






MUHAMMAD ISLAM

Hydrogeologist & GW Modeller

 M.Sc. (Hydrology & Water Resources)
 P.Eng. (Ontario)
 18 Years Professional Experience


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 Actively Looking

 Available in 2 wks Notice

 Full Time / Part Time

 Ready to Travel

 Permanent / Contract

 Ready to Relocate



PROFESSIONAL EXPERTISE

	YRS	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007 - Today
Project Management, Proposal & Report Writing	8											Manage Hydrogeological Projects, Prepare Technical Reports, Proposals, Supervising
Groundwater Modelling (Flow and Transport)	18	WELLS, LANDFILLS, MINES, QUARRIES, CONTAMINANT STORAGE SITES etc. Hydrogeological Assessment for										
ArcGIS	12											Spatial Analyst, 3D Analyst, Automation with Model Builder, map algebra, index overlay, fuzzy logic, Univariate & Exploratory data analyses,
Borehole Log Analysis & Geologic Modelling	11											Preparing 3D Borehole logs, Data Analysis, Geologic Picking & Developing Geologic Models
Database Development & Querying	14											Developing Hydrogeological Databases, Data Extraction, SQL Query Writing
Data Analyses & Consistency Checking	18	Data Analyses, Probability Plots, Consistency Checking, Gap Infilling by utilizing MS Excel, Access and VB Macros										
Programming & Macro Writing	18	Coding Utility Programs for Faster Data Processing, Macro Writing in MS Excel and Visual Basic										
3D Data Visualization / GIS	16											3D Data Visualization & Consistency Checking Through ArcGIS & Viewlog, & Surfer
Field Supervision and Data Collection	7											Pump Test, Well Logs, Drilling
Auto Calibration Technique	11											PEST, Pilot Points, Regularization, SVD Assist, Null Space Monte Carlo

SOFT SKILLS

Numerical Modelling	16	MODFLOW, Surfact, GW Vistas, Visual MF, MT3D, FEFLOW, MineDW, GoldSIM, Aquarius										
Water Resources Management	8											GoldSIM, Aquarius
Borehole Log Analyses, 3D Geology	11											Viewlog
Database Development & Querying	14											MS Access, SQL, Excel
Programming	18	Visual Basic, C, Excel Macros										
GIS	16											ArcGIS, Viewlog, Surfer

EMPLOYMENT HISTORY

Jul 2011 – Present	3	<ul style="list-style-type: none"> o Millennium EMS Solutions, Calgary, Canada o Itasca Denver Inc., Denver, USA o Andam International LLC, Muscat, Oman o ADZ Engineering Ltd., Muscat, Oman o Institute of Water Modelling, Dhaka, Bangladesh 	Freelance Consultant
Jan 2007 – Jul 2011	6	WESA Inc, Ottawa, Canada	Groundwater Modeller
Feb 2005 – Dec 2006	2	Earthfx Inc, Toronto, Canada	Hydrogeologist & Groundwater Modeller
Oct 2003 – Nov 2004	1	Century Architects & Consulting Engineers, Muscat, Oman	Hydrogeologist & Groundwater Modeller
Jul 1997 – Oct 2003	6	Institute of Water Modelling, Dhaka, Bangladesh	Junior Specialist (Water Resources)

EDUCATION

May 2003	2	UNESCO-IHE Institute for Water Education, Netherlands	M.Sc. (Hydrology & Water Resources)
May 1997	4	National Institute of Technology, Allahabad, India	B.Eng. (Civil Engineering)

EMPLOYMENT DETAILS

Jul 2011 – Present

Affiliated Clients:

- Millennium EMS Solutions, Calgary, Canada
- Itasca Denver Inc., Denver, USA
- Andam International LLC, Muscat, Oman
- ADZ Engineering Ltd., Muscat, Oman
- Institute of Water Modelling, Dhaka, Bangladesh

Freelance Consultant

GENERAL RESPONSIBILITIES

- Provide expert consulting service to businesses around the world and solve their hydrogeological problems.
- Maintain relationship with existing clients and procure work.
- Communicate with potential clients and propose specialized services.

SPECIFIC ACHIEVEMENTS

1. Hydrogeological Assessment for Robb Trend Expansion Permit (MINING MODELLING)

Estimated dewatering requirements and impact of dewatering on local and regional water resources for Robb Trend open-pit coal mine for Coal Valley Resources Inc. to support their mine license and environmental construction application.

2. Buried Sulphur Remediation at Windfall (SOLUTE TRANSPORT MODELLING)

Simulated sulphate plume movement in MT3D for the closed oil storage site at Windfall for Husky Oil Operations Ltd. Compared different excavation scenarios and suggested optimum requirement of excavation to prevent sulphur contaminants reaching the aquifer.

3. Contaminant Transport Modelling for Vulcan Gas Plant (SOLUTE TRANSPORT MODELLING)

Worked as a senior reviewer for Groundwater Modelling for the gas plant in project in Alberta involving prediction of contaminant transport

4. Hydrogeological Assessment for the Pre-feasibility Study of TRJV Gold Mine (MINING HYDROGEOLOGY)

Estimated dewatering requirements and impact of dewatering for different expansion scenarios of Turquoise Ridge Joint Venture (TRJV) gold mine in Nevada. Also simulated a 500 year pit lake recovery scenario.

5. Hydrogeological Assessment for the Voisey's Bay Nickel Mine (MINING HYDROGEOLOGY)

Estimated dewatering requirements and impact of dewatering from open pit and underground mines at Voisey's Bay for Vale Newfoundland and Labrador Ltd.

6. Comparative Study between MineDW and MODFLOW for the MineDW User's Manual (RESEARCH)

Carried out a comparative study between MODFLOW and newly released MineDW simulations that was included in the MineDW tutorial manual

7. Database Development for Phoenix Groundwater Modelling Project (DATABASE)

Developed hydrogeological database in MS Access and wrote necessary data extraction queries for Phoenix groundwater modeling project.

8. Analyze Impact of Deep Aquifer Withdrawal from Block 60 at Abu Butabul (GROUNDWATER FLOW MODELLING)

Simulated impacts of different pumping scenarios for proposed deep aquifer extraction wells at block 60 at Abu Butabul in Oman for BG Oman

9. Pumping Schedule Optimization for Sohar Refineries Desalination Plant (GROUNDWATER FLOW MODELLING)

Suggested location and pumping schedule for the proposed beach wells to supply municipal water to the desalination plant at Sohar Refineries run by Oman Refineries and Petrochemicals Company (ORPC).

10. Analyze Impact of Pumping at Sohar Refineries Desalination Plant (GROUNDWATER FLOW MODELLING)

Analyzed impact of different pumping scenarios for the expansion of Water Supply at Sohar Desalination Plant

GENERAL RESPONSIBILITIES

- Analyze impacts of various natural and man induced activities on hydrogeological cycle of a watershed through numerical modelling
- Determine Surface to Aquifer Advection Time (SAAT), Surface to Well Advection Time (SWAT), Time of Travel (ToT) as per the MOE guidance module
- Delineate Well Head Protection Areas (WHPAs), analyze vulnerability and uncertainty as per the MOE guidance module
- Determine Zone of Influence (ZOI), Capture Zones, Time of Travel (ToT)
- Estimate groundwater budget, base flow etc.
- Analyze borehole logs and pick geology to construct geologic model
- Estimate surface runoff, infiltration and evapotranspiration
- Develop hydrogeological database, analyze data, check consistency and GIS mapping.
- Direct junior staffs on modeling and data preparation

SPECIFIC ACHIEVEMENTS

- Estimated Wellhead Protection Areas (WHPAs) for 14 municipal wells in the jurisdiction of Raisin Region and South Nation Conservation Authorities. Developed and locally calibrated separate groundwater models for each of these wellheads using latest available data and simulated particle tracking to define Time of Travel (ToT). Also estimated Surface to Aquifer Advection Time (SAAT) and Surface to Well Advection Time (SWAT). These data were later used to assess aquifer vulnerability define threats as per guidelines of the Ontario Ministry of Environment. Also prepared technical reports, attended meeting with the clients and technical advisory team. Project completed in December 2010.
- Estimated dewatering requirements and extent of drawdown cone for Garson Mine by construction a numerical model for Inco. Also constructed the geologic model by analyzing borehole logs and picking geology in 3D using Viewlog.
- Estimated the extent of drawdown cones under different dewatering scenario for the Greely Quarry for Cornwall Gravel Co. Ltd.
- Developed flow and transport models for Carp Landfill in Ottawa using MODFLOW and MT3D for the Waste Management. Compared the fate of different expansion scenario and suggested the best option.

GENERAL RESPONSIBILITIES

- Analyze impacts of various natural and man induced activities on hydrogeological cycle of a watershed through numerical modeling
- Determine characteristics of groundwater flow and fate of contaminant under different scenarios
- Estimate groundwater water budget, base flow, surface runoff
- Determine zone of influence (ZOI), capture zones, time of travel (ToT)
- Estimate surface runoff, infiltration and evapotranspiration
- Develop hydrogeological database, analyze data, check data consistency.

SPECIFIC ACHIEVEMENTS

- Developed transient groundwater flow and contaminant transport model for the closed Stoney Creek landfill site, city of Hamilton, Ontario to determine the fate of leachate contaminants from the landfill site.
- Estimated water budget, groundwater head, drawdown, change in stream flow and time of travel zones through numerical models under different scenarios for different projects like “ Stouffville well field analysis for the York region, Durham region wellhead protection & contaminant sources inventory study, Duffins Creek watershed analysis etc.
- Modified the source code of a climate model “WABAS” developed by Clarifica Inc. to couple it with MODFLOW. Clarifica’s WABAS is a catchment based model which generates average groundwater infiltration, runoff and evapotranspiration from rainfall, temperature, evaporation, land use and surficial geology. Modified code was renamed as VL-WABAS which has increased performance, generates cell based output that can directly be used in a finite difference groundwater model. VL-WABAS was successfully applied in groundwater modeling of Black, Holland and Rouge river watersheds, Ontario to construct groundwater flow models.

Oct 2003 – Nov 2004	Century Consultants Ltd., Muscat, Oman	Hydrogeologist
<p>GENERAL RESPONSIBILITIES</p> <p>This was a one-year contract job for the Integrated Catchment Management Project. It was their first project after opening the Environmental Consultancy division. Muhammad was their first employee in the new division and acted as a front face of the company. He was assigned with the following duties-</p> <ul style="list-style-type: none"> ○ Hydrogeological assessments of the catchment ○ Numerical modelling ○ Keep regular contact with the Ministry, reply to their queries through letters and direct calls ○ Give on-job training to a group of three Ministry personnel ○ Prepare drilling plans and supervise drilling ○ Perform GIS work and data analyses ○ Write technical reports and prepare related report figures <p>SPECIFIC ACHIEVEMENTS</p> <ul style="list-style-type: none"> ○ Performed hydrogeological Assessment of the catchment and defined water balance ○ Developed groundwater flow, transport and seawater intrusion models for the catchment of Wadi Al Ma'wil ○ Analyzed impact of pumping on local and regional water resources ○ Proposed different catchment water management plan and simulated effectiveness of each scenario. ○ Provided 40 hours on-job training to a group of three Ministry personnel, ○ Prepared project report, and developed some utility programs in C++ to analyze and process data. 		

Jul 1997 – Oct 2003	Institute of Water Modelling, Dhaka, Bangladesh	Junior Specialist
<p>GENERAL RESPONSIBILITIES</p> <p>Joined as a Junior Engineer and was later promoted as a Junior Specialist. Started with Survey and Data Collection Division and supervised data collection team, processed raw data and carried out statistical analyses and QA/QC for different divisions including bathymetry, topography, drilling, pump test etc.</p> <p>Later promoted as a Junior Specialist in the Groundwater Division and carried out groundwater modelling,, report writing, supervising data processing team.</p> <p>SPECIFIC ACHIEVEMENTS</p> <ul style="list-style-type: none"> ○ Introduced MODFLOW into the Groundwater Division where MIKE SHE was the only option. ○ Developed groundwater model for North Bangladesh Deep Tube Well Project. The model covered the whole north-west part of the country. Analysed impact of deep aquifer withdrawal on local and regional water resources. ○ Trained a junior engineer to do groundwater modelling with MODFLOW. ○ Coded a number of utility software to process raw field data and conduct QA/QC. 		

TRAININGS AND COURSES

Water Resources Management (CVG6303)	University of Ottawa	Ottawa, Ontario
Project Information Management (CVG6304)	University of Ottawa	Ottawa, Ontario
ArcGIS (GEO5153)	University of Ottawa	Ottawa, Ontario
MSHA – 48 Hours Mine Safety Training	Mine Safety & Health Administration	Denver, Colorado
PEST – Auto Calibration Techniques	J. Doherty & J. Rumbaugh	Denver, Colorado
Groundwater Pollution & Hydrogeology	Princeton Groundwater Inc.	Orlando, Florida
Finite Element Groundwater Modelling with FEFLOW	Schlumberger Water Services, WHI	Waterloo, Ontario
Introduction to Hydrology and Hydraulics Modelling of River Systems using MIKE 11	DHI Water & Environment Inc.	Berwick, Ontario
Borehole Data Management System and Groundwater Modelling with VIEWLOG	Earthfx Inc.	Toronto, Ontario
Presentation Skill Development	Continuing Education Centre (CEC)	Dhaka, Bangladesh
Field Survey & Data Collection to Support Mathematical Modelling in the field of WRM	Institute of Water Modelling	Dhaka, Bangladesh
Basics of Mathematical Modelling	Institute of Flood Control & Drainage Research, Bangladesh University of Engineering & Technology	Dhaka, Bangladesh
RDBMS Programming with ORACLE 8 & Developer 2000	Institution of Engineers, Bangladesh	Dhaka, Bangladesh
Programming with Visual Basic	Grameen Communications	Dhaka, Bangladesh

MSC THESIS DETAILS

Funded by Rijnland Water Board	UNESCO-IHE Institute for Water Education, Delft, Netherlands	2003
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THESIS TITLE

Seepage from Rijnland Dunes: an Unsteady Groundwater Flow Analysis

THESIS SUMMARY

Dunes in the western coast are the higher part of The Netherlands. As a result, seepage occurs from the dunes towards the area behind. This seepage water is of good quality and can be a source of drinking water. In order to manage this water efficiently, Rijnland Water board was interested to know the characteristics of the seepage flow. Therefore, they funded this thesis study in order to learn about the groundwater flow pattern in the area.

Under this program, Muhammad simulated the transient groundwater flow pattern in MODFLOW, determined the amount and direction of seepage flow and estimated detailed water budget of the study area. He also simulated a number of future scenarios and suggested the best location of a storage reservoir.

ACCOLADES

NETHERLANDS FELLOWSHIP (NFP) SCHOLAR

Received Netherlands Government Fellowship to attend a one-year Master of Engineering program in Hydrology and Water Resources. Later, based on the achievements in the course work received an additional six months research fellowship by the Rijnland Water Board to conduct Thesis Study leading to an MSc degree.

INDIAN COUNCIL FOR CULTURAL RELATIONS SCHOLAR

Received Indian Government Scholarship to pursue a four-year undergraduate program in Civil Engineering. This was a very competitive merit scholarship awarded to only six students per year from whole Bangladesh.