



**Boris Matti, Ph.D.**

## **PRINCIPAL GEOLOGIST/HYDROGEOLOGIST GROUND WATER MODELING SPECIALIST**

*Ph.D., Hydrogeology (EPFL, Switzerland),*

Dr. Boris Matti is a hydrogeological and geotechnical specialist with 20 years' experience in geological, hydrogeological and geotechnical projects. He is a recognized expert in geological and hydrogeological simulation research, including FEFlow and MODFLOW, the core subject of his doctorate, and has worked in Switzerland, Bolivia, Tajikistan, Qatar, Saudi Arabia, Bahrain, U.A.E and Afghanistan.

In addition to his academic rigor, Dr. Matti also has in-depth expertise in commercial geotechnical simulation software that is widely used in the industry, including Slope/W 2012, Plaxis suite of 2D and 3D FEM software, and the RS<sup>2</sup> (Phase<sup>2</sup> 9.0) 2D FEM and RocFall statistical analysis programs from Rocscience, and in hydrological flow systems, with the computer code BASEMENT.

Abroad, Dr. Matti worked for GTZ in Bolivia, for Schlumberger Water Services in Qatar, MWH Global in UAE, and for Landell-Mills in Afghanistan as Consultant. In this role, he supported multiple projects in Kuwait and Saudi Arabia by providing expertise in groundwater and geotechnical assessments. He also gained expertise in mining hydrogeology. Most notably, he developed three-dimensional groundwater simulation models for three open-pits gold mines run by the Saudi gold company Ma'aden, which allowed the company to understand the water sustainability, dewatering requirements at the sites and slope stability.

In addition to his extensive background in geology, Dr. Matti has also conducted geophysical investigations, including in Qatar, where he worked as a senior field geologist during the exploratory phase of the National Aquifer Storage and Recovery Project. He has also worked on projects to explore the internal structures of deep-seated landslides in the Swiss Alps, including hydrogeological coupled with geomechanical modelling.

### **SPECIALISATIONS**

- **Hydrogeology, Hydrology and Geology (including instrumentation)**
- **Groundwater (FEFlow, Modflow, GWVistas), River Mechanics and Geological Modeling**
- **Geotechnical Investigation**
- **Landslide and Risk Evaluation, including Zoning, Planning**
- **Geothermal and Geophysical Consulting**

### **CAREER SUMMARY**

- **Principal Geologist-Hydrogeologist, Founder-Owner of GeoBM Sagl ([www.geobm.ch](http://www.geobm.ch)), Switzerland, Jan. 2023 – Present.**
- **NSHR - Roster - RNE (Technical Cooperation) at FAO - Food and Agriculture Organization of the United Nations – Jul 2022 - Present**
- **Technical Instructor at NEXT, A Schlumberger Company, Oil & Gas Training and Competency Development. <http://www.nexttraining.net/>. Oct. 2019 - Present**
- **Principal Geologist-Hydrogeologist, Co-Owner of Aquageo ([www.aquageo.ch](http://www.aquageo.ch)), Switzerland, Jan. 2019 – Dec. 2022.**
- **Ground Water Modeling Specialist Kabul Managed Aquifer Project (Afghanistan) as consultant for USAID 100% funded Asian Development Bank (ADB) Project managed by Landell-Mills. Oct. 2017 – Feb 2021.**
- **Principal Geologist-Hydrogeologist, Member of Direction of Muttoni & Beffa SA, Switzerland, Jan. 2017 – Dec. 2018**
- **Senior Hydrogeologist/Geologist, MWH Global now part of Stantec, Dubai, U.A.E., Sept. 2015 – Dec.2016**
- **Senior Hydrogeologist, Schlumberger Water Services SWS, Doha, Qatar, 2013–2015**
- **Senior Geologist/Hydrogeologist, Geotechnical Engineer, Muttoni & Beffa SA, Faudo, Switzerland, 2008 – 2013**
- **Scientific Collaborator, Institute of Earth Sciences, SUPSI, Switzerland, 2008**
- **Doctoral Student in Hydrogeology, GEOLEP, EPFL, Switzerland, 2005 – 2008**
- **Junior Hydrogeologist, PRONAR – GTZ, Bolivia, 2004**
- **Midstream Data Analyst – Pipelines, IHS Energy, Geneva, Switzerland, 2003**
- **Technical Editor, "Mémoires de Géologie: Geology of the western Swiss Alps, a Guidebook," G.M. Stampfli (Ed.), 2001**

### **QUALIFICATIONS**

- **Ph.D., Hydrogeology, 2008**
- **M.Sc., Hydrogeology, 2002**
- **M.Sc., Geology, 2001**

## MEMBERSHIPS

- Chartered-member, **OTIA, Order of Engineers and Architects of Canton of Ticino**, 2022
- Chartered-member, **SIA, Swiss Society of Engineers and Architects**, 2022
- Member, **Associazione Acquedotti Ticinesi**, 2021
- Member, **International Association of Hydrogeologists**, 2006
- Member, **Swiss Hydrogeological Society (Société Suisse d'Hydrogéologie)**, 2006
- Member, **Vaud Academic Society (Société Académique Vaudoise)**, 2001

## LANGUAGES

French (Mother tongue)

English, Italian (Professional proficiency)

German, Spanish (Basic knowledge)

## PEER REVIEW

### Editor Role for Landslides Journal since 2017

- SARADA PRASAD PRADHAN, Ph.D (2020). Influence of weathering and clay minerals on geomechanical properties of earth materials and initiation of landslides in recent decade: Few case studies from railway cut slope in Eastern Ghat, India. Manuscript submitted to Landslides for possible publication as an article, revised September 2020.
- SIMONE MINEO (2019). A quick combined approach for the characterization of a cliff during a post-rockfall emergency. Manuscript submitted to Landslides for possible publication as an article, revised August 2019.
- AIGUO XING (2019). Numerical investigation of the air blast generated by the Wenjia valley rock avalanche in Mianzhu, Sichuan, China. Manuscript submitted to Landslides for possible publication as an article, revised January 2019.
- LIANG WANG, M.D. (2018). Reconstruction of the 1783 Scilla landslide, Italy: numerical investigations on the flow-like behaviour of landslides. Manuscript submitted to Landslides for possible publication as an article, revised August 2018.
- TAO ZHI-GANG, ZHU CHUN, WANG DONG-SHENG, PANG SHI-HUI, HE MAN-CHAO, GU MING (2017). A Remote Monitoring and Forecasting System for Landslides Based on the Sliding Force Measurement: Case-studies and Application in China. Manuscript submitted to Landslides for possible publication as an article, revised September 2017.
- XIN QU (2017). A New Algorithm for Searching Flexural Toppling Failure Surface of Countertendency Layered Rock Slopes. Manuscript submitted to Landslides for possible publication as an article, revised September 2017.

### Reviewer Role since 2014

- GIACOMO PEPE, ANDREA CEVASCO, MICHELE PIAZZA, ROBERTO MACCIÒ, FABIO ARRIGHETTI & NICOLA CASAGLI (2020). On the efficiency and effectiveness of automatic deep drainage systems during prolonged and intense rainfall: the Mendatica landslide case study (western Liguria, Italy). Manuscript submitted to Landslides for possible publication as an article, revised Oct. 2020. Review in progress
- WANG LU-QI, YIN YUE-PING, HUANG BO-LIN, ZHANG ZHI-HUA, ZHANG MING (2018). The analysis of slippage destruction of the Three Gorges Reservoir bank under dry-wet cycles. Manuscript submitted to Landslides for possible publication as an article, revised June 2018.
- SHI-LIN LUO, DA HUANG, XIAO-GUANG JIN (2018). Long-term coupled effects of hydrological triggering factors on kinematic responses of a reactivated landslide in the Three Gorges Reservoir based on the monitoring analysis. Manuscript submitted to Landslides for possible publication as an article, revised March 2018.
- PEITAO WANG, TIANHONG YANG, TAO XU, JINGREN ZHOU, WENHAO SHI (2017). Failure patterns of a layered slope considering anisotropic properties: a case study in Sijiyang open pit mine, China. Manuscript submitted to Landslides for possible publication as an article, revised September 2017.
- WEI LUO, CHENG-CHIEN LIU (2017). Rockfall Risk Innovative Landslide Susceptibility Mapping Supported by Geomorphon and Geographical Detector Methods. Manuscript submitted to Landslides for possible publication as an article, revised July 2017.
- RYAN A. KROMER, EMILY ROWE, JEAN HUTCHINSON, MATT LATO, ANTONIO ABELLÁN (2017). Rockfall Risk Management using a Pre-failure Deformation Database. Manuscript submitted to Landslides for possible publication as an article July 2017.
- CHING-YING TSOU, MASAHIRO CHIGIRA, YUKI MATSUSHI, NARUMI HIRAISHI, NORIYUKI ARAI (2017). Coupling fluvial processes and landslide distribution toward geomorphological hazard assessment: a case in a transient landscape in Japan". Manuscript submitted to Landslides for possible publication as an article March 2017.

- HARBA, P., PILECKI, Z. (2016). Assessment of time-spatial changes of elastic properties of flysch formation prone to mass movements by seismic interferometry with use of ambient noise. Manuscript submitted to Landslides for possible publication as an article 9 May 2016.
- XU Xing-qian, SU Li-jun, ZHANG Guang-da and ZHU Hong-hu (2016). Analysis on Shear Wave Velocity Structure of a Gravel Landslide Based on Dual-source Surface Wave Method. Manuscript submitted to Landslides for possible publication as an article 9 February 2016.
- Vallet, A., Bertrand, C., Mudry, J., Bogaard, T., Fabbri, O., Baudement, C., & Régent, B. (2015). Contribution of time-related environmental tracing combined with tracer tests for characterization of a groundwater conceptual model: a case study at the Séchillienne landslide, western Alps (France). *Hydrogeology Journal*, 23, 1761–1779. doi:10.1007/s10040-015-1298-2
- Liu, W., & He S. (2015). A two-layer model for simulating landslide dam over mobile river beds. *Landslides*. doi:10.1007/s10346-015-0585-2
- Vařilová, Z., Zvelebil, J., Hubatka, F., Beneš, V., & Frolka J. (2014). The application of non-destructive geophysical methods to assess the stability of the National Nature Monument of the Pravčická Brána Rock Arch, Czech Republic. *Acta Universitatis Carolinae Geographica*, 49. doi:10.14712/23361980.2014.5

## TRAINING

- BASEMENT for simulation of hydro- and morphodynamics of river systems. 2018. <http://www.basement.ethz.ch/>
- FEFLOW Advanced Level, DHI-Budapest 2017
- FREEWAT software, 2017
- Petrel E&P Software Platform, 2014
- XaitPorter, Multiple Writers – One Document Too, 2014
- ArcGIS Desktop, SWS Internal Training, 2013
- HydroManager, SWS Internal Training, 2013
- AutoCad 2012 Complete Formation, 2012
- Industrial Rope Access Trade Association (IRATA) Certification Level 1, 2010
- Geobruigg Workshop on Protection Systems Against Natural Hazards at Locarno (CH), 2009
- Geobruigg Workshop on Protection Systems Against Natural Hazards at Meiringen (CH), 2008
- Low-Temperature Geothermal Energy, One-Day Block Course, CREGE, 2007
- Programming in Python, One-Week Course, 2006

- Landslide Risk Assessment and Mitigation, International School of the University of Salerno, Italy, Two-Week Course, 2006
- Geostatistics and Natural Resource Evaluation. Third-Cycle CUSO Course, University of Neuchâtel, Five-Day Job-Specific Training, 2005

## PUBLICATIONS

- Boris Matti, Mohammad Naim Tookhi, Assadullah Yousuf, Samir Hamidi, Habidullah Rezaei, Anayatullah Popalzai, Hosain Mohammadi, Hugh Klein, Stephen Kissane (2018): Evaluating Managed Aquifer Recharge and Aquifer Storage and Recovery in Kabul, Afghanistan. Using Regional and Site-Specific Groundwater Models. 45th IAH (International Association of Hydrogeologist) Congress, Daejeon, South Korea 2018
- Stephen Kissane, Mohammad Naim Tookhi, Assadullah Yousuf, Samir Hamidi, Habidullah Rezaei, Anayatullah Popalzai, Hosain Mohammadi, Hugh Klein, Boris Matti .(2018): Managed Aquifer Recharge and Aquifer Storage and Recovery in Kabul, Afghanistan. 45th IAH (International Association of Hydrogeologist) Congress, Daejeon, South Korea 2018.
- Matti B., Beffa F., Salvadè A., Pellegrini D., Gardenghi R., Monleone R., Marti U.(2017): A revolutionary Array Synthetic Aperture Radar (ASAR) and methodology for landslide, unstable slope and manmade structure measurement. 15th Swiss Geoscience Meeting, Davos 2017.
- Matti B., Beffa F. and Poretti (2017): A revolutionary Array Synthetic Aperture Radar and methodology for landslide, unstable slope and manmade structure measurement. Conference and Poster presentation at Commission for Technology and Innovation CTI Plenum, Lugano, Switzerland, 2017.
- Matti B. (2015): Umm Er Radhuma Formation (UER) – A Mega Water Reservoir? For what use? Technical Challenges and Business Relevances. Schlumberger, GeoMarket Symposium 2015.
- Matti, B., Tacher, L., & Commend, S. (2012). Modelling the efficiency of a drainage gallery work for a large landslide with respect to hydrogeological heterogeneity. *Canadian Geotechnical Journal*, 49, 968–985.
- Matti, B., & Tacher, L. (2009). Modèles couplés hydraulique/thermique de la nappe alluviale de la plaine du Rhône et Modélisation de l'implantation d'un système de refroidissement eau-eau- à l'hôpital cantonal de Sion (VS, Suisse). *Swiss Bulletin for Applied Geology (Swiss bulletin für angewandte Geologie)*, 14, 47–64. doi:10.5169/seals-227068
- Matti, B. (2008). *Geological heterogeneity in landslides: Characterization and flow modelling* (Doctoral dissertation). Retrieved

from Infoscience, EPFL. (Accession no.: 4156). doi:10.5075/epfl-thesis-4156

- Matti, B. (2008). Modelling the efficiency of a drainage gallery work in a large landslide with respect to hydrogeological and geomechanical parameter heterogeneity. *Geophysical Research Abstracts*, 10, EGU2008-A-00000.
- Fischer, Ch., & Matti, B. (2004). Estudio Hidrologico e Hidrogeologico de la Cuenca Salto Mayu con Modelos Matematicos. Publicación CAT-PRONAR (GTZ)
- Stampfli, G. M., Vavassis, I., De Bono, A., Rosselet, F., Matti, B., & Bellini, M. (2003). Remnants of the Paleotethys oceanic suture-zone in the western Tethyan area. In: G. Cassinis & F. A. Decandia (Eds.), *Stratigraphic and Structural Evolution on the Late Carboniferous to Triassic Continental and Marine Successions in Tuscany (Italy): Regional Reports and General Correlation, Volume speciale 2* (pp. 1–23). Rome, Italy: Italian Geological Society.
- Stampfli, G. M., Vavassis, I., De Bono, A., Rosselet, F., Matti, B., & Bellini, M. (2003). Remnants of the Paleotethys oceanic suture-zone in the western Tethyan area. *Geophysical Research Abstracts*, 5, 09830.
- Matti, B. (2002). Modélisation numérique de l'interaction entre ouvrage du génie civil et les eaux souterraines: Le cas de la galerie de Polmengo (Alptransit). *Bulletin d'Hydrogéologie*, Volume 20.

## Dr. Boris Matti, Ph.D.

### A SELECTION OF PROJECT SUCCESSES

**Principal Hydrogeologist. Groundwater Flow Modeling Report Massereene Dairy Project (Algeria). Project managed by Aqueo International Consulting LLC, UAE.** As external Consultant for Schlumberger, Dr. Matti is responsible for conducting 3D groundwater numerical simulations (FEFLOW) to assess the quality and quantity of water available for commercial use in Wilaya El Menia (2022-2023).

**Principal Hydrogeologist. Groundwater Flow Modeling Report for Dawadmi Well Field in the Saq Aquifer, Madinah Region (Kingdom of Saudi Arabia). Project managed by Dowell SLB Saudi Arabia Ltd (SLB).** As external Consultant for SLB, Dr. Matti is responsible for conducting 3D groundwater numerical simulations (FEFLOW) to assess water-supply sustainability via water balances, to predict groundwater level drawdown for 50 years and 100 years and to assess the sensitivity of the model to factors that are imperfectly known (2022-2023).

**Principal Hydrogeologist. Groundwater Flow Modeling Report for The Great Saq Well Field, Madinah Region (Kingdom of Saudi Arabia). Project managed by Dowell SLB Saudi Arabia Ltd (SLB).** As external Consultant for SLB, Dr. Matti is responsible for conducting 3D groundwater numerical simulations (FEFLOW) to assess water-supply sustainability via water balances, to predict groundwater level drawdown for 50 years and 100 years and to assess the sensitivity of the model to factors that are imperfectly known (2022).

**Principal Hydrogeologist, Expert Groundwater Modeler, 3D Hydro-geothermal Numerical Modelling for private developments, Giubiasco 1875, Ticino, Switzerland.**

Dr. Matti was responsible for conducting 3D groundwater numerical simulations (FEFLOW) for the assessment of new geothermal open-loop systems using heat exchangers for the for new development which requires pumping of 500 l/min flow rates, Switzerland. (2021).

**Principal Groundwater Modeler, groundwater flow and solute transport model for Deep Injection Wells Projects, Qatar.**

Dr. Matti is the hydrogeologist expert assigned to perform 3D groundwater numerical simulations (FEFLOW and MODFLOW) for predicting future impacts of the ongoing injection on groundwater in different areas of the city of Doha by simulating various scenarios. Ref. Al Rayyan Stadium (2020), Mussaimeer Graveyard (2021), Education City Stadium (ECS) (2021), al Thumama (2022).

**Principal Hydrogeologist, Expert Groundwater Modeler, 3D Hydro-geothermal Numerical Modelling for private developments, Osogna 426, Ticino, Switzerland.**

Dr. Matti was responsible for conducting 3D groundwater numerical simulations (FEFLOW) for the assessment of new geothermal open-loop systems using heat exchangers for the for new development which requires pumping of 500 l/min flow rates, Switzerland. (2021).

**Principal Hydrogeologist, Expert Groundwater Modeler, 3D Hydro-geothermal Numerical Modelling for private developments, Osogna 776, Ticino, Switzerland.**

Dr. Matti was responsible for conducting 3D groundwater numerical simulations (FEFLOW) for the assessment of new geothermal open-loop systems using heat exchangers for the for new development which requires pumping of 500 l/min flow rates, Switzerland. (2021).

**Principal Groundwater Modeler, Dewatering works for construction of The Island development, Dubai, UAE.**

Dr. Matti was the hydrogeologist expert assigned to perform 3D groundwater numerical simulations

(FEFLOW) for assessing the accuracy of a long-term dewatering design. (2020)

**Principal Hydrogeologist, Expert Groundwater Modeler, 3D Hydro-geothermal Numerical Modelling for private developments, Sementina 436, Ticino, Switzerland.**

Dr. Matti was responsible for conducting 3D groundwater numerical simulations (FEFLOW) for the assessment of new geothermal open-loop systems using heat exchangers for the for new development which requires pumping of 500 l/min flow rates, Switzerland. (2020).

**Principal Groundwater Modeler, groundwater studies for Shurayrah Island development, The Red Sea Development Company, Kingdom of Saudi Arabia.**

Dr. Matti is the hydrogeologist expert assigned to perform 3D groundwater numerical simulations (FEFLOW) for assessing groundwater issues and related dewatering design. (2019-2021)

**Principal Hydrogeologist, Expert Groundwater Modeler, 3D Hydro-geothermal Numerical Modelling for the commercial center of MIGROS, Aigle District, Vaud, Switzerland.**

Dr. Matti was responsible for conducting 3D groundwater numerical simulations (FEFLOW) for the assessment of new geothermal opportunities using heat exchangers for the for the commercial center of MIGROS in Vaud which requires pumping of 5000 l/min flow rates, Switzerland. (2020-2021).

**Principal Hydrogeologist. Study of optimal ways to maximize utilization of King Fahad Dam Water in Bisham Governorate (Kingdom of Saudi Arabia). Project managed by Dowell SLB Saudi Arabia Ltd (SLB).** As external Consultant for Schlumberger, Dr. Matti is responsible for conducting 3D groundwater numerical simulations (FEFLOW) for the assessment of managed aquifer recharge techniques in the Bisha Wadi (KSA). (2020-2021)

**Principal Hydrogeologist for a geothermal vertical borehole heat exchanger design in Switzerland. Project managed by Aquageo Sàrl.** For a private development, and geothermal energy use, vertical boreholes heat exchangers have been designed (approximate required borehole size and layout) with EED 4.2 (Earth Energy Designer). (2020)

**Principal Hydrogeologist for the Snowy 2.0 Pumped Hydro Electric Scheme Project in Australia. Project managed by Lombardi Ltd.** As external Consultant for Lombardi, Dr. Matti was responsible for conducting 3D groundwater numerical simulations (FEFLOW) for the pre-assessment of the pressures and flows during the tunnelling phases. (2019-2020)

**Principal Hydrogeologist, Solute Transport Training.**

Dr. Matti as external Instructor for Schlumberger-NEt provided to SAUDI ARAMCO at the Upstream Professional Development Center of Saudi Aramco (KSA), professional and technical training on solute transport in groundwater. (2019)

**Principal Geotechnical Engineer, Detention Pond Design. Project managed by Stantec.**

As external Consultant for Stantec, Dr. Matti was responsible for conducting the borehole logging geotechnical assessment in the framework of design and build for three detention ponds in Kuwait, including work scoping, geotechnical assessment, slope stability and seepage analyses. (2019)

**Principal Hydrogeologist, Kabul Managed Aquifer Recharge (KMAR), Afghanistan, USAID 100% funded Asian Development Bank Project managed by Landell-Mills.**

As external Consultant for Landell-Mills and ADB, Dr. Matti was responsible for conducting the installation of the water level monitoring system. Dataloggers from SEBA were installed and equipped with telemetric systems enabling the remote control of the measurements. (2019 - 2020)

**Principal Geologist, Kabul Managed Aquifer Recharge (KMAR), Afghanistan, USAID 100% funded Asian Development Bank Project managed by Landell-Mills.**

As external Consultant for Landell-Mills and ADB, Dr. Matti was responsible for conducting the geological core logging for the extensive piezometer drilling project (number 80) in the framework of the Kabul Managed Aquifer project. Pilot Project for managed aquifer recharge in Kabul, testing 3 technologies in various hydrogeological situations. (2018-2019)

**Principal Groundwater Modeler, Permanent Dewatering Network for Al Maktoum International Airport, Dubai, UAE.**

Dr. Matti was the hydrogeologist expert assigned to perform 3D groundwater numerical simulations (FEFLOW) for assessing the accuracy of a long-term dewatering design. (2018-2019)

**Principal Geotechnical Engineer, Geophysical and Geotechnical Investigation for the enlargement of the Cantonal Road Cevio-Brontallo, Ticino, Switzerland.**

Dr. Matti was the Geotechnical Engineer assigned to undertake the slope and rock analyses using core-drilling and seismic refraction-reflection surveys. This included scoping, supervision during execution, and especially interpretation of results and reporting. (2018)

**Principal Groundwater Modeler, for Ground Water Assessment and Long-Term Durability on the Western Coast Plain in Saudi Arabia, Ministry of Environment Water**

**and Agriculture (MEWA), Kingdom of Saudi Arabia. Project managed by Schlumberger.**  
As external Consultant for Schlumberger and MEWA, Dr. Matti was the numerical modeler for the Western Coast Project in the Kingdom of Saudi Arabia. In this senior role, Dr. Matti created accurate 2D numerical simulations for assessment of groundwater volume and its long-term durability using Groundwater Vista software and provided MEWA with outstanding teaching and software use formation. (2018)

**Principal Groundwater Modeler, for the Wadi Al Alb Dam, Ministry of Environment Water and Agriculture (MEWA) Kingdom of Saudi Arabia. Project managed by Schlumberger Water Services.**

As external Consultant for Schlumberger and MEWA, Dr. Matti was the numerical modeler for the Al Alb Wadi Dam in the Kingdom of Saudi Arabia. In this senior role, Dr. Matti created accurate 2D and 3D numerical simulations for assessment of groundwater volume and its long-term durability using both FEFLOW and SEEPW software and provided MEWA with outstanding teaching and software use formation. (2018)

**Principal Geologist/Geophysics, Kabul Managed Aquifer Recharge (KMAR), Afghanistan, USAID 100% funded Asian Development Bank Project managed by Landell-Mills.**

As external Consultant for Landell-Mills and ADB, Dr. Matti was responsible for conducting the geophysical interpretation for the extensive ERT survey in the framework of the Kabul Managed Aquifer project. This included supervision during execution, and especially interpretation of results and reporting. (2017-2018)

**Principal Hydrogeologist, 2D modelling of bed-load transport at the Moesa River, Switzerland.**

Dr. Matti was the hydrogeologist expert assigned to provide consultancy for the preliminary design for Moesa river stream at Grono (Graubünden, Switzerland) using the sophisticated 2D modelling software BASEMENT for river flow dynamics and bed-load transport. (2018)

**Principal Hydrogeologist, Expert Groundwater Modeler, 3D Numerical Modelling, Kabul Managed Aquifer Recharge (KMAR), Afghanistan, USAID 100% funded Asian Development Bank Project managed by Landell-Mills.**

As external Consultant for Landell-Mills and ADB, Dr. Matti was responsible for conducting 3D groundwater numerical simulations (FEFLOW) for the assessment of new Kabul Managed Aquifer project. Pilot Project for managed aquifer recharge in Kabul, testing 3 technologies in various hydrogeological situation. (2017 – 2021)

**Principal Hydrogeologist, Expert Groundwater Modeler, 3D Hydro-geothermal Numerical Modelling, San Vittore District, Graubünden, Switzerland.**

Dr. Matti was responsible for conducting 3D groundwater numerical simulations (FEFLOW) for the assessment of new geothermal opportunities using heat exchangers for the District of San Vittore in Graubünden, Switzerland. (2017-2019)

**Principal Hydrogeologist, 2D modelling of bed-load transport at the Ticino River, Switzerland.**

Dr. Matti was the hydrogeologist expert assigned to provide consultancy for the preliminary design for Ticino river stream deviation and renaturation at Airolo (Ticino, Switzerland) using the sophisticated 2D modelling software BASEMENT for river flow dynamics and bed-load transport. (2017)

**Senior Geotechnical Engineer, Geotechnical Guideline TRANSCO, Abu Dhabi, UAE. Project managed by MWH Global now Part of Stantec.**

Geotechnical consultant to elaborate the geotechnical guideline for TRANSCO including geophysical survey requirements. (2016)

**Senior Hydrogeologist, Stormwater & Groundwater Permanent Dewatering Network for DIP Dubai Investments Park, UAE. Project managed by MWH Global now Part of Stantec.**

Dr. Matti was the hydrogeologist expert assigned to provide the preliminary design of an extended dewatering design for lowering the groundwater over an area of 25 km<sup>2</sup> in DIP Dubai Investments Park, and to perform 3D groundwater numerical simulations (FEFLOW) for assessing the accuracy of this long-term design. (2016)

**Senior Hydrogeologist, Preliminary Study for Jebel Ali Power Station Site Permanent Dewatering and Associated Works, Dubai Electricity and Water Authority Office (DEWA), Dubai, UAE. Project managed by MWH Global now Part of Stantec.**

Dr. Matti was the hydrogeologist expert assigned to provide, based on the preliminary design of an extended dewatering design for lowering the groundwater over an area of 990,000 m<sup>2</sup> in Jebel Ali Power Plant (JAPS), 3D groundwater numerical simulations for assessing the accuracy of this long-term design. (2016)

**Senior Hydrogeologist, Preliminary Study for Jebel Ali Power Station Site Permanent Dewatering and Associated Works, Dubai Electricity and Water Authority Office (DEWA), Dubai, UAE. Project managed by MWH Global now Part of Stantec.**

Dr. Matti was the hydrogeologist expert assigned to provide the preliminary design of an extended dewatering design for lowering the groundwater over an area of 990,000 m<sup>2</sup> in Jebel Ali Power Plant (JAPS). (2016)

**Senior Geotechnical Engineer, Coastal Strip Agricultural Water Distribution System.**

**Authority for the Utilisation of the Jebel Hasouna - Jefara Water System (GMRWUA), Libya. Project managed by MWH Global now Part of Stantec. (2016)**  
Geotechnical support during Design phase.

**Senior Geotechnical Engineer, Heritage Residences and Administrative Complexes Development, Mauritius. Project managed by MWH Global now Part of Stantec.**  
Geotechnical consultant during Design phase, ground investigation, design of foundations, water supply and drainage systems. (2016)

**Senior Geotechnical Engineer, Geotechnical Interpretation and Foundation Design, Nass Construction for the Electricity and Water Authority (EWA), of the Kingdom of Bahrain. Project managed by MWH Global.**

Dr. Matti was the geotechnical expert assigned to provide interpretive assessments of the geotechnical conditions for the construction and upgrades of water Distribution Station, including the construction of An elevated service reservoir (ESR); ground storage tanks (GST's), pumping stations; and associated pipelines and inspection chambers for four proposed locations; Isa Town, Durrat Station, Nabih Saleh and Sitra. (2015-2016)

**Senior Geotechnical Engineer, Study & Design for Flood Management.**

**Governorates of Wadi Addawasir, As Sulayyil & Al Aflaj, Deputy Riyadh Municipality Administrative and Current Affairs, Riyadh, Kingdom of Saudi Arabia. Project managed by MWH Global.**

Dr. Matti was the geotechnical expert assigned to provide the preliminary design of a large earth embankment for mitigation of flood risks in one southern governorate of the Riyadh Region, Wadi Addawasir. (2015-2016)

**Senior Hydrogeologist, Planning and Design of Sewerage & Drainage Networks for Nal Al Sheba (NAS) Project Development Area, Dubai Municipality, Dubai, UAE. Project managed by MWH Global.**

Dr. Matti was the hydrogeologist expert assigned to provide the preliminary design of an extended dewatering design for lowering the groundwater over an area of 3000 m<sup>2</sup> in Nad Al Sheba Area (NAS). (2015)

**Senior Hydrogeologist, Qatar National Project for A new Water Policy, Qatar General Electricity and Water Corporation "KAHRAMAA". Project managed by MWH Global.**

Dr. Matti was the hydrogeologist expert assigned to support technically MWH water Management Specialist team and advise the Client on all technical specificity. (2015-2016)

**Senior Geotechnical Engineer, Deep Tunnel Stormwater System Feasibility Study, Dubai Municipality, Dubai, UAE. Project managed by MWH Global.**

Dr. Matti was the geotechnical expert assigned to provide the preliminary design of a retention pond for capturing and conveying stormwater and groundwater flows from the Dubai World Central (DWC) area, including Al Maktoum International Airport, DWC Commercial and Residential, and World Expo 2020 project area, with a focus on Dubai World Central (DWC) area. (2015)

**Senior Hydrogeologist, Riyadh Railway Station, Arriyadh Development Authority, Riyadh, K.S.A. Project managed by Schlumberger Water Services.**

Dr. Matti was the hydrogeology expert assigned to the study the water inflows that were hindering excavations for the new metro project in Riyadh, Saudi Arabia. He successfully defined the hydrogeological behavior and designed preliminary mitigation and monitoring measures. (2015)

**Senior Geologist, Assessment of Building Subsidence at Al Nafel, Arriyadh Development Authority, Riyadh, K.S.A. Project managed by Schlumberger Water Services.**

Dr. Matti was the geotechnical expert for the Assessment of Building Subsidence at Al Nafel, Riyadh. This study aimed to define the nature and causes of the settlement and to define preliminary mitigation and monitoring measures. (2015)

**Senior Groundwater Modeler, Ground Water Assessment and Long-Term Durability on Western Coast, Ministry of Water and Electricity, Kingdom of Saudi Arabia. Project managed by Schlumberger Water Services.**

Dr. Matti was the numerical modeler for the Western Coast Project in the Kingdom of Saudi Arabia. In this senior role, Dr. Matti created accurate 2D numerical simulations for assessment of groundwater volume and its long-term durability. (2015)

**Hydrogeology Project Manager, Deep Recharge System, Qatar Rail, Doha, Qatar. Project managed by Schlumberger Water Services.**

Dr. Matti was the lead hydrogeology project manager for the deep injection project of ALYSJ, the main contractor for the Golden Line Metro Project in Qatar. The project aiming to inject over 10k m<sup>3</sup> of water per day, which was generated by dewatering activity during construction, into deep aquifers. (2014-2015)

**Senior Groundwater Modeler, Assessment and Prediction of Temporal Groundwater Level Rises, Riyadh Metro, Riyadh, K.S.A. Project managed by Schlumberger Water Services.**

Dr. Matti was the numerical modeler for the Metro Riyadh project in the Kingdom of Saudi Arabia, which involved building a 3D groundwater numerical simulation (FEFlow) for groundwater assessment for the new metro project in Riyadh. (2014-2015)

**Senior Groundwater Modeler, Al Ghat and Al Alb Wadi Forced Recharge Assessment and Performance, Ministry of Interior, Riyadh, K.S.A. Project managed by Schlumberger Water Services.**

Dr. Matti was the numerical modeler in charge of 2D groundwater numerical simulation for forced recharge assessment in the Wadi Al Alb and Al Ghat in the Riyadh region. (2013-2014)

**Senior Geologist/Geophysicist, Al Ghat and Al Alb Wadi Forced Recharge Assessment and Performance, Ministry of Interior, Riyadh, K.S.A. Project managed by Schlumberger Water Services.**

Dr. Matti was supervising the ERT and TDEM field acquisition in the Wadi Al Alb and Al Ghat in the Riyadh region. This included scoping, supervision during execution, and especially interpretation of results and reporting. (2013-2014)

**Senior Groundwater Modeler, Humaymah Open Pit Gold Projects, Ma'aden Gold, K.S.A. Project managed by Schlumberger Water Services.**

Dr. Matti was the numerical modeler in charge of creating 3D groundwater numerical simulations (MODFLOW) for assessing the accuracy of long-term sustainable yield estimates and dewatering requirements. (2013-2014)

**Senior Field Geologist, National Aquifer Storage and Recovery Project, Kahramaa, Doha, Qatar. Project managed by Schlumberger Water Services.**

Leader of the core drill logging survey in carbonate environments for the National Aquifer Storage and Recovery (ASR) project, South Qatar. (2013-2015)

**Hydrogeology Project Manager, Deep Recharge System, Qatar Rail, Doha, Qatar. Project managed by Schlumberger Water Services.**

Dr. Matti was the lead project manager overseeing hydrogeology for the deep injection project of QDVC, the main contractor for the Red Line Metro Project in Qatar. The project aimed to safely inject into deep aquifers the over 10k m<sup>3</sup> of water generated per day from dewatering operations at metro excavation sites. (2013-2014)

**Senior Hydrogeologist, Doha Metro Project, Qatar Rail, Qatar. Project managed by Schlumberger Water Services.**

Groundwater monitoring for the Doha Metro Project, Doha, Qatar. (2013-2014)

**Senior Groundwater Modeler, As Suq and Ad Duwayhi Open Pit Gold projects, Ma'aden Gold, K.S.A. Project managed by Schlumberger Water Services.**

Dr. Matti was responsible for creating accurate 3D groundwater numerical simulations (MODFLOW) for assessing the accuracy of long-term sustainable yield estimates. (2013-2014)

**Senior Groundwater Modeler, National Aquifer Storage and Recovery Project, Kahramaa, Qatar. Project managed by Schlumberger Water Services.**

In this senior technical role, Dr. Matti provided expert analysis using 3D groundwater numerical simulation for the National Aquifer Storage and Recovery Project, South Qatar. (2013-2015)

**Senior Geologist/Geophysicist, National Aquifer Storage and Recovery Project, Kahramaa, Doha, Qatar. Project managed by Schlumberger Water Services.**

Leader of the Seismic, TDEM and ERT surveys in carbonate environments for the National Aquifer Storage and Recovery (ASR) project, South Qatar. This included partially the scoping, supervision and execution, and especially interpretation of results and reporting. (2013)

**Senior Field Geologist, UCA Rockfall Risk Assessment (Reports 1 and 2), Aga Khan Foundation, Khorog, Tajikistan**

Dr. Matti was the geological lead for the geo-hazard assessments and mitigation measures potentially affecting the proposed University Campus development near the town of Khorog, in south-eastern Tajikistan. The geo-hazard assessment and mitigation measures methodology has involved a desk study review, interpretation of satellite imagery and previous field mapping, and a general field investigation completed during August 2010. This work implied over two weeks of geological structural investigation at more than 3000 meters of elevation. The project financed by Aga Khan Foundation. (2009-2011)

**Senior Hydrogeologist, Network Eco Defrost Geothermal Project, Injectosond SA, Castione, Switzerland**

Dr. Matti was the lead on this innovative project aiming to de-ice road bridges using thermal energy pumped out directly from the deep structures of the earth through heat exchangers inserted in the piles of bridge and then through heating coils directly inserted in the bridge slab. (2009-2010)

**Junior Hydrogeologist, Basin Water Management, Cat-Pronar (GTZ), 2004**

Dr. Matti was the Hydrogeologist in charge of the water resources assessment (simulation MODFLOW) of the Misque Basin in Bolivia. The goals of the project were to identify new water resources for irrigation purposes. (2004)

### **Swiss Key Projects from 2008 to 2013**

Dr. Matti worked from 2008 to 2013 in the field of geotechnical investigations, principally for foundations and supporting structures. Over these five years, he successfully completed over 120 small-to-medium-size mandates, including geotechnical investigation and intervention in deep structures (support and foundations), hydrogeological surveys, geothermal energy projects, field research, surveys and planning,



supervision and collection works. He also provided expert consulting services and drafted expert reports in the fields of earth sciences and construction.

#### **Senior Geologist, Dalpe Deep Vertical Shaft for Electrical Energy, Azienda Elettrica Ticinese, Switzerland**

Dr. Matti was the site geologist during the investigation and design phase of the 140-m-long vertical shaft drilling for electricity power generation. Dr. Matti led all the geotechnical assessment, drilling and laboratory analyses.

#### **Senior Geologist, Melide-Grancia Tunnel, Melide-Grancia Joint Venture, Ticino, Switzerland**

Dr. Matti was the site geologist for the Melide-Grancia Tunnel in Ticino. His task was to enter the shaft on a daily basis to study the geological and structural characteristics at the front of the tunnel boring machine during tunneling works for predictive analysis of tunneling difficulty.

#### **Junior Hydrogeologist, New Water Resources, Municipality of Savigny, Vaud, Switzerland**

Dr. Matti designed a new groundwater source for the city on this project, which also included setting new policies for water management and caps on water extraction. "Projet de nouveau captage, Délimitation de zones de protection, Commune de Savigny, 2007"

#### **Junior Hydrogeologist, Wastewater Disposal, Private, Sainte-Croix, Switzerland**

Dr. Matti led the hydrogeological investigations for the elimination of wastewater. "Reconnaitssances géologiques et hydrogéologiques en vue de l'élimination des eaux usées, Chalet de la Limasse, commune de Ste-Croix"

#### **Junior Groundwater Modeler, Hydro-geothermal Numerical Modelling, Sion Hospital, Sion, Switzerland**

Dr. Matti was responsible for conducting 3D groundwater numerical simulations (FEFLOW) for the assessment of new geothermal opportunities using heat exchangers for the hospital in the town of Sion, Switzerland.

#### **Junior Groundwater Modeler, Drainage Gallery Project for Landslide Mitigation, Canton of Vaud, Switzerland**

Dr. Matti built 3D groundwater numerical simulations (FEFlow) to assess the efficiency of a drainage gallery project intended for stabilization of the La Frasse large landslide.

#### **Junior Geologist/Geophysics, Geotechnical Survey of Drainage Gallery for Landslide Mitigation, Canton of Vaud**

Dr. Matti was the site geologist during the investigation and design phase of the drainage gallery work in the La Frasse large landslide. Dr. Matti led all the geotechnical assessment; drilling, seismic reflection and refraction survey and laboratory analyses. This included partially the

scoping, supervision and execution, and especially interpretation of results and reporting.

#### **Junior Groundwater Modeler, Drainage Gallery for thermal and hydraulic characterization, Alptransit, Switzerland**

Dr. Matti built 3D groundwater models for long-term simulations of thermal and hydraulic characteristics in the Saint-Gotthard Massif for the US\$13-billion Alptransit Tunnel Project, Switzerland's largest-ever construction project. This work constituted a part of his master thesis in hydrogeology.

#### **Junior Geologist/Geophysics, Seismic and Bathymetric study in the lake Lemman, Canton of Vaud, Switzerland**

Dr. Matti was the site geologist during the investigation phase.