

Lorimer, Mike TRAN:EX

From: Boissonneault, Mike TRAN:EX
Sent: Tuesday, April 14, 2015 9:49 AM
To: Lorimer, Mike TRAN:EX
Subject: RE: Avalanche Risk Zoning Report

Working on it Mike,... should be done by tomorrow. Given significant practical, political and public safety implications need to be sure our response is thorough, complete and accurate.

Will keep you posted,

Mike Boissonneault

Manager, Avalanche and Weather Programs
Phone: 250-387-7523
Cell: 250-888-7004

Web Site: http://www.th.gov.bc.ca/Avalanche_Weather/
Avalanche Safety Plan: <http://www.th.gov.bc.ca/publications/AvalancheSafetyPlan/>

From: Lorimer, Mike TRAN:EX
Sent: Tuesday, April 14, 2015 9:44 AM
To: Boissonneault, Mike TRAN:EX
Subject: RE: Avalanche Risk Zoning Report

Hi Mike,

Just checking in on this. We need to get a response to them soon.

thx

Mike Lorimer

Regional Director - Southern Interior Region

From: Boissonneault, Mike TRAN:EX
Sent: Friday, April 10, 2015 4:08 PM
To: Lorimer, Mike TRAN:EX
Subject: RE: Avalanche Risk Zoning Report

Mike:

I have reviewed the report and am still compiling comments. Will provide comments to you next week.

Thank you,

Mike Boissonneault

Manager, Avalanche and Weather Programs
Phone: 250-387-7523
Cell: 250-888-7004

Web Site: http://www.th.gov.bc.ca/Avalanche_Weather/

Avalanche Safety Plan: <http://www.th.gov.bc.ca/publications/AvalancheSafetyPlan/>

From: Lorimer, Mike TRAN:EX
Sent: Thursday, April 2, 2015 2:20 PM
To: Boissonneault, Mike TRAN:EX; Bennetto, Jack D TRAN:EX
Cc: Chapman, Rodney L TRAN:EX; Lorimer, Mike TRAN:EX
Subject: FW: Avalanche Risk Zoning Report

Good Afternoon Mike and Jack,

At the request of the Ministry of Environment and the Environmental Assessment Office, we have been asked to assist in the review of the avalanche risk zoning report for the Jumbo Glacier.

Firstly, this is a highly confidential document and please do not forward this email to other parties.

The responsibility for the review of the report lies with the EAO and it will form part of the basis for their evaluation of the Jumbo Glacier Resort's compliance with the EA Certificate. They have provided us with the document and some terms for our review as noted below.

The avalanche management aspect of the JGR project is just a part of the entire permitting process. As has been the case for many years, the primary contact for all aspects of this project for the Ministry of Transportation and Infrastructure remains the Rocky Mountain District.

I ask that both of you provide me with comments that are limited to the scope of the work requested below. We are not in a position to determine compliance, but simply asked to assist them with the with review.

I would be looking to the AWP with respect to the technical and procedural aspects of the report. With regards to Rocky Mountain District, I am looking for information related to the ongoing review of the project and related to the type of similar reports that you would receive as part of normal Development Approval processes.

While RMD remains the primary contact for all aspects of the JGR file, please provide me with your comments so that I can review and share with my counterpart at the EAO.

The EAO is hoping to have some feedback early next week if possible.

Thanks,

Mike Lorimer
Regional Director - Southern Interior Region

From: Craven, Paul EAO:EX
Sent: Thursday, April 2, 2015 10:23 AM
To: Lorimer, Mike TRAN:EX
Cc: Cousins, Autumn EAO:EX
Subject: Avalanche Risk Zoning Report

Mike,

I am writing to you to ask for the Ministry of Transportation and Infrastructure's assistance with our review of the attached ***Snow Avalanche Risk Zoning for a Day Lodge and Service Building for the Jumbo Glacier Resort*** prepared by Dynamic Avalanche Consulting Ltd.

Given your Ministry's role in seeking similar reports, we are looking for any advice on whether the report is consistent with what your Ministry would normally expect and accept.

In particular, we would appreciate any advice on questions or clarifications, if any, we may wish to ask the author. One area to focus on is the report's recommendation related to the use of the daylodge subject to three conditions.

We will be using this report to determine whether the construction of these buildings is in compliance with a condition in the environmental assessment certificate. For clarity, we do not require your Ministry to opine on the compliance status in your response.

We would appreciate it if you could review the report and get back to us early next week, if possible.

Many thanks,

Paul

Lorimer, Mike TRAN:EX

From: Boissonneault, Mike TRAN:EX
Sent: Tuesday, April 7, 2015 4:08 PM
To: Lorimer, Mike TRAN:EX
Subject: Jumbo report

Hi Mike:

I have read the report and am working on comments. Trust I can get back to you later this week on progress. Can you confirm when you are looking for feedback on this. I understand this is likely high priority so would like to fit this in with the various other items I am working on and get this to you asap.

If you want to call to discuss, I am in the office for the remainder of the week,

Cheers,

Mike Boissonneault

Manager, Avalanche and Weather Programs
Phone: 250-387-7523
Cell: 250-888-7004

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Avalanche Safety Plan: <http://www.th.gov.bc.ca/publications/AvalancheSafetyPlan/>

Lorimer, Mike TRAN:EX

From: Boissonneault, Mike TRAN:EX
Sent: Friday, April 17, 2015 9:25 AM
To: Lorimer, Mike TRAN:EX; Cousins, Autumn EAO:EX
Cc: Craven, Paul EAO:EX
Subject: RE: Urgent: Review Requested ASAP this AM

Hi Autumn:

Yes, confirmed I have received your note. Preparing comments related to the three bullet points for further review.

Mike Boissonneault

Manager, Avalanche and Weather Programs
Phone: 250-387-7523
Cell: 250-888-7004

Web Site: http://www.th.gov.bc.ca/Avalanche_Weather/
Avalanche Safety Plan: <http://www.th.gov.bc.ca/publications/AvalancheSafetyPlan/>

From: Lorimer, Mike TRAN:EX
Sent: Friday, April 17, 2015 9:06 AM
To: Cousins, Autumn EAO:EX
Cc: Craven, Paul EAO:EX; Boissonneault, Mike TRAN:EX
Subject: RE: Urgent: Review Requested ASAP this AM

Hi Autumn,

I received this and will work towards a response ASAP.

I will be having some conversations this morning so you will get a response from me.

Mike Lorimer

Regional Director - Southern Interior Region

From: Cousins, Autumn EAO:EX
Sent: Friday, April 17, 2015 8:46 AM
To: Boissonneault, Mike TRAN:EX; Lorimer, Mike TRAN:EX
Cc: Craven, Paul EAO:EX
Subject: Urgent: Review Requested ASAP this AM
Importance: High

Hi Mike and Mike

Thank you in advance for MOTI comments on the Alan Jones Report. Looking forward to receiving your comments shortly.

I will likely be sending a letter to JGR today. I am hoping you could please do an expedited review of the following excerpts from the letter to ensure factual accuracy. I realize this is short notice but can you please review asap this

morning? We have various reviews to do of the letter so we are under tight turn around to get it out this afternoon to JGR. Thank you!

Please confirm receipt of this email and that you are able to review asap this morning. If I don't hear back from you shortly I'll call your offices to ensure you have seen this email (as I realize you may be tied up in meetings).

Excerpts for review:

- As part of EAO's review, EAO sought input from the Ministry of Transportation (MoTI) given their responsibilities and expertise relating to avalanches.

s.13

EAO C&E may have follow-up questions for Alan Jones to help us better understand the nature of the risks and potential mitigation at the day lodge and service building locations.

- The current industry standard CAA Guidelines (2002) developed a three colour zoning system for proposed occupied structures: white zone (low risk), blue zone (moderate risk) and red zone (high risk). The white zone is "an area with an estimated avalanche return periods of greater than 300 years."
- Therefore, EAO C&E's view is that structures in the white zone could be compliant as that aligns closely with the EA's avalanche hazard classification of being greater than a 200-300 avalanche return period. EAO C&E interprets condition 36 to mean that commercial and residential structures must not be located in an area classified to have an avalanche return period up to 300 years {i.e. the red zone (less than 30 years) or blue zone (less than 300 years)}.

Thank you

Autumn

Paluch, Alisha TRAN:EX

From: Boissonneault, Mike TRAN:EX
Sent: Thursday, April 16, 2015 1:20 PM
To: Lorimer, Mike TRAN:EX
Subject: Jumbo Report
Attachments: 150415 AWP Response to EAO final.pdf

Mike:

Here is the letter with avalanche related topics covered as requested by Paul Craven. The report is technical as related to avalanche risk assessments and guidelines for land use and methods of mitigation.

As we discussed, if there are questions you or Kevin may have do not hesitate to contact me.

Mike Boissonneault

Manager, Avalanche and Weather Programs
Phone: 250-387-7523
Cell: 250-888-7004

Web Site: http://www.th.gov.bc.ca/Avalanche_Weather/
Avalanche Safety Plan: <http://www.th.gov.bc.ca/publications/AvalancheSafetyPlan/>



April 15, 2015

Cliff: 234537

Environmental Assessment Office
836 Yates Street
Victoria BC V8W 9R5

Dear Paul Craven:

Re: Review of Consultant Report – Snow Avalanche Risk Zoning Report, Jumbo Glacier Resort

The following information is provided in response to a request you made on April 2nd for a review of the above mentioned avalanche risk zoning report produced by Dynamic Avalanche Consulting Ltd. on behalf of Jumbo Glacier Resort. The report, identified as Snow Avalanche Risk Zoning for a Day Lodge and Service Building for the Jumbo Glacier Resort, March 19, 2015 has been reviewed by staff at MoTI and we have prepared the following information for you to consider.

The objectives of the requested review are summarized as:

- Provide the EAO with advice on whether the report is consistent with reports MoTI would normally expect and accept;
- Provide advice on questions or clarifications the EAO may wish to request.

The following information and advice is keyed to sections of the report from Dynamic where the EAO may wish to consider gathering additional information.

Section 6.0 Avalanche Risk Assessment

The assessment methods described are consistent with the methods used in other avalanche zoning assessments MoTI has accepted from Dynamic Avalanche Consulting and other engineering consultants who specialize in assessing avalanche risks.

After the commercial skiing operation commences the character of the winter snowpack in the runout zone of the Pink Panther avalanche path is likely to change. Machine compaction of the lower slopes and runout may provide a hard, low friction, surface that avalanches run on top of.

Ministry of
Transportation
and Infrastructure

Construction and Maintenance Branch
Avalanche and Weather Programs

Mailing Address:
PO Box 9850 Stn Prov Govt
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The Dynamic report assesses the effect of avalanches from two avalanche paths will have on two building sites. The avalanche paths are commonly called Pink Panther and Karnak paths. A third avalanche path is closely connected to the south side of the Pink Panther path. Trim lines in the forest, south of the southern boundary of Pink Panther path indicate that avalanches run onto or very near the valley floor on this path. The start zone of this path may be closely connected to the Pink Panther start zone.

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Section 7.0 Avalanche Risk Discussion

The EAO requested that Jumbo Glacier Resort supply an avalanche zoning plan that is consistent with the Canadian Avalanche Association Guidelines for Snow Avalanche Risk Determination and Mapping in Canada, 2002 (CAA guidelines). The CAA guidelines recommend appropriate activities according to the zone that buildings are located in (Red, Blue or White zones). The full text of this guideline (section 5.6.1), rather than partial elements of the guideline, should be considered when making a determination of the appropriate land use in an avalanche zone or when setting conditions under which a building in an avalanche zone could be occupied or used.

Section 7.0 of the Dynamic report confirms that both the Day Lodge and Service Building foundations are located in avalanche risk zones.

Type of Structure Use and Appropriate Zoning

Section 7.1 Service Building

The CAA guidelines recommend that, in the Red zone:

Construction of new buildings not normally permitted in the Red zone. (CAA 2002)

The Dynamic report indicates that this recommendation is only intended to be applied to occupied structures, either temporarily or permanently occupied but does not provide information on the basis for that assessment of the guidelines. The recommendation is that, if built, this building should not be used or routinely accessed during the winter season and that condition would qualify the building as a non-occupied structure.

Setting strict limits on the use of a structure (and achieving that objective) over the life of the building is a challenging concept. One interpretation of the guidelines is that construction of new buildings is not

normally permitted in the Red zone due, in part, to the challenge of ensuring the prescribed risk treatment (the access limitations) are not forgotten or disregarded over a long period of time.

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Section 7.2 Day Lodge

The Day Lodge foundation is located mostly within the Blue zone and the CAA guidelines state that appropriate development in the Blue Zone may include:

Construction of new buildings, such as industrial plants and temporarily occupied structures, possibly permitted with specified conditions. Conditions may include structures reinforced for avalanche forces, construction of avalanche defences, and requirement for evacuation plans or a combination of these. (CAA 2002)

Dynamic has identified the Day Lodge as a temporarily occupied structure in the following statement (page 27):

Assuming the Day Lodge would be used only during limited (working) hours during the day, it may be considered a *temporarily occupied structure*.

The basis for assuming this very limited use of the primary initial facility in the ski area operation is not explained in the report. Buildings of this nature are often operational beyond a small portion of the day; building maintenance services are usually required, staff may need to be present to prepare for the upcoming day of operations and the owner may find it profitable to operate services through most of the day or night. The Day Lodge may also need to serve as the only large shelter for the public during periods of highway closure and therefore may be considered an essential service building.

The example of an industrial plant in the CAA guidelines is an indication that building in the Blue zone should only be considered for certain operational uses. Industrial plant owners can limit visitors to the building and surrounding property to those that are required out of operational need. The owner can require that all personnel at the facility are trained to follow an established set of safety procedures such as evacuation to a safe portion of the building or remaining off site during elevated hazard periods. As an employer the owner has the ability and responsibility to train and account for all personnel in the hazard zone. Prospective employees can be advised of the risks before exposure, the employer is held

responsible for operation of a safe workplace, both owner and employee risk acceptance is explicit, and oversight by WorkSafeBC lends the assurance of long term compliance.

The guidelines do not define what temporarily occupied means. However, the term is given context by appearing next to the term industrial plant. Consideration of temporary occupancy should be balanced with consideration of the amount of control an owner exercises over visitors to the site and the frequency of visits or the need to visit at predetermined times. If there is great control over the user group (i.e. they are all employees) then appropriate use of the site may be quite frequent and all building users can all be trained in mitigation procedures. Where there is latitude to only visit the site infrequently then timing of visits (less than daily use) can be adjusted to coincide with periods of low risk.

The CAA guidelines provide the following additional factors to consider in deciding appropriate building location and use. These factors are not addressed in the Dynamic report:

Special structures where large numbers of people may gather, multi-unit residences or structures used for essential services (hospitals, schools, police and fire stations) must be placed only in a White zone and where there is a high confidence that the avalanche risk is low. Properties rented during winter, in which the tenant may not be aware of or have accepted the risk, should only be placed in the White zone.(CAA 2002)

This portion of the CAA Guidelines provides important distinctions that should be considered carefully when considering the appropriate location for a facility such as the Day Lodge. Identifying this Day Lodge as a temporarily occupied structure suitable for the Blue zone is directly challenged by the guideline's assertion that structures where large numbers of people gather should only be placed in the White zone. Owners of structures where large numbers of people may gather do not share the same measure of control over occupancy timing and density as the owner of an industrial plant or similar private facility. Visitors to a Day Lodge may be unaware of the hazard in general and during exposure cannot be expected to be knowledgeable or follow a specific set of safety procedures.

The area surrounding the Day Lodge should also be considered in the determination. The building cannot function as designed unless people are able to safely arrive and leave the site. Large numbers of people can be expected to gather near the Day Lodge because that is the very specific purpose of the building – it is the gathering place for visitors to the ski resort. While the White zone is nearby on the south side of the Day Lodge the Red zone begins 25m to the north of the building.

Making a this distinction between temporarily occupied structures and places where large numbers of people gather has not been required frequently in western Canada. However, a parallel can be drawn to the operation of public highways as opposed to railways. Both are transportation corridors and both pass through avalanche terrain. Highways have the legislative mechanism in place to temporarily close and evacuate the highway during times of elevated avalanche hazard or during avalanche blasting operations. Railways do not need this mechanism. Railways are permanently closed to the public and

the owner has complete control over the movement and safe work practices of all persons in the hazard areas.

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Recommendations from Section 7.2

The Dynamic report recommends the following three conditions for operation of the Day Lodge in the Blue zone:

- 1. Structural Reinforcement**
- 2. Explosive Control**
- 3. Evacuation Plan**

The CAA guidelines propose three conditions that, if applied individually or together may result in the possible permitting of new structures in the Blue zone:

Construction of new buildings, such as industrial plants and temporarily occupied structures, possibly permitted with specified conditions. Conditions may include structures reinforced for avalanche forces, construction of avalanche defences, and requirement for evacuation plans or a combination of these. (CAA 2002)

The conditions identified in the guidelines differ from those proposed by Dynamic. In particular, the guideline recommendation for construction of avalanche defenses is a reference to a reliable long term method of risk reduction that is not reliant on frequent human intervention as is the case with temporary mitigation using explosives. Examples of the permanent avalanche defences mentioned are given on page 28 of the Dynamic report. These include snow retention structures in the start zone, deflection berms and stopping dams in the track or runout. The report provides reasons for not choosing this method including the large size of the avalanche path, expense of the works, difficult construction conditions due to access and environmental constraints and interference with ski run development.

Structural Reinforcement

Building reinforcement is a good method for preventing property loss. The report recommends there should be no sheltering inside the building during periods of high avalanche hazard or during explosive control operations so the advantage of the structural reinforcement is limited to property protection.

Employing Explosive Triggering as a Mitigation for Structures

The CAA guidelines identify three examples of risk control that may be appropriate for mitigating risk at facilities constructed in the Blue zone; explosive triggering of avalanches is not among the conditions identified.

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Explosives are used to trigger avalanches in a wide range of circumstances. The advantage of this method is that, when successful, it delivers rapid short term relief of the problem. There are shortcomings to explosive triggering that make it a poor choice for protection of a facility that will attract large numbers of people and has not yet been built. These shortcomings are described in the Avalanche Handbook:

Explosives are intended to bring down small avalanches, but there is an inherent risk of releasing large avalanches. Large avalanches may occur for various reasons. Errors in snow stability evaluation, time delays due to equipment breakdown, inaccessibility of firing sites, personnel shortage, or bad weather can allow a large buildup of snow prior to control work. When the optimum time is missed, the person in charge must make a difficult decision about whether to risk releasing a large destructive avalanche (which might occur naturally) or to wait and risk a large avalanche later. Because of the chance of large avalanches, explosives are not usually applied for the protection for structures. (*D. McClung and P. Schaerer, 2006, page 284*)

Explosive control cannot take place without evacuation of the *danger area*, the area where there may be danger to persons or property from flying material or other hazardous condition resulting from a blast (the avalanche). (*WorksafeBC OH&S Regulation Part 21*)

Evacuation of Day Lodge and Surrounding Area

Dynamic has recommended an evacuation plan for the Day Lodge to reduce any potential residual risk to workers and the public both within and outside of the building. The CAA guidelines caution against the use of evacuation in Canada as there is no established system for public avalanche hazard warning:

Land use planners must recognize the importance of developing such systems where occupied structures and meeting places are exposed to avalanche hazard. (CAA 2002)

Evacuation of the Day Lodge building is the responsibility of the owner and they have the authority to evacuate the structure. The evacuation of the surrounding area may not be as easily accomplished. The authority to evacuate the area surrounding the Day Lodge may or may not belong to the lodge owner. That authority and responsibility for evacuation may fall onto the municipality.

When evacuation is considered as a mitigation option the planning typically includes:

- designation of hazard area requiring evacuation
- vesting authority to specific persons to order and end evacuations
- an evacuation plan
- evacuation communication and alarm system
- facilities to house displaced people
- trained evacuation personnel
- evacuation training and practice
- Avalanche Safety Plan for all exposed personnel (WorkSafeBC 4.1.1)
- procedures for ensuring evacuation is complete and effective
- enforcement measures

Under the present scenario that prescribes explosive control to prevent avalanches reaching the day lodge, evacuation will need to occur multiple times each winter.

At the outset of the new ski area operations the day lodge may be the only large commercial building on site. Evacuation of this building requires access to additional shelter via a safe route. The highway to the resort will be subject to closure for avalanche hazard and control operations. Egress from the valley cannot be guaranteed so evacuees will need to be sheltered within the ski area. Periods of avalanche hazard at the day lodge and ski area are likely to coincide with elevated hazard on the access highway.

The Jumbo Glacier Resort plans includes long term development of overnight accommodation in a village area near the Day Lodge. As the population increases the effect on effective evacuation of the area near the Day Lodge should be considered. Increased costs for preparedness along with decreasing confidence in evacuation area security during blasting operations should be expected. The long term viability of these aspects of the mitigation recommendations should be considered.

The Dynamic report does not examine if the lodge owner (or the land owner) have the ability to meet the cost of maintaining readiness and conducting frequent evacuation of the lands surrounding the day lodge over the life cycle of the building.

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Examples of Avalanches and Structures at Ski Resorts

Three examples that may help illustrate the application of this information are provided below:

- 1) Section 7.3 of the Dynamic report references the Sunshine Village day lodge and parking area. Sunshine suffered a loss in 1972 when Parks Canada (the land manager) conducted avalanche control with explosives to reduce risk at the parking lot and ticket office. Unusually large avalanches had already been triggered the day prior and the access road to the parking lot was buried and remained closed. Public who were unable to leave the ski area were held overnight and sheltered at the hotel and Day Lodge 4km away from the parking area. The ticket office and 30 cars were destroyed by an explosive triggered avalanche. No structures have been rebuilt in that ticket office location but the parking area is still in use.

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- 2) Another example referenced in the Dynamic report (page 29) is the Alpine Meadows tragedy that occurred in 1982. The Dynamic report states that the day lodge was destroyed, was rebuilt in the same location and has been not impacted since - but the report does not identify the expected return period for another avalanche of the same magnitude. In the 1982 avalanche four of the seven persons killed were in locations that were thought to be evacuated and secured. One fatally

injured victim, along with one survivor, were buried by the avalanche after cross country skiing into the closed evacuation area. Three others, including a child, were walking through a parking lot on the way to the day lodge, reportedly in search of food as the second day of area closure had depleted their supplies. It is worth noting that repeated explosive control efforts over two days had been unsuccessful in releasing the fatal avalanche. The other three fatalities were ski area staff working to conduct avalanche control and to secure the access road.

- 3) A more modern example, although not from the Dynamic report, occurred at Crystal Mountain in Washington State. A ski lift base station was destroyed in March 2014 when explosives triggered a larger than previously experienced avalanche in wet snow conditions. The size and flow pattern of the explosive triggered avalanche were not anticipated. The lift had been in place for 34 years.

Page 31, Signature Block, Engineer of Record

When MoTI considers acceptance of geotechnical or engineering reports the Engineer of Record responsible for the report is required to seal the document with his/her professional stamp.

I hope this provides the information you were seeking regarding the avalanche zoning report. If you have any further questions, please feel free to contact me.

Yours truly,

A handwritten signature in black ink, appearing to read "Mike Boissonneault". The signature is fluid and cursive, with a large, stylized initial "M" and a long, sweeping tail.

Mike Boissonneault
Senior Manager, Avalanche and Weather Programs
250-387-7523

Paluch, Alisha TRAN:EX

From: Boissonneault, Mike TRAN:EX
Sent: Friday, April 17, 2015 5:14 PM
To: Lorimer, Mike TRAN:EX
Subject: Re: Avalanche Programs Letter for EAO

Look forward to reading the submission.

Mike.

Sent from my iPhone

On Apr 17, 2015, at 4:12 PM, "Lorimer, Mike TRAN:EX" <Mike.Lorimer@gov.bc.ca> wrote:

Mike,

I'll be taking your letter and some other feedback that I received to formulate a response to the EAO request. They were specific in the request so I want to ensure that my response on behalf of the Ministry is entirely within the scope of the assignment that I received from Paul.

The draft report that you sent me was very useful to bring me up to speed and to help me better understand the context of the suggested questions that you provided for the EAO to seek additional feedback. I understand that you have been directly in contact with the EAO staff over the past few days to discuss JGR so having this information was great to help me in my discussions with Autumn this morning regarding their other request.

At this point, the information you provided to me has everything I need to answer the EAO request from last week. Thanks.

Mike Lorimer

Regional Director - Southern Interior Region

From: Boissonneault, Mike TRAN:EX
Sent: Friday, April 17, 2015 2:07 PM
To: Lorimer, Mike TRAN:EX
Subject: Re: Avalanche Programs Letter for EAO

Mike:

Can you confirm status of the avalanche letter for Paul Craven with EAO. Have not heard back from you since I sent it.

Thanks

Mike

Sent from my iPhone

On Apr 16, 2015, at 1:20 PM, "Boissonneault, Mike TRAN:EX" <Mike.Boissonneault@gov.bc.ca> wrote:

Mike:

Here is the letter with avalanche related topics covered as requested by Paul Craven. The report is technical as related to avalanche risk assessments and guidelines for land use and methods of mitigation.

As we discussed, if there are questions you or Kevin may have do not hesitate to contact me.

Mike Boissonneault

Manager, Avalanche and Weather Programs

Phone: 250-387-7523

Cell: 250-888-7004

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Avalanche Safety Plan: <http://www.th.gov.bc.ca/publications/AvalancheSafetyPlan/>

Lorimer, Mike TRAN:EX

From: Boissonneault, Mike TRAN:EX
Sent: Friday, April 17, 2015 10:21 AM
To: Cousins, Autumn EAO:EX; Lorimer, Mike TRAN:EX
Cc: Craven, Paul EAO:EX
Subject: RE: Urgent: Review Requested ASAP this AM

Folks:

Thanks for the note Autumn. Comments from Avalanche and Weather Programs as follows:

Excerpts for review:

First point

- As part of EAO's review, EAO sought input from the Ministry of Transportation (MoTI) given their responsibilities and expertise relating to avalanches.

s.13

EAO C&E may have follow-up questions for Alan Jones to help us better understand the nature of the risks and potential mitigation at the day lodge and service building locations.

s.13

Second point

- The current industry standard CAA Guidelines (2002) developed a three colour zoning system for proposed occupied structures: white zone (low risk), blue zone (moderate risk) and red zone (high risk). The white zone is "an area with an estimated avalanche return periods of greater than 300 years."

Comment: The CAA risk determination "guidelines" should not be referred to as "standards". Quoting or selecting small segments of the guidelines can lead to misinterpretation of the EAO comments.

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Third Point

- Therefore, EAO C&E's view is that structures in the white zone could be compliant as that aligns closely with the EA's avalanche hazard classification of being greater than a 200-300 avalanche return period. EAO C&E interprets condition 36 to mean that commercial and residential structures must not be located in an area classified to have an avalanche return period up to 300 years {i.e. the red zone (less than 30 years) or blue zone (less than 300 years)}.

Comment: The proponent is suggesting that it would be appropriate to put the day lodge in a blue zone and then undertake a long term mitigation strategy of human intervention and short term risk reduction.

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Suggest:

- s.13

These are comments/suggestions EAO may wish to consider from AWP-HQ. If there are questions or concerns you may have, please give me a call. If you and others on the list may wish to have a conference call this morning, I can be available for that as well.

Trust this helps,

Mike Boissonneault

Manager, Avalanche and Weather Programs
Phone: 250-387-7523
Cell: 250-888-7004

Web Site: http://www.th.gov.bc.ca/Avalanche_Weather/
Avalanche Safety Plan: <http://www.th.gov.bc.ca/publications/AvalancheSafetyPlan/>

From: Cousins, Autumn EAO:EX
Sent: Friday, April 17, 2015 8:46 AM
To: Boissonneault, Mike TRAN:EX; Lorimer, Mike TRAN:EX
Cc: Craven, Paul EAO:EX
Subject: Urgent: Review Requested ASAP this AM
Importance: High

Hi Mike and Mike

Thank you in advance for MOTI comments on the Alan Jones Report. Looking forward to receiving your comments shortly.

I will likely be sending a letter to JGR today. I am hoping you could please do an expedited review of the following excerpts from the letter to ensure factual accuracy. I realize this is short notice but can you please review asap this morning? We have various reviews to do of the letter so we are under tight turn around to get it out this afternoon to JGR. Thank you!

Please confirm receipt of this email and that you are able to review asap this morning. If I don't hear back from you shortly I'll call your offices to ensure you have seen this email (as I realize you may be tied up in meetings).

Excerpts for review:

- As part of EAO's review, EAO sought input from the Ministry of Transportation (MoTI) given their responsibilities and expertise relating to avalanches.

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EAO C&E may have follow-up questions for Alan Jones to help us better understand the nature of the risks and potential mitigation at the day lodge and service building locations.

- The current industry standard CAA Guidelines (2002) developed a three colour zoning system for proposed occupied structures: white zone (low risk), blue zone (moderate risk) and red zone (high risk). The white zone is "an area with an estimated avalanche return periods of greater than 300 years."
- Therefore, EAO C&E's view is that structures in the white zone could be compliant as that aligns closely with the EA's avalanche hazard classification of being greater than a 200-300 avalanche return period. EAO C&E interprets condition 36 to mean that commercial and residential structures must not be located in an area classified to have an avalanche return period up to 300 years {i.e. the red zone (less than 30 years) or blue zone (less than 300 years)}.

Thank you

Autumn

Paluch, Alisha TRAN:EX

From: Boissonneault, Mike TRAN:EX
Sent: Monday, April 20, 2015 2:06 PM
To: Lorimer, Mike TRAN:EX
Subject: Jumbo

Hello Mike:

Tried calling but understand you are in meetings for most of the day. Wondering if you may have any questions about the letter I prepared for EAO regarding technical avalanche information they were looking for. If you have already responded to EAO, can you provide me with the content of the response as well?

Thank you,

Mike Boissonneault

Manager, Avalanche and Weather Programs
Phone: 250-387-7523
Cell: 250-888-7004

Web Site: http://www.th.gov.bc.ca/Avalanche_Weather/
Avalanche Safety Plan: <http://www.th.gov.bc.ca/publications/AvalancheSafetyPlan/>

Lorimer, Mike TRAN:EX

From: Boissonneault, Mike TRAN:EX
Sent: Thursday, April 23, 2015 9:54 AM
To: Lorimer, Mike TRAN:EX
Subject: Avalanche Programs Letter for EAO re Jumbo

Hi Mike:

I have tried to contact you by phone for the past few days and have not been able to reach you so am sending you this e-mail.

Mike, can you confirm whether or not you have provided the letter I wrote for EAO that was requested by Paul Craven. The April 15 letter contained technical and procedural avalanche comments related to the Jumbo file. If you have passed the letter on to the EAO office, can you provide me with a copy of the materials for my files.

Thank you,

Mike Boissonneault

Manager, Avalanche and Weather Programs
Phone: 250-387-7523
Cell: 250-888-7004

Web Site: http://www.th.gov.bc.ca/Avalanche_Weather/

Avalanche Safety Plan: <http://www.th.gov.bc.ca/publications/AvalancheSafetyPlan/>

Paluch, Alisha TRAN:EX

From: Boissonneault, Mike TRAN:EX
Sent: Friday, April 24, 2015 11:46 AM
To: Lorimer, Mike TRAN:EX
Subject: RE: AWP Avalanche programs letter to EAO re jumbo

Mike:

Agreed, there seems to be a misunderstanding. The response I sent to you was crafted to ensure it there was no comment on the issue of compliance. As you have noted, that is a matter for the EAO to decide based on any facts they are able to gather through enquiries such as the one Paul Craven made to our ministry on April 2nd.

Thank you for including all of the questions from my response in your submission to the EAO. It was my hope that the supporting contextual material I sent to you would accompany those questions as the decision makers at the EAO have little or no background in examining avalanche safety issues from a technical perspective.

If you require any additional information in this matter please do not hesitate to contact me,

Mike Boissonneault
Manager, Avalanche and Weather Programs
Phone: 250-387-7523
Cell: 250-888-7004

Web Site: http://www.th.gov.bc.ca/Avalanche_Weather/
Avalanche Safety Plan: <http://www.th.gov.bc.ca/publications/AvalancheSafetyPlan/>

-----Original Message-----

From: Lorimer, Mike TRAN:EX
Sent: Thursday, April 23, 2015 10:43 AM
To: Boissonneault, Mike TRAN:EX
Subject: Re: AWP Avalanche programs letter to EAO re jumbo

Mike,

Sorry that I missed your call. I've been in estimate debates all week along with face to face working group meetings with the entire RMT here in Kamloops.

From your last note, I fear that you have misunderstood my request. As I stated in my first email, I was asked to compile some executive level information for EAO. The information that I received from you was utilized with information from several other sources to compile a high level note that kept to a very defined scope. This is a critical point as the ultimate determination of compliance lies with the EAO, and our Ministry is not in a position to make that determination on their behalf.

The EAO was not looking for a lengthy document so I compiled the short note to help guide them to appropriate resources to assist them in their review and ultimate determination of compliance.

I can tell you that all of your recommended followup questions were included in the note to the EAO.

These communications are not intended for a broader distribution, as they are intended to assist in their compliance determination which is a legal process. With that in mind, I am not in a position to share the note that was compiled.

Thanks,
Mike

On 2015-04-22, 7:00 AM, "Boissonneault, Mike TRAN:EX"
<Mike.Boissonneault@gov.bc.ca> wrote:

>Mike

>

>I have not heard back from you after my request on status of the letter

>I wrote that I understood you would pass on to EAO on my behalf. I am

>in a training course most of today but will all before 9 to discuss with you.

>If you have submitted the letter can you provide me a copy of

>correspondence for my files?

>

>Thank you

>

>Mike

>

>Sent from my iPhone