### DONGWEI SUN, M.Sc., G.I.T

GROUNDWATER MODELLER



#### EDUCATION

M.Sc., Hydrogeology, University of Waterloo, Canada, 2023 B.Sc., Hydrogeology, University of Waterloo, Canada, 2020

#### **PROFESSIONAL REGISTRATION**

Geoscientist-in-Training, Ontario

#### SUMMARY

Dongwei Sun is a groundwater modeler with over 4 years of experience leading and supporting the development of 3D conceptual site models and numerical models. His work enhances the understanding of geological settings, groundwater flow conditions, and groundwater surface water climate interactions while forecasting contaminant migration and impacts on potential receptors.

His skills enable him to tackle various comprehensive water-related challenges, including regional and local hydrogeological assessment, municipal water supply, water budget, mine pit dewatering and recovery, source water protection, environmental risk assessment and remedial action planning.

#### **PROFESSIONAL HISTORY**

2025 - present:	Groundwater Modeller, Robertson GeoConsultants Inc.
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- 2023 2024: Geoscientist-in-Training, Matrix Solutions Inc.
- 2020 2023: Research Assistant & Teaching Assistant, University of Waterloo

### PROJECT EXPERIENCE

#### MINING HYDROGEOLOGY, MODELLIONG AND REMEDIATION

## Sandy Flat Remediation Planning, Northern Territory, Australia (2025 to present) for Northern Territory Department of Industry, Tourism and Trade (DITT).

- To ensure an accurate representation of operational scenario and effective decision-making for water management.
- Previous calibrated model was QAQCed first and being reestablished to fit purpose.
- Management plans were implemented into the numerical model for prediction. Predicted flow and loads to receiving environments were extracted and analyzed.
- Model uncertainty analysis was performed to bracket model prediction results.
- Results were integrated with numerical water balance model for holistic water and load balance understanding.

# Myra Falls Water Load Balance Model Update, British Columbia, Canada (2025 to present) for Nyrstar Myra Falls (NMF).

• Perform model validation based on new data.

- Flow and loads to downstream receiving environments were extracted and compared to conceptual targets.
- Results help clients to better understand key components in the designed side-wide interception system, their functionality and potential environmental impact if they were not operated properly.

#### ENVIRONMENTAL HYDROGEOLOGY, MODELLIONG AND REMEDIATION

#### Orphaned Well Association (OWA) Integrated Groundwater and Surface Risk Assessment, British Columbia, Canada (2024) for OWA on behalf of Anterra Energy Inc.

- Led the development of an integrated surface water and groundwater flow and transport model.
- The integrated model was utilized to track water from precipitation through surface ponding, infiltration, subsurface flow, and movement through surface features like creeks and wetlands, while also accounting for evapotranspiration losses.
- By simulating the full water cycle and tracking the interactions between surface water and groundwater, the model assesses the impact of varying climatic conditions on flow and contaminant transport, providing insights to support site closure strategies.

# Orphaned Well Association (OWA) Screening Level Risk Assessments, Alberta, Canada (2023 - 2024) for OWA on behalf of Anterra Energy Inc.

- Led the development of 3D geological and numerical models to conduct screening-level risk assessments for multiple contaminated sites in Alberta.
- Responsibilities included QA/QC borehole lithology, water level, and sampling data.
- Development of geological and groundwater flow and transport numerical models, identification of potential receptors, delineation of discrete contaminant features, receptor risk assessment, plume migration forecasting and remediation scenario analysis.

# Guelph Downey Pumping Well Return to Service ATRANS Analysis, Guelph, Canada (2024) for City of Guelph.

- Developed a conceptual site model and conducted multiple ATRANS simulations to evaluate potential vertical travel times from the water table to the bedrock aquifer, as well as breakthrough concentration over time for various hydrocarbons.
- A series of simulations assessing the impact of uncertainties in input parameters on predicted breakthrough were performed. The sensitivity analysis provided insights into the uncertainty of predicted concentrations, informing the assessment of results and the development of a robust sampling and monitoring plan.

#### Pennsylvania Department Environmental Protection (PADEP) Quick Domenico Analysis. Pennsylvania, the United State (2024) for US Army Corps of Engineers.

- Employed analytical solutions to evaluate the fate and transport of various volatile organic carbon (VOC) in the aquifer.
- Performed model uncertainty analysis to assess potential plume migration and stability, and to bracket results.

# LANXESS South Plant Capture Zone Analysis, Arkansas, the United States (2024) for LANXESS Corporation.

• Conducted capture zone analysis using existing mass recovery wells and various plume extents to design an optimized recovery system that achieves hydraulic control of groundwater.

# Cavalier Water Resource Capture Zone Analysis, Alberta, Canada, (2024) for Cavalier Energy Inc.

• Conducted capture zone analysis for water wells identified as potential receptors under Steam Assisted Gravity Drainage (SAGD) operations.

# Santa Susanna Field Laboratory (SSFL) Model Development and Calibration, California, the United States (2023 - 2024) for Morwick G360 Groundwater Research Institute/Boeing.

- Assisted in the development and calibration of regional scale numerical models to simulate contaminant plume migration.
- Updating model discretization, translating borehole lithology into model layers.
- Calibrating conductivity zones under steady state and transient state simulation.
- Model result visualization and analysis using script-based workflow.

## Canadian Natural Resources Limited (CNRL) Screen-Level Risk Assessments, Alberta, Canada (2024) for Canadian Natural Resources Limited.

- Led the development of 3D geological model to conduct screening-level risk assessment for a contaminated site in Alberta.
- Responsibilities included QA/QC borehole lithology, water level, and sampling data.
- Development of geological model, identification of potential receptors, delineation of discrete contaminant features and receptor risk assessment.

# Cenovus Screening Level Risk Assessments, Saskatchewan, Canada (2024) for Cenovus Energy Inc.

- Led the development of 3D geological and numerical models to conduct screening-level risk assessments for multiple contaminated sites in Saskatchewan.
- Responsibilities included QA/QC borehole lithology, water level, and sampling data.
- Development of geological and groundwater flow and transport numerical models, identification of potential receptors, delineation of discrete contaminant features, receptor risk assessment, plume migration forecasting and remediation scenario analysis.

# K+S Potash Conceptual Site Model Update, Saskatchewan, Canada (2024) for K+S Potash Canada.

- Updated the Conceptual Site Model based on additional site assessment results.
- Identified data gaps and recommended data collection plan.

#### Guelph Groundwater Flow Model Update, Guelph, Canada (2024) for City of Guelph.

- Support the development of regional groundwater flow model.
- Compiled steady-state flow model calibration datasets including representative steady-state head targets, well construction details, municipal water demand, non-municipal PTTW takings, baseflow data, and hydrogeological parameters.
- Prepared transient groundwater flow model verification datasets including pumping schedules, transient observation head targets, and well construction details.

## Guelph Integrated Water Management Strategy (IWMS) Water Balance Study, Guelph, Canada (2024) for City of Guelph.

• Utilized Sankey diagrams to display water balance outputs from MikeSHE—an integrated groundwater and surface water model, to visualize the city's water distribution more effectively.

#### ENVIRONMENTAL MONITORING PROGRAM

#### Syncrude/Suncor Winter Drilling, Alberta, Canada (2024) for Syncrude/Suncor.

- Perform groundwater monitoring.
- Measuring water levels, downloading transducer data, documenting and plotting results.
- Providing per-shift updates to the site supervisor and internal team.

#### Niagara Falls Hospital Gas Monitoring, Ontario, Canada (2024) for EllisDon.

- Reviewed site plan and conducted gas monitoring for H2S and methane using an RKI Eagle.
- Equipment testing, gas monitoring, creating field tickets, and summarizing results.

### *McCaffrey Energy Group Inc (MEG) Monthly data QAQC, Alberta, Canada, (2023 - 2024) for McCaffrey Energy Group Inc.*

• Non-vented water-level barometric correction, well hang-up adjustment and monitoring data QAQC.

### SELECTED PUBLICATIONS

Evaluation of Hydraulic Conductivity Estimates from Various Approaches with Groundwater Flow Models. Ground Water. 2023. https://doi.org/10.1111/gwat.13348 Sun, Luo, N., Vandenhoff, A., McCall, W., Zhao, Z., Wang, C., Rudolph, D. L., & Illman, W. A. (2023).