22 June 2010 FILE: 10-012

Regional District of North Okanagan
9848 Aberdeen Road
Coldstream, BC
V1B 2K9

**Attention:** **Mr. Arnold Badke, P. Eng.,**
**General Manager of Engineering Services**

**Re:** **Well Closure Report for BC WTN 75652,**
**Also known as Well ID Plate 10024, or the Old Well**
**in the Whitevale Subdivision, Near Lumby, BC**

This letter report has been prepared by Sustainable Subsurface Solutions on behalf of the Regional District of North Okanagan [RDNO], regarding the closure of the old community water supply well in the Whitevale Subdivision, near Lumby, BC. The scope of this assignment was outlined in an email to Mr. Arnold Badke, P. Eng of RDNO on 20 April 2010 and approval to proceed with the works was given by Mr. Badke in a letter received on 30 April 2010. The agreed scope of work included a pre-closure assessment of the well, selection of a qualified contractor and supervision of closure of the well, preparation of a report summarizing the closure activities and submission of the official closure report to the BC Ministry of Environment.

The Subject Well is located at 715 Franklyn Road in the Whitevale Subdivision, which in turn is located within Electoral Area D of the RDNO. The well has not been in use since 2006, when a new replacement well was constructed as the yield of the well reportedly declined over the years and local residents had been subjected to severe water use restrictions. The old well, which was constructed in 1969, is also referred to as Well Tag Number [WTN] 75652 in the BC Ministry of Environment [BCMoE] WELLS database. The well is located within the pump house on site and the steel casing for the well extends approximately 0.3 m above the concrete slab which is the floor of the building. Affixed to the exposed well casing is Well ID Plate 10024. A copy of WTN 75652 is attached to this report.

The new well on site, located approximately 15 m northwest of pump house, is referred to as WTN 90803. A copy of WTN 90803 is also attached to this report. Both wells are completed in a confined aquifer which exists below 8.7 m depth. The old well is completed to approximately 57.9 ft [17.65 m], whereas the new well is completed to 86 ft [26.2 m] depth.

A down hole video camera survey was completed on 06 June 2010 to verify the physical characteristics of the old well. The updated information was used to develop a methodology and a cost estimate for closure of the well. The down hole survey determined that the well is completed to 57.3 ft [17.46 m] depth with slotted perforated casing, rather than a conventional well screen assembly. The perforations were noted to exist from approximately 45.6 ft [13.90 m] below top of casing [btoc] to the full depth of the well at 57.3 ft [17.46 m] depth. It may be that the difference between the total depth reported on WTN 75652 and the video log is due to the lower-most portion of the well casing being in-filled with sediment. The static [non-pumping] water level in the well was at 25.4 ftbtoc [7.74 mbtoc]. It was further determined that the perforations in the casing were irregular in orientation and length, inferring that the well was drilled using the mud-rotary method and that the casing was perforated using a cutting torch on site immediately prior to installation. A compact disk, with a copy of the down hole video survey of the well has been included with this report.

The closure of the well was completed on 11 June 2010. The Qualified Professional supervising the closure of the Well, as per Section 68 of the BC Water Act, was Remi Allard, P. Eng., of Sustainable Subsurface Solutions, located at 209-2455 Quail Ridge Boulevard, Kelowna, BC, V1V 2S8, phone 1-250-765-2225. The Qualified Well Driller that completed the closure of the well was Mr. Shane Ramsey of Trinity Valley Drilling, PO Box 5, Lumby, BC, V0E 2G0, phone 1-250-547-9447. Mr. Ramsey is registered in British Columbia as QWD# 05101402.

As per the attached well closure report, the well was filled in with bentonite chips from the bottom of the casing to 33 ftbtoc [10.06 mbtoc] depth. This depth is approximately 12 ft [3.66 m] higher than the depth at which the upper-most perforations exist in the well casing. Clean sand and gravel backfill was subsequently placed in the well casing from 33 ftbtoc [10.06 mbtoc] to 17 ftbtoc [5.18 mbtoc]. As per the requirements of the BC Groundwater Protection Regulation, a closure plug consisting of bentonite was installed from 17 ftbtoc [10.06 mbtoc] to the top of the well casing. A lockable steel well cap was placed atop the steel casing which extends above the floor of the pump house.

Photos of the closure activities accompany this report.

In summary, we have supervised the closure of the well by a Qualified Well Driller. Our interpretation is that the well has been closed in accordance with the requirements of the BC Groundwater Protection Regulation and the BC Water Act.

A copy of this report has also been sent to the BC Ministry of environment in Penticton.

Yours truly,

**SUSTAINABLE SUBSURFACE SOLUTIONS**

**Remi Allard, M. Eng., P. Eng.**
**Principal Hydrogeologist, Groundwater Engineer**

RA/ra/pa

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## Plate 1 – Bentonite Pellets placed in well

## Plate 2- Sand & Gravel Fill Being Placed

## References

1. Province of British Columbia (2005) *Water Act – Groundwater Protection Regulation*, BC Reg 299/2004, Queens Printer, Victoria, BC

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