

UMATILLA COUNTY

Geologic reconnaissance in Parts of Umatilla and Morrow Counties N.S.W. May 5, 1945
Report of Umatilla Co geology + mining potential - author unknown - early '40's or late 30's

Account of earthquake in Umatilla County--July, 1936. N.S. W 1/29/47
B & B Mortarless Block Company (Building Blocks)

Geology & Groundwater of the Pendleton Area, Umatilla Co J.E.A.

Hobson & Shack (Sand & Gravel) N. S. W. 1/29/47

Jones Scott Co. (Sand & Gravel) N. S.W. 1/30/47

Kik Tract of Land N.S.W. 10/15/48
Sehman + Hedaway Hot Springs NSW 9-9-70

Pendleton Pumice Products Co., (Building Blocks) N. S. W. 1/29/47
Pendleton Sand & Gravel Co. (Sand & Gravel) N. S. W. 1/29-31/47

Umatilla Building Materials, Inc. (Concrete, Tile, Brick) N. S. W. 1/30/47

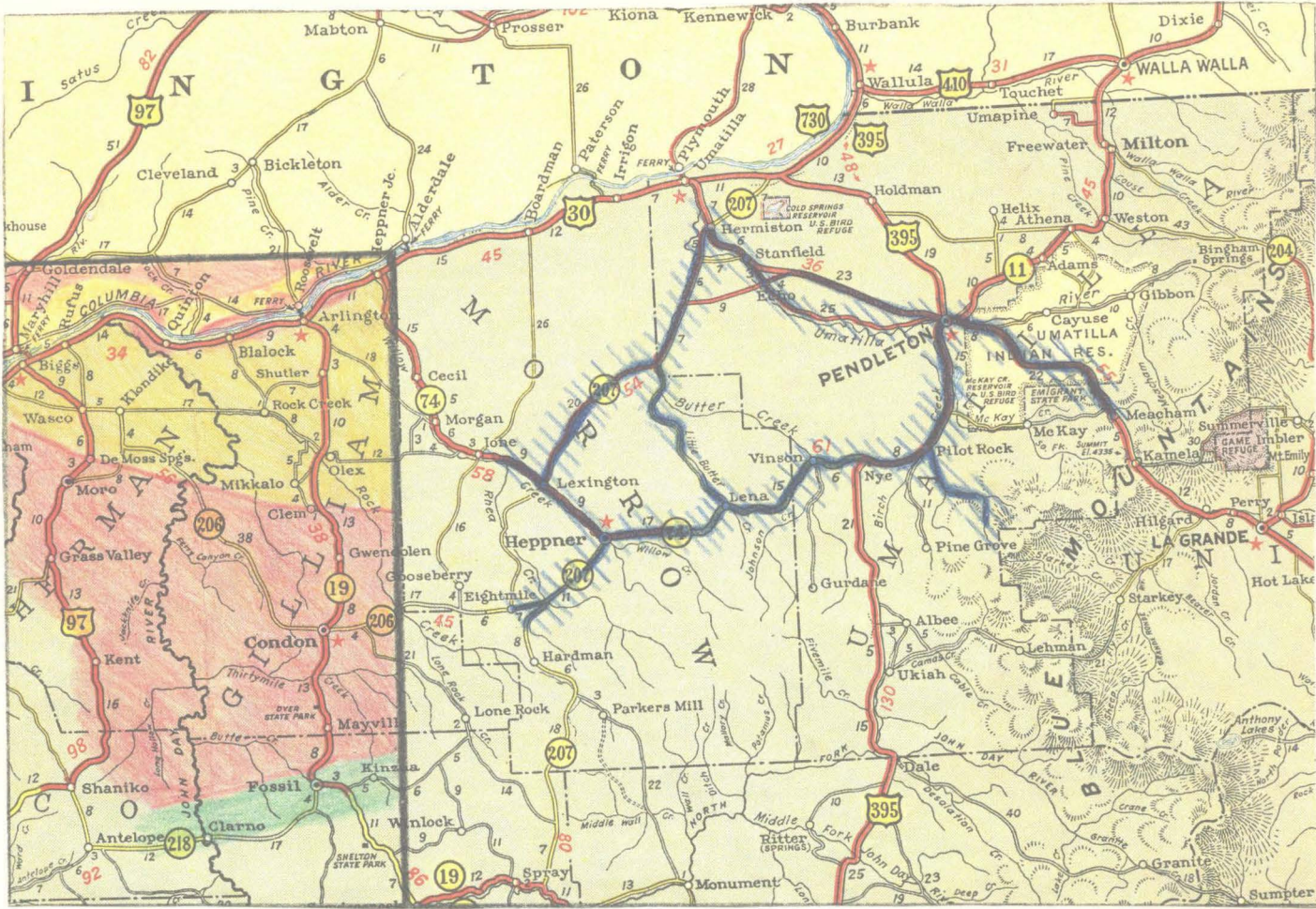
GEOLOGIC RECONNAISSANCE IN PARTS OF UMATILLA AND MORROW COUNTIES

FOREWARD:

Reports of iron occurrences in the area covered in this report have come to the attention of the Baker Field Office on several occasions and through different and independent sources. Although the area in question has not been mapped geologically it was believed to be composed in the main of thick lava flows, and accordingly an unlikely site for an iron deposit in the usual commercial sense of the word. However, four conventional mining symbols appearing on the Umatilla National Forest map (south half, 1940) in the vicinity of the reported occurrences lent credence to their existence. A special effort was made to confirm these reported occurrences in hope they might prove to be ferruginous bauxites such as are associated with comparable lavas in Washington and Columbia Counties. Reconnaissance geology bearing on the possible occurrence of such ferruginous bauxite in the area at large was also made in the following report summarizes all findings and observations.

AREA:

The area covered is bounded by the roads from Pendleton to Heppner via Pilot Rock, Nye, Vinson and Lena and from Heppner to Pendleton via Lexington, Hemiston, Stanfield and Echo. Areas receiving especial attention outside of this area include side trips from - 1. Pilot Rock up east Birch Creek and Pearson Creek; 2. from Heppner to Eightmile and also nearly to Hardman; 3. from Lexington to near Ione, and 4. from Pendleton to Meacham. Within the area much of the section paralleling Little Butter Creek was traversed.



Map showing area traversed and a portion of Hodges geologic map.

Legend for Geologic Map

- Yellow ---- Shutler formation (Pliocene)
- Red ----- Coriba (Columbia River basalts (Miocene)
- Green ----- Clarno, John Day and older formations

GEOLOGIC DISCUSSION:

The nearest significant geologic mapping to this area is that in the Geological map of North Central Oregon included in Hodge's Geology of North Central Oregon. Although the eastern border of this map is about 18 miles distant (to the west) from the nearest portion of the area studied formational descriptions and correlations appear to apply aptly indeed to features observed in the area under study, even in the extreme eastern portion which is some 65 miles east of the nearest border. And on the basis of such long range correlations it would appear that a geologic map of the area under discussion would show not Columbia River basalt as the predominant formation, but rather the Shuttler formation or an equivalent thereof. Further, it is quite possible that detailed mapping might demonstrate that a younger age of lavas occur here as do the Cascade and even younger intracanyon flows west of La Dalles.

Pendleton-Pilot Rock Section

Fluviatile deposits including much well rounded, often coarse gravels, monopolize the section along the highway from Pendleton to Pilot Rock. These sediments seem to have a considerable thickness and they appear to blanket the hills on either side of the highway. They appear to rest on the basic lavas (very probably Coriba) which are exposed along the Unatilla River Canyon west of Pendleton, and which likewise constitute the chief formation to be seen on the east-west section from Pilot Rock to at least Lena. Small patches of volcanic ash or diatomaceous earth occur in these sediments which further conforms to Hodge's description of the Shuttler formation as a whole.

Pilot Rock to Heppner Section

As already stated, the east-west section from Pilot Rock to Lena is made up of basic volcanics. The hills along this section, particularly in the central western portion, are dissected with deep valleys. Soil covering is sparse and these flows can be

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seen for great distances on either side of the highway. From Lena to Heppner relief becomes somewhat less rugged and soil mantle heavier.

Paralleling this east-west section to the south and an estimated 5-6 miles distant, are the foothills of the Blue Mountains and there is little doubt but what the older Tertiary formations (John Day and Clarno) continue eastward along these Mountains from Hodges area. Numerous tales of fossil sites (all to the south) by informants questioned along the road testify to this. However, reasonably authentic tales of coal "mines" complicate the picture.

Hodge calls attention to lignitic coal beds in the Mascall which overlies the Coriba, but doesn't mention them in his description of the older formations. It is the writer's understanding nevertheless that coals are described elsewhere in some of the older formations, although literature to substantiate this is not at hand. At any rate coal south of this east-west basaltic section would indicate either that (1) older coal bearing formations occur there, or that (2) patches of Mascall overlie the Coriba there, or (3) that the lavas comprising this section are younger than both the Coriba and the Mascall.

The probabilities are that these lava are Coriba, but more detailed field work would be necessary to establish existing relationships with certainty.

East Birch Creek-Pearson Creek side trips.

The valley of east Birch Creek is a narrow, relatively deep valley. From Pilot Rock to a point about 7 miles upstream it was walled with steep cliffs of lava flows. Farm fields covered the bottom. At this point conspicuous deposits of "diatomaceous-ash" occur on the valley bottom. Then the valley narrows and a fossiliferous coal-bearing sandstone makes up a high hill on the north east side of the road. Basic lavas are abundant beyond this point and up the lower reaches of Pearson Creek and yet other coal occurrences are reported on its headwaters. More extensive study would be necessary to establish whether or not this coal bearing sandstone is preserved remnants of

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Mascall or not but it was the writers impression that ~~the~~ lavas might be found to overlie it.

Happner to Lexington to Butter Creek on the Harriston road - including side trip from Lexington towards Iona.

The country along this section and as far as could be seen on either side of the road consisted of numerous low, but well rounded hills. These were cultivated to the fence lines and outcrops of bedrock were conspicuous for their absence. Widespread and abundant float rock indicated the bedrock to be exclusively basalt, and this extensiveness of float together with evidence to be seen in road cuts, indicated that the mantle was quite thin. While in places this mantle may be residual basaltic soil or a wash of same from very local sources, fluvial material appears to be by far the most prevalent.

Section from point where Butter Creek crosses Lexington-Harriston road to Harriston, including a side trip south along Little Butter Creek.

At the point where Butter Creek meets the road and south along Little Butter Creek and for a few miles north along main Butter Creek bedrock is again much in evidence both as abrupt cliffs and as ridges extending great distances along the flanks of the hills. Concurrently, lake beds, where exposed, show considerable thickness and an especially prominent development of fine sands. These appear in abundance as far south as Sand Hollow.

The lavas here are basaltic and are very likely an extension of those along the east west Pilot Rock-Happner section already described, exposed here due to the appreciable down cutting of Butter Creek.

To the north from where the road crosses Butter Creek sands become increasingly abundant and finally dunes are to be found on the north end.

Section from Hermiston to Pendleton via Echo

On the western or Hermiston end of this section conditions are as just described in the last paragraph of the preceding section. Some of the dunes along the highway have been treated with asphalt or oil to reduce migration. With progress eastward outcrops of basalt become more in evidence finally ending with the big outcrops in the canyon of the Umatilla River just west of Pendleton. These basalts are most probably Coriba. However, these basalts at large are covered with sediments on most flat places and outcrops are limited chiefly to river canyons or road cuts.

Section from Pendleton east up the Blue Mts. to Mesham.

Well rounded, coarse gravels such as described in the section from Pendleton to Pilot Rock alternate with basalt outcrops from Pendleton east to the foot hills of the Mountain. ^{otherwise} Superimposed basalts constitute the exclusive rock exposed along the road from the base of the mountain to the summit. Here occurred the most abundant development of native basalt soil seen. In the gullies of the foothills it was often thick, accumulated obviously as wash from the hills above. With increased elevation this soil becomes progressively thinner amounting to merely a thin skin at the summit.

In approaching these mountains from Pendleton conspicuous truncated spurs and fault scarps such as characterize the basalt hills surrounding many of the valleys in eastern Oregon, appeared wanting. Instead it appeared that the foothills reflected the outline of individual flows which came from some source back in what is now the more central portion of the mountains - with successive flows each falling short of the ones beneath. This effect could be a reflection of erosion, but if the mountains are due dominately to a build up of successive flows, rather than uplift and faulting, it might well be that these accumulations here mark the site of one of the major sources of the Columbia River basalts -- that outpourings of the same sort of basaltic lava continued on a progressively decreasing scale long after the celebrated Miocene basaltic floods had abated. If such might be the case, then Columbia River basalts could really have

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dual ages -- Miocene for the widespread basalt floods and younger ages for local continuations of the same. Such an explanation would help clarify some of the questions and contradictions arising in connection with the age of these basalts and it is not illogical to presume but what local continuations of basalt outpourings did occur. Whether such continuations did prevail on the Mountain east of Pendleton as suggested here would require much detailed field study. The thought is just expressed here at this time for whatever it is worth.

REPORTED IRON OCCURRENCES: Two occurrences were run down. One was a case of mistaken identity where an extensive red zone between flows in Bitter Creek was regarded as hematite. Another in the vicinity of Indian Mountain was inaccessible due to snow. While according to my informant it seems to be a genuine occurrence, it apparently is a vein of pyrite or magnetite situated in the decidedly older formations and not a lateritic occurrence.

Repeated inquiries brought to light no additional rumored occurrences anywhere here.

MINE SYMBOLS ON FOREST SERVICE MAP

The four mine symbols occurring on the Umatilla National Forest Map (south half, 1940) are located as follows:

T. 2 S., R. 20 E., S. 22
T. 3 S., R. 26 E., S. 23
T. 4 S., R. 25 E., S. 5
T. 4 S., R. 25 E., S. 7

All these sites were visited as closely as it was possible to do so and present or past owners of the land on which these occur together with several engineers of the State Highway Commission, were interviewed. In only one instance did anyone know of as much as a rumor of any mining or prospecting activity at these locations or at any other location north of the "coal mines". This one exception was so vague as to be worthless - in essence Mrs. Anderson who owns the

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ranch at T. 4 S., R. 25 E., S. 5 site did recall that about 25 years ago some men (identity unknown) did dig a sizeable mysterious hole about there for some unknown reason.

The final conclusion was that these symbols mark the sites of highway rock quarries. But why the person who compiled this map showed these particular four quarries is anybody's guess. He could have spotted 54 or so others and to be consistent should have done so.

OTHER LINES OF INVESTIGATION

A sample of ferruginous bauxite was shown to several competent and informed people -- chiefly engineering personnel of the State Highway Department whose search for road metal had led them to examine rock formations all over this particular territory and other parts of north central Oregon as well. No-one contacted had seen any formation resembling the sample.

CONCLUSIONS

No ferruginous bauxites were seen, nor were any reported occurrences heard of. Investigation of rumored iron occurrences and mapped prospect sites proved these occurrences to be cases of mistaken identity or otherwise unfounded. Reconnaissance geology indicated there was little likelihood of finding lateritic deposits within the bounds of the area investigated for the following reasons;

- 1) Very much, if not most, of the area/^{was} covered with sediments of one variety or another (tentatively correlated as the Shutler or an equivalent thereof) and not basalt or soils derived therefrom.

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- 2) Of the few places in which basalt soils were observed, the best development was on the slopes of the Blue Mountains and there appreciably thick occurrences were limited to wash material in the gullies in the foothills.
- 3) The contact between the basalts and the overlying sediments appeared sharp and clean in the few places it was clearly exposed, and the abundance of very coarse gravel common to the overlying sediments over a large area suggest torrential conditions of sedimentation. Thus it is unlikely that any lateritic occurrences might be found buried under these sediments. Besides, if the correlation of these sediments as Shutler is correct, the differential in age between them and the basalts is so relatively small that it is unlikely that any appreciable amount of lateritization could have occurred before the sediments were deposited.

Before these conclusions relative to the possible occurrence of ferruginous bauxites is applied to all of north central Oregon, the areas between Pendleton and Hermiston and the Washington State line and the great expanse of Columbia River shown on Hodges Map around Grass Valley and extending east to the area covered by this discussion, should be investigated. The overlying sediments may not extend to the Washington line, and, although this seems doubtful from Hodge's paper, native decomposition products may be more abundant on the basalts to the west.

Report by: N.S. Wagner
Examination made April 24, 25, 26, 1941
Report submitted May 5, 1945