

State Department of Geology and Mineral Industries

702 Woodlark Building
Portland 5, Oregon

MEHAMA BAUXITE LOCALITY

Marion County

Owner and area: An undetermined number of acres have been optioned or leased by Mr. James W. McMahan, 2249 N.W. Glisan Street, Portland, Oregon.

Location: SE $\frac{1}{4}$ sec. 1, T. 9 S., R. 2 E. At a distance of 5.8 miles east of Mehama along the road following the Little North Santiam River turn left on road leading to the P. G. Ferris sawmill in sec. 12, T. 9 S., R. 2 E. This mill is .7 mile north of the Little North Santiam River road and the bauxite locality is about one-fourth to one-half mile north of the mill.

History and development: In 1949 and 1950 a minor amount of exploration consisting mainly of shallow test pits and one open cut was completed by J. W. McMahan. R. L. Nichols, geologist with the U. S. Geological Survey, reported during World War II that high alumina clays occurred in and around Keel Creek in about sec. 1, T. 9 S., R. 2 E.

Geology: A narrow northeast-trending ridge divided into two parts by a narrow saddle occupies a portion of the SE $\frac{1}{4}$ of sec. 1, T. 9 S., R. 2 E. The elevation of the surface of this ridge is about 1,800 feet (altimeter). Since a topographic map of this immediate area does not exist, accurate location of the bauxite occurrence and the locations from which samples were taken cannot be depicted. For approximate sample locations see Figure 2.

The area is made up of a series of basic lavas and pyroclastics which may entirely or in part belong to the Mehama volcanic series as mapped by Thayer (1939) in the vicinity of Mehama. The lavas and pyroclastics have been altered in places to clay and possibly ferruginous bauxite, as indicated by the bauxite nodules occurring on this ridge in the SE $\frac{1}{4}$ sec. 1, T. 9 S., R. 2 E.

High alumina clay is exposed in shallow pits dug along a logging road which lies along the southeast side of a portion of the ridge and which turns northwestward across the saddle in the ridge. This clay is about 80 feet below the surface of the ridge. Above the road are some pits which expose hard, tan, fine-grained bauxite nodules. Southwest of the saddle tan bauxite nodules are exposed along the surface of the ridge. The open cut situated on top of the ridge southwest of the saddle extends S. 60° W. for about 75 feet and is approximately 8 feet wide and 5 feet deep. Below approximately 2 feet of top soil and silt, 3 feet of red and tan clay containing some tan limonitic bands and tan bauxite nodules are exposed in this cut. A hole 2 feet deep in the bottom of the open cut exposes tan and gray bauxitic clay consisting of alternating tan limonite and gray clay streaks which appear to be bedding laminae, but probably the tan streaks represent channels in the original clay along which surface waters deposited limonite. Gray, slightly altered basalt(?) float is so profusely scattered over a small portion of the top of the ridge northeast of the saddle as to indicate that basalt occurs in place.

Several clay and bauxite float samples were taken during the reconnaissance examination of this locality and were analysed as recorded in the following table.

CLAY AND BAUXITE SAMPLES FROM SE₁ SEC. 1, T. 9 S., R. 2 E.

<u>Sample No.</u>	<u>Location</u>	<u>Megasconic description</u>	<u>SiO₂</u>	<u>Fe₂O₃</u>	<u>Al₂O₃</u>
Field #1 P-10031	From pits on logging road on S.E. side of ridge N.E. of saddle approximately 80 feet below top ridge.	Tan and gray clay.	34.96	14.84	33.64
Field #2 P-10032	Chips from float nodules in small pit on S.E. side of ridge N.E. of saddle approximately 25 feet below top of ridge.	Tan and gray hard granular bauxite nodules.	6.64	11.83	49.19
Field #3 P-10033	Float from vicinity of pit from which Sample #2 was taken.	Tan and gray hard granular bauxite nodules.	10.66	13.57	51.61
Field #4 P-10034	Float from top ridge S.W. of road crossing saddle.	Tan and gray hard granular bauxite nodules.	5.58	34.33	38.11
Field #7 P-10035	Float from S.E. side of ridge N.E. of saddle and N.W. of Sample #1 locality approximately near top of ridge.	One tan bauxite nodule.	6.42	37.36	31.44
Field #8 P-10258	From pit in road crossing saddle, at top of saddle.	Red clay with some tan limonite bands and nodules of bauxite.	23.22	13.79	33.27
Field #9 P-10259	Grab sample of dump material from hole 2 feet deep in open cut.	Tan bauxitic clay with tan and gray streaks.	17.04	10.05	43.53
Field #10 P-10260	From pit on S.E. side of ridge N.E. of saddle and above Sample #2 locality.	Red clay with white and tan spots.	32.22	9.71	35.28

The bauxite appears to occur only as float and not enough exploration has been done to determine the possible quantity of reserves or to determine the structure and genesis of the occurrence.

Visited: August 1950

Report by: D.J.W., May 8, 1951

Reference: Thayer (1939)

6011

NOTES ON THE MEHAMA DISTRICT CLAYS

by Libbey and Lowry

April 4, 1946

Sample P-4435 of bauxitic clay brought in by Ken White of Columbia Metals Corp., Box. 269, Salem, Oregon was analyzed and found to contain:

Alumina,	Al ₂ O ₃	49.16%
Silica,	SiO ₂	37.32
Iron,	Fe	0.49

Petrographic examination of the sample showed it to be a mixture of gibbsite (white portion) and kaolinite (gray part). The specimen was given to Ken White who told us of the occurrence and reported that the clay was found as float along Canyon Creek in sec. 6, T. 9S., R. 3E., Mill City quadrangle, Marion County.

As Ken White was unable to accompany us on the trip a traverse of the several roads in the Canyon Creek area was made. No material similar to the sample submitted to us by White was found but snow along the road up the branch of Canyon Creek which apparently leads to House Mt. prevented examination of the upper reaches of the creek. The Canyon Creek area is made up of a series of badly fractured basic lavas and associated pyroclastic beds. The lavas as well as the pyroclastics have been considerably altered in places to form clay. The Mehama clay deposit, apparently covers a large area as the clay is exposed in many of the roadcuts between the P.G. Ferris sawmill and Canyon Creek in sec. 6, T. 9S., R. 3E. The clay is a weathered porphyritic (numerous plagioclase phenocrysts) basic lava and petrographic examination indicates it may be halloysitic. According to Bob Nichols the Mehama clay occurs in and around Keel Creek in about sec. 11, T. 9S., R. 2E. He reports that the average available alumina content of the 5 samples assayed was more than 31 percent. The clay exposed in roadcuts between the Ferris sawmill and Canyon Creek decrepitates somewhat in water.

The analysis of a 7½-foot channel sample, P-4558, of badly weathered reddish conglomerate which may occur in sec. 5, T. 9S., R. 3E. is given below. The channel represents the middle part of an about 17-foot vertical exposure of similar material exposed in the north bank of the roadcut over a lateral distance of 50 feet. The log of the trip which follows explains how to reach the locality.

P-4558

Alumina, Al_2O_3 24.04%
Silica, SiO_2 49.90
Iron, Fe 10.74

A Petrographic examination of the waxy light-colored clay in several decomposed pebbles shows it is montmorillonite. The clay decrepitates and swells somewhat in water as does much of the material making up the channel sample. However petrographic examination of the latter did not give conclusive results as to its identity.

Several conglomeratic horizons were noted in the Canyon Creek area as shown in roadcuts. The rocks of the district belong to the Mehama volcanic series. The rocks of the area are similar in appearance to those of the Calapooya formation, the Hobart Butte area, to those of the Fisher formation south and west of Eugene, and to those in the area between Mohawk and Holley. Only one attitude was noted and it was shown in an excavation on the north side of the road a short distance east of the easternmost branch of Canyon Creek. An apparent dip of about 10° to the SW. was shown at this locality where weathered basalts occur. House Mt. to the north appears to be formed by several nearly flat lying flows of columnar jointed lava which is probably Stayton lava. A log of the trip follows:

(10 $\frac{1}{2}$ % should be added to the mileage figures)
as Dodge was used.

- 0.00 Mehama. Turn slightly left off highway and up gravel road toward Elkhorn.
- 2.00 Forks of road. Took left fork toward Elkhorn, Basic lava in road and sediments below in stream.
- 3.35 Clay
- 4.75 Pyroclastic grits, probably reworked, in roadcuts and in stream. Associated blocky glassy lava. Rocks resemble Goble and Fisher-Calapooya formations.
- 5.45 Weathered tuff(?)
- 5.75 Forks of road. Took road to left up to P.G. Ferris sawmill.
- 6.50 P.G. Ferris sawmill. Took road to right which leads to Canyon Creek. Weathered and fractured basic lava.
- 8.65 Mehama clay(?)
- 9.55 West branch of Canyon Creek. Mehama Clay.
- 9.95 Easternmost branch of Canyon Creek. Water barrel on north side.

omit

- 10.05 Forks (lower) of road. Took right fork toward Cougar Creek.
- 10.75 Forks (upper) of road. Took left fork.
- 11.35 Weathered reddish conglomerate exposed in 17-foot vertical section about 50 feet long. Sample P-4558 taken. See above. Some material is bentonitic.
- 11.85 Turned around. Clay derived from pyroclastic material including weathered cobbles and pebbles. Mainly badly fractured basic lava.
- 12.95 Back at (upper) forks of road. Took fork leading east and below into canyon. Weathered basic lava most common.
- 13.70 Back at (upper) forks. Took road back toward Canyon Creek.
- 14.40 Back at lower forks. Took road uphill toward House Mt. Lookout.
- 16.42 Turned around because snow hides roadcuts. Country rock is fractured basic lava and associated clayey pyroclastics. Returned to Mehama.