

## **Controls on the Distribution of Organic Matter in Lacustrine Deposits of the Eocene Green River Formation, Eastern Utah and Western Colorado**

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Using Fischer Assay oil yield as a proxy for organic matter (OM) content, grade distribution plots for each of the 17 recognized stratigraphic zones in the Eocene Green River Formation Uinta and Piceance Basins, Colorado and Utah were generated using data from the most recent U.S. Geological Survey assessment of western U.S. oil shale. The Green River Formation was deposited in a large saline lake, Lake Uinta. A study of the distribution of OM in each of these zones indicates that OM content is related to: 1) variations in OM production, and 2) the lateral transport of organic-rich sediments on the floor of the lake. Each dominated during different phases of the lake. Lake Uinta formed during a major transgression during which two much smaller fresh-water lakes merged forming one large lake. During maximum flooding, relatively uniform, low-grade oil shale was deposited over the large offshore area, and there is little evidence of lateral transport of sediment. Infilling began shortly after maximum transgression ultimately producing broad marginal shelves around a relatively compact deep depocenter. The transport of organic-rich sediments from these marginal shelves basinward into the depocenter increased as the shelves expanded. OM content among individual stratigraphic intervals in the depocenter during this period was highly variable due to local variations in lateral transport processes. Later, Lake Uinta expanded gradually, ultimately covering much of the marginal shelves with laminated organic-rich deep-water sediments. As water depth on the shelves increased, evidence of lateral transport of sediments diminishes. Although OM content varied through time in these laminated sediments, the lateral distribution of OM within any given time interval from individual bed to entire zone varied in a predictable, uniform fashion over much of the lake.