GS-30 MANITOBA STRATIGRAPHIC DATABASE AND THE CAPITAL REGION STUDY, 2000

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SUMMARY

In 1999, the northern portion of the Capital Region Study (mineral resource potential, overburden thickness, geology, bedrock topography) was released as preliminary maps (Bezys et. al., 1999a-h). In 2000, the study was extended to the south, and the maps and report for the entire Capital Region Study are presently in the editing stage.

The Manitoba Stratigraphic Database (MSD) continues to be updated with the addition of historic tops to 437 wells.

MANITOBA STRATIGRAPHIC DATABASE AND THE CAPITAL REGION STUDY

In 1999, the Capital Region Study preliminary maps were released. These included the Selkirk (62I/2), Stonewall (62I/3), Teulon (62I/6) and Netley Marsh (62I/7) map sheets (Bezys et al., 1999a-h). In 2000, the study was extended to the south to include the Ste. Anne (62H/10), St. Adolphe, (62H/11), Winnipeg (62H/14) and Dugald (62H/15) map sheets. Included are overburden thickness, geology, bedrock topography (5 m contour interval) and mineral potential maps (*see* Bezys, GS-31, this volume). Data sources include 5897 water wells and 182 stratigraphic wells from the MSD. Production of the maps and report is in progress and release is expected in March 2001.

When the 1999 preliminary maps were prepared, the best reference for ground elevation was the existing 1:50 000 NTS map sheets, with a contour interval of 25 feet. Because of the coarseness of the maps, assigning ground elevations was difficult. As a result, when a digital elevation model (DEM) was produced, the resultant surface contained many anomalous peaks and pits.

Late in 1999, Manitoba Industry, Trade and Mines acquired a set of 1:20 000 digital map tiles, centred on the City of Winnipeg. The maps contained both 2.5 m contours and numerous spot elevations. With the availability of this new and very detailed ground elevation data, it was decided to check and correct the ground elevations for all water-well data gathered prior to the completion of the final maps.

To accomplish the correction, all of the individual 1:20 000 map tiles were combined in ArcView® to form a topographic map covering the study area. Likewise, the spot elevations were combined to form a continuous data set. The Capital Region well data were then compared to the 1:20 000 contour and spot data. Wells with ground elevation deviations of greater than 0.3 m were corrected. To check progress at various stages, DEMs were prepared of the Capital Region data and then compared to the 1:20 000 contours.

Once the ground elevation was satisfactorily corrected, the depth to bedrock data also needed to be evaluated. Because of the large number of wells used in this study, the wells tend to be tightly grouped throughout most of the study area. When the depth to bedrock of a single well deviated significantly from those of its neighbours, it was usually assumed to be incorrect and removed from the data set. When two or more adjacent wells exhibited similar anomalous depths, the water-well stratigraphy was called up in ArcView® and examined. If the stratigraphy appeared to be correct, the data points were kept; otherwise, they were removed.

The original water-well data gathered for the Capital Region Study were selected because they had reasonably accurate descriptive locations. The wells were plotted from the descriptions and UTM co-ordinates generated by digitizing or by measurement. However, some parts of the study area had large gaps with little or no data. As the gaps cause problems in the generation of contour or DEM maps, it was necessary to add infill data. This introduced another problem, as the co-ordinates in the Water Resources water-well database only located the well to the centre of a legal subdivision. Even in lightly populated areas, this frequently results in two or more points being mapped to the same co-ordinate. In more highly populated areas, many wells would display at a single co-ordinate, with depths varying by many tens of metres. The procedure used to select the infill well was to examine the stratigraphy of each water well at the location and then select the most appropriate one based on the stratigraphic characteristics of the nearest neighbours. Stratigraphic wells from the Manitoba Stratigraphic Database were used as key reference points.

Once the data-editing process was complete, the well data were inserted into AutoCAD® 14 and contoured using QuickSurf®. The maps and report are now in the editing stage and are expected to be released in March 2001.

MANITOBA STRATIGRAPHIC DATABASE – UPDATE

The Manitoba Stratigraphic Database continues to be updated. This has proceeded more slowly than expected, however, due to the amount of time required by the Capital Region Study. At this time, 437 stratigraphic and/or oil and gas wells have been updated by historical tops picked by H.R. McCabe (formerly of Manitoba Industry, Trade and Mines). An update of the MSD CD-ROM is planned for middle to late 2001. More detailed information on both the Manitoba Stratigraphic Map Series and Manitoba Stratigraphic Database is available in Conley and Bezys (1998) and Bezys and Conley (1999).

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