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February 26, 2009

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AND

Davis & Company
1 First Canadian Place, Suite 5300
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Attention: Mr. Stephen Garrod

Attention: Mr. Chris Barnett

Dear Sirs:

Re: Proposed Rockfort Quarry Licence Application Peer Review
Review Comments on CRA Memorandum Submission
Amabel Aquifer Hydrostratigraphy, Dated January 28 2009
Water Resources Aspects
File 04 980984.04

As requested, we are providing preliminary peer review comments of the technical information provided in the January 28, 2009 Memorandum by Connestoga-Rovers & Associates (CRA) on behalf of James Dick Construction Limited (JDCL) with respect to their application for a Class A Category 2 Licence for their Rockfort Quarry property.

The January 28th memo follows on from earlier meetings in November and December 2008 between specific peer reviewers and the proponent's like-consultants. Other technical memo responses have also been provided by the proponent's consultants with respect to peer review comments on the implementation of the grout curtain and recharge well system, and the revised Adaptive Management Plan submitted by the proponent.

Our current peer review of water resource issues is a continuation of the peer review process that was started in 1998 for the licence application, and which continued through to 2003/2004. The proponent has not yet provided any response to Jagger Hims Limited with respect to the peer review comments/clarification questions that we raised in our previous

peer reviews of the suite of site-specific technical reports submitted by the proponent in support of the application in 2000. Since the proponent continues to rely on all or parts of those reports from 2000, Jagger Hims Limited continues to request a written response from the proponent to our earlier peer reviews that date from 2001 to 2003. In excess of five years has elapsed since the last set of peer review comments were provided to JDCL, and it is our understanding that no substantive new technical information related to site specific hydrogeological issues has been collected and/or brought forward by JDCL to try to resolve the earlier peer reviews. The items documented in previous peer reviews remain outstanding.

The review process for the site-specific application was suspended in 2003/2004 while the Comprehensive Broader Scale Environmental Study (CBSES) of Resource Area 9A was developed and subsequently completed by JDCL. The final report for the CBSES was submitted to the Town Of Caledon in July 2008. Credit Valley Conservation (CVC) has provided their review comments related to the CBSES report. Jagger Hims Limited has not reviewed the CBSES report, as our mandate is centred on the site-specific application for the Rockfort Quarry.

Addendum water resources and monitoring documentation related to the site-specific Rockfort application was submitted by the proponent in August 2008, as follows:

A. Water Resources Evaluation And Design Addendum Rockfort Quarry, Town Of Caledon, Ontario. Prepared by Conestoga Rovers Associates, July 2008; Reference No. 009595 (11).
B. Updated Adaptive Management Plan Water Resources Protection Rockfort Quarry, Town Of Caledon, Ontario. Prepared by Conestoga Rovers Associates, Ecoplans Limited and Goodban Ecological Consulting, July 2008; Reference No. 009595 (8).

The Water Resources And Design Addendum report provides the results of additional monitoring data collection and general site characterization information that has been obtained since the submission of the technical support reports in 2000. As well, this addendum report describes modifications to the proposed mitigation measures and monitoring for the quarry operation, as well as providing additional technical support for the proposed mining and mitigation operations.

The Updated Adaptive Management Plan Water Resources Protection report provides details of the proposed operational water management, and mitigation monitoring programs that are intended to protect the existing water resources and natural environment around the periphery of the quarry and within any potential zone of influence of the quarry operations. It is stated that this report updates and supersedes the August 2000 Adaptive Management Plan document. Although not stated as such, we have assumed that the Updated AMP Report also

supersedes the April 2003 Modifications To The adaptive Management Plan document that was submitted by the applicant.

Jagger Hims Limited provided preliminary review comments of the two addendum documents noted above, in our letter jointly addressed to Garrod Pickfield LLP and Davis & Company, dated October 28, 2008. Review comments prepared by CVC/Blackport Hydrogeology Limited and by Golder Associates Limited, related to water resource issues and mining/mitigation issues respectively were also submitted to the proponent in November 2008. Subsequent to those submissions, a number of like-expert technical discussion meetings took place in December 2008. The January 28th 2009 memo from CRA related to the hydrostratigraphy of the Amabel aquifer, and a companion memo of the same date by CRA, related to the grout curtain and recharge system implementation, provide documentation of information presented by CRA at the like-expert meetings.

The various figures which were included in the January 28th CRA memo on Amabel hydrostratigraphy were presented and discussed by CRA at the water resources and mining expert consultants meeting held at CRA's Mississauga office on December 8th 2008. Copies of the figures were provided electronically to the peer review consultants (Jagger Hims Limited, Golder Associates and Credit Valley Conservation/Blackport Hydrogeology Limited) on December 19, 2008. We subsequently requested that CRA provide descriptive text to accompany the figures to document CRA's interpretation of the technical information with respect to the hydrostratigraphy of the Amabel aquifer rock mass. The Amabel is also the rock resource target for extraction at the Rockfort Quarry.

The central crux of the discussion about the Amabel hydrostratigraphy relates to whether or not the Amabel fractured rock aquifer reasonably can be characterized and modeled as a single layer, unconfined aquifer, as proposed by CRA. That single layer aquifer is represented in the CRA groundwater model by a single value of hydraulic conductivity for the entire vertical profile of the rock mass, but which also exhibits spatial (lateral) variation of that hydraulic conductivity value across the subject property. Hydraulic conductivity is a measure of the relative ease with which water will move through a material. In the relatively simplistic CRA model, the Amabel aquifer within a specific area is represented by a single value of hydraulic conductivity from top to bottom of the rock mass. Different areas may have a different value of hydraulic conductivity, but within a specific area the value is the same for the entire rock mass.

An alternative interpretation of at least some of the site-specific information, as postulated by one or more peer reviewers, is that the Amabel aquifer rock mass may better be characterized and modeled as two or more quasi-horizontal layers that may exhibit differing hydraulic

conductivity values in the various layers, as well as spatially across the site and beyond the site boundaries.

The characterization and subsequent modeling of the Amabel aquifer is central to the issue of the reasonableness of the groundwater modeling to simulate firstly the existing pre-quarry conditions, and then the predicted future impacts due to quarrying and mitigation, and finally the post-closure final rehabilitation as two hydraulically inter-connected lakes. A properly developed groundwater model should be able to provide valuable insight with respect to how the site-specific natural system is expected to respond to external stresses over time such as from an operating quarry, including extraction, dewatering and mitigation operations, and finally post-closure conditions.

It is recognized that groundwater models of the type developed for Rockfort should not be viewed as being able to provide "absolute" numerical values with respect to future predicted impacts. The natural environment is variable and models, by necessity, incorporate many simplifying assumptions that reduce their ability to provide "absolute" predictions. Rather, properly constructed and calibrated models can provide valuable insight with respect to the degree of relative change that is expected to occur as a result of a land-use change.

The model predictions should be sensitive enough to be able to be validated by site-specific monitoring as the extraction operation progresses. If monitoring shows conditions that are different from the predictions, the model should be updated and modified so that it can simulate actual conditions, and thereby be better-able to predict future conditions. In the case of Rockfort, this will be important because the extraction operation and subsequent mitigation becomes progressively more complex through the various phases of the operation. The impacts to adjacent water resources and natural heritage features that may result from failure of part or all of the mitigation measures would be unacceptable. As well, the model should be able to simulate the post-closure lake conditions within reasonable limits to demonstrate that the natural system can be self-sustaining.

There will be changes that occur to local conditions associated with the development, operation and subsequent final rehabilitation of a quarry. It becomes a question of:

- whether such changes reasonably can be predicted at the outset and suitable mitigation measures designed and implemented to manage those changes;

- the magnitude and significance of operational changes and post-rehabilitation changes that actually do occur (i.e. the sensitivity of the natural system to accommodate short-term and long-term change--is this acceptable?);

- the ability to monitor/measure such change accurately, within the context of natural seasonal variability, and then be able to adapt operations/mitigation measures quickly enough and effectively enough in the event that the "change" is outside what is predicted and/or deemed acceptable. The AMP approach is a reasonable way of achieving the objectives, provided that the right tools are available and are used appropriately.

With respect to the Rockfort application, there is no doubt that the proposed engineering design, mitigation and monitoring requirements raise the bar in regard to the level of operational sophistication that will be essential to extract the resource in the manner proposed, in order to maintain protection of the adjacent natural heritage features and local water resources. If the application is approved, by the time extraction commenced in the more-sensitive areas (late Phase 2 and into Phase 3), Rockfort would be one of, if not the most highly engineered, tested and monitored rock quarry in the province. There is nothing inherently wrong with being the first of its kind, but that does warrant a higher-than-normal level of technical scrutiny, as well as a higher-than-normal level of short-term and long-term assurances that the system will operate as intended. This is particularly the case if the likely impacts that would result from failure are not acceptable, as is the situation at Rockfort.

CRA/JDCL has stated from the outset that the unmitigated impact scenario would not be acceptable. Whereas the unmitigated impact has not been quantified by the proponent, we believe that it is generally accepted by reviewers to be the case. Hence, the onus surely has to be placed on the proponent to demonstrate to the regulatory agencies that the level of understanding of the site and surroundings within the potential impact zone is sufficient to provide reasonable assurance that the various engineering and mitigation measures will function as intended, and that the monitoring will be sensitive enough to detect changes resulting from the operation. As well, the agencies need to be assured that there are contingencies available to mitigate any unforeseen conditions that may be encountered during the life of the operation. Similar constraints apply to the final rehabilitation period to ensure that the environment will remain protected under post-closure conditions.

The January 28th 2009 information document on the Amabel Hydrostratigraphy submitted by CRA provides some descriptive text and context for why they believe that the Amabel does not contain laterally extensive and/or consistent horizontal layers of differing hydraulic conductivity that would preclude their characterization of the Amabel as a single layer in their computer model. We would agree that the information, as-presented, does suggest that there are no apparent large-scale consistent patterns with respect to layering.

However, we would also suggest that the Amabel in areas in which more-detailed investigative work has been completed, such as the grout curtain demonstration area and the

three other pumping test sites could be characterized as being "different" from the rest of the site and surrounding areas. For example, the grout curtain demonstration area was investigated in significantly greater detail, relative to the rest of the site, and those results clearly show zones of differing hydraulic conductivity characteristics with depth, at that location (see profiles A1 and A4 in CRA's 3-D visualization figure attached to their January 28th memo). The other profiles are provided to illustrate that there is no similar or consistent pattern across the site.

We note that the other profile locations have not been investigated at anything like the same level of detail as the grout curtain demonstration site. Also, unfortunately, there is not one of the original cored boreholes within the grout curtain test area that initially was investigated at the lesser level of detail for comparison with the grout curtain level of detail. Potentially, such a comparison would have been useful to demonstrate that even a lesser level of detail of investigation at the grout curtain demonstration location would have identified the distinct pattern of hydraulic conductivity characteristics observed at depth. That would at least provide some confidence that the results from a lesser level of detail of investigation can be relied upon to reflect actual conditions.

As well, there is very little detailed information available to determine the lateral extent of the conditions encountered at the grout curtain demonstration site. This is particularly relevant in the southern part of the property to determine whether or not it extends off-site to areas that support the cold water fishery habitat.

With respect to the information provided by the pumping tests, it is interesting to note that those results (as well as other information) are characterized in the model as being areas of higher hydraulic conductivity, relative to the widespread regional hydraulic conductivity zone in the model that is assigned the lowest value in the model (about 0.5 m/day). We note that the packer testing data for profile holes C4 and C5 (eastern side of the property) indicate rock that has relatively low hydraulic conductivity (in the order of 0.09 to 0.009 m/day). However, in the computer model, those boreholes appear to be located within areas that are modeled using the two highest hydraulic conductivity values in the model (10 to 20 m/day). These types of discrepancies require explanation.

It is these types of uncertainties or discrepancies noted above that result in a relatively low level of confidence that the model is reasonably constrained by the field data, and reflects reality with respect to how the system will react to the stresses imposed by the quarry and the proposed mitigation measures. At this present time, there is insufficient site-specific information south of the property to characterize the groundwater/surface water interactions in the areas that rely on groundwater discharge to help maintain fish habitat. Without a reasonably detailed understanding of the groundwater/surface water interactions adjacent to

the Rockfort property, it is difficult to predict potential changes that may arise due to the quarrying operation, and exactly where to monitor for such change.

Is it possible to collect additional field information that will increase the level of understanding required to implement the proposal and have reasonable assurance that the environment can be protected? We believe that it is possible to collect the required information. The type of detailed hydrostratigraphic information that was collected during the grout curtain demonstration project proved to be extremely useful with respect to characterizing the Amabel aquifer at that location, as well as providing preliminary design information for the actual grout curtain and recharge well system. If similar detailed information was available, for example, at the south end of the property where the grout curtain and recharge system are to be installed, then many of the currently unanswered questions and concerns related to the site-specific feasibility of the engineering/mitigation works to protect the cold-water fishery habitat could be answered. As has been stated in previous peer reviews, at the present time there is no factual information to confirm the groundwater/surface water relationships south of the site, or that recharge wells located at the property boundary will be able to assist groundwater discharge conditions at specific locations in surface water courses downgradient, should that become necessary in the future.

The difficult question to answer is how much information is going to be sufficient, and when should that information be collected and reviewed by the interested parties? Were such factual information available at this stage in the approval process, and that information was supportive of the feasibility of the project, then there would be a much higher level of confidence that the system can be constructed and operated in a manner that will afford protection of the local natural environment adjacent to the quarry. The question of how best to characterize, model and actually monitor the Amabel aquifer and the local groundwater/surface water interactions downgradient from the quarry would have been resolved. It also has to be recognized, however, that new information may identify conditions that are not supportive of the proposal because of technical constraints and/or economic considerations.

The applicant holds the position that the level of information currently available is sufficient to support the overall feasibility of the project and that the AMP as proposed will ensure environmental protection. While we do not agree with this position, we do recognize that under the applicant's recent proposal with respect to the timing of certain investigative and testing works, progress has been made towards developing a process to address some of our earlier concerns. Under the recently submitted proposal, further more-detailed site-specific information would be generated following approval of the licence, during the lead-up to, and including, the Phase 1 extraction, and during Phase 2 as part of detailed design, testing and implementation of the grout curtain and recharge well system. The recent January

28th 2009 CRA memo related to the timing of the various engineering mitigation works indicates a commitment by the applicant to undertake additional detailed testing of two 150 m long critical sections of the actual grout curtain wall during Phase 2 extraction, and possibly earlier during Phase 1 as a contingency if necessary.

The type of detailed information that would be provided by such investigation/testing is expected to be similar to, or possibly more-detailed than, the information obtained during the grout curtain demonstration exercise previously completed. It remains our opinion that this type of information should be available prior to licencing to provide solid technical support for the proposal. For the reasons outlined above and in our previous peer review comments, it is our opinion that sufficient information presently is not available.

If it was possible to implement and enforce some sort of staged approval process that would permit only limited extraction until the required detailed information is collected, analysed and approved, such a process could be supportable from our technical perspective, as long as the natural environment was assured an appropriate level of protection while this process was completed.

Such a staged approval process would have to include definitive stop-go milestone events that are commensurate with the level of potential risk to the environment. Approval to move from the initial less-sensitive stage of extraction to a more-sensitive stage of extraction, that is, where the potential risk to the environment is higher in the event of total or partial failure of mitigation measures, would be contingent on review and approval of supporting technical information and evaluation that is sufficient and acceptable to the various review agencies. The applicant's proposal of January 28, 2009 does not incorporate these types of safeguards, and therefore is not sufficient in these respects, as presented.

We trust that this information is sufficient for your present needs. Please contact our office if you have any questions.

Yours truly,
JAGGER HIMS LIMITED

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