

## Water Quality Data Assessment in the Saale River Basin, State of Thuringia, Germany

Klaus Bongartz<sup>1</sup>, Timothy D. Steele<sup>2</sup>, and Karl-Erich Lindenschmidt<sup>3</sup>

<sup>1</sup>Friedrich-Schiller-University Jena, Loebdergraben 32, D-07743 Jena, Germany

<sup>2</sup>TDS Consulting Inc. 595 West Meadow Rd., Evergreen, CO 80439 USA

<sup>3</sup>UFZ-PBFS, Brückstrasse 3a, D-39114 Magdeburg, Germany

### Biographical Sketches of Authors

Dr. Bongartz has been involved with different aspects of hydrological research and integrated water resources management since more than 10 years in Germany. Since 1997, when he went from the University of Bonn to the University of Jena, and concentrates his professional research on hydrological modeling and integrated water resources management focusing especially on process regionalisation. During his professional career he has been involved in two applied research projects as Partner and coordinator. At the University he also did the job of lecturing undergraduate students. So he combined teaching and working in a successful research team quite successfully during the last years. Within that period, he has developed cooperation with various research teams in Germany and the U.S, China, India and the Philippines involving the Environmental Research Center (UFZ) the Department of Agriculture (USDA), the USGS, the IIT, and the Chinese Academy of Science respectively. Recently Dr. Bongartz is involved in a European-Asian teaching program for Integrated Watershed Management and in a European Community Integrated Project dealing with IWRM in Europe and Africa.

Dr. Steele's career encompasses nearly 38 years in water-quality hydrology and regional assessments of water resources. During over 24 years as a consultant, he has managed many multidisciplinary projects as well as hydrologic baseline and modeling studies for water-resources planning and management studies and various mining-related projects. He has consulted on numerous projects dealing with hydrogeochemical interactions, ground-water contamination, aquifer and lake restoration, tailings disposal, hazardous waste/residuals management, design/evaluation of hydrologic monitoring networks, statistical analysis of hydrologic data, stream and subsurface water-quality modeling, use-attainability analyses, water-quality stream standards and total maximum daily loads (TMDLs) assessments, as well as regional ground-water planning and international water-resources management. He has given expert testimony or provided litigation support for a range of topics of concern. His professional career has included overseas experience in eleven foreign countries. Since 1999, Dr. Steele has conducted block (short) courses dealing with concepts of integrated watershed approaches – the *3M* approach (*monitoring, modelling, and management*) at university institutes located in Darmstadt and Jena, Germany.

### Abstract

Over the past decade, hydrologic and water-quality data have been collected at several sites within the Saale River basin, a tributary of the Elbe River in eastern Germany. Primary emphasis has been placed upon variables related to salinity. Historically, numerous health spas with (sometimes) hot, saline springs as well as salt mining areas are located within this river basin, resulting in contributions of salinity to the main stem Saale River and one of its main tributaries the Unstrut. Water-quality data, along with model applications, have been developed for this basin in a multidisciplinary study by a consortium of German Universities and Agencies. The purpose of this paper is to provide an introduction to the water-quality related studies in the river basin, as well as describing selected results using available hydrologic and water-quality monitoring data.