



**REPORT TO THE JUAN DE FUCA WATER DISTRIBUTION COMMISSION
MEETING OF TUESDAY, 4 OCTOBER 2011**

SUBJECT GROUTING OF ABANDONED WATER MAINS

ISSUE

As part of the construction permit process, the City of Colwood is requiring all abandoned water mains be completely filled with concrete grout.

BACKGROUND

With recent drawing submissions the City of Colwood has requested that all abandoned water mains be completely filled with concrete grout. Grouting all abandoned water mains will add considerable cost to the main replacement program. Presently, our standard procedure is cap and sandbag every open end of the abandoned main to seal the main. Sandbags are filled with cement/sand mixture.

Grouting of all abandoned water mains would add significant cost to water main construction and, as we need to ensure that our Engineering Specifications and Standard Drawings apply to all municipalities in the Juan de Fuca Water Distribution System, we are requesting concurrence of the Juan de Fuca Water Distribution Commission on a grouting policy. The major reason for grouting of pipes is to avoid potential sink holes in roads in the future resulting from collapse of an abandoned water main. Generally, the impact of pipes less than 300 mm collapsing on the road surface is not detectable. There have not been any reports of sink holes in the Juan de Fuca service area despite the extensive water main replacement program over the past decade. In accordance with its policy, the Capital Regional District (CRD) would be responsible for repairs to a road surface damaged as a result of the collapse of an abandoned water main. Consequently, there is little liability for municipalities.

It is not the practice of municipalities on Vancouver Island to grout abandoned water mains. A quick survey of municipalities in the Metro Vancouver area was completed with the following results:

Municipality	Grouting of Abandoned Mains	Comments
City of Vancouver	Yes, Limited	All Pipes > 300mm dia grouted.
City of Burnaby	No	No pipes are grouted.
City of Richmond	Yes, Limited	Local Road – no grouting. Grout Pipes > 250mm dia. for all arterial, collector and bus routes.
City of Langley	Yes	All water mains grouted.
City of Surrey	Yes	Just started grouting 6 months ago.
City of North Vancouver	No	They did it at one time and found it was very costly.

ALTERNATIVES

Alternative 1 – That the Juan de Fuca Water Distribution Commission approve grouting of all abandoned water mains in the distribution system and that the capital budget be amended to reflect the increased costs.

Alternative 2 - That the Juan de Fuca Water Distribution Commission approve grouting of abandoned water mains with a diameter 300 mm or greater and that the capital budget be amended to reflect the increased costs.

Alternative 3 – That the Juan de Fuca Water Distribution Commission not approve the grouting of abandoned water mains.

IMPLICATIONS

Alternative 1 – The cost of grouting all abandoned water mains would add approximately 10% to the cost of water main replacement project.

Alternative 2 – This alternative is a balanced approach to the risk of collapse of an abandoned water main and the potential impact vs. the increased cost of construction, and increased cost of the main replacement program. Grouting the pipes most likely to cause a surface failure eliminates most of the risk associated with abandoned water mains. The cost of this alternative would be much less than Alternative 1 given the small number of 300 mm water mains being abandoned.

Alternative 3 – This alternative does not address the risk and future liability for CRD where it is determined that a sink hole or cracks appear in the road surface are a result of a collapsed pipe. As few larger diameter pipes are being replaced, and with the lack of incidents of damage as a result of the current practice of abandoning water mains, continuing with the current practice is considered to present little risk or liability, but may result in inconvenience to the public if an incident occurs.

CONCLUSIONS

There is no common practice among municipalities for abandoning water mains. The risk, and hence liability associated with the collapse of an abandoned, small diameter (less than 300 mm) water main, is considered to be small. The risk and liability increases with the diameter of the pipe. Grouting water mains 300 mm or greater would appear to provide a balance between risk, liability and cost.

RECOMMENDATION

That the Juan de Fuca Water Distribution Commission:

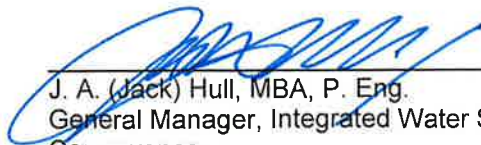
1. Adopt as policy the grouting of abandoned water mains with a diameter 300 mm or greater, and
2. Advise participating municipalities of the proposed Juan de Fuca Water Distribution Commission policy and request their endorsement.



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Concurrence