Brian W. Zelt

PROJECT RELATED EXPERIENCE - WATER QUALITY MODELLING

Parsons Lake, ConocoPhillips/Salmo   NWT, Canada

Surface water quality modelling and risk assessment of a historical slumping of drilling fluids contamination and potential release to nearby Parsons Lake.

Parson Lake, ConocoPhillips/Salmo   NWT, Canada

Surface water quality modelling of a temperature effluent plume. Screening level assessment of near field and bulk lake temperature increases resulting from the use of the lake water for process cooling. The annual temperature cycle for the Parson Lake (NWT) was modelled using first principles and also using CE-QUAL-W2. Near-field mixing was evaluated using CORMIX.

Klua Creek Well Blowout, Salmo   B.C., Canada

As a part of the assessment of the gas well blowout that resulted in a large amount of saline water spilled on the surrounding area, spring runoff water quality was predicted for the drainage area affected.

EIA, Suncor Energy   Alberta, Canada

Development of the water quality model and technical manager of the water quality modelling in the Athabasca River oil sands area for the EIA for the Project Millennium oil sands mine and facilities expansion.

EIA, Shell Canada   Alberta, Canada

Development of the water quality model and technical manager of the water quality modelling in the Athabasca River oil sands area for the EIA for the Lease 13 oil sands mine and facilities application.

Bow River Mixing Zone Study   Alberta, Canada

This assessment combined state of the art water quality simulation model development and Monte Carlo techniques to analyze the size of the mixing zone and probabilities of exceeding chronic and acute criteria in the Bow River (Alberta), because of effluent loadings from two City of Calgary municipal wastewater treatment plants. The study included statistical assessments of effluent loadings and simulated long-time series of loadings stochastically based on historical records.

WL Screen Model Development   Alberta, Canada

Development of the overlapping dilution zone water quality model for Alberta Environmental Protection's *WL SCREEN* screening tool for wastewater and mixing zone discharges.

Effluent Dilution Assessment   Alberta, Canada

Analysis of the near-field dilution zones downstream of different discharge types on the North Saskatchewan River for Sherritt. The assessment compared allowable bank and diffuser discharges effluent loadings based on mixing zone criteria and requirements.

Sediment Transfer Modelling   Alberta, Canada

Sediment resuspension modelling and programming changes to the U.S. EPA-WASP model based on laboratory empirical relationships of the resuspension of sediments in the Athabasca River.

Spill Model Development   Alberta, Canada

Using the Northern River Basin Study longitudinal and transverse dispersion study results, a Windows-based, user-friendly spill model was developed to predict the time of arrival and downstream water quality concentrations as a result of instantaneous spills anywhere in the Athabasca River basin. The C++ program allows the user to point and click the location of the spill and view the spill-induced water concentrations at user-specified downstream locations. The program displays a list of contacts and phone numbers of downstream users affected by the spill.

Sediment/Silt Influence Zone Modelling   Alberta, Canada

Sediment/silt resuspension due to bridge construction at the Suncor oil sands Steepbank Mine was modelled to predict the zone of influence for fisheries due to the construction.

Effluent Sampling Frequency Modelling   Alberta, Canada

Analysis of a short, six month time series of effluent quality was used to generate a statistically equivalent simulated time series to determine a cost-optimized sampling frequency that still meets government guidelines. This stochastic simulation was performed for Canadian Liquid Air.

Effluent Dilution   Northern Alberta, Canada

Dilution calculations to assess the dilution potential of the Weyerhaeuser effluent in the Wapiti/Smoky River systems. The assessment also included a review of the mixing characteristics at the junction of the Wapiti and Smoky rivers.

Thermal Plume Dispersion Modelling   Northern Alberta, Canada

Analysis of an excess thermal discharge into a river examining the extent of the thermal plume in summer and the extent of ice-suppression in winter for a Suncor expansion. Analysis of the near-field initial dilution of the discharge jet using various diffuser designs and the far-field plume.

Water Quality Dispersion Modelling   Alberta, Canada

Formulation of a probabilistic dispersion and fate model for a waste load allocation analysis being performed on the Bow River, using the USEPA WASP4 water quality model.

Water Quality Dispersion Modelling   Southern Alberta, Canada

Formulation and calibration of a probabilistic dispersion and fate model for a waste load allocation analysis being performed on the Oldman River, using the USEPA WASP4 water quality model.

Wetlands Quality/Dispersion Modelling   Northern Alberta, Canada

Probabilistic formulation of a risk assessment model to examine migration and fate of PAH's and other compounds in the fine tails capping water for the Suncor/Syncrude Oils Sands wetlands reclamation plan. The probabilistic compound loading from the wet landscape model was input into a probabilistic dispersion model of the Athabasca River using the USEPA WASP4 water quality model.

Water Quality Dispersion Modelling   **Alberta, Canada**

Computer modelling and probabilistic simulation of the dispersion of contaminants from the Canada Creosote site on the Bow River, Calgary using the USEPA WASP4 water quality model.