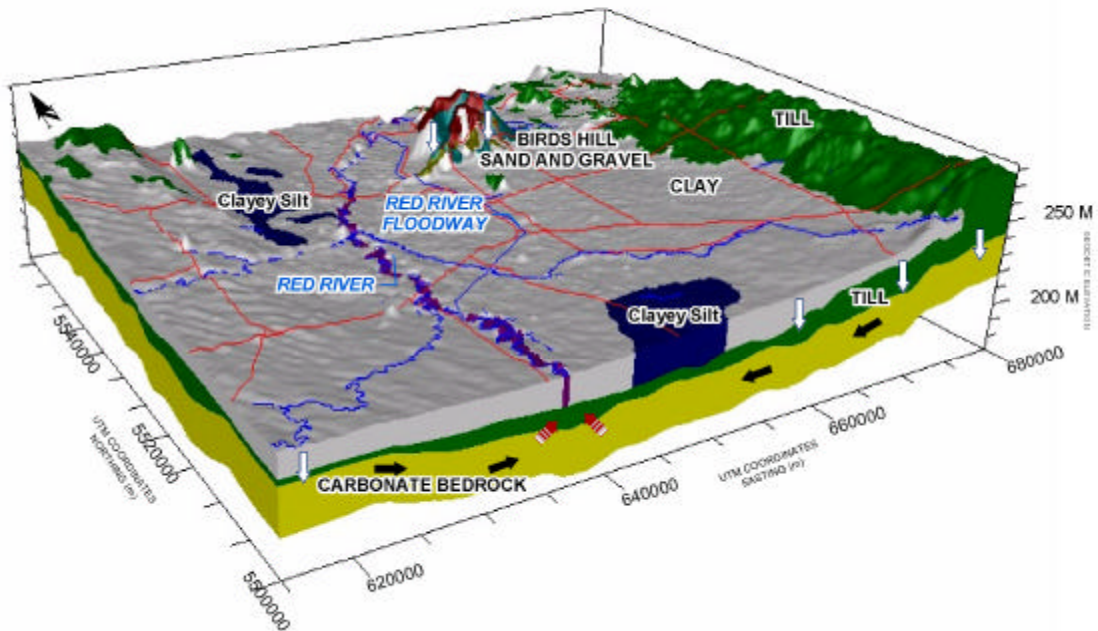


FLOODWAY EXPANSION PROJECT

PDEA 1 GROUNDWATER INVESTIGATIONS AND MODELING

Manitoba Conservation / Manitoba Floodway Expansion Authority

Winnipeg, Manitoba



Project Description

The potential impacts on the groundwater regime of the Carbonate Aquifer system in and adjacent to the Floodway have been a major focus of the site investigations and preliminary design for the proposed Floodway Expansion. Under the KGS Group PDEA1 Lead Consultant services to MFEA, detailed subsurface investigations and computer-aided modeling was performed to evaluate the groundwater level and water quality conditions. Site investigations were completed to define the subsurface soil and groundwater conditions along the Channel, and included the installation of numerous monitoring wells and piezometers. An inventory of water supply wells was also performed, complete with water quality testing.

A three dimensional regional computer model (visual MODFLOW) was first established, and calibrated using monitored conditions from prior to the original Floodway construction (pre 1960's) to the post-construction. Alternate scenarios for expansion were then investigated to predict the possible impacts, with a primary focus on deepening of the existing Channel. Two-dimensional modeling was then completed at three locations along the Floodway to investigate the influence from widening of the Channel. The three locations were selected to represent the typical stratigraphic and groundwater conditions found along the Channel length. The final modeling task was to evaluate the potential changes in infiltration of surface water from the Red River flowing within the Floodway into the Carbonate Aquifer system, and to predict possible influences on the groundwater quality.