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September 9, 1943

Mr. F. J. Anderson

The Monolith Portland Midwest Company

Laramie, Wyoming

Dear Mr. Anderson:

In accordance with your request, I am submitting herewith estimates of the tonnage of limestone underlying Secs. 3, 4, and 5, T. 16 N., R. 72 W., in the Roger's Canyon district, Albany County, Wyoming.

The days, September 3-7, 1943, were spent mapping the limestone outcrops in the Casper formation and measuring thicknesses of beds. A map showing the areal extent of the limestones is submitted herewith.

Conclusions.- The sections in question are underlain by a total of at least 367,437,000 tons of limestone, distributed as follows: Sec. 3, 52,812,000 tons; Sec. 4, 128,375,000 tons; Sec. 5, 186,250,000 tons.

General geology.- The Roger's Canyon region is occupied by about 600 feet of sandstones and limestones which comprise the Casper formation. The sandstones and limestones are inclined westward at angles varying from 3 to 6 degrees, but in the SW¼ Sec. 5 and in Sec. 6 are folded into an anticline with the beds standing vertically on the east limb and dipping gently westward on the west limb.

Exposures through the area are not uniformly good and it is difficult to correlate the different limestone beds from place to place. The distribution of the different units shown on the map are believed to be essentially correct, however.

The sequence of beds in the Cooper formation are as follows, from the top downward:

Undifferentiated sandstones and limestones: These beds lie at the top of the formation and are not well exposed. Apparently there are limestones in the sequence which may be as much as 10 or 15 feet in thickness. None of these limestones were considered in estimating tonnages.

Limestone C: Limestone C, as shown in the map, actually comprises two limestones separated by a sandstone bed. In the south part of Sec. 32, T. 17 N., R. 72 W., the upper limestone is 12 feet thick, but appears to be considerably thicker in the southwest part of Sec. 5. The lower limestone is about 15 feet thick. Consequently, a total thickness of 30 feet was used in computations involving this bed.

Sandstone unit:

Limestone B: This limestone was found to exceed 25 feet in thickness in several places, but in calculating tonnages, a conservative thickness of 20 feet was used.

Sandstone unit:

Limestone A: This limestone exceeds 40 feet in thickness where well exposed, but in computations a thickness of 30 feet was used for the bed.

Sandstone unit:

Lowermost limestone: This bed is exposed at the surface in the northwestern part of Sec. 3, where it is 20 feet thick. That figure was used to calculate the total tonnage of this limestone underlying the area.

Basal redbeds:

Pre-Cambrian crystalline rocks:

The limestones can be traced for many miles north and south along their outcrops and they are known, therefore, to be persistent units. Consequently beds cropping out only in the eastern part of the area surveyed can confidently be projected to the westward below the younger beds.

Computations.- A planimeter was used to determine the areas in square feet occupied by individual limestone units. This figure was multiplied by

the thickness of a bed to obtain volume in cubic feet. The limestone was arbitrarily estimated to weigh 125 pounds per cubic foot. Total poundage was then converted to tonnage.

Limestone C (30' thick)

	Areal extent; sq. ft.	Tonnage
Sec. 3	3,500,000	6,562,000
Sec. 4	8,000,000	15,000,000
Sec. 5	25,000,000	46,875,000
		68,437,000

Limestone B (20' thick)

Sec. 3	7,000,000	8,750,000
Sec. 4	22,800,000	28,500,000
Sec. 5	29,000,000	36,250,000
		73,500,000

Limestone A (30' thick)

Sec. 3	10,000,000	18,750,000
Sec. 4	31,000,000	43,125,000
Sec. 5	33,000,000	61,875,000
		123,750,000

Lowest limestone (20' thick)

Sec. 3	15,000,000	18,750,000
Sec. 4	33,400,000	41,750,000
Sec. 5	33,000,000	41,250,000
		101,750,000

TOTAL TONNAGE — 367,437,000

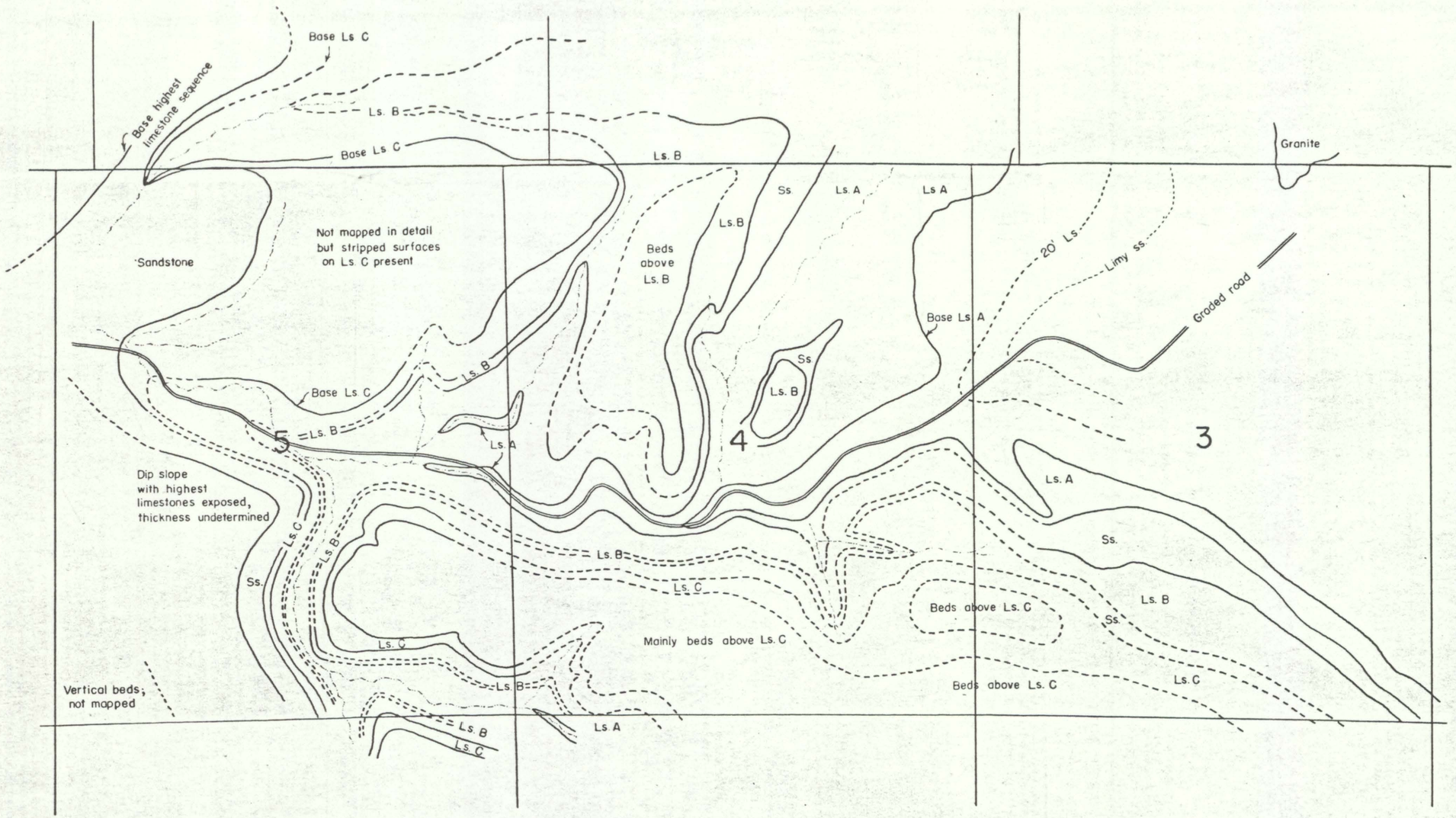
Through measuring the areas at which limestone is exposed at the surface and estimating areas in which the limestones are overlain by no more than 20 feet of overburden, it appears that there are approximately

30,000,000 tons of limestone readily available by stripping in the three sections.

I trust this information will fulfill your needs.

Very truly yours,

HDT/ltb



GEOLOGICAL MAP SHOWING

LIMESTONES IN CASPER FORMATION

T. 16 N., R. 72 W., ALBANY CO., WYO.

H. D. Thomas — Sept., 1943