geological Survey was created by Act 131 of the Louisiana Legislature in 1934 to investigate the geology and resources of the State. LGS is presently a research unit affiliated with the Louisiana State University and reports through the Executive Director of the Center for Energy Studies to the Vice Chancellor for Research and Graduate Studies.

Cover photo: Southwest Pass 2007 by Robert Paulsell

Contracts/Grants

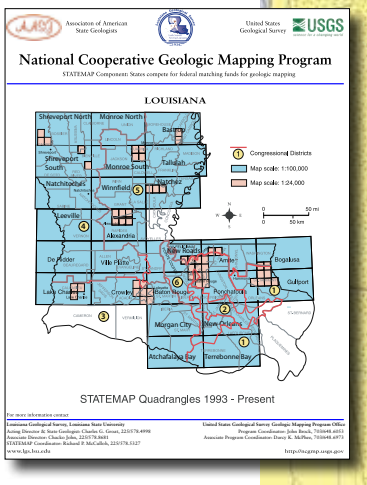
Geologic Mapping

Surface-geologic mapping projects conducted by the Louisiana Geological Survey (LGS) during the past 20 years comprise 1:100,000-scale compilations of 30 × 60 minute geologic quadrangles and 1:24,000-scale fieldmapped 7.5-minute geologic quadrangles. The vast majority of these mapping efforts were funded under the STATEMAP component of the National Cooperative Geologic Mapping Program (NCGMP), begun in 1993 and administered by the U.S. Geological Survey (USGS).

The principal goal of this program of geologic mapping for LGS initially was to prepare statewide surface geology coverage at 1:100,000 scale in 30 × 60 minute quadrangle format. This scale was emphasized because it is at the large end of the range of intermediate scales, and preserves abundant detail from source mapping done at larger scales (principally 1:62,500 and 1:24,000) while yet covering relatively large areas. By the close of FY 2013, LGS had completed 30 × 60 minute geologic quadrangle coverage of the entire state (30 sheets total) with a mix of published lithographs and draft open-file compilations.

Since the late 1990s LGS also has prepared 7.5-minute geologic quadrangles at 1:24,000 scale totaling 62 sheets. Fifty-two were prepared with STATEMAP support, and the other ten were prepared for the U.S. Army Corps of Engineers within the Fort Polk region, southcentral Louisiana.

The STATEMAP 2017–2018 deliverables completed and submitted included geological maps and pamphlets covering five 7.5 minute quadrangles in two study areas (the greater Lafayette area in southwestern Louisiana and the southern Baton Rouge area in southeastern Louisiana).



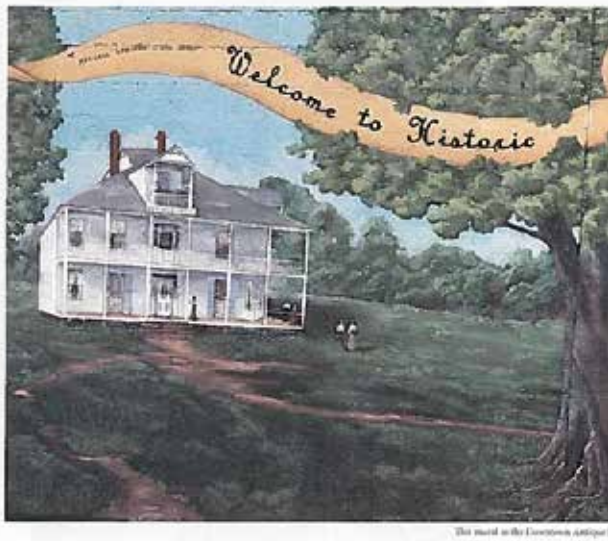
Surface Mapping

LGS has published several series of surface geologic maps in various scales over the decades that have been of great use to the geologic community. However, it has been recognized that traditional geologic mapping is not always well understood by non-geologists seeking information relevant to their needs. This can be addressed with a "non-traditional" geologic map emphasizing landforms rather than age, stratigraphy and lithology. Landforms are described by the appearance of their surfaces, their position in the topography, the processes that created and shaped them, and the ecosystems they support.

These landforms are key to understanding natural systems in a state like Louisiana with generally subtle relief, very similar deposits at the surface, and widely obscured by dense sub-tropical vegetation. Landforms exert tremendous influence and control on soil development, drainage, natural vegetation patterns, wildlife habitats and the occupation patterns of indigenous peoples. They affect subsequent human developments such as agriculture, forest management, highway patterns, and the suburban sprawl into wetlands. Landform recognition is essential to the research and engineering efforts that help manage Louisiana's coastline and rivers.

LGS will soon publish Landforms of the Louisiana Coastal Plain in an effort to meet the requirements of coastal scientists that need to better understand how geology relates to their areas of interest. The mapped landforms help define Louisiana's extensive riverine and coastal floodplains, areas that are subject to episodic stream flooding and hurricane storm surges. They also offer insight into the increased flooding potential of very flat upland regions that retain such low gradients that they can still flood during extreme rain events.

The intent is to produce maps that have relevance to a wider target audience, including the general public.

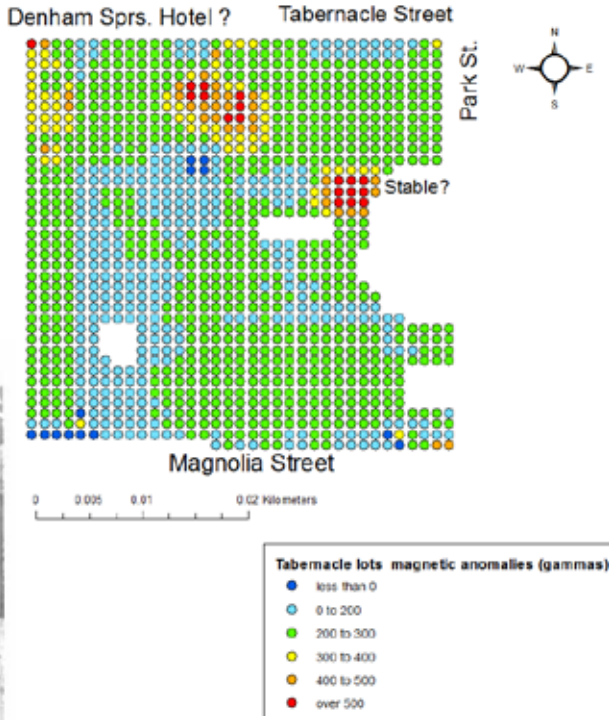


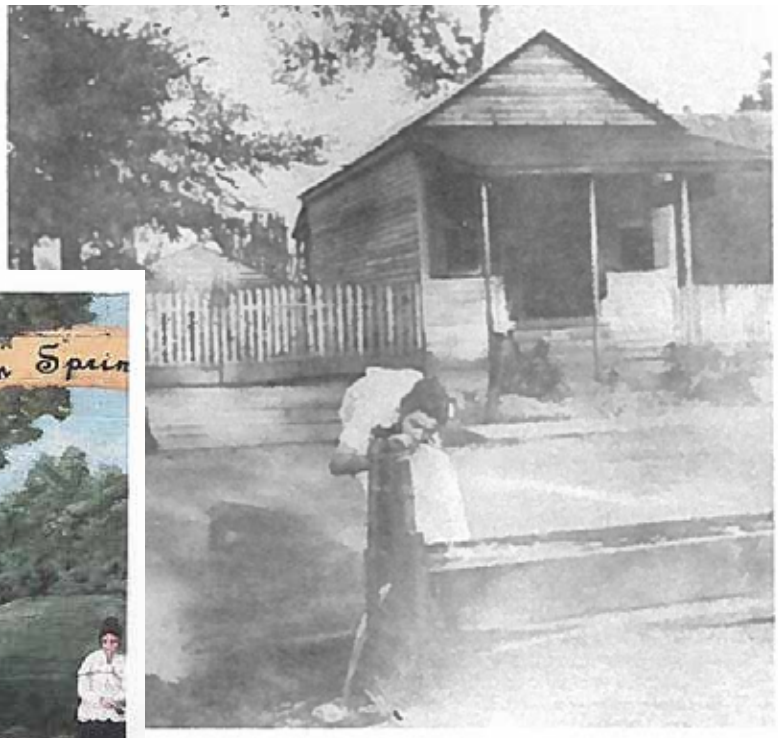
Environmental scientists, coastal engineers, planners, and decision-makers working in coastal Louisiana may find that landform awareness is highly relevant to the issues that they are examining, such as subsidence, flooding, erosion, habitat change, natural hazards, and land loss.

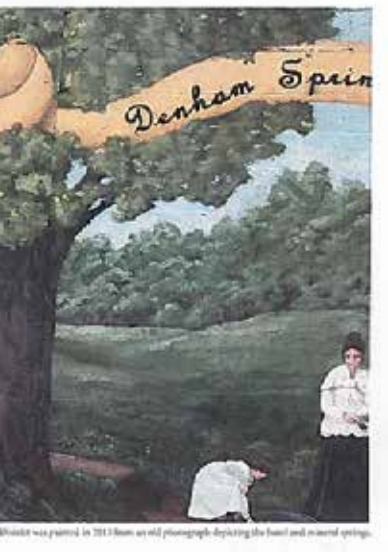
Water Resources

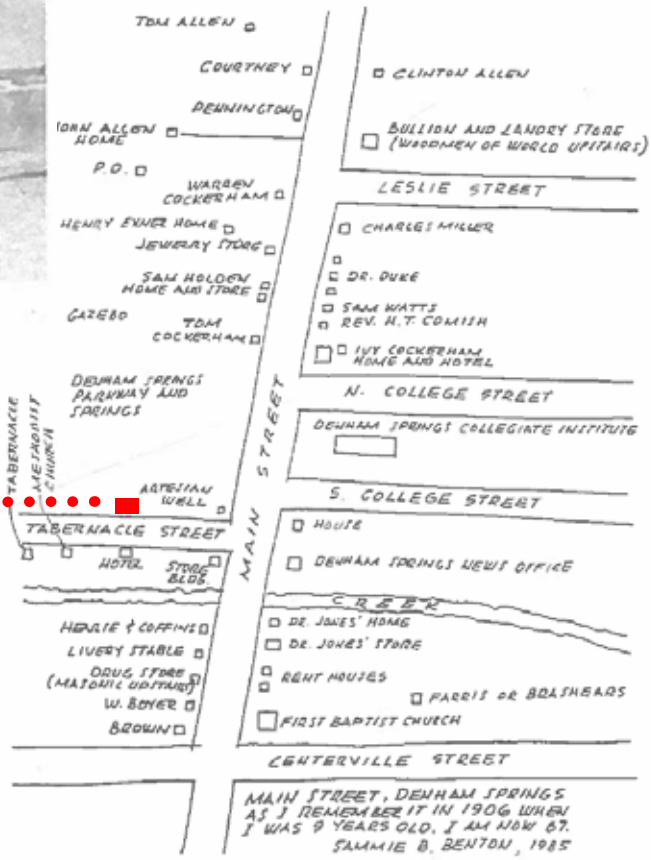
Denham Springs Historical and Spring Study

This is a study near the Amite River funded by the City of Denham Springs to determine location of historical sites and examination of spring water chemistry. Five springs within Spring Park have been sampled twice and water has been analyzed for over 20 different analytes. Water samples have also been collected and analyzed from the city's six water wells. These samples were collected in the summer of 2018. In the fall of 2018 a series of magnetic surveys will be completed to determine location of where an early water well was located within Spring Park and the location of two nineteenth century hotels that hosted tourists that came to Denham Springs to receive the believed health benefits from bathing in the spring water.









Trends in Hydraulic Fracturing

There is an ongoing investigation of trends with hydraulic fracturing (HF) in the state of Louisiana with a focus on the eight parishes: Bienville, Bossier, Caddo, De Soto, Natchitoches, Red River, Sabine, Webster that the Haynesville shale gas play lies in. After approximately ten years of Louisiana Department of Natural Resources collection of sources and volumes of water used for hydraulic fracturing it is possible to determine trends (HF) for Haynesville Formation (shale) as well as other units: Cotton Valley Group (mainly Bossier Formation/shale); Wilcox Groups, and Hesston Formation. There is also nine years for FracFocus data analyzed for trends within the chemistry of reported fracture solutions. FracFocus is a voluntary online data base where contractors report site location, volumes of water used, depth of fracturing and water chemistry of solution for fracturing. Results have been presented at regional and national professional meetings as well as variety of conferences in Louisiana.

Mississippi Alluvial Aquifer Study

The regional study of the groundwater within the Mississippi Alluvial Aquifer in a nine parishes region: Catahoula, Concordia, East Carroll, Franklin, Madison, Morehouse, Richland, Tensas, West Carroll in northeastern Louisiana that is funded by the Louisiana Water Institute. This project involved sending letters to owners of private wells and contacting public supply managers requesting permission to sample their wells. At present the first phase of contacting private wells owners has been completed which has yielded results for 78 wells. Private well sampling was completed between October 2017 and March 2018. The second phase of contacting public supply mangers will begin shortly in the fall of 2018 and should be completed in the spring of 2019. Each of the samples was and will be analyzed for 25 analytes: aluminum, arsenic, barium, boron, cadmium, calcium, chromium, cobalt, copper, iron, lead, magnesium, manganese, nickel, phosphorous, potassium, silicon, sodium, strontium, vanadium, and zinc. Preliminary results will be present this fall at meeting in Shreveport. The final report will be submitted to the Louisiana Water Institute and for publication as an LGS report and possibly in appropriate journal.

Geologic Studies

The LGS has continued to study diverse range of topics that considered important to understanding the geology of Louisiana. For example, joint research with the LSU Department of Geology and Geophysics the University of Texas, Austin, Department of Geology concerning the age and origin of the Sabine Plate was published in Geology. More recently, the results of research conducted with Texas A&M University and Brigham Young University-Hawaii on the age, extent, and stratigraphic significance of the a volcanic ash bed, exposed in Rapides Parish and known as the "Chalk Hills Member" of the Catahoula Formation, has been accepted for publication in the Journal of Geology. A monograph about the Quaternary stratigraphy and geoarchaeology of the southwest Louisiana continental shelf currently in preparation for publication by the Bureau of Ocean Energy Management. Research is continuing with the the LSU Department of Geology and Geophysics on a suspected extraterrestrial impact crater in St. Helena Parish.

The St. Helena crater is the only known meteor crater in Louisiana and one of only 176 on earth. This type of meteor impact occurs once every 2000-6000 years.

New Oil & Gas Map of Louisiana

The 2008 Oil & Gas Fields Map has been updated and a new 2018 map has been compiled and is in the process of final editing and review.

Energy

Integrated Carbon Capture and Storage in the Louisiana Chemical Corridor

This 26 month project commenced in February 2017 and is funded by the US Department of Energy and LGS researchers are participants in this multidepartment project headed by the Center for Energy Studies. Other LSU departments on the project team include the Department of Engineering, Department of Geology & Geophysics, Department of Environmental Science and the Law Institute.

The objectives of this project are (1) to develop a multidisciplinary team of stakeholders with interest in carbon capture and storage in the Louisiana Chemical Corridor along the Mississippi River, (2) to analyze the technical and economic feasibility of an integrated carbon capture and storage project that captures 50 million tons of CO2 from one or more industrial sources, transport it via pipeline and store it in underground saline reservoirs in existing hydrocarbon fields, and (3) to provide a geologic evaluation using publicly available geologic data for the potential for CO2 storage in saline reservoirs found in oil and gas fields in South Louisiana.

The LGS role in this project is to provide a geological evaluation of selected saline formations with requisite shale seals in Bayou Sorrel (Iberville Parish) and Paradis fields (St. Charles Parish) situated along the Mississippi River industrial corridor. This area has a concentration of petro-chemical industries that generate large volumes of CO2 emissions which would be the source for CO2 needed for sequestration. LGS researchers have completed the geologic evaluation of the selected saline reservoirs in the two fields based on publicly available data and literature. The top of the brine sand reservoir evaluated at Bayou Sorrel lies at a depth of 7300 feet and is approximately 900 feet thick. The prospective saline sand reservoir selected by the project team at the Paradis field is at a depth of 4300 feet and has a thickness of 350 feet. Both Bayou Sorrel and Paradis currently have hydrocarbon production from other mostly deeper zones.

The LGS researchers have pointed out potential geologic issues that need further investigation. These include (1) coring shale reservoirs both above and below the target sections to determine their effectiveness as seals, (2) obtaining seismic data to more accurately determine faulting and lateral extent of both the target and sealing reservoirs, (3) evaluating conditions of casing in the numerous well bores in both fields as they are potential leakage pathways, (4) potential chemical reactions between the injected CO2 and brine in the target reservoirs, (5) where and how far would the brine displaced by CO2 injection would travel, and (6) mode of transport of CO2 from source to sink.

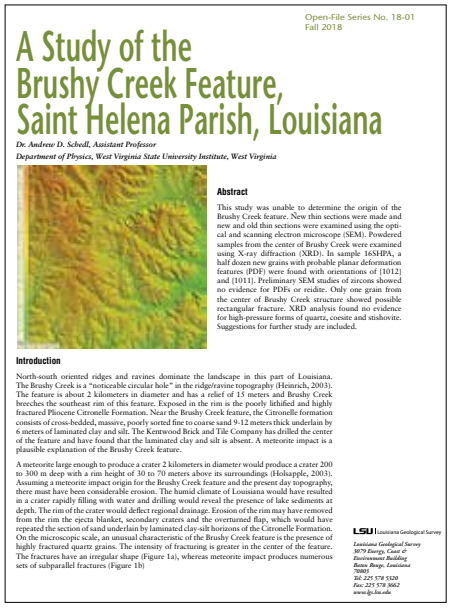
Offshore Gulf of Mexico Partnership for Carbon Storage – Resources and Technology Development

LGS has partnered with the Bureau of Economic Geology (BEG), University of Texas, on this project which is funded by the US Department of Energy under their carbon sequestration program. This research program has just been initiated and LGS will be providing assistance to BEG for selecting suitable offshore sites for carbon sequestration.

Geophysics

LGS (M. Horn) continues development of electrical resistivity and magnetometry geophysical techniques for near subsurface features relevant to geology, archaeology, and civil engineering. The techniques have successfully resolved prehistoric and historic human habitations, human graves, modern buried pipelines, and lithostratigraphic relationships in the shallow subsurface. Archaeological field studies have identified locations of potential significance at a dam site (Fannin County, Texas) and floor plan elements of Antelope Creek (1200-1450 AD) dwellings (Potter County, Texas). Field methods have also been applied to the internal structure of 5 ka Indian mounds that are widely distributed along the lower Mississippi River fluvial province. Comprehensive geological and geophysical studies in historic Louisiana and Texas cemeteries have identified unmarked 19th c. graves, providing custodians with guidance for renovations and future interments. Investigations of geological and civil engineering problems along the Louisiana Gulf Coast have focused on resolution of regionally and locally important faults as well as undocumented pipelines, both of which impact planning of new construction.

Application of these low cost, minimal impact field techniques represents a highly valuable contribution by LGS to the myriad of archaeological, historical, geological, and engineering challenges in the growing Louisiana region.



Open-File Series No. 18-01
Fall 2018

A Study of the Brushy Creek Feature, Saint Helena Parish, Louisiana

Dr. Andrew D. Schedl, Assistant Professor
Department of Physics, West Virginia State University Institute, West Virginia

Abstract

This study was unable to determine the origin of the Brushy Creek feature. New thin sections were made and new and old thin sections were examined using the optical and scanning electron microscope (SEM). Powdered samples from the center of Brushy Creek were examined using X-ray diffraction (XRD). In sample 16SHPA, a half dozen new grains with probable planar deformation features (PDF) were found with orientations of {1012} and {1011}. Preliminary SEM studies of zircons showed no evidence for PDFs or reidite. Only one grain from the center of Brushy Creek structure showed possible rectangular fracture. XRD analysis found no evidence for high-pressure forms of quartz, coesite and stishovite. Suggestions for further study are included.

Introduction

North-south oriented ridges and ravines dominate the landscape in this part of Louisiana. The Brushy Creek is a "noticeable circular hole" in the ridge/ravine topography (Heinrich, 2003). The feature is about 2 kilometers in diameter and has a relief of 15 meters and Brushy Creek breeches the southeast rim of this feature. Exposed in the rim is the poorly lithified and highly fractured Pliocene Citronelle Formation. Near the Brushy Creek feature, the Citronelle formation consists of cross-bedded, massive, poorly sorted fine to coarse sand 9-12 meters thick underlain by 6 meters of laminated clay and silt. The Kentwood Brick and Tile Company has drilled the center of the feature and have found that the laminated clay and silt is absent. A meteorite impact is a plausible explanation of the Brushy Creek feature.

A meteorite large enough to produce a crater 2 kilometers in diameter would produce a crater 200 to 300 m deep with a rim height of 30 to 70 meters above its surroundings (Holsapple, 2003). Assuming a meteorite impact origin for the Brushy Creek feature and the present day topography, there must have been considerable erosion. The humid climate of Louisiana would have resulted in a crater rapidly filling with water and drilling would reveal the presence of lake sediments at depth. The rim of the crater would deflect regional drainage. Erosion of the rim may have removed from the rim the ejecta blanket, secondary craters and the overturned flap, which would have repeated the section of sand underlain by laminated clay-silt horizons of the Citronelle Formation. On the microscopic scale, an unusual characteristic of the Brushy Creek feature is the presence of highly fractured quartz grains. The intensity of fracturing is greater in the center of the feature. The fractures have an irregular shape (Figure 1a), whereas meteorite impact produces numerous sets of subparallel fractures (Figure 1b)

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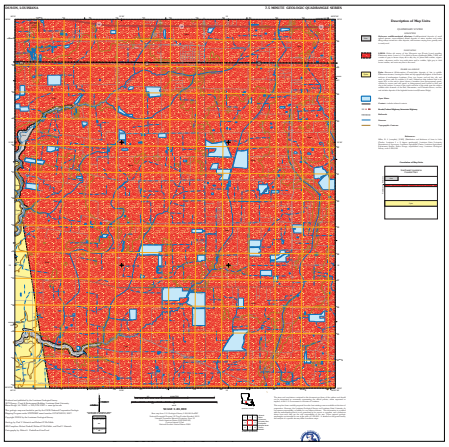
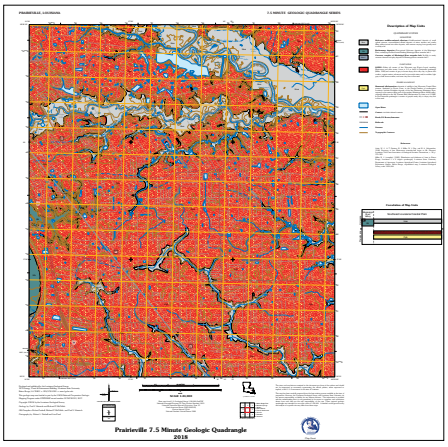
Lgs Publications 2018

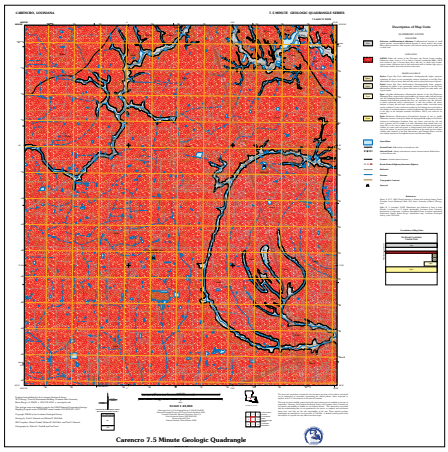
This years publications include:

- *A Study of the Brushy Creek Feature, St. Helena Parish, Louisiana* by Andrew Schedl, 2018
- *Geologic Mapping of Shreveport South and North* at 1:100,000 Scale by Paul V. Heinrich and Richard P. McCulloh
- *Geologic Mapping of Winnfield South and North* at 1:100,000 Scale by Paul V. Heinrich and Richard P. McCulloh
- *Geologic Mapping of Carencro* at 1:24,000 Scale (Paul V. Heinrich and Richard P. McCulloh)
- *Geologic Mapping of Duson* at 1:24,000 Scale (Paul V. Heinrich and Richard P. McCulloh)
- *Geologic Mapping of Mire* at 1:24,000 Scale (Paul V. Heinrich and Richard P.McCulloh)
- *Geologic Mapping of Praireville* at 1:24,000 Scale (Paul V. Heinrich and Richard P.McCulloh)
- *Geologic Mapping of St. Gabriel* at 1:24,000 Scale (Paul V. Heinrich and Richard P.McCulloh)

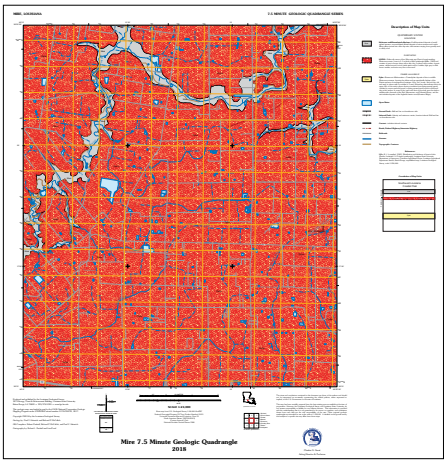




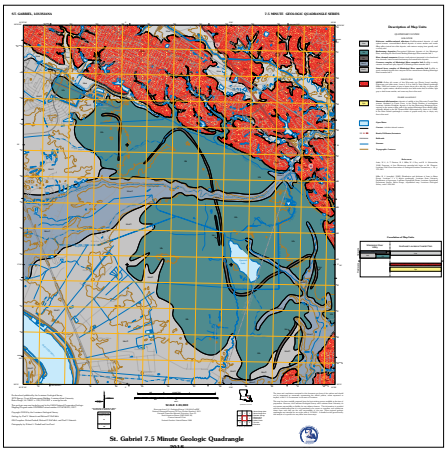
Prairieville 7.5 Minute Geologic Quadrangle
2018



Carencro 7.5 Minute Geologic Quadrangle

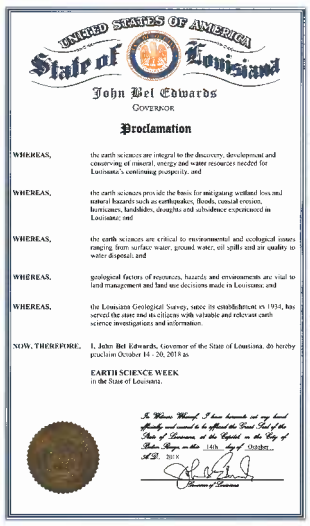


Mire 7.5 Minute Geologic Quadrangle
2018



St. Gabriel 7.5 Minute Geologic Quadrangle

Outreach Activities



UNITED STATES OF AMERICA
State of Louisiana
John Bel Edwards
GOVERNOR

Proclamation

WHEREAS, the earth sciences are integral to the discovery, developmental and conserving of mineral, energy and water resources needed for Louisiana's continuing prosperity, and

WHEREAS, the earth sciences provide the basis for mitigating wetland loss and natural hazards such as earthquakes, floods, coastal erosion, hurricanes, landslides, droughts and subsidence experienced in Louisiana; and

WHEREAS, the earth sciences are critical to environmental and ecological issues ranging from surface water, ground water, oil spills and air quality to water disposal; and

WHEREAS, geological factors of resources, hazards and environments are vital to land management and land use decisions made in Louisiana; and

WHEREAS, the Louisiana Geological Survey, since its establishment in 1934, has served the state and its citizens with valuable and relevant earth science investigations and information.

NOW, THEREFORE, I, John Bel Edwards, Governor of the State of Louisiana, do hereby proclaim October 14 - 20, 2018 as

EARTH SCIENCE WEEK
in the State of Louisiana.

Earth Science Week: Sponsored Nationwide by the American Geoscience Insitute (AGI), this week was celebrated from October 14-20, 2018.

Educational Out Reach Coordinator, Riley Milner, P.G., has been quite busy as of late. On December 19, 2017 after an invitation from the 4th and 5th Grade teachers at The Laboratory Key Academy in Baton Rouge he presented a demonstration of the rocks and minerals in Louisiana and other states, countries as well as the ocean geologic history and life. The students from the four classes in attendance came prepared with their own questions. Their questions ranged from a discussion of the Rock Cycle to how do you become a Geologist and how much money does a Geologist make.

Personell

Congratulations to Douglas Carlson on his appointment as Adjunct Associate Professor in the Department of Geology and Geophysics.

LGS Mapping Scientist, R. Hampton Peele, became the new Editor of the National Hydrographic Dataset (NHD) for Louisiana on October 1, 2017, under contract with Louisiana Department of Environmental Quality. In coordination with the USGS NHD Production Team, Peele is working to get Louisiana's NHD data ready for inclusion in the NHD High Resolution - Plus national dataset.

On March 10, 2018 the BREC Bluebonnet Swamp Nature Center held their annual event **"Rockin' at the Swamp"**. It is an all day event featuring geologic displays from LGS, LSU Geology Club, jewelry venders, and rock and mineral specimens on display as well as for sale.

The week of May 7th to 11th, 2018 was "**Louisiana Tourism Week**" sponsored by the Louisiana Department of Recreation and Tourism. LGS was asked by the Atchafalaya National Heritage Center at the Butte La Rose tourist Center on I-10 to display our Cartographic products at the Heritage Center for the week. Riley Milner spent the week at the center providing discussion and information for the local visitors as well as traveler's from across the country.

On June 6th thru the 11th 2018 Riley Milner assisted the St. James Parish Library in Lutcher and Vacherie kick off their Summer Program **"Libraries Rock"** with displays at both libraries featuring rocks and minerals of Louisiana, specimens form 3.2 billion year old Stromatolite's from South Africa, to fossils from the past and present, mineral specimens representing the full range of mineral types, a microscope display with a Scope-on-a-Rope showing thins section of the Greenwell Springs Chondrite Meteorite (i.e. stony not Iron-Nickel) and others from many types of rock and minerals, and a display of rocks representing the Rock Cycle (i.e. sedimentary, igneous and metamorphic). Mr. Milner was invited to participate in the St. James Parish's "Geology of St. James Parish" Dinner and presentation. The activity is to celebrate the geologic history of St. James Parish and its oil and gas and other economic resources in the parish.

On September 22, 2018 a presentation was made to the Louisiana Master Naturalists of Greater Baton Rouge workshop "**Introduction to Plants - Identification + Landscaping with Natives**" hosted by the LSU Hilltop Arboretum. In addition, Mr. Rick McCulloh led a workshop with classes and discussion ending in short nature trail to the Waddill Wildlife Refuge Area in East Baton Rouge Parish.

Conferences

Baton Rouge Flood of 2016
What Happened, What We Did, What We Lost, and What We Learned

On Monday, August 13, the Louisiana Geological Survey, with co-sponsor Baton Rouge Geological Society, presented a symposium on the flood that devasted much of the Baton Rouge area in August 2016. The well-attended event featured individual presentations, a group panel discussion, and a public Q&A session. John E. Johnston III of the Louisiana Geological Survey served as symposium chair.

Louisiana Coastal Geology Symposium 2018

Louisiana Coastal Geology Symposium 2018, presented by the Louisiana Geological Survey and the New Orleans Geological Society-brought together scientists, engineers and policy makers from across a range of disciplines to exchange ideas, interpretations and insights on Louisiana coastal geology – both onshore and offshore – and on associated topics. It was held in the Dalton J. Woods Auditorium of the Energy, Coast and Environment Building at Louisiana State University on July 10-11, 2018. John E. Johnston III of the Louisiana Geological Survey served as symposium chair.

Louisiana Geological Survey, LSU Agcenter, LA Water Insitutue Host Louisiana Water Conference

The staff of the Louisiana Geological Survey were involved in hosting the twelfth annual Louisiana Water Conference in the spring of 2018. Attendance for the conference was approximately 100 many of whom earned continuing education credits as required to maintain their status as registered professional geoscientists.

LAWater 2019: 13th Annual Louisiana Water Conference

Louisiana Geological Survey (LGS), LSU Agricultural Center (LSU AgCenter), and Louisiana Water Resources Research Institute (LWRRI) are co-hosting the 13th Annual Louisiana Water Conference, April 15-16, 2019 at Louisiana State University, Baton Rouge, Louisiana.

The Louisiana Water Conference aims to disseminate the latest water-related research and activities within and around Louisiana, promote education and public awareness of Louisiana's valuable freshwater resources, and promote engagement of water-use sectors.

The Conference will offer certificates of Continuing Education Units (CEUs) and 1 PDH Ethics for Professional Geoscientists (PG) and Professional Engineers.

You are cordially invited to submit abstracts to LAWater 2019. Registration fee is waived for presenting authors (oral or poster). There is a limit for only one free registration for each accepted presentation.

Submission link: https://easychair.orgconferences/?conf=lawater2019

Abstract registration deadline: March 15, 2019

Submission deadline: March 15, 2019

lgs.lsu.edu

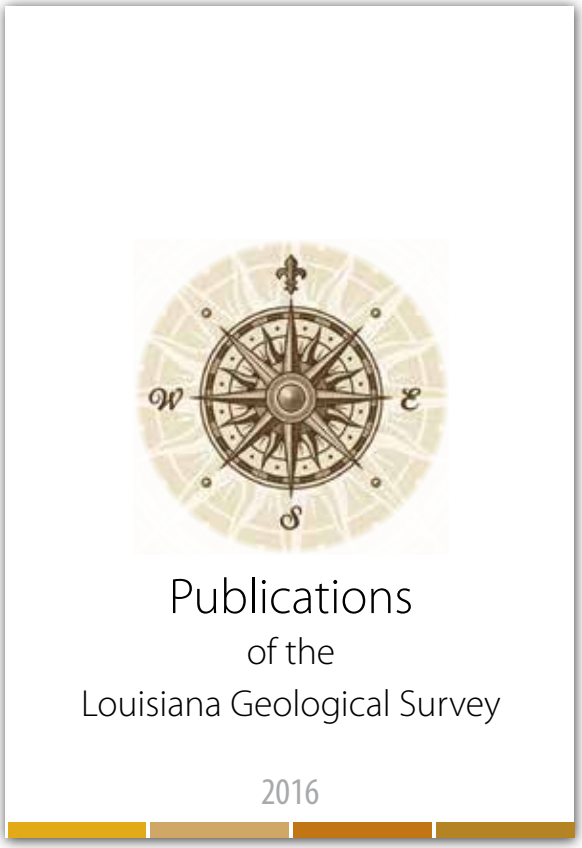
LGS now has Georeferenced maps on the Avenza Map Store. Download and view on your smartphone or tablet.

The Louisiana Geological Survey launched a new and improved web site, http://www.lgs.lsu.edu. The LGS cartographic section developed the site emphasizing the importance of geology to our everyday lives. Educational resources are among the header items that are available from the LGS. The data resources page included lists of well logs and core samples collected throughout the state over many years. The core samples can be viewed by setting up a time with the publications expert, Pat O'Neill (poneil2@lsu.edu).

Downloadable data and maps are also available on the site. The Publications page contains a list of maps and publications that are available for a very modest price. Free pdf downloads are available for most 100,000 scale and some 24,000 scale surface geologic maps. The associated digital geologic data are uploaded to the site for public use as quality control is completed on each file.

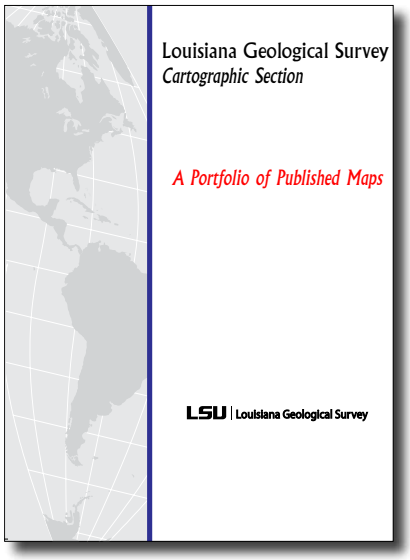
Lgs Resource Center

The LGS Resource Center consists of a core repository and log library. It is located behind the Graphic Services building on River Road. Most of our cores are from the Smackover and Wilcox Formations. The core facility has more than 30,000 feet of core from wells mostly in Louisiana. The well log library contains over 50,000 well logs from various parishes in the state. The Core Lab is equipped with climate controlled layout area, microscopes, and a small trim saw. The core and log collections are included as part of the LSU Museum of Natural History as defined by the Louisiana Legislature and is the only one of its kind in Louisiana.The LGS Resource Center is available for use by industry, academia and government agencies, and others who may be interested. Viewing and sampling of cores can be arranged by calling Patrick O'Neill at 225-578-8590 or by email at poneil2@lsu.edu. Please arrange visits two weeks in advance. A list of available cores can be found at the LGS web site (www.lgs.lsu.edu).



Now available

Publications of the Louisiana Geological Survey 2016



The Louisiana Geological Survey has created **A Portfolio of Published Maps**, a 66-page example of maps produced by the Survey's Cartographic Services section since 1980. The full-color publication showcases the wide-ranging cartographic design technologies used by LGS in creating maps of Louisiana's offshore oil and gas structures, river basins, aquifers, estuarine basins and more.

"A Portfolio of Published Maps", for download url, please email rpaulsell@lsu.edu. For more information, contact LGS at 225.578.5320.

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