

**From:** Zamora, Phil  
**Sent:** March 12, 2004 4:48 PM  
**To:** Wheaton, Thomas  
**Cc:** Jollymore, Brian  
**Subject:** Tiverton Quarry Blasting Plan

Hi, Thomas. Please find Dennis Wright's note to me sent July 29, 2003 regarding set back distance for Whites Point Quarry. He suggested multiplying the guideline distances by 3 in order to protect iBoF A. salmon and he talked about

"reduce the size of the individual charges being used. If the individual charges could be split or decked, as described in the guidelines, the impacts could be further reduced. "

It appears that the set back distances from the Bay of Fundy (870-900m) and the Petit Passage (550-570 m) are well beyond the 420.5 (140.5 X 3) distance that Dennis is suggesting to protect iBoF A. salmon.

Brian J. is of the opinion that a reduction of charges may not be necessary given the proposed set back distances.

The following is the July 29/03 note:

Good afternoon Phil -

Further to our telephone conversation this morning, I have the a few comments and thoughts concerning the explosives use issue associated with the White's Point Quarry, Digby Neck. As I mentioned to you, the explosives use guidelines are simply that - guidelines as there is much uncertainty concerning both how explosives behave when detonated in or near water and how fish and marine mammals will react to the shock waves produced by the detonation of the explosives. Because of these constraints, we can use the guidelines to determine an approximate lethal zone or develop a set-back distance to protect those resources. We can impose further terms and conditions to meet site and resource specific conditions.

I am not comfortable with using the 'I-Blast' model for buried charges as the model was developed using relatively few data points. I have much more confidence in the equations used for the guidelines. Because of the presence of an endangered Atlantic salmon population in the area, an endangered Atlantic Right Whale population and a spawning area for herring, I would recommend a set back distance at least triple that determined by application of the equations in the guidelines. This would be approximately 100 m or so. This is not as great a set-back as you had proposed using the I-Blast model but I think that it would be a much easier sell to the proponent.

In addition, I would recommend that the proponent re-think his explosives plan in order to reduce the size of the individual charges being used. If the individual charges could be split or decked, as described in the guidelines, the impacts could be further reduced. I think that this is a realistic compromise as you are asking the proponent to alter his plan while at the same time you are making a significant change in your proposed set-back distance.

With respect to Norm Cochrane's comments, he is correct in his comment about sub-lethal impacts . Again I emphasize that these are only guidelines and are meant as a starting point for the mitigation of impacts. To provide guidelines to cover all species and size ranges for all possible explosive use situations is virtually impossible to accomplish. I am unfamiliar with Norm's term of 'beaming'. Under certain circumstances, explosive shock waves can be focussed or beamed and the impact zone will be quite different from that predicted. Again these are only guidelines. In a quarrying operation there is much opportunity to fine tune the terms and conditions to be imposed to better serve the needs of both the environment and the proponent.

In addition to the explosives use issues, it would appear that this proposal is fraught with many other issues that will be addressed through the full impact assessment process. Should you wish clarification on any of the points that I have raised, please feel free to contact me at any time.

***Dennis Wright***

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

**From:** Wright, Dennis

**Sent:** March 12, 2004 12:05 PM

**To:** Zamora, Phil

**Cc:** Jollymore, Brian

**Subject:** Explosives set-back calculations

Good morning Phil - as per our telephone discussion the other day, I have run the parameters you provided the equations to determine an appropriate set-back to meet our guidelines for both over-pressure and protection of spawning areas/incubating eggs.

Using a charge weight of 86.67 kg detonated in a rock substrate and substituting this figure into the equations provided in the guidelines, a set-back of 46.8 m is required in order meet the over-pressure guideline of 100 kPa and a set-back of 140.5 m is required to meet the peak-particle velocity guideline of 13mm/sec.

I trust that these calculations will suffice your needs. Should you wish to discuss any aspect of the project with me, please feel free to contact me at any time.

***Dennis Wright***

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Message

Page 3 of 3

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PEOPLE -- some make things happen, some watch things happen, and the majority have no idea what's happened.

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