

The Geology of the Site of the
Spanish Diggings,
Niobrara and Platte Counties, Wyoming

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Location of Site: The Spanish Diggings, as herein defined, consist of a score of Indian quarry sites on both sides of the Niobrara-Platte County boundary in T. 30 N., R's. 66 and 67 W., and T. 31 N., R. 66 W. The area extends for a distance of six miles in a northeast-southwest direction. It is bounded by Willow Creek on the south and the South Fork of Muddy Creek on the north. (See area covered by Cloverly formation in accompanying map.)

Geology: The rocks exposed in the area range in age from Triassic (?) to mid-Tertiary. All quarry sites are in rocks of Cretaceous age (Cloverly formation). The following succession of formations is at least partially exposed:

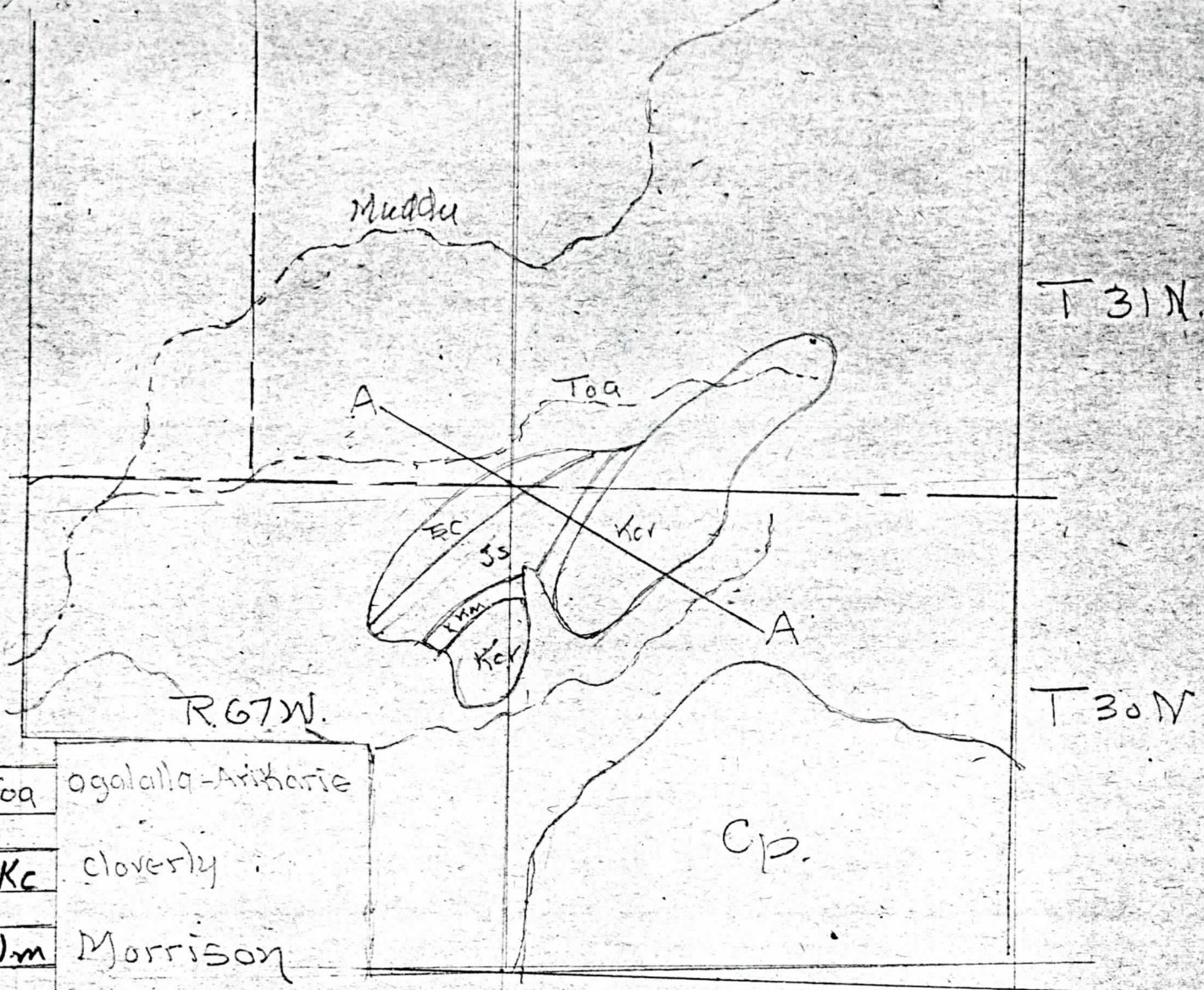
<u>Age</u>	<u>Formation</u>	<u>Thickness (Feet)</u>
Miocene	Ogallalla-Arikaree undivided	--0 to 100
Cretaceous	Cloverly	150 to 200
Jurassic	(Morrison (Sundance)	300 300
Triassic (?)	Chugwater (Spearfish)	600

Subsequent to the deposition of the Cloverly formation and prior to the deposition of the Ogallalla-Arikaree succession the rocks of the area were folded and deeply eroded. The Ogallalla-Arikaree rocks were deposited unconformably upon the eroded surface etched in all older rocks. During

the present cycle of erosion part of the Ogalalla-Arikaree rocks have been removed, exposing the island-like occurrence of the older succession.

Quarry sites are located upon a conspicuous ridge capped by the Cloverly formation, which normally consists of sandstones and shales. The basal sandstones are locally conglomeratic. Here the sandstones have been, in part at least, metamorphosed into quartzites. Secondary silica has been deposited in the spaces between the sand grains, thereby cementing the rock into a tough quartzite suitable for artifacts. No detailed study of these quartzites has been made by the writer. It is believed that the degree of metamorphism varies from place to place both laterally and vertically through the sandstones. The rock in some places was therefore more desirable for artifacts than in others. Quarrying operations were carried to a depth of from 15 to 20 feet in search for the more desirable phases of the quartzite or siliceous aggregates which are reported to be locally present. The quartzite is of various colors.

The writer has not made a detailed study of the presence of Recent alluvium throughout the area. When last visited some years ago no extensive deposits of alluvium were noted, although small batches of stream deposits probably occur in the stream channels. The entire area appears to have been subject to erosion since late Tertiary time, and consequently there has been little accumulation of Pleistocene or post-Pleistocene alluvium. Residual soils on the flatter slopes of the Sundance and Morrison formations are probably from a few inches to a few feet thick. There are, no doubt, limited occurrences of water or wind transported material scattered over the area. These have not been studied in detail and their occurrence or character are therefore unknown to the writer.



Toa Ogallala-Arikare

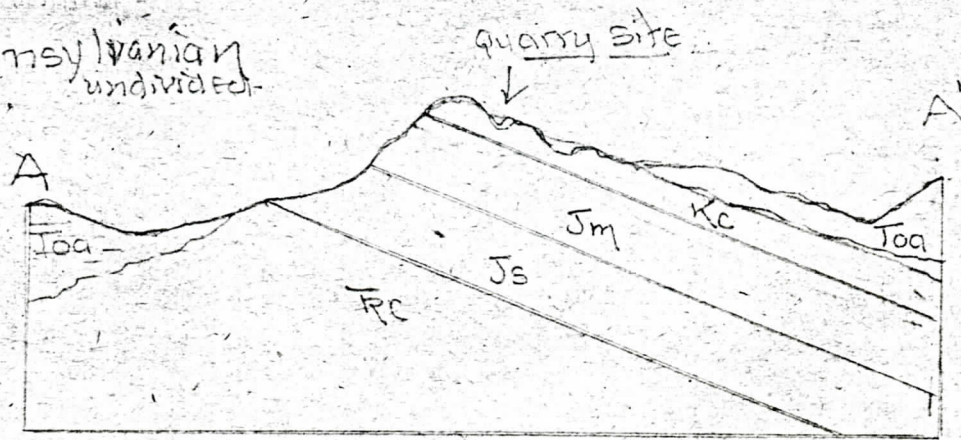
Kc cloverly

Jm Morrison

Js Sundance

Rc chugwater

Cp Pennsylvanian undivided



Generalized Cross Section along line A-A'

Map after U.S. Geol. Survey of Wyoming - 1925

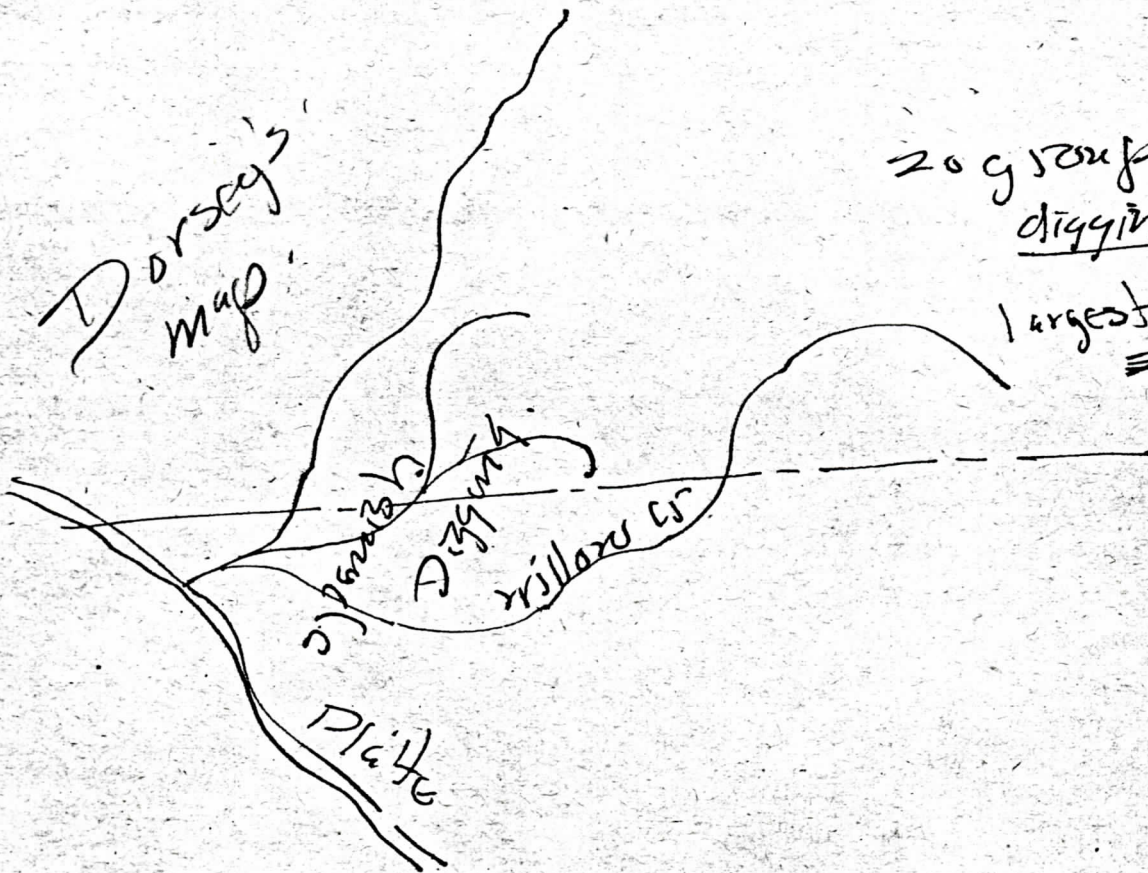
Copy of
map by WCH night



Bluff 5-6 miles long.

Dorota - ss - white - nearly black, light pink
to dark red -

Dorsey's
map



20 groups of
diggings

largest covers
~~2~~ 40 acres

Dr. W. C. Knight Spanish Wiggins
Science. March 4 - 1898

913.787

D739

Field Columbian Museum -

Dr George A. Dorsey. Publication No 51 - 1900

"Handbook of aboriginal American
Antiquities" - by W. H. Holmes

✓ B. A. E. Bulletin 65 - pp. 210-213
