

Geological Details for 2021 Geological Mapping of Miami County, Kansas

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The following provides a summary of published and unpublished data used in the development of the Geological Map of Miami County (i.e., Layzell et al., in prep). In the last few decades, numerous investigations of Pennsylvanian stratigraphy in eastern Kansas have identified significant miscorrelation of units within the Zarah Subgroup interval of the Kansas City Group, owing to rapid variability in unit distribution and thicknesses (e.g., Arvidson, 1990; Heckel and Watney, 2002; Oborny, 2015; and Oborny et al., 2017). Together, these observations resulted in revision to the stratigraphic nomenclature for this interval by the Kansas Geological Survey (Oborny et al., in prep). These nomenclatural changes have subsequently been used to revise and update the surficial geologic map for Miami County (Layzell et al., in prep.). Many critical observations from these previous studies are outlined in detail within Oborny et al. (in prep).

Some data, such as geophysical well-log tops data from oil and gas wells and unit isopach maps, were used in the recent geological mapping of Miami County and are accessible through closed-access journals as supplemental data (e.g., Oborny et al., 2017). These published oil and gas tops data are included within the data file accompanying this open-file report and are formatted in such a way that they may be readily imported into mapping software. This data file also contains GPS coordinates for 33 drill cores (fig. 1) assessed by Oborny et al. (2017); these coordinates may be similarly imported into mapping software. All geophysical well logs and drill cores within the data file, including descriptions of drill core from Oborny et al. (2017), are available through the Kansas Geological Survey's Oil and Gas Database at <http://www.kgs.ku.edu/PRS/petroDB.html>. Figure 2 shows unit isopach maps from Oborny et al. (2017). It is important to note that the authors of the geological map of Miami County that accompanies this open-file report found discrepancies between field observations and unit

identifications made by Oborny et al. (2017) for drill cores M-52 and M-53A. The unit identifications made by Oborny et al. (2017) for these two drill cores are supported by detailed conodont biostratigraphic data. Therefore, we suspect that cores M-52 and M-53A were collected in altogether different areas than reported at the time of drilling; hence, the cores are not used in generating the geological map of Miami County (Layzell et al., in prep).

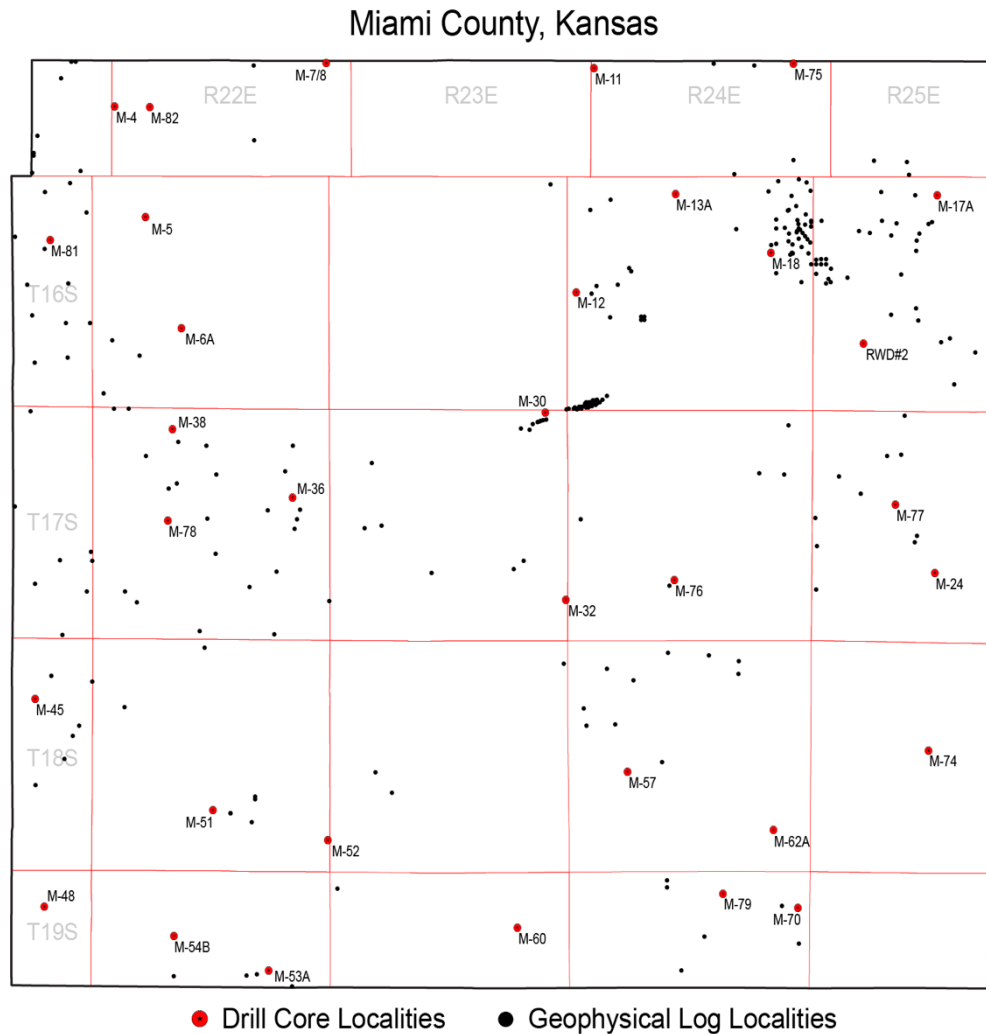


Figure 1. Map of Miami County, Kansas, illustrating locations of drill cores and oil and gas wells used by this investigation. In addition to the 165 oil and gas wells and 33 drill cores used by Oborny et al. (2017), this investigation examined an additional 91 oil and gas wells.

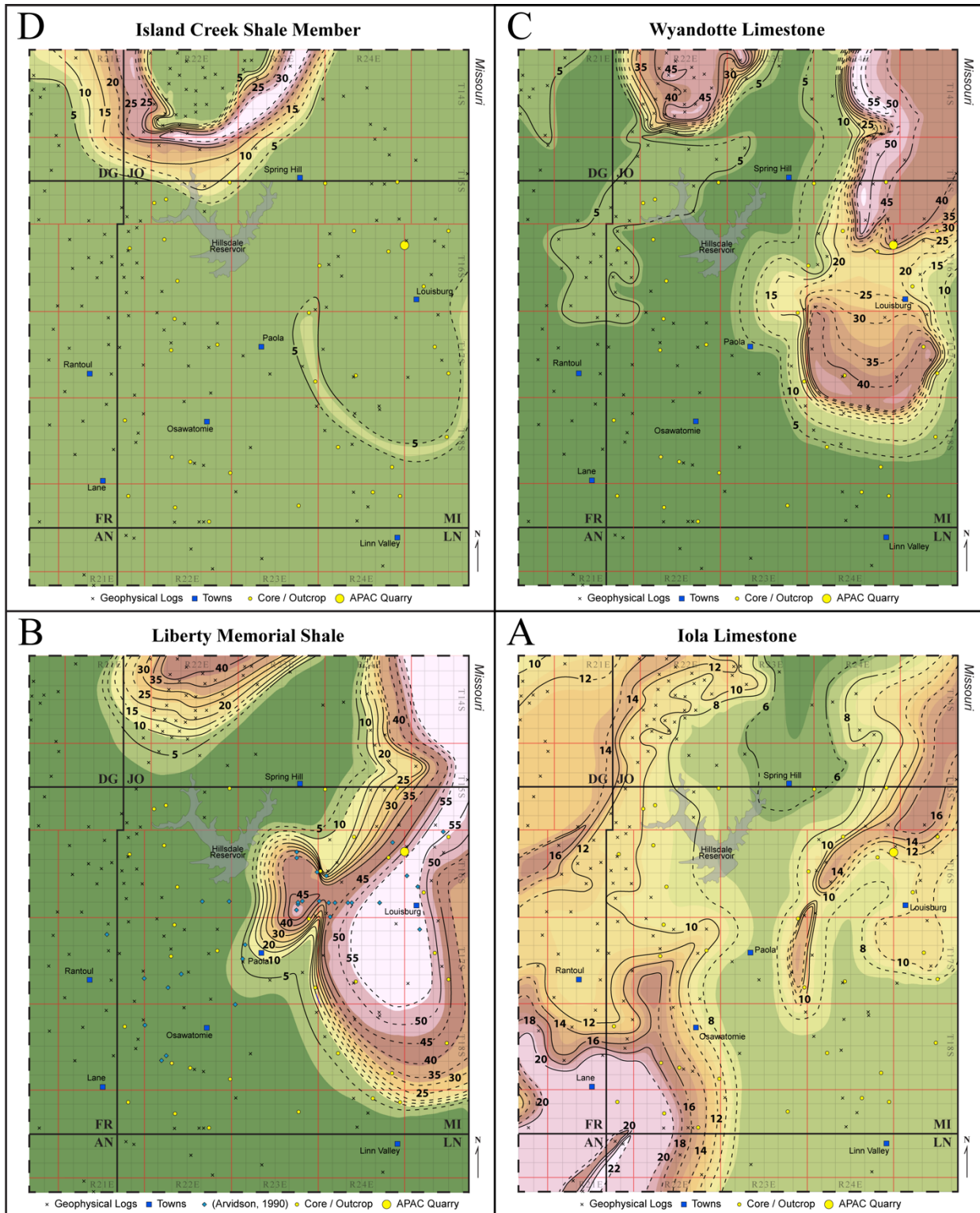


Figure 2a–d: Unit isopach maps from Oborny et al. (2017). (a) Iola Limestone, (b) Liberty Memorial Shale, (c) Wyandotte Limestone, and (d) Island Creek Shale Member.

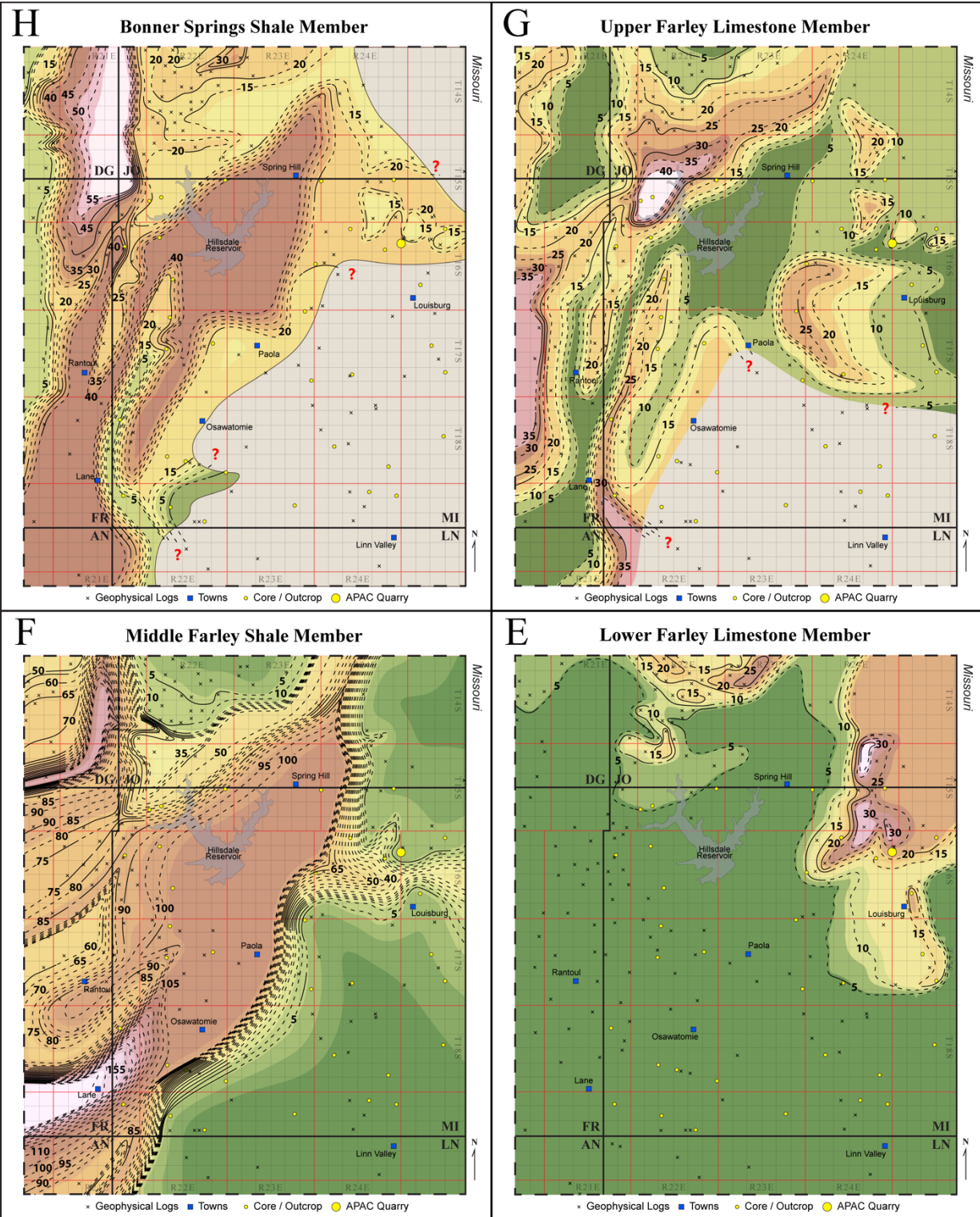


Figure 2e–h: Unit isopach maps from Oborny et al. (2017). (e) Lower Farley Limestone Member, (f) Middle Farley Shale Member, (g) Upper Farley Limestone Member, and (h) Bonner Springs Shale Member

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