January 7, 2009

Project No. 08-1416-0026/2007
E/08/2662

Mr. Ken Lukawesky
BC Ministry of Transportation and Infrastructure
7818 6th Street
Burnaby, BC
V3N 4N8

TESTING OF CRUSHED ROCK MATERIAL FOR SUITABILITY AS HIGH FINES SURFACING AGGREGATE, GABRIOLA ISLAND, TEXADA QUARRY SOURCE

Dear Mr. Lukawesky:

As requested by the British Columbia Ministry of Transportation and Infrastructure ("MoT"), Golder Associates Ltd. (Golder) has carried out testing of an aggregate sample from Gabriola Island for its suitability for use as High-Fines Surfacing material.

This report provides the results of the testing program.

1.0 BACKGROUND

The sample provided for evaluation was an aggregate material understood to have been sampled from a stockpile of "High Fines Surfacing Aggregate" being placed on the roads of Gabriola Island, and was reportedly produced at the Texada Quarrying Ltd. quarry on Texada Island.

Similar material, also reported to have been supplied from the Texada Quarry, was indicated by you to have been placed on the roads of Gabriola Island during the past three to four years. The present material was collected on May 27, 2008 by MoT staff and delivered to Golder's Materials Engineering Laboratory in Surrey, and was contained in two bags labelled Bag #340 and #341.

The purpose of the testing was to assess the material's suitability for use as high fines surfacing material. In addition, in response to concerns about the material potentially causing contamination to well water, MoT requested a preliminary assessment of the potential impact on water quality in the receiving environment for the subject material.

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Unit B, 12330 88th Avenue, Surrey, British Columbia, Canada V3W 3J6
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2.0 TESTING PROGRAM

The initial MoT request for testing of the sample was for Micro-Deval Abrasion of the coarse and fine portions and Plastic (Atterberg) Limit of material from Bag #340, and Petrographic examination of material contained in Bag #341. Based on observations of the presence of metallic minerals in the Petrographic examination, metals leachable testing and acid-base accounting were subsequently added to the testing program.

In order to completely assess the physical suitability of the material for use as High Fines Surfacing Material, the properties listed in Table 202-B of MoT's "Standard specification for Highway Construction" should be determined; this table also identified Sand Equivalent testing and Fracture count as required tests. These procedures were not part of the initial request, but were carried out on material that constituted the sample for the Petrographic examination.

3.0 RESULTS

Test reports were issued previously; this report provides discussion on the suitability of this material with respect to high fines surfacing material (BC Ministry of Transportation and Infrastructure Specification).

3.1 Physical Testing

The results from the physical testing program are summarized in the table below, with MoT specifications listed beside each result.

Table 1: Results of Physical Testing Program

Test	Results	MoT Specification (Table 202-B)
Sand Equivalent	42	≥20
Micro-Deval, coarse aggregate (% loss)	12.2	≤25
Fractured faces method A (%)	>50	≥50
Plasticity	Non-plastic	≤6

The material tested complies with MoT's specification with respect to the physical parameters listed above.

3.2 Petrographic Examination

The dominant rock types of the Bag #340 sample were diorite and meta-diorite, accounting for more than 70 % of the sample, with about 12 % skarn and approximately 15 % calcareous rock material – limestone, marble and calcite veining – making up the remainder. The Petrographic examination gave a Petrographic Number of 126, which translates to an overall quality classification for the sample as suitable for general aggregate applications, including road aggregates.

The Petrographic examination identified the presence of metallic minerals, which could have the potential for leaching and releasing metals into the environment. This included almost 1 % of individual rock particles composed primarily of magnetite (iron oxide).

For the purposes of the Acid Rock Drainage and Metals Leachable ("ARD/ML") assessment, the metal-bearing minerals are of most importance. Sulphide minerals, and in particular pyrite, are the main source of ARD. Sulphides can be oxidized in the presence of water to produce sulphuric acid, which leads to a lowering of the pH of the interacting water, which can lead in turn to further oxidation of sulphides. The presence of carbonate minerals, including calcite, has a neutralizing effect on any acid thus produced. Other minerals, such as plagioclase feldspars, can have a long term neutralizing effect.

Metallic oxides and sulphides are potential sources for leachable metals. Other metal-bearing minerals, including silicates, can also contribute to leaching of metals. Many water quality guideline limits for toxic elements such as arsenic and lead are set very low, due to the high toxicity associated with these elements. These elements are not necessarily major components of minerals in which they occur, but are found as trace elements and impurities substituting for other elements/metals in very small proportions. As an example, even if lead- or arsenic-bearing minerals such as galena or arsenopyrite are not found, the presence of other metal-bearing minerals, in particular sulphides and oxides, may be an indication that these elements/metals could be present.

In addition to individual magnetite particles, metallic sulphides and oxides were other mineralogical components identified in certain rock fragments, such as skarn and diorite. These included pyrite, which has the potential to produce acid when exposed to water in an oxidizing environment. In addition to the calcareous material mentioned previously, rock fragments classified as meta-diorite and skarn also contained carbonate minerals. The observed presence of carbonate material at the indicated levels would be expected to be sufficient to neutralize the acid produced from the oxidation of pyrite.

3.3 Acid-Base Accounting

The acid-base accounting (ABA) test provides an analysis that is based on the balancing of the maximum potential acidity that could be produced from the interaction of water with the rock under oxidizing conditions, with the potential neutralization provided by carbonate minerals in the rock material. The maximum potential acidity (MPA) is derived from the measured or calculated sulphide content. The neutralization potential (NP) is determined through titration to a neutral pH of a solution produced from the dissolution of the sample in HCl (i.e., the Sobek method). Both values are expressed as tonnes of $CaCO_3$ equivalent per 1,000 tonnes of material ($tCaCO_3$), and the ratio of the NP:MPA provides an indication of whether the rock material is likely to be prone to producing acid rock drainage.

The generally-accepted interpretation of ABA data suggests that if the value of NP:MPA is less than 1, the material is considered likely to result in acid rock drainage upon interaction with water in oxidizing environments. An NP:MPA in the range of 1-4 indicates that the material may be an ARD generator. A value larger than 4 indicates that the material is considered unlikely to cause acid rock drainage.

The ABA data confirms the presence of sulphide minerals and indicates that the sulphide minerals present in the sample material would produce a maximum potential acidity of 13.4 $tCaCO_3$. The neutralization potential was 215 $tCaCO_3$ due to the presence of calcareous material. The calculated NP:MPA value for this sample is 16, which indicates that the material is classified as non-acid generating.

3.4 Leachable Metals

The metals leachable test used for the analysis is referred to as the "Shakeflask method", and is outlined in "Guidelines and Recommended Methods for Prediction of Metals Leaching and Acid Drainage at Mine Sites in British Columbia" (BC Ministry of Energy and Mines, Dr. A. W. Price, 1997). Distilled water is added to a sample of crushed rock material and these are left to interact for a period of 24 hours. The resulting leachate is analyzed with respect to individual elements through different analytical procedures most appropriate for detection of each element.

The results were compared to the limits contained in the BC Ministry of Environment Water Quality Guidelines (2006). The Water Quality Guidelines provide a broad range of limits for a variety of environments, for example, from aquatic life to terrestrial wildlife, agricultural and recreational uses. The limits for various compounds and elements can vary depending upon the environment in which the water may pass through or in which it may be used. This variability is typically related to the sensitivity of the organisms living in the environment, to the particular substance.

As the material in the present case is in use on roads in populated areas where some agricultural activity may take place, it was of relevance to compare the results not only to guidelines for freshwater aquatic life, but also for drinking water and water supply for livestock and irrigation. In addition, some of the roads on which the material is in use are located near marine water, and therefore the limits applicable to marine and aquatic life were also taken into consideration.

Our analysis found that some metals exceeded these guidelines; these are listed in bold in the table below. The metals for which exceedances were noted were copper (Cu), mercury (Hg) and molybdenum (Mo). For reference, limits not exceeded for these metals are also listed in the table below. All other elements for which analyses were conducted were below the limits for these particular guidelines. If other sets of guidelines were to be applied, there may be additional or other elements that exceed those particular limits.

	Element		
	Cu	**Hg**	**Mo**
Bag #341, measured amounts (mg/l)	**0.0364**	**0.000162**	**0.0557**
Water usage/environment	Limits (mg/l)		
Freshwater aquatic life	0.0404	**0.0001**	2.0
Marine and estuarine life	**0.003**	0.002	N/A
Irrigation of forage crops	0.200	0.002	**0.05**
Irrigation of non-forage crops	0.200	0.002	N/A
Livestock water supply, if consuming non-irrigated forages or if no Molybdenum containing fertilizers are applied to grow feed	0.300	0.003	0.08
Livestock water supply, all other cases	0.300	0.003	**0.05**
Drinking water supply	0.500	0.001	0.25
Wildlife water supply	0.300	**≤ 0.00002**	**0.05**

The BC Water Quality Guidelines state that *"if natural background levels exceed the guidelines for aquatic life with respect to copper, the increase in total copper above natural levels to be allowed, if any, should be based on site specific data"*.

4.0 DISCUSSION

The results from the testing indicate that the material submitted to Golder satisfies the criteria concerning the physical properties specified by MoT with respect to High Fines Surfacing Material.

With respect to the chemical properties of the sample, the material is classified a non-acid generator. Some of the leachable metals exceeded the BC Ministry of Environment Water Quality Guidelines (2006), as indicated in the table in section 2.4.

There are few uncertainties associated with the metals leachable results, as noted below:

- The testing was conducted on a single sample from a source which can be expected to exhibit considerable range in geology. Therefore, more than one sample would be required to adequately characterize the overall leachable metals content in the aggregate material as a whole.

- The metals that exceed the limits of the guidelines do so marginally, with the exception of mercury in wildlife water supply and copper in marine and estuarine environments. The anticipated variability with respect to leachable metals within the rock types themselves could mean that if additional samples were tested, they might not exceed the guidelines.

- In contrast to the marginal exceedances discussed above, the guideline for mercury was exceeded by about eight times the limit for wildlife water supply. In the Guidelines for interpreting Water quality Data (Ministry of Environment, Lands and Parks, 1998), it is stated that since the set limits for mercury are very low, there is a large potential for contamination during sampling and analysis, making it difficult to measure the mercury content in ambient water samples accurately.

- The shakeflask method is an aggressive test method, which produces "worst case" scenario results. If the same sample was to be tested using a long term kinetic test, which more realistically models the leaching behaviour in the field, the leachable metals for which exceedance have been identified may be present at levels below the specified limits.

Because of the items noted above, no firm conclusions can be made as to the character and amounts of leachable metals in the overall material being used as High Fines Surfacing Aggregate, without further sampling and testing. This single test can be regarded as preliminary in nature. The results from the metals leachable test provide a mix of indicators, ranging from "acceptable" to "potentially unacceptable". As a follow-up to the preliminary findings, we would be pleased to conduct a more detailed program of sampling and testing. This would enable a better understanding of the overall metals leachable characteristics and its variability within the material sourced from Texada Quarrying and used as high fines surfacing aggregates.

Should additional sampling and testing confirm that the leachable metals content of the material exceeds relevant guidelines, consultation with an environmental scientist may be necessary, in order to conduct a site specific evaluation. Golder staff would be capable of and pleased to provide such services, if requested.

5.0 CLOSURE

We trust that this report satisfies your immediate requirements. Please do not hesitate to contact us should you have further questions or comments.

Yours very truly,

GOLDER ASSOCIATES LTD.

Anett Briggs, M.Sc., GIT
Geoscientist

Fred Shrimer, P.Geo.
Associate

AB/FHS/mvh

Attachments

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SAND EQUIVALENT VALUE OF SOILS AND FINE AGGREGATE

ASTM D 2419

December 3, 2008
Project number: 08-1416-0026 / 2007

MINISTRY OF TRANSPORTATION
7818 6th St.
BURNABY, B.C.
V3N 4N8

ATTENTION: Mr. Ken Lukawesky

PROJECT: **Texada Quarry Aggregate Testing**

Sample:	**STPL, Bag #341**
Source:	**Texada Quarry**

Date sampled: May 27, 2008
Date tested: December 3, 2008

Sampled by: Client
Tested by: IC

TRIAL #	SEDIMENT PERIOD (min)	CLAY HEIGHT (inches)	SAND HEIGHT (inches)	SAND EQUIVALENT
1	20	7.2	3.0	42
2	20	7.4	3.0	41
AVERAGE				**42**

Reported by: L. Hu

Reviewed by: _____
A. Briggs, M.Sc. GIT

RESISTANCE OF COARSE AGGREGATE TO DEGRADATION BY ABRASION IN THE MICRO-DEVAL APPARATUS

ASTM D 6928

June 4, 2008

Project number: 08-1416-0026 / 2007

MINISTRY OF TRANSPORTATION
7818 6th St.
Burnaby, B.C.
V3N 4N8

ATTENTION: Mr. Ken Lukawesky

PROJECT: **Texada Quarry Aggregate Testing**

Sample:	**STPL, Bag #340**
Source:	**Texada Quarry**

Date sampled: May 27, 2008
Date tested: June 2, 2008

Sampled by: Client
Tested by: LH

Grading	8.2
Loss at conclusion of test (% by mass)	**12.2**

Control Aggregate Brechin Stone (Validation) Test Data	
Test date	May 20, 2008
Weighted loss	18.2%

Reported by: L. Grajales

Reviewed by: _____
N. Mwitta

Notice: The test data given herein pertain to the sample provided, and may not be applicable to material from other production zones/periods. This report constitutes a testing service only. Interpretation of the data given here may be provided upon request.

FRACTURE COUNT OF COARSE AGGREGATE

BCH - I 13

December 3, 2008

PROJECT NUMBER: 08-1416-0026 / 2007

Ministry of Transportation
7818 Sixth Street
Burnaby, BC, V3N 4N8

ATTENTION: Mr. Ken Lukawesky

PROJECT: **Texada Quarry Aggregate Testing**

Sample:	**STPL, Bag # 341**
Source:	**Texada Quarry**

DATE SAMPLED: May 27, 2007 SAMPLED BY: SL
DATE TESTED December 2, 2008 TESTED BY: LH

METHOD A - COUNT (pieces)

Aggregate Size mm	Fractured pieces	Unfractured pieces	Total pieces	**% Fractured Particles**
25 x 19	--	--	--	--
19 x 12.5	166	0	166	100.0
12.5 x 9.5	300	0	300	100.0
9.5 x 4.75	315	0	315	100.0
TOTAL	781	0	781	**100.0**

METHOD B - MASS (grams)

Aggregate Size mm	Fractured g	Unfractured g	Total g	**% Fractured Particles**
25 x 4.75				

Reported by: L. Hu

Reviewed by:

A. Briggs, M. Sc. GIT

Notice: The test data given herein pertain to the sample provided and may not be applicable to material from other production zones.
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Liquid Limit, Plastic Limit and Plasticity Index of Soils

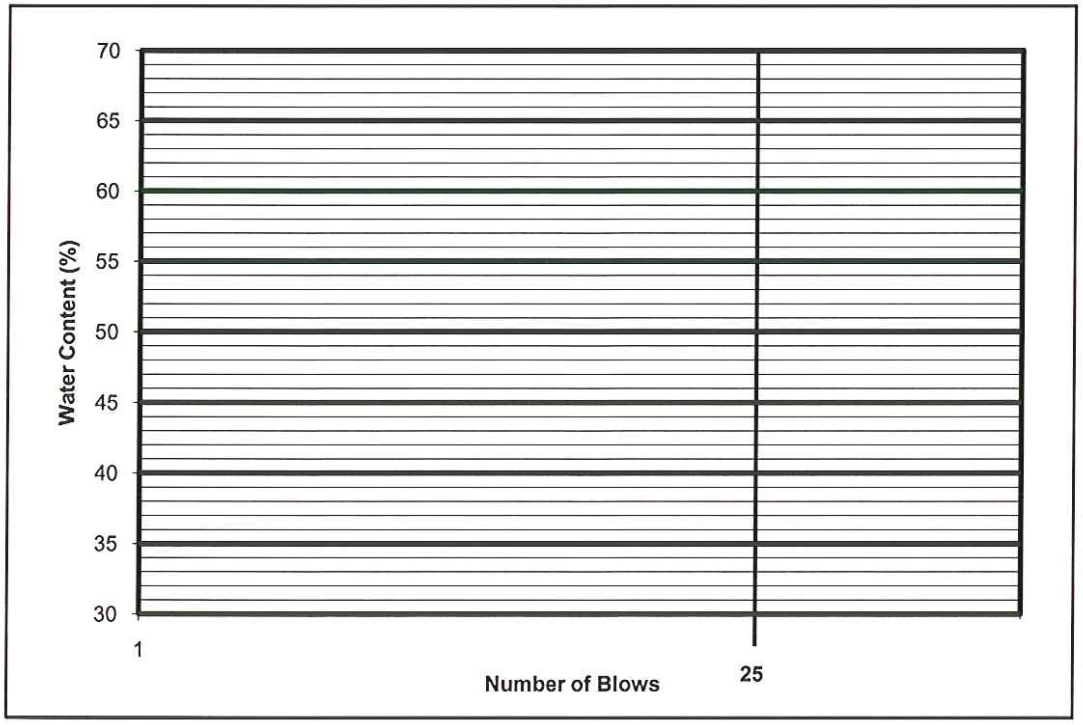
ASTM D 4318-93

Golder Associates

Project # 08-1416-0026 / 2007 **Tech : DC**

TYPE OF TEST	LL	LL	LL	LL		W% Nat.
CONTAINER NUMBER						
NUMBER OF BLOWS						
MASS WET SOIL + TARE						
MASS DRY SOIL + TARE						
MASS OF WATER						
MASS OF CONTAINER						
MASS OF DRY SOIL						
WATER CONTENT W (%)						

TYPE OF TEST	PL	PL	BOREHOLE NO.	
CONTAINER NUMBER			SAMPLE	STPL, Bag #340
MASS WET SOIL + TARE			DEPTH	
MASS DRY SOIL + TARE			LIQUID LIMIT (%)	
MASS OF WATER			PLASTIC LIMIT (%)	#DIV/0!
MASS OF CONTAINER			PLASTICITY INDEX (%)	#DIV/0!
MASS OF DRY SOIL			W% Natural (%)	
WATER CONTENT W (%)			LIQUIDITY INDEX	#VALUE!



SAMPLE DESCRIPTION : **NON-PLASTIC MATERIAL (significant silty sand)**

Notice: The test data given herein pertain to the sample provided and may not be applicable to material from other production zones. This report constitutes a testing service only. Interpretation of the data given here may be provided upon request.

GOLDER ASSOCIATES LTD., Unit B, 12330 - 88th Avenue, Surrey, B.C. Canada V3W 3J6 Tel: 604-591-6616 Fax 604-591-6608

PETROGRAPHIC EXAMINATION OF COARSE AGGREGATE

ASTM C 295

June 10, 2008

Project Number: 08-1416-0026/2007

MINISTRY OF TRANSPORTATION
7818 6th St. - Burnaby, B.C., V3N 4N8

ATTENTION: Mr. Ken Lukawesky

PROJECT: **Testing of Aggregate from Texada Quarry**

Sample:	**Sample #341**
Source:	**Texada Quarry**

Date Received: May 27, 2008 **Sampled by:** Client

	PETROGRAPHIC DESCRIPTION/ PHYSICAL QUALITY	PERCENT BY COUNT BY SIEVE FRACTION (mm)				PN MULT	PN CONTR.
		12.5	9.75	4.75	Weighted Total		
GOOD	**Diorite** – medium grained, white with black speckling, dense, strong	27.3	13.0	9.0	*14.8*	1	**14.8**
GOOD	**Limestone** – fine grained, grey, dense	1.9	1.4	1.1	*1.4*		**1.4**
GOOD	**Marble** – medium grained, med. density	5.6	5.8	6.7	*6.2*	1	**6.2**
GOOD	**Metadiorite** – chloritized, epidote bearing, calcareous, medium to coarse grained, greenish white, dense	35.1	50.7	58.2	*50.3*	1	**50.3**
GOOD	**Skarn** – medium to coarse grained, variable density	11.7	14.1	9.4	*11.1*	1	**11.1**
GOOD	**Metavolcanic** – fine grained, light grey to brown, dense	1.2	1.9	0.7	*1.1*	1	**1.1**
GOOD	**Calcite vein** – coarse grained	1.9	2.1	2.5	*2.2*	1	**2.2**
GOOD	*Subtotal*	***84.7***	***89.0***	***87.6***	***87.1***		***87.1***
FAIR	**Diorite** – friable, brittle	1.1	1.2	0.6	*0.9*	3	**2.7**
FAIR	**Limestone** – friable	2.0	0.4	0.7	*1.0*	3	**3.0**
FAIR	**Marble** – friable	5.3	0.5	2.7	*2.9*	3	**8.7**
FAIR	**Metadiorite** – friable, brittle	4.2	4.7	6.0	*5.2*	3	**15.6**
FAIR	**Skarn** – brittle	1.1	1.9	1.1	*1.3*	3	**3.9**
FAIR	**Calcite vein** – brittle	0.6	1.1	1.0	*0.9*	3	**2.7**
FAIR	**Magnetite** – fine grained, dense	1.0	1.2	0.3	*0.7*	3	**2.1**
FAIR	*Subtotal*	***15.3***	***11.0***	***12.4***	***12.9***		***38.7***
	TOTALS	**100.0**	**100.0**	**100.0**	**100.0**		**125.8**

Note: 1. The PN is not related to potential for Alkali-Aggregate Reaction. AAR must be separately assessed.

PETROGRAPHER: _____
B. Hudson, B.Sc., GIT

ASTM INTERNATIONAL ORGANIZATIONAL MEMBER

Notice: The data given in this report pertain to the sample provided, and may not be applicable to samples from earlier or subsequent production. This report comprises a testing service only. Interpretation may be provided upon written request.

Texada Quarry, Sample #341

General

The sample of quarried, crushed rock was sieved in preparation for the separate examination of grains from the various sieve fractions. All size fractions which comprised at least 5% by mass of the sample were included in this examination. Particle shape was dominantly angular with some sub-rounded particles.

Identification of rock types and minerals was done using a stereomicroscope with magnifications from 8x to about 120x, supplemented by basic geologic diagnostic methods. Thin-sections and chemical analyses to assist in the classification were not undertaken.

Lithologic Composition

The geological composition of the sample is summarized in the table above, and discussed in detail here.

The sample consisted of plutonic, carbonate sedimentary and metamorphic rock types.

Of the plutonic rocks types, diorite constituted approximately 16% of the sample. This rock was white with dark speckling and medium to fine grained. The mafic component was comprised largely of biotite and hornblende. Some metallic sulphide, possibly pyrite, was observed along fracture surfaces. The physical-mechanical quality of this rock was generally good; however, some particles where slightly brittle and friable.

Carbonate sedimentary rocks, consisting of limestone, were observed in minor quantity in the sample. These rocks were fine grained, dark grey in colour and sub-angular in particle shape. Some particles appeared to be slightly weathered. Approximately 2% of the sample was comprised of limestone.

Metamorphic carbonate in the form of marble was observed in 9% of the sample. Grain size varied from fine to coarse and colour ranged from white to beige. Some of these rocks were slightly weathered and friable.

Approximately 56% of the sample consisted of a greenish, fine to coarse grained calcareous metadiorite. Secondary alteration minerals included chlorite and epidote. The competency of these particles was generally good; although, some of the coarser grained varieties were slightly brittle.

Another 12% of the sample was identified as skarn. This rock type is believed to originate from contact zone, fluid rich metamorphism of carbonate rocks. Some varieties consist of a breccia of the other rock types in a calcite matrix. Other variations are randomly oriented, coarsely re-crystallized minerals such calcite, epidote, garnet and augite. Magnetite and metallic sulphides (ie. pyrite, pyrrhotite, etc.) were also observed in varying amounts. Some particles were almost pure magnetite with accessory minerals of malachite and possibly copper.

The rocks classified as metavolcanics consisted of calcareous basalt, andesite, rhyolite and trachyte. Hornblende phenocrysts and calcite inclusions were observed for some particles. In total, metavolcanic rocks accounted for 1% of the sample.

Engineering Characteristics

In addition to the geologic classification of the aggregate, the sample was also examined for characteristics relevant to engineering uses. Aspects such as porosity, strength, tenacity, presence or absence of vugs, voids, fissures, cracks, coatings and impurities in the particles were considered in the assignment of individual particles into various quality classifications.

Most of the sample was found to consist of strong, fresh rock material. Approximately 13% of the sample was found to be somewhat medium strength rock.

On the basis of this sorting of the sample, the relative amounts of "Good" and "Fair" quality material were determined. This enabled the determination of a Petrographic Number (or "PN"), in accordance with the method given in CSA A23.2-15A. The PN is an index of a coarse aggregate's overall physical-mechanical quality.

The PN for this sample was "126". For reference, the PN scale referenced in CSA A23.2-15A, Attachment A2, is as follows:

PN LIMITS	PRODUCT TYPE
125	Concrete Class C1, C2, F1
140 max	Other concrete classes
125	Shotcrete
125	Railroad ballast
150	Granular base
160	Select Granular sub-base

Thus Texada Quarry, Sample #341 would be considered to be of suitable quality for some of the uses noted above. Supplementary physical-mechanical testing would be recommended to further delineate the characteristics of the aggregate and provide a balanced assessment of the acceptability for use in specific application. The aggregate would be anticipated to provide durability and strength commensurate with these ratings, when used as construction-grade aggregate.

Alkali-Aggregate Reaction Potential

The Petrographic Examination identified metadiorite as a rock with mineral components that may be potentially alkali-reactive. It would therefore be recommended that the AAR characteristics of this aggregate be evaluated using test methods as described in ASTM Volume 04.02. Suitable methods for such evaluation include the C 1293 ("Concrete Prism") and C 1260 ("Accelerated Mortar Bar") procedures, given in ASTM 04.02.

Summary

The sample consisted primarily of plutonics and calcareous metamorphosed plutonics.

The sample had a low content of weathered, weak or friable particles culminating to a PN of 126. Based on this result the material is judged to be suitable for use as concrete aggregate in some applications, subject to satisfactory compliance with applicable specifications, such as supplementary physical durability tests, or testing for AAR potential.

Despite the presence of sulphide minerals such as pyrite it is thought that the presence of carbonate minerals would neutralize any acid produced by the oxidation of sulphides. This characteristic should be evaluated with applicable testing prior to use in pH sensitive environments. Due to the presence of metallic oxides there is a potential for leaching of metals. It is recommended that the material be tested with respect to leachable metals.

Reported by:

B. Hudson, B.Sc., GIT

Reviewed by:

F. Shrimer, P. Geo.

ACID GENERATION POTENTIAL ANALYSIS

July 22, 2008
Project number: 08-1416-0026.2007

MINISTRY OF TRANSPORTATION
7818 6th St.
Burnaby, B.C.
V3N 4N8

ATTENTION: Mr. Ken Lukawesky

PROJECT: Testing of Aggregate from Texada Quarry

Sample:	**Sample #341**
Source:	**Texada Quarry**

Date sampled: May 27, 2008 **Sampled by:** Client

TEST INDEX	RESULTS
Neutralization Potential (NP)	215
Maximum Potential Acidity (MPA)	13.4
Net Neutralization Potential (NNP)	202
NP:MPA Ratio	**16**
Total Sulfur (%) - LECO	0.43
Sulfate (%)	0.05
Sulfate (%) HCl-leachable	0.03
Sulfide (calculated)	0.38
Carbon (%)	2.49
Carbon (%) as CO_2	9.1
Fizz Rating	3
pH	7.8

Test conducted by: ALS Chemex (Ref: VA08083300)

Reviewed by: _____
A. Briggs, M.Sc., GIT

LEACHABLE METALS ANALYSIS

REF: BC Ministry of Energy and Mines (Price et al., 1997)

MINISTRY OF TRANSPORTATION
7818 6th St.
Burnaby, B.C.
V3N 4N8

July 22, 2008
Project number: 08-1416-0026.2007

ATTENTION: Mr. Ken Lukawesky

PROJECT: Testing of Aggregate from Texada Quarry

Sample:	**Sample #341**
Source:	**Texada Quarry**

Date sampled: May 27, 2008 **Sampled by:** Client

ELEMENT-LEACHABLE	RESULT (mg/L)	ELEMENT-LEACHABLE	RESULT (mg/L)
Aluminum	0.0504	Mercury	0.000162
Antimony	0.00176	Molybdenum	0.0557
Arsenic	0.0037	Nickel	<0.00050
Barium	0.0234	Phosphorous	<0.30
Beryllium	<0.00050	Potassium	5.28
Bismuth	<0.00050	Selenium	0.00266
Boron	0.031	Silicon	2.83
Cadmium	<0.000050	Silver	0.000192
Calcium	158	Sodium	8.93
Chromium	<0.00050	Strontium	0.381
Cobalt	0.00018	Thallium	<0.00010
Copper	0.0364	Tin	<0.00050
Iron	<0.030	Titanium	<0.010
Lead	<0.00010	Uranium	0.00979
Lithium	0.0083	Vanadium	<0.0010
Magnesium	3.4	Zinc	<0.010
Manganese	0.0761	**pH**	**7.99**

Test conducted by: ALS Environmental (L64804-5) **Reported by**: ALS – Amber Springer

Reported by: BH

Reviewed by: _____

A. Briggs, M.Sc., GIT

Notice: The test data given herein pertain to the sample provided, and may not be applicable to material from other production zones. This report constitutes a testing service only. Interpretation of the data given here may be provided upon request.