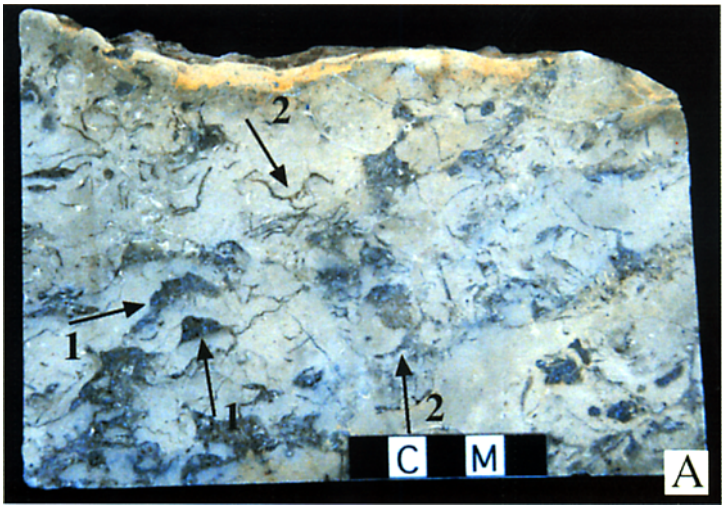

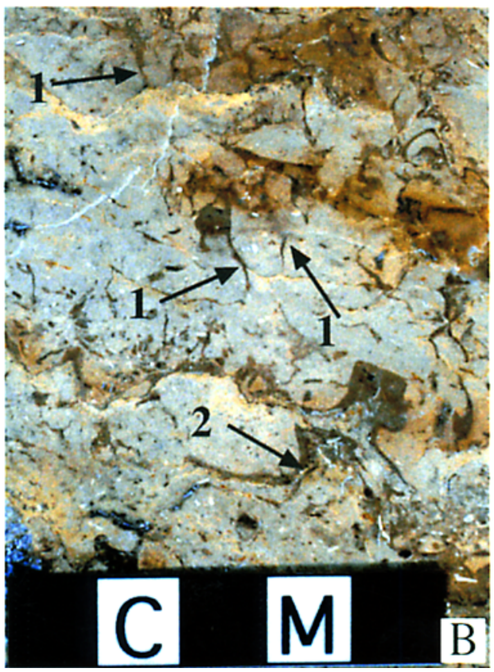

Figure 3.1. Hand samples showing different types of spar accumulations found in the rocks of the Farley Limestone.
(A) Phylloid algal wackestone with spar in shelter pores (1) and phylloid algal molds (2).
(B) Phylloid algal wackestone with spar dominantly in fractures (1) and phylloid algal molds (2).
(C) Phylloid algal packstone with spar found almost exclusively in phylloid algal molds (arrows).

not included in this percentage. Whereas the bulk spar percentage discussed above is determined from outcrops and hand samples, the aggregate spar percentage was estimated following petrographic examination of splits of aggregate samples subjected to KDOT physical tests in order to deal with differences before and after crushing. Because this property is obtained from crushed aggregates, data were only available for those 10 samples for which crushed aggregates were available (KU-1-KU-10).

Table 3.1. Table of spar characteristics observed in the rocks of the Farley Limestone.

Spar Type	Crystal Shape	Crystal Size	Boundary Shape
Sparry Cement	Equant: crystals have essentially equal length and width Bladed: length to width ratios are between 1.5:1 and 6:1 Fibrous: length to width ratio is greater than 6:1	Wide range of crystal sizes ranging from approximately 50 microns to several millimeters.	Intercrystalline boundaries of equant crystals are typically planar with even contacts. Irregular boundaries are present in small (under 70 microns) equant crystals and on some bladed crystals.
Neomorphic Spar	Exclusively equant crystals	Microspar: equant crystals of 5-10 microns. Pseudospar: equant crystals of 10-50 microns	Neomorphic spar is typically found in mosaics of microspar or pseudospar with crystal boundaries of an irregular nature.

Clay Percentage and Type

All data concerning clay percentages and forms for all rocks studied were compiled from field observations and laboratory testing.

Total Percentage of Clay-Rich Strata

The total percentage of clay-rich strata is an estimate of the total thickness of the stratigraphic interval that contains any type of clay-rich zone. To calculate this value, estimates of the thickness of individual beds that contained any clay-rich material were made. From these estimates of clay content of individual beds, a total percentage of clay-rich strata was calculated for each stratigraphic interval.

Clay Distribution

Clay is typically distributed within a stratigraphic interval as shale beds, concentrated stylocumulates, diffuse stylocumulates, and disseminated material. Commonly it is found in concentrated clay-rich seams or stylocumulates defining bedding planes or within individual beds (Figures 3.2, 3.3). Shale beds and concentrated stylocumulates were identified by their size, shape, and relationship to the surrounding carbonate. The concentrated stylocumulates are typically = 5 mm thick and are dominantly planar to slightly undulose with uniform thicknesses along their lengths. The seams generally have sharp to slightly gradational contacts with surrounding carbonate and commonly contain fossil material. Concentrated stylocumulates and shale strata are easily identified because they can be removed from the surrounding carbonate with a hammer or pick or by crushing the rock. This is possible because there is little carbonate within the clay-rich area and it is easily separated from the surrounding limestone. Therefore, this occurrence of clay generally does not become a part of the aggregate because it is crushed into fine particles.

Some clays are in diffuse stylocumulates spread out within limestone beds (Figures 3.2 & 3.4). These diffuse stylocumulates are composed of numerous subparallel microstylolites and have a wispy to patchy appearance commonly dying out into the surrounding limestone. Because the diffuse stylolites are composed of numerous microstylolites spread throughout the limestone, they cannot easily be separated from the surrounding limestone with a pick or by crushing the rock. Because

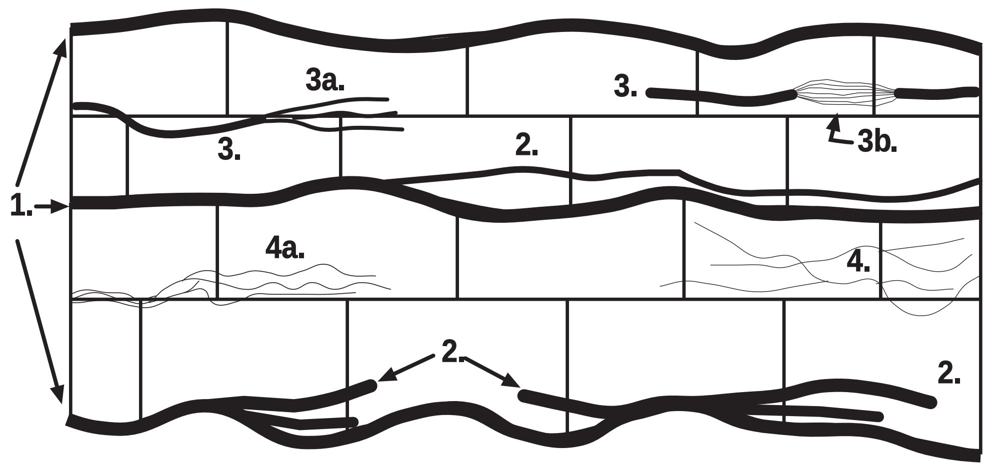

Figure 3.2. Hypothetical illustration of two limestone beds with various forms of clay distributed within them (1). Concentrated stylocumulates or thin shale beds are typically located along bedding planes and may branch into surrounding limestones (2). Concentrated stylocumulates also occur within limestone beds (3). These often branch into slightly more diffuse stylocumulates near their ends (3a) or have zones of diffuse stylocumulates within them (3b). Diffuse stylocumulates also occur as thin wisps or stringers of clay-rich material within limestones (4), and may have a horsetail appearance (4a).