



IN REPLY REFER TO:

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
7744 FEDERAL BUILDING
300 NO. LOS ANGELES STREET
LOS ANGELES, CALIFORNIA 90012

December 9, 1965

Mr. Ralph S. Mason, Mining Engineer
Department of Geology &
Mineral Industries
1069 State Office Building
Portland, Oregon 97201

Dear Ralph:

What can you tell me now about activity in natural sodium or potash zeolites in the Rome area, Malheur County, in advance of whatever you may be planning to say about it in your 1965 annual review?

Regis and Sand gave a talk at the Gatlinburg (Tennessee) meeting of the Mineralogical Society of America in June 1965 on phillipsite from there. Eberly published a paper in the 1964 January-February issue of the American Mineralogist on erionite from the Rome area, crediting Kennedy Minerals Company, Inc. as his source of materials. My grapevine on zeolitic events tells me that the Norton Co. may be getting ready to produce mordenite and erionite from the Rome area.

Anyone thinking of natural bedded sodium or potash zeolites for selective cation exchange applications or as petroleum catalysts should know that we consider these authigenic zeolites to be leasable rather than locatable minerals. They form by the action of saline, alkaline lake or ground waters on acidic tuffs, and frequently are interbedded with other leasable minerals in Cenozoic sedimentary sequences that include saline minerals, oil shales, lignite, etc. They owe their commercial value to the interchangeability of their sodium and potash ions. These deposits, if 75 percent zeolite and in mineable thicknesses, and if on Federal lands, should be held under the Mineral Leasing Act. Persons exploring them or developing them as lode or placer claims should know that their claims may be contested, or could be jumped with a prospecting permit! If you can conveniently and quietly help to pass the word along to anyone operating in good faith but under the wrong law it should be appreciated by all concerned.

Sincerely,

R. G. Wayland
Regional Geologist
Branch of Mineral Classification
Conservation Division

cc: Hall F. Susie, BLM/Portland

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STATE DEPARTMENT OF GEOLOGY AND
MINERAL INDUSTRIES1069 STATE OFFICE BUILDING
PORTLAND 1, OREGON

January 11, 1966

Mr. R. G. Wayland, Regional Geologist
Branch of Mineral Classification
Conservation Division, U.S. Geological Survey
7744 Federal Building
300 No. Los Angeles Street
Los Angeles, California 90012

Dear Russ:

Many thanks for your December 9 letter concerning Oregon zeolites. We are not aware of any field activity for zeolites during the 1965 season. I did have a most interesting meeting with Dr. L. B. Sand, Chief, Zeolon Unit, of the Norton Company of Worcester, Massachusetts in July. Norton is very much interested in our zeolites, and I have written Dr. Sand to see if they have any releasable information on their future activities.

Interest has also been increased by Shell-Canadian Explorations, and Mr. H. Donald Curry, 33 Richards Street, Salt Lake City, has been in touch with us from time to time for Shell. We have also heard that Union Carbide has been looking at clinoptilolite in the Mitchell area, but nothing more tangible than this.

We are hopeful that starting this coming summer we will have a man working on a summertime basis for several years on clinoptilolites, erionites, and other zeolites in central Oregon. We feel very strongly that there is a considerable future in these zeolites and apparently we have an enormous quantity of them. We have been reliably informed that Oregon is regarded as having more commercially potential zeolites than any other State.

We are extremely disconcerted that the Survey considers the zeolites to be leasable rather than locatable minerals. As you no doubt know, we feel very strongly that the position taken by the Survey, the Forest Service, and the Bureau of Land Management tends to erode the mining law structure. Mining companies seeking to establish large-scale, long-term operations

with a large investment in plant and mine take a very dim view toward the erection of a permanent physical plant and expenditure of large sums of development money on ground to which they do not have title. Behind the mining company there is always the financial backer, and they too share this reluctance to invest in an enterprise so completely lacking in any guarantees for long-term occupancy.

I will forward any news from Dr. Sand immediately it comes in.

Sincerely yours,

Ralph S. Mason
Mining Engineer

RSM:lk

COPY

STATE DEPARTMENT OF GEOLOGY AND MINERAL INDUSTRIES

1069 STATE OFFICE BUILDING
PORTLAND 1, OREGON

January 11, 1966

Dr. L. B. Sand
Chief, Zeolon Unit
Refractories Division
Norton Company
Worcester, Massachusetts

Dear Dr. Sand:

We have received a letter from Russ Wayland, Regional Geologist for the Branch of Mineral Classification, U.S. Geological Survey, Los Angeles, inquiring about the present status of zeolite exploration activity in Oregon. Recalling our visit in Salem in July of this year with Joe Berg, I thought it might be well to relay this inquiry to you. We are not in any sense asking for confidential information, but if you have anything of interest that we can relay to Wayland and also use in our January summary of the State's mineral activity, we would be most grateful.

Wayland mentioned that you and Regis presented a paper at Gatlinburg, Tennessee, in June on phillipsite. Would it be possible to get a reprint of your paper? We are hoping to do a considerable amount of field work in central Oregon on zeolites starting this coming summer and are attempting to obtain as much background information as possible.

One disturbing comment incorporated in Wayland's letter was to the effect that the USGS considers "natural bedded sodium or potash zeolites" to be leasable rather than locatable minerals. I mention this since I seem to recall that Norton located some claims here in the State several years ago. According to Wayland, holders of either lode or placer claims on zeolite ground could lose their claims to a second party holding a prospecting permit.

Sincerely yours,

Ralph S. Mason
Mining Engineer

RSM:lk



NORTON COMPANY WORCESTER, MASSACHUSETTS 01606 · AREA CODE 617 853-1000

Mr. Ralph S. Mason
State of Oregon
Department of Geology and Mineral Industries
1069 State Office Bldg.
Portland, Oregon 97201

February 17, 1966

Dear Mr. Mason:

I was pleased to receive your letter of January 11, 1966 indicating continued and increased interest in the zeolite deposits.

The opinion held by Russ Wayland of the U.S.G.S. unfortunately has made it more difficult for us to communicate information at this time. This matter is under study now; as soon as possible I will forward what information I can. Mr. Regis and I do not have any reprints of the zeolite papers presented last year at the M.S.A. meetings in Gatlinburg nor at the G.S.A. meetings in Kansas City. Your best bet for background information is Prof. Richard Hay, Dept. of Geology, U. of California, Berkeley.

It was a pleasure to meet you. I hope the situation is such that sometime this year we can get together to discuss the Oregon zeolites.

Best regards,

NORTON COMPANY
Refractories Division
Research and Development Department

Chief, ZEOLON Unit

L. B. Sand
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January 26, 1966

To: H. M. Dele
From: R. S. Mason
Subject: U. S. Geological Survey Leasing Policy

You will recall that last December I received a letter from Russ Wayland of the Los Angeles office of the USGS Branch of Mineral Classification in which he stated that zeolites are classed as leasable rather than locatable minerals.

I later discussed this matter with Hall Susie of the BIM who: (1) took exception to this position by the USGS, and (2) questioned the authority of the Survey to take a position on the subject of leasing.

Today Susie called, having just returned from Los Angeles and a talk with Wayland. It seems that the Survey bases its thinking on the fact that zeolites occur with leasable minerals and therefore they too should be leased. Presumably lead-zinc deposits in limestone will henceforth be non-locatable. Wayland told Susie that the Survey had notified Union Carbide that their claims on some zeolite deposits in Arizona were invalid. The letter was written in 1961, and according to Susie it now serves as a landmark decision upon which others now hinge (in the eyes of the Survey, that is).

RSM:lk

Hollis,

Joe Berg called from OSU on Monday and said that Dr. L.B. Sand of the Norton Co. was in his office and wanted to see you. He was passing thru and couldn't wait till Wed. I was on my way to Salem and we agreed to meet there. Briefly, Norton is very much interested in Oregon Zeolites--has been for some time in fact. They have done a little field work here. Norton is currently using considerable quantities of Mordenite, both synthetic and natural. The natural is a lot cheaper but not too abundant. Clinoptilolite is a close relative chemically to Mordenite except that it has a very small port (smaller than Erionite). One of the big new uses for zeolites is for water scavengers in urethane plastics for construction. The zeolites pick up much water and hang on to it, making stronger more durable plastics.

Dr. Sand wanted to know if we could give them some assistance in identifying likely areas to look for zeolites etc. I told him we would be glad to work with them. No field methods are known whereby the various zeolites can be identified. This is a lab technique, largely X-Ray diffraction. Oregon is reputed to have more zeolites than any other state and if the industrial demand really develops Dr. Sand feels that we could ~~surely~~ expect a fair sized industry.



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Sincerely,

R. G. Wayland
Regional Geologist
Branch of Mineral Classification
Conservation Division

cc: Hall F. Susie, BLM/Portland

zeolites

COPY

P. O. Box 417

January 16, 1978

Beverly Vogt
1069 State Office Building
Portland, Oregon 97501

Dear Bev:

In looking at my latest materials on zeolites, I haven't very much new on Levyne or Levynite. It is summarized on the enclosed sheet. It is apparently one of the Chabazite group and not very common. Dana has a discussion but the properties are not quite the same.

Have also looked up the information about the clastic dike near Burns and the following is quoted from a letter to Andy, October 22, 1974. You can probably summarize these thoughts for a photo caption. If you need more information let me know:

"On my return from Boise, Idaho, I spent about an hour examining a group of clastic dikes that are present in a cinder-scoria deposit south of Hwy 20 about 2 miles, southwest of Hines, Oregon, (NW $\frac{1}{4}$ sec. 2, T. 24 S., R. 30 E.). The clastic dikes exposed in the quarry range from a few inches to 18 inches wide and have a crude vertical as well as horizontal layering. The material in the dike is tan to almost white pumiceous material and the size ranges from fine ash to lumps of pumice as large as 1" in diameter.

"The dikes (at least 5) can be traced for several hundred yards and trend in a northwest-southeast direction. Clastic dikes of similar material also cut through layered pumice on the north side of Hwy 20 and have the same general trend. Again the mechanism for emplacing the dikes is not apparent although it appears that the clastic materials came in from above.

"The materials of the dikes appear to be of the same composition as the overlying layered pumice - buff, tan to white in color and like that described as Tsv by R.C. Greene (1972) "pumice and pumiceous sedimentary rocks, light brown to white, slightly to moderately well consolidated; ash flow tuff with abundant lump pumice, in part densely welded. Present on south side of Burns Butte T. 23 S., R. 30 E."

"It appears that the dikes must have been emplaced very soon after the layered pumice was deposited as the pumice lumps and the glass shard ash are angular and fresh looking.

"The length and width of the fractures which these dikes filled certainly must have some tectonic origin - tensional forces from doming may have opened the fractures.

Beverly Vogt
January 16, 1978
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"The elevation of about 4,160' is about 200' lower than Pleistocene sedimentary deposits of the Harney Basin so it is possible that the dikes could have developed in a hydrous environment. The age of the dikes is not known - they are younger than the Pliocene sediments that they cut and that's about all we can say. The length, width, and continuity of the dikes certainly suggest a tectonic origin."

Best regards,

Norm

NVP:rep
Encl: 1 page Zeolites