Leesville 100k geology 6-9-15.pdf 1 6/9/15 3:08 PM

LEESVILLE, LOUISIANA/TEXAS 31093-A1-TM - 100 Produced and published by the Louisiana Geological Survey 3079 Energy, Coast & Environment Building, Louisiana State University Kilometers 1 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 Baton Rouge, LA 70803 • 225/578-5320 • www.lgs.lsu.edu Miles 1 0 1 2 3 4 5 6 7 8 9 10 11 12 13 This geologic map was funded in part by the USGS National Cooperative **SCALE 1:100,000**

Base map from U.S. Geological Survey 1:100,000 Digital Line Graphs (100K DLG)

Universal Transverse Mercator Projection, Zone 15

North American Datum 1927 (NAD 27)

Contour Interval 10 meters

National Geodetic Vertical Datum 1929

Leesville 30 x 60 Minute Geologic Quadrangle

LEESVILLE, LOUISIANA/TEXAS

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Richard P. McCulloh, John Snead

Cartography by: Lisa Pond and Robert Paulsell

Geology by STATEMAP 2011 Mapping Team: Paul V. Heinrich, Marty Horn,

GIS compilation by: R. Hampton Peele, Katherine A. Renken, Marcus B. Massom,

30 x 60 Minute Louisiana Geologic Quadrangle Index

2015 Publications

Mike Bitton, Richard P. McCulloh, John Snead, Paul V. Heinrich, Marty Horn

Chacko J. John Director & State Geologist

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30 x 60 MINUTE GEOLOGIC QUADRANGLE SERIES

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Description of Map Units

QUATERNARY SYSTEM

HOLOCENE

Holocene undifferentiated alluvium—undifferentiated deposits of small upland streams: unconsolidated alluvial deposits of minor streams and creeks filling valleys incised into older deposits, with textures varying from gravelly sand to sandy mud.

Backswamp deposits—fine-grained Holocene deposits of rivers, accumulated in the flood basins between meander belts. Primarily unconsolidated mud and fine sand. Small river meander-belt deposits—point bar deposits underlying the meander belts

QUATERNARY UNDIFFERENTIATED

Quaternary alluvial-fan deposits—unnamed alluvial-fan deposits. PLEISTOCENE DEWEYVILLE ALLOGROUP

Fredonia alloformation—youngest alloformation underlying the topographically lowest surface of the Deweyville Allogroup along the Sabine River. The surface lies near the level of the Sabine River flood plain and is mostly buried by it. Sandjack alloformation—alloformation of the Deweyville Allogroup along the Sabine River that is intermediate in age and topographic position between the Merryville and

Merryville alloformation—oldest alloformation underlying the topographically highest surface of the Deweyville Allogroup along the Sabine River. The terrace of the Merryville alloformation lies on the Louisiana side of the Sabine River valley directly across from

PRAIRIE ALLOGROUP

alluvial deposits of ancestral late Pleistocene streams. Grayish-white to reddish-white and

light red very fine to medium sand to silt, with clay, to sandy mud, in places including beds

Fredonia alloformations. Deweyville, Texas lies on the surface of the Sandjack

Prairie Allogroup, undifferentiated—diverse depositional sequence of deposits of the Mississippi River, its tributaries, and coastal plain streams; includes terraced fluvial (meander belt, backswamp, and braided stream), colluvial, estuarine, deltaic, and marine units deposited during the Wisconsin to Sangamon interval of the late Pleistocene. Multiple levels along alluvial valleys and coast-parallel trends are grouped into two principal temporal phases. The Prairie Allogroup is undifferentiated where fluvial terrace remnants flank headward portions of stream courses.

of gravelly sand and sandy gravel of chert and vein quartz. Weathers to yellow, orange, Lower Prairie Allogroup—older Prairie Allogroup deposit; equivalent to the Beaumont Formation of southeastern Texas and Eunice Terrace of southwestern Louisiana. Diverse

depositional sequence of flood-plain, meander-belt, and backswamp deposits of middle to late Pleistocene ancestral Mississippi and Red rivers, their tributaries, and coastal plain

INTERMEDIATE ALLOGROUP Intermediate allogroup, undifferentiated—fluvial deposits of the Mississippi River, its tributaries, and coastal plain streams; equivalent to units designated elsewhere as

TERTIARY SYSTEM

Lissie Alloformation, undifferentiated—dissected alluvial deposits of early Pleistocene streams. The unit is bounded updip by the Willis surface and downdip by younger subunits of the Intermediate allogroup.

and slope deposits, locally derived from Tertiary formations.

UPLAND ALLOGROUP

Willis Formation, undifferentiated—deeply dissected alluvial sediments deposited by Pliocene streams in west-central Louisiana. The unit is unconformably underlain by Tertiary formations of Miocene to Eocene age, and is bounded downdip by the Lissie

places. Comprises calcareous clay, with scattered irregular calcareous nodules up to

Blounts Creek Formation—a relatively nondescript series of grayish clayey and silty very fine to fine sands, silty and very fine to fine sandy clays, and clayey silts. The principal sedimentary structures comprise rare lamination and low-angle cross lamination. Castor Creek Formation—silty to very fine sandy, grayish clay, with reddish mottles in

several centimeters long, at numerous localities. May weather to black soil.

Williamson Creek Formation—very fine to very coarse sand, averaging very fine to medium overall, with overall poor sorting. Overall grain size appears coarser than in other Fleming subunits, with sands containing much more of the coarser size fractions and a larger proportion of quartz granules in places. Granules are extremely abundant locally and consist almost exclusively of quartz, in places comprising sandy granule conglomerate. Internal features include medium-scale trough cross beds in coarser, granule-rich sand and

sandy granule conglomerate, with bedding sets fining upward in places. Dough Hills Formation—clay, sand and sandstone, and silt and siltstone, in varying proportions. Includes calcareous clay, containing characteristic calcareous nodules, and may include in places anomalous localized concentrations of fine-grained calcareous rock. May weather to black soil. Sand and sandstone are poorly sorted, range in grain size from

very fine to very coarse, and contain sparse quartz granules at a number of localities. Carnahan Bayou Formation—texturally heterogeneous suite of generally poorly sorted sediments comprising varying proportions of sand/sandstone, with granules in places; silt/siltstone; and clay/mud. Primarily clayey very fine to fine sand containing some coarse and very coarse sand with some granules. Granules and pebbles include both quartz and rock fragments, with granules comprising predominantly quartz, and pebbles and cobbles consisting mostly of rock fragments; the rock fragments comprise both light-colored clay/mud rip-up clasts, and in places, dark or black chert. Includes petrified wood and thin

Lena Formation—texturally heterogeneous suite of generally poorly sorted sediments comprising clay, with and without sand and silt; silt/siltstone, mostly without substantial clay; and sand/sandstone, with and without clay. Includes calcareous clay, containing characteristic calcareous nodules, and tuffaceous clays in places. Weathers locally to

tuffaceous beds locally.

produce a brownish gray to lightish surface sand, and may weather to black soil.

OLIGOCENE-MIOCENE Catahoula Formation—texturally heterogeneous suite of generally poorly sorted sediments comprising primarily silt/siltstone to very fine quartzose sand/sandstone, with and without clay. Overall or predominant grain size of sand/sandstone tends to average very fine to fine sand. Coarser grains may comprise quartz, chert, and/or mud clasts. Contains petrified wood and tuffaceous sandstone locally. Weathers locally to produce a thick (up to 2 meters) gray/tan loamy surface unit. A palynological age of early late Miocene was determined for the Catahoula in its type area in eastern north Louisiana (Wrenn et al. 2003), in contrast to the Oligocene age indicated by subsurface-to-surface

OLIGOCENE VICKSBURG GROUP

correlation in the Texas Gulf Coast (Galloway 1977; Galloway et al., 1982).

Vicksburg Group, undifferentiated—thin-bedded to laminated grayish-whitish, clayey very fine to medium sand to fine sandy clay, medium-scale cross-bedded in places, weathering reddish-orangish, with zones of clasts of light grayish clayey sand; and thick-bedded maroonish-grayish silty clay. The Vicksburg is divisible into two members of formation rank in Sabine Parish (Andersen, 1960)—the Sandel and Nash Creek formations—plus a third in Natchitoches Parish, the overlying Rosefield Formation (Andersen, 1993). The lowermost formation, the Sandel, comprises sand with interbedded conglomerate containing cobbles and slabs of carbonaceous bentonitic clay like that of the overlying Nash Creek. Based on the investigation of Rukas and Gooch (1939), Andersen (1993) portrayed the Rosefield as comprising lentils of marly clay that

EOCENE JACKSON GROUP

Jackson Group, undifferentiated—llight brownish gray and gray, silty and sandy clay, and clayey very fine sand, with red mottles. According to Andersen (1960) it comprises primarily clay, fossiliferous in its lower portions (Moodys Branch and Yazoo formations and Danville Landing beds), with varying amounts of sand, glauconite, and volcaniclastic material. Locally contains petrified wood, and cobble- and boulder-sized, light greenish gray carbonate nodules (Moodys Branch Formation). Fine-grained overall texture and the presence of glauconite are suggestive of deposition on a shallow, muddy shelf.

form a marine tongue extending into Natchitoches Parish from the east and pinching out

CLAIBORNE GROUP

characteristics are suggestive of deltaic deposition on a shallow shelf.

Cockfield Formation—generally very fine to fine sand of grayish to grayish brown coloration weathering to brownish orange-red hues. Ranges from sandy clay to medium sand, in places containing grayish clayey laminae that may become broken into rip-up clasts. Ironstone beds and nodules are common. Weathers locally to produce a thick (1 to 2.5 m) loamy sand surface mantle. Above its basal sand unit the Cockfield comprises "interbedded clays, silts, and muds" (Andersen, 1960, p. 92) and is "predominantly composed of very fine sand and silt" (Andersen, 1993, p. 87), with scattered occurrences of petrified wood, leaf fossils, lignite, and glauconite (Andersen, 1960). These

Cook Mountain Formation—greenish gray sideritic, glauconitic clay in its upper part, which may weather to brown ironstone; yellow to brown clays and fossiliferous marl in its lower part, which may weather to black soil. Ironstone concretions near base. In the Leesville 30 x 60 minute quadrangle it consists of fissile, very fine sandy clay, weathering maroonish-brownish. Fine-grained overall texture and the presence of glauconite are suggestive of deposition on a shallow, muddy shelf.

Sparta Formation—lightish colored massive to bedded sand, cross bedded in places, with interbedded clays, glauconitic sands that weather to concretionary ledges, and some thin interbeds of lignite or lignitic sands and shales. In the Leesville 30 x 60 minute quadrangle it consists of whitish to light gray very fine sand, clean and well sorted, with laminae accentuated by iron oxides and some channeloid cutouts. Though no detailed depositional characterization is available, the unit overall shows aspects broadly suggestive

of deposition in environments transitional between continental and marine. Cane River Formation—brown silty clay with basal glauconitic, fossiliferous silts, which may weather to ironstone locally. Fine-grained overall texture and the presence of

glauconite are suggestive of deposition on a shallow, muddy shelf. Carrizo Formation—well rounded, very fine to medium, glauconitic quartzose sand, commonly cross bedded, in places feldspathic and/or containing petrified wood (Andersen, 1993, p. 73; Andersen, 1960, p. 84). Ranges in color from reddish orange

to, in more-weathered outcrops, a deep-maroon limonitic sand containing abundant WILCOX GROUP

Sabinetown Formation—a sequence consisting of a basal glauconitic very fine sand bed, the Pierson glauconite, commonly characterized by Venericardia bashiplata; and an upper unit of laminated, slightly glauconitic clay, silt, and sand (Andersen, 1960, p. 82-83; Andersen, 1993, p. 69-70). Upper Prairie Allogroup—younger of Prairie Allogroup temporal phases, consisting of

Pendleton Formation—a heterogeneous sequence that can be generalized as consisting of a basal unit, the Bayou Lenann member, of glauconitic very fine to fine sand and sandy mud characterized by calcareous concretions containing Cardium toumeyi var.; a middle unit, the Slaughter Creek member, of glauconitic silty clay and sand, characterized by Nuculana corpulentoidea; and an upper unit, the High Bluff member, of very fine to fine sand, glauconitic and with silt, clay, and lignite interbeds, characterized by Venericardia sabinensis (Andersen, 1960, p. 72-79; Wasem and Wilbert, 1943). Where observed in the Leesville 30 x 60 minute quadrangle the Pendleton consists of light grayish-whitish clayey very fine sand and sandstone, weathering yellowish, with ironstone beds and root/boring casts.

Open Water **Contact**—includes inferred contacts.

Montgomery, Elizabeth, and Bentley. Included are broad areas of mid-Pleistocene colluvial ———— Normal fault—Identity and existence certain, location accurate. Ball and bar on Concealed fault—Identity and existence certain, location concealed. Ball and bar on

> downthrown block.

Roads and Railroads

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(Peason, Kisatchie, Dowden Creek, Kurthwood, Slagle, Simpson South, Fort Polk, and Birds Creek 7.5-minute quadrangles:) McCulloh, R. P., and P. V. Heinrich, 2002, Geology of the Fort Polk region, Sabine, Natchitoches, and Vernon Parishes, Louisiana: Louisiana Geological Survey, Report of investigations 02-01, 82 p. plus plates and appendices (includes ten 1:24,000-scale

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