


Personal Details

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| Name: | Josef Wolfgang WAGERER |  |
| Qualifications: | Expert Hydrogeology 2007 (Sachverständiger für Hydrogeologie BVFS e.V.) Master of Science (GIS) 2004 Diplom-Mineraloge Univ. 1990 (eq. to MSc. in Geology) | |
| Profession: | Consulting Geologist approved by the Association of German Geologists BDG (Beratender Geowissenschaftler BDG) | |
| Specialisation: | Project Management and Consulting for Water Resource Management (Applied Geology, Hydrogeology and Geoinformation) | |
| Nationality: | German | |
| Year of Birth: | 1963 in Bad Kötzing / Bavaria, Germany | |
| Civil Status: | common-law marriage | |
| Children: | one daughter | |

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| Address: | Riezlerweg 16, 80997 München, Germany |
| Contact Numbers | phone 0049 (0) 89 87129436 fax 0049 (0) 89 87129437 mobile +49 (0) 171 1460735 email info@wagerer-geoconsult.de web www.wagerer-geoconsult.de |

Key Qualifications

- Approved Consulting Geologist
- Expert for Hydrogeology and Water Resource Management
- Experience in international assignments and multinational expert teams
- 18 years of experience in managing geological projects of several sizes and different objectives
- 18 years of experience in teamwork with engineers, geologists, chemists and ecologists
- Strong skills in groundwater exploration, monitoring, analysis of aquifers and resource management
- Highly integrated methods in analyzing geological situations
- Excellent reporting skills in German and English
- Excellent computer literacy in CAD, GIS and geostatistics
- Well experienced in site supervision, drilling contracts and cost controlling
- Highly motivated and flexible

Educational Qualifications

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| 01/02 – 03/04 | Study of Geographical Information Systems and Science (Paris-Lodron-University Salzburg, Austria) reaching the academic title of a Master of Science (GIS) main subjects geodata management, openGIS, spatial analysis, project management, remote sensing |
| 10/83 – 05/90 | Study of Mineralogy (University Freiburg i.Br., Ludwig-Maximilian-University Munich, Technical University Munich) reaching the academic title of a Diplom-Mineraloge Univ. (equivalent to a MSc. in Geology) main subjects geochemistry, mineralogy, petrology, geophysics |
| 1988 - 1990 | Mineralogical-geochemical thesis on carbonates in alteration zones of Variscan Granites in Northern Bavaria being part of an EU research project at the Technical University Munich |
| 1986 - 1990 | Student assistant on several mineralogical projects at the Technical University Munich, e.g. petrology of granites, geochemical analysis (XRD, XRF, NAA, EDX), mineralogy of industrial minerals, clay mineralogy, sedimentology for archeological investigations, sea floor survey and sea drilling |
| 1976 - 1983 | Grammar School at the Benedictine Monastery of Metten / Bavaria, Germany |

Advanced Trainings

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| 02/08 | Advanced training for experts, Hamm/Germany |
| 04/06 – 06/06 | IDRISI: Applications in Forestry, Center for Geoinformatics, University Salzburg/Austria |
| 05/04 | Training Leica GS50 differentialGPS, Leica geosystems, Munich |
| 03/04 | 9. Advanced Training Seminar on Geoinformation Systems, Runder Tisch GIS e.V., Munich |
| 03/03 | 8. Advanced Training Seminar on Geoinformation Systems, Runder Tisch GIS e.V., Munich |
| 12/02 | Seminar on openGIS, Center for Geoinformatics, University Salzburg/Austria |
| 07/02 | AGIT 2002, Center for Geoinformatics, University Salzburg/Austria |
| 05/98 | Graphic-based Groundwater Modelling, WASY, Berlin |
| 03/97 | Seminar Groundwater in Germany, University Freiburg/Br. |
| 10/96 | Calculation of Evapotranspiration, University Suderburg |
| 04/95 | Groundwater Modelling (Kinzelbach/Rausch), Academy Ostfildern |
| 10/94 | Seminar Monitoring Wells, Center for Groundwater Peine |
| 07/93 | Seminar on Building Law (VOB), Munich |
| 04/92 | Clay Mineralogy in Geological Engineering, LGA Nuremberg |

Professional Experience

Development

(see detailed descriptions in the following section "Projects")

| Date | Company | Position | Description |
|-------------------------|--|----------------------------------|---|
| 05/10 – pres. | GTZ International Services, Riyadh, Saudi Arabia | Short Term Expert Hydrogeology | Project planning, bid management, expert's reports for water resource management projects in Saudi Arabia |
| 02/10 – pres. | Bavaria State Forestry (Baye-rische Staatsforsten AöR) Regensburg | Expert Hydrogeology | Planning of water supply and consulting for water related law in disaster management projects in Bavaria |
| 06/09 – 03/10 | Berchtesgaden National Park | Expert Water Resource Management | Hydrogeological investigations and forecasts on the water supply situation in the Königssee area |
| 09/08 – 01/10 | GTZ International Services, Riyadh, Saudi Arabia | Well Survey Manager | Management, controlling and evaluation of the water point inventory as part of the Wasia-Biyadh Water Resources Studies (Ministry of Water and Electricity, Riyadh, KSA) |
| 09/08 – 03/10 | Erdwerk GmbH, Consulting Geologists and Engineers, Munich, Germany | Cost Controller | Cost controlling for four deep drill hole sites in the Munich area |
| 05/08 – 01/10 | GTZ International Services, Riyadh, Saudi Arabia | Senior Expert Hydrogeology | Documentation of drilling works in SW Saudi Arabia (24 wells, depth 50 – 1,500 m), well completion reports (part of Wajid Water Resources Studies for Ministry of Water and Electricity, Riyadh, KSA) |
| 06/07 – 04/08 and 07/08 | Erdwerk GmbH, Consulting Geologists and Engineers, Munich, Germany | freelance Consultant | Exploration of geothermal energy at deep drill hole sites in Bavaria, site supervision and site planning for preliminary works; approval processes; consulting for water related law |
| 01/08 – 02/08 | Dr. Blasy – Dr. Øverland Consulting Engineers, Eching, Germany | freelance Consultant | Consulting for groundwater related law, Bavaria/Germany |
| 08/07 - 11/07 | GTZ International Services, Riyadh, Saudi Arabia | freelance Consultant | Evaluation of geophysical borehole loggings (part of Wajid Water Resources Studies in SW Saudi Arabia for Ministry of Water and Electricity, Riyadh, KSA), expert's report |

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| 11/06 – 04/07 | Dornier Consulting GmbH, Branch Abu Dhabi (Office Riyadh, Saudi Arabia) / GTZ International Services | Senior Expert Hydrogeology | Bid Management for Groundwater Management Projects; Pre-Feasibility Study for Groundwater Development in SW Saudi Arabia, Reporting, Geodata processing, GIS-based cartography on (hydro-)geology in a National Water Resources Study, Saudi Arabia |
| 06/06 – 09/06 | Erdwerk GmbH, Consulting Geologists and Engineers, Munich, Germany | freelance Consultant | Exploration of a thermal water resource |
| 01/03 – 05/06 | Dr. Blasy – Dr. Øverland Consulting Engineers, Eching, Germany | freelance Consultant | Groundwater exploration, planning of drinking water wells, management of drinking water resources and protection areas, planning and supervision of monitoring programmes, spatial evaluations, expert's reports, supervision of drilling sites, contracts for drilling companies |
| 03/05 – 02/06 | Erdwerk GmbH, Consulting Geologists and Engineers, Munich, Germany | freelance Consultant | Exploration of geothermal energy and a thermal water resource at a deep drill hole site |
| 04/98 – 12/04 | Christian Weise publishers, Munich, Germany | GIS expert | CAD-/GIS-based cartography on geology and mineralogy worldwide for LAPIS |
| 10/97 – 12/02 | Dr. BLASY + MADER Consulting Engineers, Eching, Germany | freelance Consultant | Groundwater exploration, GIS-based catchment area studies for drinking water wells, risk analysis e.g. on disposal sites and motorways, groundwater modelling and monitoring, feasibility studies on groundwater exploration, studies and evaluations for flood protection, planning and supervision of drilling sites and hydraulic field tests, expert's reports |
| 06/99 | Authority for maritime navigation and hydrography (BSH) Hamburg, Germany | Assistant | Assistant Geologist for sea floor survey, seismic and sea floor drilling |
| 09/99 | Teacher's Academy, Dillingen, Germany | Planner and guide | Conception of a one week study trip on geology and mineral resources for geography teachers in Grammar School |

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| 02/92 – 09/97 | Dr. BLASY + MADER Consulting Engineers, Eching, Ger- many | Employed geologist | Geological-geohydrological investigations on suitability of potential disposal sites, groundwater modelling, site supervision, evaluations, expert's reports |
| 1/91- 01/92 | Dr. Blasy – Dr. Busse GmbH, Eching, Ger- many | Site supervisor | Supervision of complete redevelopment of gasworks |
| 10/91 | Dr. Blasy – Dr. Busse GmbH, Eching, Ger- many | Sampler | Technician at redevelopment measures |

Projects (representative selection)

| Date | Company | Position | Projects |
|---------------|--|------------------------------------|--|
| 09/08 – 01/10 | GTZ Interna- tional Services, Riyadh, Saudi Arabia | Well Survey Manager | Water Point Inventory, Wasia-Biyadh Water Resources Studies (East Saudi Arabia) <ul style="list-style-type: none"> - Team leader of well survey - Project management - GIS-based evaluation of well databases - Development of survey plans - Controlling and evaluation of field data - Expert's report |
| 09/08 – 03/10 | Erdwerk GmbH, Consulting Geologists and Engineers, Munich, Ger- many | Cost Con- troller | Exploration of geothermal energy, deep drill hole sites Aschheim and Unterföhring, Munich/Germany (ca. 2.600 – 3.100 m MD) <ul style="list-style-type: none"> - Cost controlling for four deep drill hole sites - Contract controlling |
| 05/08 – 01/10 | GTZ Interna- tional Services, Riyadh, Saudi Arabia | Senior Ex- pert Hydrogeology | Documentation of drilling works, Wajid Water Resources Studies, SW Saudi Arabia, ongoing <ul style="list-style-type: none"> - Drilling completion reports for 24 wells, 50 – 1,500 m - Evaluation of drilling data and pumping tests - Well completion logs - Documentation and reporting |
| 08/07 - 11/07 | GTZ Interna- tional Services, Riyadh, Saudi Arabia | freelance Consultant | Expert's Report "Geophysical Logging of Existing Wells", Wajid Water Resources Studies, Saudi Arabia <ul style="list-style-type: none"> - Evaluation of geophysical borehole loggings at 15 wells in SW Saudi Arabia - Data management and visualization - Expert's report |

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| 11/06 – 04/07 | Dornier Consulting Branch Abu Dhabi / GTZ International Services, Riyadh, KSA | Senior Expert Hydrogeology | Groundwater Resources Management (Umm Er Radhuma and Wajid Aquifer Systems, Saudi Arabia) <ul style="list-style-type: none"> - GIS-based pre-feasibility study for the drinking water supply of the Asir Region - Bid management, technical and financial proposal for a water resources study and groundwater management plan in the Ar Riyadh Region - Technical review of a domestic water demand study - Processing and evaluation of census data in five regions - Technical and editorial review of a Final Report (14 Volumes) - GIS-based thematic cartography and 3D Model construction |
| 03/05 – 02/06 | Erdwerk GmbH Consulting Geologists and Engineers, Munich, Germany | Consultant | Exploration of thermal water and geothermal energy, Deep drill hole site Bad Wörishofen GT2 (2.600 m) <ul style="list-style-type: none"> - Interpretation of regional geological data and studies - Scientific documentation - Documentation of drilling works - Site supervision in teamwork - Interpretation of geophysical data |
| 03/05 – 05/06 | Dr. Blasy – Dr. Øverland Consulting Engineers, Eching, Germany | Consultant | Exploration of thermal water and geothermal energy, Deep drill hole site Bad Wörishofen GT2 (2.600 m) <ul style="list-style-type: none"> - Cost controlling - Contract controlling |
| 03/98 – 10/05 | Dr. Blasy – Dr. Øverland Consulting Engineers, Eching, Germany and Dr. BLASY + MADER Consulting Engineers, Eching, Germany resp. | Consultant | GIS-based catchment area studies and drinking water resource management city of Penzberg/Bavaria (five wells, ca. 50 boreholes, appr. 1,5 Mio m³/a) <ul style="list-style-type: none"> - Analysis of geohydrological system - Planning of drilling programmes and contracts - GPS mapping - Consulting - Planning and evaluation of hydraulic tests - GIS-based evaluations and DEMs - Analysis of conflicts and suggestions for solutions - Planning of a new drinking water well - Expert's reports and presentations - Groundwater related law |

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| 03/95 – 04/05 | Dr. Blasy – Dr. Øverland Consulting Engineers, Eching, Germany and Dr. BLASY + MADER Consulting Engineers, Eching, Germany resp. | Consultant Employed Geologist | Groundwater monitoring at the Munich International Fair Trade Center (appr. 130 boreholes and wells, toxic wastes, subway construction site) - Planning and supervision of the monitoring programme - Cooperation with authorities and planning companies - Controlling of objectives - Spatial and time-related evaluations of flow situations - Consulting on hydraulic measures - Assessments of effects on the groundwater regime - Final expert's report |
| 09/99 – 06/04 | Dr. Blasy – Dr. Øverland Consulting Engineers, Eching, Germany and Dr. BLASY + MADER Consulting Engineers, Eching, Germany resp. | Consultant Employed Geologist resp. | Groundwater monitoring at the Munich Airport MUC II (80 monitoring wells, some 100 boreholes, 18 reports) - Controlling of authority defined objectives - Planning of the monitoring programme - Spatial evaluations of flow situations - Assessments of effects - 18 expert's reports with GIS-/CAD-based maps, cross sections, diagrams, hydraulic calculations |
| 07/98 – 02/03 | Dr. BLASY + MADER Consulting Engineers, Eching, Germany | Consultant | Groundwater exploration city of Weilheim/Bavaria (new 48 m-well, seven older wells, 18 monitoring wells, appr. 1,5 Mio m ³ /a) - Project planning - Exploration and investigations - Evaluation of seismic data - Planning and supervision of drilling programme - Planning of a new drinking water well and drilling contract - Scientific documentation of drilling results - Planning and evaluation of pumping tests - Groundwater modelling to result verification - Cost controlling - Expert's report and groundwater related law |

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| 03/98 – 10/02 | Dr. BLASY + MADER Consulting Engineers, Eching, Ger- many | Consultant | Feasibility studies in groundwater exploration community of Icking/Isar valley (four wells, appr.. 100 boreholes, 60 chemical analysis, long term pumping test) <ul style="list-style-type: none"> - Project identification - Planning of drilling programme and test well - Analysis of geohydrological system - Planning, supervision and evaluation of a eight months pumping test with hydrochemical and biological analysis - Assessment of groundwater quality - Applications of permissions concerning groundwater and nature related law - Expert's report and suggestions for solutions |
| 04/02 – 10/02 | Dr. BLASY + MADER Consulting Engineers, Eching, Ger- many | Consultant | Risk analysis motorway A94 Simbach/Bavaria <ul style="list-style-type: none"> - GIS-/CAD-based system analysis - Hydrological mapping - Geodata management and visualization |
| 07/01 – 10/01 | Dr. BLASY + MADER Consulting Engineers, Eching, Ger- many | Consultant | Groundwater exploration deep drinking water well Ammersee West/Bavaria (220 m) <ul style="list-style-type: none"> - Planning a 220 m—drinking water well - Drilling contract - Site supervision and cost controlling - Planning and evaluation of geophysical borehole data and pumping test - Interpretation and evaluation of drilling results |
| 07/01 – 10/01 | Dr. BLASY + MADER Consulting Engineers, Eching, Ger- many | Consultant | Feasibility study on groundwater exploration near the city of Ingolstadt/Bavaria <ul style="list-style-type: none"> - Numeric groundwater modelling - Simulation-based planning of wells and resource management - Expert's report and suggestions |
| 05/00 – 02/01 | Dr. BLASY + MADER Consulting Engineers, Eching, Ger- many | Consultant | Risk assessment of a central disposal site at the Dep. of Pfaffenhofen/Bavaria (two disposal sites, three aquifers, appr. 25 monitoring wells, six-years-hydrochemical monitoring period) <ul style="list-style-type: none"> - Integration of complex geodata - Hydraulic and hydrochemical evaluations - Risk assessment of effects on groundwater quality - Expert's report describing geological situation and further suggestions |

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| 07/99 | Dr. BLASY + MADER Consulting Engineers, Eching, Ger- many | Consultant | workshop on investigations of potential disposal sites for engineers from India with seminary and field trip |
| 04/98 – 10/98 | Dr. BLASY + MADER Consulting Engineers, Eching, Ger- many | Consultant | Flood protection planning near the city of Regensburg/Bavaria (four potential sites, appr. 20 boreholes) <ul style="list-style-type: none"> - Planning and supervision of drilling programmes - Evaluation of geophysical borehole data (FRACVIEW, DLL, SP, GR) - Planning and evaluation of packer tests - Geological interpretation - Expert's report and assessment of the suitability |
| 02/92 – 11/97 | Dr. BLASY + MADER Consulting Engineers, Eching, Ger- many | Employed Geologist | Investigations on suitability of potential disposal sites in the departments Regensburg, Neuburg, Kelheim/Bavaria (14 sites, appr. 90 monitoring wells, several aquifers, complex geological structures) <ul style="list-style-type: none"> - Cooperations with authorities, lawyers and residents - Planning and supervision of drilling programmes with several techniques - Controlling drilling contracts - Planning and evaluation of hydraulic field tests - Groundwater related law - Spatial analysis - Scientific documentations - Geological mapping - Digital elevation models - Geological interpretations - Assessments and expert's reports |
| 03/96 – 11/96 | Dr. BLASY + MADER Consulting Engineers, Eching, Ger- many | Employed Geologist | Effects of gravel pits on nature reserve areas, Gundelfingen/Bavaria (approx. 15 lakes, 50 monitoring wells, three aquifers) <ul style="list-style-type: none"> - Regional groundwater modelling - Integration and data management of long term monitoring data - Hydrological mapping - Calculations of evapotranspiration rates - Simulation of mining scenarios - Suggestions on optimization |
| 11/91 – 01/92 | Dr. Blasy – Dr. Busse GmbH, Eching, Ger- many | Freelance Site Super- visor | Redevelopment of the gasworks in the city of Landshut/Bavaria <ul style="list-style-type: none"> - Site supervision - Assessment of risk potential of strata - Cost controlling |

Computer Skills

(from * - basic to *** - excellent)

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| CAD | AutoCAD | *** |
| GIS | ESRI ArcView 3.x, ArcGIS 9.x, ArcScene | *** |
| | IDRISI Kilimanjaro 14 | ** |
| | AutoCAD Map 2004 | ** |
| GPS and mobile GIS | Leica GISDataPro, ESRI ArcPad | *** |
| Geostatistics | Golden Software Surfer and Grapher | *** |
| Borehole Data Management | FUGRO GeoDIN 5 | ** |
| Spreadsheet calculating | MS Excel | *** |
| DBMS | MS Access, SQL | ** |
| Remote sensing | ERDAS Imagine | ** |
| Groundwater modelling | MODFLOW, PMWin | *** |
| | WASY FEFLOW | * |
| Presentation | MS Powerpoint, Adobe Photoshop, MS Frontpage | *** |
| | Net Objects Fusion, MS Publisher | ** |

Language Skills

(from 1 - excellent to 5 – basic)

| Language | Speaking | Writing | Reading |
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| <u>German</u> | mother tongue | | |
| English | 1 | 1 | 1 |
| French | 3 | 3 | 2 |
| Spanish | 4 | 4 | 3 |

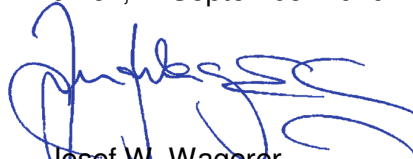
Other Skills

- Well experienced in organizing projects and conceptual work
- Very good knowledges in differentialGPS survey and navigation
- Very good knowledges in common drilling techniques and site supervision
- Good to fair knowledges in remote sensing, GIS in forestry, disaster management and analyzing geo-hazards

Professional Memberships

- Association of German Geologists (Berufsverband Deutscher Geowissenschaftler), Bonn/Germany
- German Association of Free Experts (Bundesverband Freier Sachverständiger e.V.), Düsseldorf/Germany
- Club UNIGIS, University Salzburg/Austria

Munich, in September 2010



Josef W. Wagerer