

Province of
British ColumbiaMinistry of
Agriculture

MEMORANDUM

D. HORA 5066. 6548.

Property File
Bonners Ferry
92B 017

August 5, 1982

To: J.A. Pelter
Director, Livestock Branch
VictoriaRe: JULY 29, 1982 MEMO RE ROBERTSON LIME

AUG 17 1982

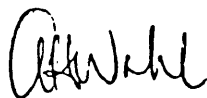
There are many concerns I would have re the quality of Robertson lime samples.

- . From the lab reports enclosed, assay units are not expressed, i.e., does 10 represent %, ppm, or what?
- . All analyses appear to have been conducted at one lab. Other lab analytical results should be conducted.
- . Determinations should be more definite, i.e., >20 is not meaningful and precise levels are quite often critical, nutritionally. (i) Lime should contain 35 to 40% Calcium, not just >20 or not 3, 4, 9, 8, or 6 (% assumed) as indicated in samples 5611, 5613, 5614, 5616 and 5626, respectively. If lime contains 19% Calcium, it is worth 50% the value of lime containing 38%. (ii) Magnesium levels over 5% could negatively affect cattle performance. Sample 5621 and 5623 exceed this level.
- . Generally, the Aluminum levels seem quite high, as well (>10). The major problem with high Aluminum includes inhibited Magnesium absorption (which may correct the high Magnesium situation, previously-indicated).

In summary, my major concerns center around actual Calcium levels present in this product and thence economic worth, the non-specificity of units in the assay report, only one laboratory's reporting, and potential Magnesium problems in some cases with cattle. These problems would be of a mineral tie up nature and resultant inadequacy of other key elements, such as Phosphorus (when Magnesium was over-supplied). You would have to feed 2 lb. daily of lime (containing 5% Magnesium) to reach the maximum tolerable level of Magnesium in dairy cattle and 1 lb. daily to beef. Both levels are highly unlikely because of the relative unpalatability of the product and unlikelihood of force-feeding such high levels.



for macromineral supplementation. Price will probably determine the answer.



A.H. Wahl
Swine Specialist

AW:tb
encl.

9213 01 F



August 13, 1982

REC-117 1982

To: J.A. Pelter
Director, Livestock Branch

Re: Agricultural lime as swine supplement

Of the 14 mineral elements required by pigs for maintenance and production, calcium and phosphorus are likely to be limiting as macronutrients in grain-based diets.

Ground limestone, bonemeal, calcium phosphate and dicalcium phosphate all add calcium, while the last three add phosphorus when incorporated into diets. The agricultural lime product specified in the analysis is a poor grade of limestone except in four of the samples. (5522, 5623, 5624 and 5625).

| <u>Analysis (%)</u> | <u>Agr. lime</u> | <u>Limestone</u> | <u>Bonemeal</u> | <u>Barley</u> |
|---------------------|------------------|------------------|-----------------|---------------|
| Si | ~18 | - | - | - |
| Al | ~ 7 | - | - | - |
| Mg | 2 | - | 0.35 | 0.13 |
| Ca | >20 | 38 | 22.96 | 0.06 |
| Fe | 3 | - | 0.044 | 0.008 |
| Mn | 0.15 | - | 0.858 | 1.76 |
| Na | 0.30 | - | 0.74 | 0.06 |
| K | ~2.00 | - | 0.23 | 0.49 |
| Cu | Trace | - | - | - |
| Zn | Nil | - | - | - |

Most samples have a high sand (silica) content at over 20%, along with the high aluminum percentage. Thus the product would have a value already of 75% of ground limestone. The product analysis shows Ca content of greater than 20% - how much greater? If the Ca content is that on average, then it is worth slightly over half that of ground limestone. Iron and potassium might be supplemented if in an available form. Copper, zinc and manganese would not be supplemented from this product. Neither would any element be at a toxic level when added to the diet at the recommended amount for supplementation of calcium levels.

The question then arises whether the two or three feed mills on the Island would prefer to use a variable product over the consistency of ground limestone, bonemeal or dicalcium phosphate



Received Aug 26, 1982

Kelowna Dept. Agric. Lab - will have to pay for it
Buckleyfield must have their lab

August 18, 1982

Mr. T. Robertson
P.O. Box 331
Mesachie Lake
Vancouver Island, B.C.
VOR 2N0

Dear Mr. Robertson:

In response to your request concerning the suitability of your lime source for use in poultry and livestock feed formulations, I made contact with our Livestock and Poultry Branches. A response has been received from the Livestock Branch and these have been attached hereto for your information.

It appears our staff had a problem with the analysis as no indication was given how the information was expressed, i.e., percentage or parts per million. It is suggested that the feed company to whom you propose to sell your product make the final evaluation on its suitability for use in their livestock and poultry feeds.

I understand the University of British Columbia may contact you directly and provide you with information on the use of the product in poultry feeds.

Yours very truly,

M. G. Oswell, P.Ag.
Executive Director
Production Services

MGO:ec

Attachments: 4

749-6013 - memo (son's residence at Honey moon Bay)



925017

Province of British Columbia
Ministry of Energy, Mines and Petroleum Resources

SAMPLE RECEIVED FROM E. P. ROBERTSON (D. HORA) Page 3

ADDRESS Box 331, Mesachie Lake, B. C.

| WHOLE ROCK <input type="checkbox"/> | | SEMI-QUANTITATIVE SPECTROGRAPHIC ANALYSIS | | | | |
|--------------------------------------|--------|---|--------|--------------------------|--|--|
| DIFFRACTION <input type="checkbox"/> | | (IN PER CENT) | | | | |
| LABORATORY NO.: | 5623 | 5624 | 5625 | 5626 | | |
| SUBMITTER'S MARK: | 11 | 11 | Blank | 5 | | |
| | 0'-20' | 30' | | 20'-30' | | |
| Si | 4.75 | 2.6 | 6.9 | 18.7 | | |
| Al | 1.0 | 0.5 | 1.5 | >10.0 | | |
| Mg | >5.0 | 1.0 | 2.0 | >2.0 | | |
| Ca | >20.0 | >20.0 | >20.0 | 6.0 | | |
| Fe | 1.0 | 0.4 | 0.75 | 5.0 | | |
| Pb | - | - | - | T | | |
| Cu | T | T | T | T | | |
| Zn | - | - | - | T+ | | |
| Mn | 0.17 | 0.12 | 0.12 | 0.15 | | |
| Ag | - | - | +T+ | - | | |
| V | T | T | T | 0.02 | | |
| Ti | 0.015 | 0.01 | 0.025 | 0.3 | | |
| Ni | T | T | T | T | | |
| Co | - | - | - | T | | |
| Na | - | - | - | >3.0 | | |
| K | - | - | - | >3.0 | | |
| W | - | - | - | - | | |
| Sr | 0.02 | 0.02 | 0.025 | 0.01 | | |
| Ba | T | T | T | 0.07 | | |
| TRACES: | Zr, Cr | Cr | Sn, Cr | Ga, Zr, Cr, Y, Yb, Sc | | |

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LEGEND
T - TRACE
M.C. - MAJOR CONSTITUENT
N.D. - NOT DETECTED
P - PRESENT

W. M. Johnson
CHIEF ANALYST



921501 F

Province of British Columbia
Ministry of Energy, Mines and Petroleum Resources

SAMPLE RECEIVED FROM E. P. ROBERTSON (D. HORA) Page 2.....

ADDRESS Box 331, Mesachie Lake, B. C.

| WHOLE ROCK <input type="checkbox"/> | | SEMI-QUANTITATIVE SPECTROGRAPHIC ANALYSIS | | | | | | |
|--------------------------------------|---------|---|---------|--------|---------|--------|--------|--------|
| DIFFRACTION <input type="checkbox"/> | | (IN PER CENT) | | | | | | |
| LABORATORY NO.: | 5615 | 5616 | 5617 | 5618 | 5619 | 5620 | 5621 | 5622 |
| SUBMITTER'S MARK: | 7 | 7 | 8 | 8 | 9 | 9 | 10 | 11 |
| | 20'-30' | 0'-20' | 20'-30' | 0'-20' | 20'-30' | 5'-20' | 0'-30' | 0'-25' |
| Si | >20.0 | >20.0 | 12.1 | 17.6 | 19.4 | 18.8 | 15.4 | 6.9 |
| Al | >10.0 | >10.0 | 6.0 | 7.5 | 7.0 | 6.5 | 3.0 | 2.0 |
| Mg | >2.0 | >2.0 | >3.0 | >2.0 | >2.0 | >2.0 | >7.0 | >2.0 |
| Ca | >20.0 | 8.0 | >20.0 | >20.0 | >20.0 | >20.0 | >20.0 | >20.0 |
| Fe | 4.5 | 5.0 | 2.0 | 3.25 | 3.0 | 3.0 | 1.5 | 0.75 |
| Pb | - | - | - | - | - | - | - | - |
| Cu | T | 0.01 | T | T | T | T | T | T |
| Zn | - | - | - | - | - | - | - | - |
| Mn | 0.2 | 0.1 | 0.13 | 0.13 | 0.12 | 0.12 | 0.14 | 0.17 |
| Ag | †T† | †T† | †T† | †T† | †T† | †T† | †T† | - |
| V | 0.01 | 0.01 | T | T | T | T | T | T |
| Ti | 0.25 | 0.3 | 0.07 | 0.1 | 0.12 | 0.1 | 0.06 | 0.03 |
| Ni | T | T | T | T | T | T | T | T |
| Co | T | T | T | T | T | T | T | - |
| Na | 0.4 | 1.0 | T | 0.02 | 0.15 | 0.2 | 0.01 | - |
| K | 0.5 | >2.0 | 0.35 | 0.5 | 2.0 | 1.0 | - | - |
| W | - | - | - | - | - | - | - | - |
| Sr | 0.02 | 0.01 | 0.02 | 0.01 | 0.015 | 0.02 | 0.02 | 0.02 |
| Ba | 0.025 | 0.06 | T | T | 0.04 | 0.05 | T | T |
| Molybdenum | TRACES: | Ga, Mo†, Cr, Y, Yb, Sc | Cr | Ga, Cr | Ga, Cr | Ga, Cr | Cr | Cr |
| Boron | B | 1.0 | 0.2 | | | | | |
| | Zr | T | 0.01 | T | T | T | T | T |

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W. J. Johnson
CHIEF ANALYST



DATE ... August 12, 1982

92 B01 F

Province of British Columbia
Ministry of Energy, Mines and Petroleum Resources

SAMPLE RECEIVED FROM E. P. ROBERTSON (D. HORA)

ADDRESS Box 331, Mesachie Lake, B. C. ... V0R 2N0

WHOLE ROCK
DIFFRACTION

SEMI-QUANTITATIVE SPECTROGRAPHIC ANALYSIS
(IN PER CENT)

| LABORATORY NO.: | | 5607 | 5608 | 5609 | 5610 | 5611 | 5612 | 5613 | 5614 |
|---------------------------------------|---------------------|-------|------------------|-------|---------|------------------|------------------|------------------|------------------|
| SUBMITTER'S MARK: | | 1 | 1 | 2 | 3 | 4 | 4 | 5 | 6 |
| | | 25' | 15' | 20' | 10'-30' | 15' | 8' | -20' | |
| Silicon | Si | 13.2 | 16.4 | 6.8 | 6.9 | >20.0 | >20.0 | >20.0 | >20.0 |
| Aluminum | Al | 2.5 | 10.0 | 5.0 | 3.5 | >10.0 | >10.0 | >10.0 | >10.0 |
| Magnesium | Mg | 2.0 | >2.0 | >2.0 | >3.0 | >3.0 | >2.0 | >2.0 | >2.0 |
| Calcium | Ca | >20.0 | >20.0 | >20.0 | >20.0 | 3.0 | >10.0 | 4.0 | 9.0 |
| Iron | Fe | 1.0 | 3.0 | 1.0 | 1.25 | 7.0 | 5.0 | 5.0 | 5.0 |
| Lead | Pb | - | T | - | - | - | T | - | - |
| Copper | Cu | T | T | T | T | T | T | 0.01 | T |
| Zinc | Zn | - | - | - | - | T+ | - | T | T |
| Manganese | Mn | 0.15 | 0.17 | 0.16 | 0.17 | 0.1 | 0.15 | 0.1 | 0.15 |
| Silver | Ag | - | T+ | - | T+ | - | - | - | - |
| Vanadium | V | T | T | T | T | 0.015 | 0.01 | 0.01 | 0.01 |
| Titanium | Ti | 0.05 | 0.2 | 0.03 | 0.07 | 0.3 | 0.2 | 0.25 | 0.25 |
| Nickel | Ni | T | T | T | T | T | T | T | T |
| Cobalt | Co | T | T | - | T | T | T | T | T |
| Sodium | Na | - | 0.07 | 0.3 | 0.1 | >3.0 | >3.0 | >2.0 | >2.0 |
| Potassium | K | - | 2.0 | 0.25 | 0.05 | >2.0 | 2.0 | >2.0 | >2.0 |
| Tungsten | W | - | - | - | - | - | - | - | - |
| Strontium | Sr | 0.02 | 0.02 | 0.04 | 0.03 | 0.01 | 0.03 | 0.01 | 0.01 |
| Barium | Ba | T | 0.05 | T | T | 0.03 | 0.03 | 0.06 | 0.07 |
| Gallium, Yttrium, Ytterbium, Scandium | TRACES: Scandium | | Ga, Y, Yb, Sc | | | Ga, Y, Yb, Sc | Ga, Y, Yb, Sc | Ga, Y, Yb, Sc | Ga, Y, Yb, Sc |
| Chromium | Cr | T | T | T | T | 0.02 | 0.01 | T | 0.01 |
| Zirconium | Zr | T | T | T | T | T | T | 0.01 | T |
| Arsenic | As | | | | | 0.03 | | | |

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- P - PRESENT

> - greater than
+ - low

W. E. Johnson
CHIEF ANALYST

92B017

THE CHIEF ANALYST



DATE ... June 23, 1982

Province of British Columbia
Ministry of Energy, Mines and Petroleum Resources

SAMPLE RECEIVED FROM D. HORA

ADDRESS Geological Branch

WHOLE ROCK
DIFFRACTION

SEMI-QUANTITATIVE SPECTROGRAPHIC ANALYSIS
(IN PER CENT)

| | | | | | | | | |
|-------------------|-----------|--|--|--|--|--|--|--|
| LABORATORY NO.: | 25874M | | | | | | | |
| SUBMITTER'S MARK: | 0143-0150 | | | | | | | |
| Si | <10.0 | | | | | | | |
| Al | 0.04 | | | | | | | |
| Mg | >5.0 | | | | | | | |
| Ca | >20.0 | | | | | | | |
| Fe | 0.5 | | | | | | | |
| Pb | 0.01 | | | | | | | |
| Cu | T | | | | | | | |
| Zn | - | | | | | | | |
| Mn | 0.1 | | | | | | | |
| Ag | †T† | | | | | | | |
| V | - | | | | | | | |
| Ti | T | | | | | | | |
| Ni | T | | | | | | | |
| Co | - | | | | | | | |
| Na | - | | | | | | | |
| K | - | | | | | | | |
| Sr | 0.015 | | | | | | | |
| TRACES: | Cr, Ba | | | | | | | |

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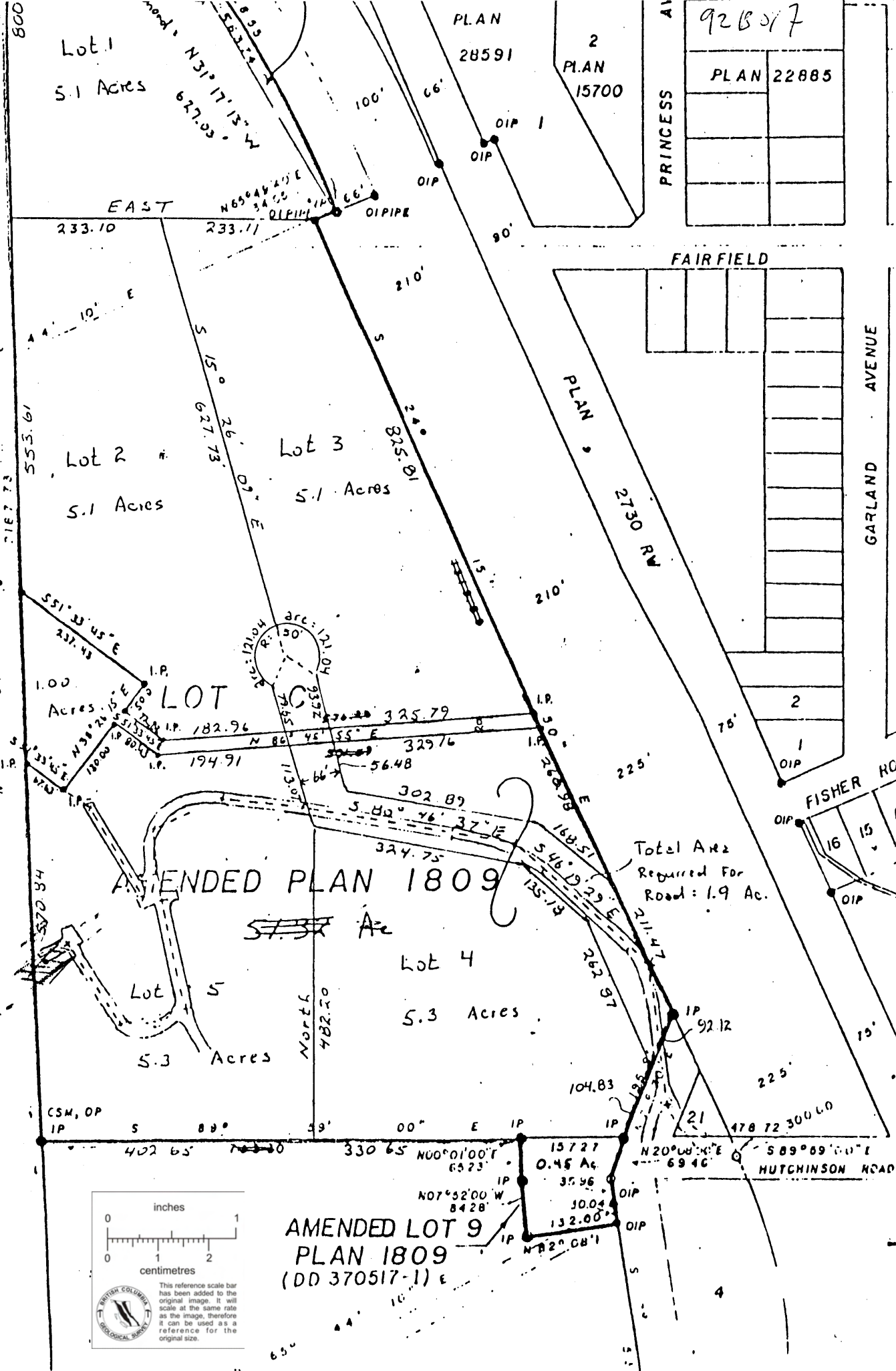
LEGEND

- T - TRACE
- M.C. - MAJOR CONSTITUENT
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- P - PRESENT

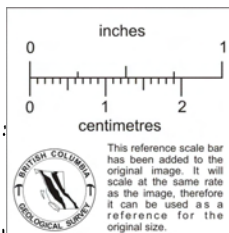
W. M. Johnson
CHIEF ANALYST

92607

| | |
|------------|--|
| PLAN 22885 | |
| | |
| | |
| | |



Handwritten notes and arrows pointing to specific areas on the map, possibly indicating a road or boundary adjustment.



AMENDED LOT 9
 PLAN 1809
 (DD 370517-1)

THE CHIEF ANALYST

CORBLE HILL AGLINE QUARRY

92B017



DATE ... June 23, 1982

Province of British Columbia
Ministry of Energy, Mines and Petroleum Resources

SAMPLE RECEIVED FROM D. HORA

ADDRESS Geological Branch

| LABORATORY NO. | SUBMITTER'S MARK | LABORATORY REPORT | |
|----------------|------------------|--------------------------------|--------------|
| 25874M | 0143 - 0150 | SiO ₂ | 8.8 ± 0.1 |
| | | Al ₂ O ₃ | 0.50 ± 0.02 |
| | | MgO | 8.1 ± 0.1 |
| | | CaO | 42.4 ± 0.2 |
| | | L.O.I. | 40.27 ± 0.05 |

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ND

- TRACE
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- NOT DETECTED
- PRESENT

W. M. Johnson
CHIEF ANALYST