

CIRCULAR LETTER NO. 465B

(This letter updates Circular Letter No. 465A issued December 7, 2018)

Amended August 28, 2019

TO ALL BRITISH COLUMBIA LAND SURVEYORS

Re: Official Vertical Datums for Legal Surveys in British Columbia

The *Survey and Plan Rules* definition of “**British Columbia Geo-Spatial Reference**” (BCGSR) calls for a vertical datum to be specified by the Surveyor General for use in legal surveys. Rule 10-2(1) of the *Survey and Plan Rules* also states that the datum and geoid model are to be specified by the Surveyor General specifically for surveys completed under the *Oil and Gas Activities Act*. Additionally, the *Land Title Act* (Part 9 – Air Space Titles - Section 138) defines the term “geodetic elevation” as “an elevation derived from a source approved by the Surveyor General”.

It is the responsibility of the land surveyor to ensure that they are using the approved vertical datum and geoid model for all legal surveys requiring elevations within British Columbia. This circular letter is provided to specify the approved vertical datum and geoid model for those surveys.

In November of 2013, Natural Resources Canada (NRCan) introduced a new vertical datum for all of Canada known as the Canadian Geodetic Vertical Datum of 2013 (CGVD2013). While this is officially the current vertical datum for Canada, the previous datum known as Canadian Geodetic Vertical Datum of 1928 (CGVD28) will continue to be the established datum for use on legal surveys within British Columbia.

GeoBC has announced a phased rollout of the new vertical datum (CGVD2013) in which it will publish, through the [MASCOT](#) website, the CGVD2013 elevations of all Provincial and Federal Control Points, as well as maintain the ability to access the CGVD28 elevations.

Until this transition has been completed by GeoBC, and an update to this Circular Letter is issued, the approved vertical datum for legal surveys throughout the province is *CGVD28* and the acceptable hybrid geoid model for all areas of BC outside the Metro Vancouver to Abbotsford area is *HTv2.0 (1997)*. When working within the Metro Vancouver to Abbotsford area the acceptable hybrid geoid model is *HTMVBC00_Abb*.

If elevations are derived from passive control points being either Integrated Survey Area (ISA) monuments, Provincial control points or Federal vertical benchmarks the published CGVD28 elevations from the MASCOT database are to be used. The CGVD28 datum is published on MASCOT datasheets in a number of different formats. The following are acceptable variants of this datum: ‘CVD28BC’, ‘CVD28GVRD’, ‘CVD28GVRD2018’, and ‘1928 Canadian Vertical Datum’.

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GNSS observations can be used to determine ellipsoidal heights anywhere in BC and the accepted hybrid geoid models (HTv2.0 (1997) or HTMVBC00_Abb, as is appropriate for the location), can be applied to determine orthometric heights. The geoid model CGG2013 can be used to determine elevations relative to the CGVD2013 datum, but this is not yet the adopted vertical datum for British Columbia and the resulting orthometric heights will not agree with MASCOT. The HTv2.0(1997) and CGG2013 geoid models are available for download on [NRCan's Geoid Models webpage](#) (Sign in required) and the HTMVBC00_Abb hybrid geoid model is available from [GeoBC's Geospatial Reference Downloads Webpage](#). (Link updated August 24, 2017)

It is important to note that while several epochs for the HTv2.0 hybrid geoid model are available through Natural Resources Canada, all MASCOT monuments are currently referenced to the Epoch 1997 version of the HTv2.0 hybrid geoid model. In order to maintain compatibility with MASCOT, the only approved epoch for the HTv2.0 hybrid geoid model is the 1997 epoch:

HTv2.0 (1997)

When using the HTMVBC00_Abb hybrid geoid model, there is no choice of epoch offered for download. For clarity, note that this model is referenced to the 1997 epoch and therefore compatible with MASCOT.

When using Natural Resource Canada's Precise Point Positioning (PPP) service to process GNSS observations to determine elevations, there are now two choices under the 'Vertical Datum' menu, namely CGVD28 (HT2_0) and CGVD2013. Please ensure you select the CGVD28(HT2_0) option in order to get elevations of your survey points in the approved vertical datum and geoid model. When selecting the CGVD28 vertical datum within CSRS-PPP elevations are propagated from the epoch of observation to epoch 1997 and then the HTv2.0(1997) model is used to derive a CGVD28 elevation. The release of HTv2.0 in epochs 2002 and 2010 does not have an effect on this process.

It is critical that your plan clearly label the vertical datum (specific CGVD28 version from the MASCOT datasheet), the control points (noting published elevation) and, where applicable, the hybrid geoid model (HTv2.0 (1997) or HTMVBC00_Abb (MASCOT notes this as GVRD00)) that has been used.

Yours sincerely,



Cristin Schlossberger, BCLS
Surveyor General of British Columbia