

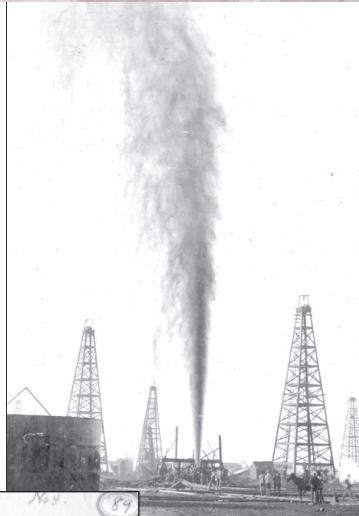
# The Louisiana Geological Survey

Volume 11, Number 2

# News

December 2001

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## Louisiana's Oil Industry Centennial

### Jennings Field

— the birthplace of  
Louisiana's  
Oil Industry —

September 2001  
Public Information Series No. 9

Louisiana Geological Survey

The centennial of Louisiana's oil industry, marking the first discovery of oil in Louisiana on September 21, 1901, was celebrated with various functions at Jennings the weekend of September 21, 2001. Governor Foster established the Louisiana Oil Centennial Committee to plan the celebration to commemorate this very special occasion for Louisiana's Oil and Gas industry. In conjunction, LGS published its Public Information Circular No. 9 entitled "Jennings Field—the Birthplace of Louisiana's Oil Industry". This circular, compiled by Research Associate Byron Miller with assistance from his colleague in industry, Jeffrey Spencer, traces the history of the oil discovery and the people responsible for it, with historical photographs of the field (courtesy of the Jennings Carnegie Public library), and provides a brief overview of the field geology. Copies of this publication were widely distributed and given to the Centennial Commission, the Jennings Museum, Louisiana Legislators, the Louisiana Independent Oil and Gas Association (LIOGA), and attendees of Professional meetings, including the LIOGA Prospect Expo at Lafayette and the GCAGS at Shreveport. Single copies can be obtained free of charge from LGS Publications (contact Patrick O'Neill, 225-578-8590).

# The Louisiana Geological Survey News

## LOUISIANA GEOLOGICAL SURVEY

Chacko J. John, Director and State Geologist

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The LGS News is published semiannually and distributed to professionals, state agencies, federal agencies, companies, and other organizations associated with geological research and applications. Call the main office for extra copies.

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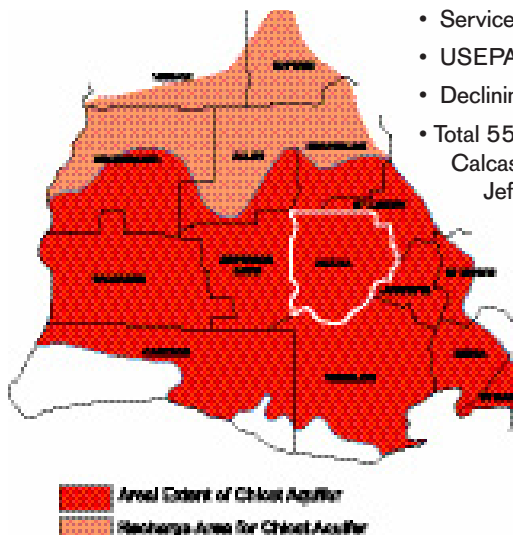
### LGS Mission Statement

*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) protecting the state and its citizens from natural, geological, and environmental hazards; and*
- (3) insuring 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.

## Chicot Aquifer Pilot Study for Acadia Parish



- Services 650,000 people in 15 parishes
- USEPA designated Sole-Source aquifer
- Declining water levels 0.5 - 1 ft/yr
- Total 555 MGD withdrawn
  - Calcasieu - 113 MGD
  - Jefferson Davis - 108 MGD
  - Acadia - 101 MGD
  - Evangeline - 65 MGD
  - Vermilion - 47 MGD

The Louisiana Geological Survey has recently completed a project entitled "Evaluation of Aquifer Capacity to Sustain Long Term Ground Water Withdrawal from Point Sources: A Pilot Study—Chicot Aquifer", which was funded by the Louisiana Department of Natural Resources. The objective of this study was to identify the nature and type of information required to develop a high resolution, ground water model that would aid in the management of Louisiana's ground water resources. This project involved two interrelated tasks: a detailed aquifer characterization study and the development of a conceptual parish-scale ground water model. Acadia Parish was chosen for the pilot study because of its agricultural importance, the volume of data thought to be in the public record, the singular nature of the aquifer sand, the lack of aquifer complexities, and the level of interest in the region for this type of study.

The geologic characterization phase of the study showed that the top of the Chicot Aquifer lies at a uniform depth of about 100 feet throughout most of Acadia Parish and appears to vary from approximately 25 feet below ground surface (BGS) in the southwest corner to more than 137 feet BGS in the west-central part of the parish. The maximum depth of the base of the Chicot Aquifer is about 1376 feet BGS in the southern part of the parish and as shallow as about 540 feet BGS in the northern part of the parish. The Chicot Aquifer has a graveliferous texture, which differentiates it from the underlying Evangeline Aquifer in Acadia Parish.

The aquifer consists of massive water-bearing sands intermittently divided by numerous clay layers, but none of these units form a continuous ground water flow barrier. A clay unit divides the Chicot Aquifer into Upper and Lower units throughout much of the parish, but is not laterally continuous. Saline water is present at the base of the aquifer throughout the parish, and clay units intermittently separate the base of fresh water from the top of the saline water. The freshwater/saltwater interface varies in depth from 415 to 1115 feet BGS.

The management of ground water resources requires an understanding of the processes and dynamics of the ground water system at various spatial and temporal scales. The conceptual model was developed using a telescopic mesh refinement technique that allowed for the integration of the parish-scale model into a pre-existing aquifer-scale model. This technique provided the boundary conditions for the parish model and a link between the aquifer-scale model and local flow dynamics. The conceptual model created a series of subsurface layers that differentiated between various subsurface conditions present within each ground water model layer. A calibrated ground water model is planned, using the results from the aquifer characterization study along with water well and observation data, aquifer property, and water use information.

## Geologic Mapping in Louisiana

Cooperative agreements with the U.S. Geologic Survey (USGS) under the National Cooperative Geologic Mapping Program, STATEMAP component, continue to be the primary means of support of LGS geologic mapping activities. At the end of June 2001 final deliverables were submitted for the STATEMAP FY 2000 project "Geologic Mapping of Comite, Denham Springs, St. Tammany, Hickory, and Lacombe 7.5-Minute Quadrangles". The 7.5-minute quadrangles are in two study areas: the Baton Rouge area; and the "north shore" area north of Lake Pontchartrain. In July 2001 work began on the STATEMAP FY 2001 project "Geologic Mapping of Aimwell, Harrisonburg, Sicily Island, Mandeville, Slidell, and Haaswood 7.5-Minute Quadrangles". These 7.5-minute quadrangles also are in two study areas: the area encompassing the Sicily Island Hills Wildlife Management Area in northern Catahoula Parish, east-central north Louisiana and, again, the "north shore" area.

The annual meeting of the State Geologic Mapping Advisory Committee was convened on 7 September to review the status of geologic mapping activity in Louisiana and to reach a consensus relative to needs for geologic maps and priorities for future mapping projects. One of the main purposes of the meeting was to inform directly the technical content of the STATEMAP proposal for FY 2002, which was submitted to the USGS at the end of October.

A recent notable exception to the LGS geologic mapping activities supported as STATEMAP projects was the mapping of ten 7.5-minute quadrangles encompassing the Fort Polk military reservation and Peason Ridge military installation in west-central Louisiana, completed in late 1999. This work was conducted for Fort Polk under subcontract to Prewitt and Associates, Inc., Austin, Texas, and under contract to the U.S. Army Corps of Engineers, Fort Worth District. The final deliverable report prepared for the Corps was recently edited for LGS publication, and its production will begin shortly. The geologic maps are available as GIS files on a compact disc accompanying the report.

Upcoming releases of geologic map data originally produced as deliverables for two of the above projects were announced at the 2001 annual Louisiana Remote Sensing and Geographic Information Systems (RSGIS) Workshop, 2-4 April, in Baton Rouge. The announcements were contained in two poster sessions by R. Hampton Peele and Richard P. McCulloh: Fort Polk 1:24,000-Scale Geologic GIS Data: Upcoming Release, and

Baton Rouge 1:24,000-Scale Geologic GIS Data: Upcoming Release.

The initial LGS contribution to the map catalog of the National Geologic Map Database (NGMDB, also called the National Cooperative Geologic Mapping Program database) was composed and submitted to the project's Website and Database management team at the USGS office in Flagstaff, Arizona. The database is being set up and administrated by the USGS with joint support from the Association of American State Geologists. When it is established, it will serve as "an Internet-based system for query and retrieval of earth-science map information," as stated at the project's general-information website link at <http://ncgmp.usgs.gov/ngm-dbprj.html>.

Another website link at <http://ncgmp.usgs.gov/ngmdbproject/cathelp/intro.html> summarizes the types of geologic map products being catalogued as follows:

The Database map catalog is designed to provide users with information about the geologic and related maps that are available, either for purchase or from a library. These maps may be in:

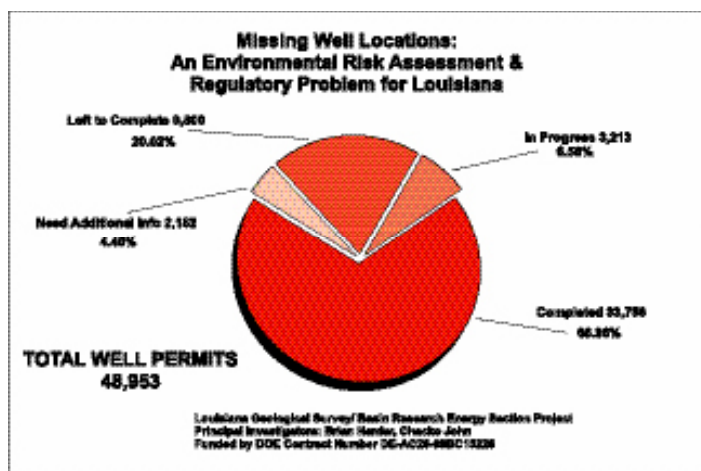
- formal or open-file series
- state geological survey map series
- book publications
- student theses
- other publications

The initial LGS submittal contains entries for such documents previously published by LGS, formatted according to the database project's prescriptions. As LGS continues to release geologic-map products, entries will be created and submitted for them separately. For more information on Geologic Mapping projects at the Louisiana Geological Survey please contact Richard P. McCulloh (225-578-5327) or Paul V. Heinrich (225-578-4398).

## Missing Well Locations: An Environmental Risk Assessment and Regulatory Problem for Louisiana

The focus of this 3-year (1999-2002) DOE-funded project is to examine permits for 48,953 wells that do not have locations in the state's computer data base and to create a digital database of the locations from various public records. This project is being done in cooperation with the Louisiana Department of Natural Resources, Office of Conservation. LGS is obtaining paper records of each well permit. Using various commercial oil and gas mapping and surveying software and data management programs, (Geographix, Arcview, AutoCad Map and ProCogo), a digital latitude and longitude for each of the missing wells is being obtained. Research personnel include Chacko John, Brian Harder, Philip LeMay, and Byron Miller.

The current status of the project is that 39,153 permits have been examined. Of that total 33,758 have been completed and digital locations have been obtained, 3,213 are currently in progress toward completion, and 2,182 need additional information. Upon completion, each permit is placed in one of the following databases determined by their status: Active Producers (11,450) of which 10,221 or 89.27% are complete, Shut-in Producers (2,305) of which 1,872 or 81.21% are complete, Abandoned Previous Producer (17,513) of which 8,329 or 47.56% are complete, Abandoned Dry (9,029) of which 6,511 or 72.11% are complete, Permit Expired (7,083) of which 5,774 or 81.52% are complete, and Miscellaneous Wells (1,573) of which 1,051 or 66.82% are complete. On project completion the databases will be available in both digital and hard copy format. The completed database will provide industry and the public with access to information for all phases of



## Awards

### LGS Cartographers Win International Map Competition

The Official Map of Louisiana 2000, created by cartographers from the Louisiana Geological Survey (LGS), won an international map design competition in September. The Avenza MAPublisher Map Competition committee selected the map for first place in the category of General Purpose Map and also for the Grand Prize, Best of Show award. Cartographers John Snead, Edwin Millet, Lisa Pond, Robert Paulsell, and Edward Koch designed and produced the map. Geographic information system (GIS) support was provided by Hampton Peele, DeWitt Braud, and Ahmet Binselam. The map was prepared by LGS under contract from the Louisiana Department of Transportation and Development. The map can be purchased on the DOTD website [www.dotd.state.la.us](http://www.dotd.state.la.us) for \$15 plus shipping.

Avenza Systems, Inc., of Ontario, Canada, sponsored the competition. Their MAPublisher product enables GIS data to be successfully and accurately brought into a high-end graphics program such that the cartographer can enjoy full graphics ability and utilize over 35 precision cartographic tools in creating a map for publication.

Maps in the competition were received from as far away as Latvia and from a variety of academic, governmental, and industry organizations and individuals. The winning maps can be seen on the Internet at [www.avenza.com](http://www.avenza.com).



## New Research Contracts

**Geologic Review:** Principal Investigator is John Johnston. This project is funded by the Louisiana Department of Natural Resources and the U.S. Department of the Army, Corps of Engineers. Project duration is from 1 Oct. 2001 to 30 Sept. 2002. (\$95,500).

**Field Investigation and Digital Mapping of the Pipeline Crossings of Bayou LaFourche.** Project Co-principal investigators are John Snead and Lisa Pond. This project is funded by the Oil Spill Research and Development Program (OSRADP). Project duration is from 1 Sept. 2001 to 31 May 2002. (\$16,795).

**Central Louisiana Coal bed Methane Project.** Principal Investigator is F. Clayton Breland Jr. Other project researchers are Riley Milner and Reed Bourgeois and the project is funded by the U.S. Geological Survey. Project duration is from 30 Sept. 2001 to 29 Sept. 2002. (\$30,000).

**Seismic Micro-Technology Software Donation.** F. Clayton Breland, Jr., Assistant Professor-Research, has been given a grant of software valued at \$47,495. The grant, which extends over a period of three years, was donated by Seismic Micro-Technology (SMT) of Houston, Texas, an industry leader in personal computer-based seismic data interpretation software. The software, part of SMT's Kingdom Suite product, will be used in interpreting 2D and 3D seismic data, providing support for interpretation through synthetic seismogram generation, analyzing and processing post-stack seismic data, and modeling of subsurface data. This software is a personal computer-based industry standard for interpretation of seismic data. LGS will shortly acquire a dual-monitor workstation as a dedicated unit upon which the software can be accessed, and envisions the possibility of working with 3D seismic data in the future.

### Grant From USGS for Coal Bed Methane Research

LGS has received a grant of \$30,000 from the US Geological Survey for a collaborative project on coal bed methane research. As we noted in the last newsletter, industry interest in Louisiana's coal bed methane resources appears to be increasing. F. Clayton Breland, Associate Professor-Research, is the principal investigator for the project, which consists of generating maps and cross sections over coals in central Louisiana and ultimately assisting the USGS and a private industry group to drill a coal bed methane (CBM) well. As part of this project LGS and the USGS, as the lead government agency, are actively seeking industry partners and collaborators to join a North-Central Louisiana Coalbed Methane Consortium. The proposed collaborative project will core one (or multiple) drill holes in a newly established CBM field in north-central Louisiana, and then obtain coal core and gas samples for analytical tests and for CBM resource evaluation of the area. Industry partners are expected to provide drilling leases and permits, and funds for drilling, coring, geophysical logging, and hole completion. The USGS and LGS will provide 1) experienced CBM geologists, 2) available subsurface data, 3) all analytical equipment and analyses (including coal desorption/absorption, and coal, gas and produced water geochemistry), and 4) some financial support for drilling the proposed well(s). An experienced USGS drill crew and a coal-coring wireline rig and hydrologic testing equipment are also available on a cost basis, if needed for the project. Interested industry partners must submit a short written proposal stating their interests and abilities to fund the proposed project. Scientific results of the project may be kept confidential for up to five years. As this report is being written, USGS and LGS are engaged in talks with private sectors groups interested in CBM and hope to select a suitable partner with which to conduct this basic research in the very near future.

A handwritten signature in black ink, appearing to read 'Happy Holidays' in a stylized, cursive script.

**Baton Rouge to Host GCAGS Annual Convention, 2003**

The Gulf Coast Association of Geological Societies Annual Convention will be held in Baton Rouge at the Radisson Hotel in October, 2003. David Pope is the General Chairman for the Convention and it will be hosted by the Baton Rouge Geological Society. Volunteers are needed and welcome. All those who would like to volunteer to assist the Chairman of the various convention committees should contact David Pope for details (225-578-3452).

**American Association of Petroleum Geologists Annual Convention, Houston, Texas March 10–13, 2002**

Abstracts for the following poster papers by LGS faculty and staff have been accepted for presentation at this AAPG Convention:

- “Effects of Eocene Beach Rock on Reservoir Compartmentalization in Livingston Field: Livingston Parish, Louisiana.” This poster will be co-authored by Ronald Zimmerman (LGS) Donald Goddard (Center for Energy Studies), and C.D. White and L. Hongmei (LSU Petroleum Engineering Department).
- “Occurrence and Structural Control of Hydrocarbon Production Associated with the Baton Rouge Fault Zone, Louisiana.” Co-authors for this presentation are Byron Miller, Richard P. McCulloh, Chacko J. John, Brian Harder, and Reed Bourgeois.
- “Regional Trends and Exploration Potential for Coal bed Methane in Louisiana.” This poster paper is co-authored by F. Clayton Breland and Chacko J. John.

**Earth Science Week and Ocean Commotion 2001**

LGS celebrated Earth Science week (October 7–13, 2001) by participating in the yearly event called “Ocean Commotion 2001,” held at LSU on October 4, 2001 in the Pete Maravich Assembly Center. Ocean Commotion is organized by the LSU Sea Grant College Program and the LSU University Relations Office and is focused on getting school children to interact and learn about ocean life and the natural environment.

The LGS display theme was “There Is More Than Water Out There,” which showed K-8 grade classes from the Baton Rouge area where oil and gas comes from and how their lives are affected by their daily use of products derived from oil. The event featured over 60 exhibits and was attended by more than 3,500 students, 175 teachers, and 300 parents. Riley Milner and Ann Tircuit manned the LGS display.

**LGS Participates in Shreveport Convention**

The Annual Convention of the Gulf Coast Association of Geological Societies and the Gulf Coast Section of the Society of Sedimentary Geology was held in Shreveport, LA, from October 17–19, 2001. The Louisiana Geological Survey had an exhibit booth at this Convention, with Research Associate Riley Milner in charge of it. Displays of LGS publications and maps of information on ongoing LGS research projects were exhibited. The booth had a large number of visitors, and the free postcards and page-size maps of the generalized geology of Louisiana and the free 4” x 4” phone note pads made out of recycled old topographic maps were in great demand. The following technical presentations were given by LGS Faculty and Staff at this meeting:

- J.A. Spencer, \* and Byron Miller, 2001, 100 years of Exploration and Production at Jennings Field
- J.B. Echols, 2001, The Producibility of Coalbed Methane from Wilcox Coals in Louisiana
- R.K. Zimmerman and D.A. Goddard, 2001, A North Louisiana Gas-Prone Hosston Slope-Basin Sand Trend
- Chacko J. John, B.L. Jones, B.J. Harder, R.J Bourgeois, and R.P. McCulloh, 2001, Field Studies of Breton Sound Blocks 37, 39, and 49, Offshore Louisiana

All the papers were published in the Gulf Coast Association of Geological Societies Transactions, v.51, 2001.

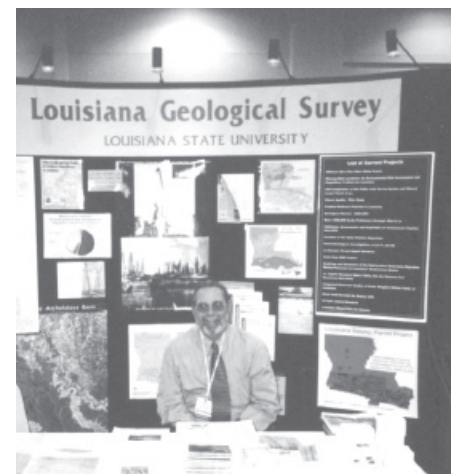
\*Osprey Petroleum Company, Houston

**Geologic Review Presentations**

John Johnston III, Assistant Director, has made and continues to make invited presentations on the “Geologic Review Process” to audiences composed of industry, parishes, and state government personnel. Two of these presentations were included in seminars arranged by C.H. Fenstermaker and Associates in New Orleans and Houston providing continuing education credits to attending landmen and surveyors. Another presentation was given at the Louisiana Department of Natural Resources Coastal Program 2001, held on Oct. 24–25 in Lafayette. Johnston also gave a seminar on “Introduction to Petroleum Geology” recently in Baton Rouge, for new employees of government agencies who had little or no previous knowledge of the oil and gas industry. This seminar was sponsored jointly by the Natural Marine Fisheries Science, C.H. Fenstermaker & Associates, John Chance & Associates, and the Coastal Management Division of DNR.

**Geological Coordination for a Reservoir Simulation of the Upper Wilcox Sand in Livingston Field, Livingston Parish, Louisiana**

Principal Investigator was Ron Zimmerman. This project was funded by TMR Exploration, Inc., Bossier City, Louisiana, in conjunction with an associated project dealing with the engineering aspects of the reservoir simulation. The reservoir simulations were conducted by the LSU Department of Petroleum Engineering. A poster presentation entitled “Effects of Eocene Beach Rock on Reservoir Compartmentalization in Livingston Field: Livingston Parish, Louisiana” resulting from this project research has been accepted for presentation at the annual convention of the American Associates of Petroleum Geologists, to be held in Houston, Texas, March 10–13, 2002.



## Personnel News

Ronald Zimmerman, Associate Professor-Research, completed 10 years of service with LGS/LSU in October. The LSU Service Award Certificate was presented to him by LGS Director Chacko John. Ron has also been nominated as the Chairman of the Exhibits Committee for the 2003 GCAGS Convention in Baton Rouge.

John B. Echols, Assistant Professor-Research, retired from LGS/LSU at the end of June 2001, after more than a decade of service.

Cherri Webre, Office Coordinator 1, transferred to the LSU Theater Department after 14 years of service at LGS/(BRI), as Office Coordinator 2.

Ann Tircuit, Office Coordinator 1 was promoted to Office Coordinator 2.

LSU Vice Chancellor for Research Dr. Kevin Smith and Asst. Vice Chancellor Todd Pourciau visited LGS on October 4, 2001, and met with LGS Director Chacko John, who provided them with an overview of the ongoing LGS research projects. They were later given a tour of the Cartographic Section, where Section Manager John Snead described some of the mapping projects and provided examples of maps and publications produced by the Section.

Riley Milner was elected as Treasurer of the Baton Rouge Geological Society for the year 2001–2002. Riley has also been nominated as the Chairman of the Program Brochure Committee for the 2003 GCAGS Convention in Baton Rouge.

Chacko John was elected as the Vice President and President-elect of the Baton Rouge Geological Society for the year 2001–2002. He is also the current Vice President (2001–2002) of the Energy Minerals Division of the American Association of Petroleum Geologists and was recently elected as the Vice President (2001–2002) and President-elect of the Gulf Coast Association of Geological Societies at its meeting on October 16th at Shreveport.

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## Publications

#9 Jennings Field—the Birthplace of Louisiana's Oil Industry, September 2001. 28pp. Traces the history of the oil discovery and the people responsible for it, with historical photographs of the field, and a brief overview of the field geology.

Contact Patrick O'Neill to order LGS publications (phone: (225) 578-8590, e-mail: pat@lgs.bri.lsu.edu)

*NOTE: There is no cost for any of the above listed publications. They are also available on the LGS website (www.lgs.lsu.edu).*

**[www.lgs.lsu.edu](http://www.lgs.lsu.edu)**

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