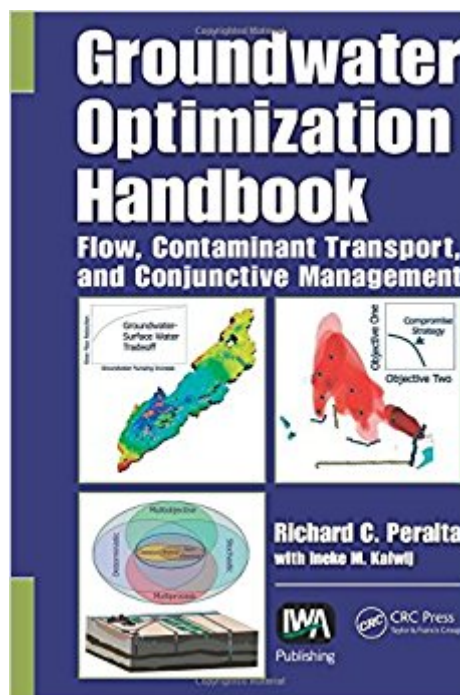




The book was found

Groundwater Optimization Handbook: Flow, Contaminant Transport, And Conjunctive Management



Synopsis

Existing and impending water shortages argue for improving water quantity and quality management. *Groundwater Optimization Handbook: Flow, Contaminant Transport, and Conjunctive Management* helps you formulate and solve groundwater optimization problems to ensure sustainable supplies of adequate quality and quantity. It shows you how to more effectively use simulation-optimization (S-O) modeling, an economically valuable groundwater management tool that couples simulation models with mathematical optimization techniques. Written for readers of varying familiarity with groundwater hydrology and mathematical optimization, the handbook approaches complex problems realistically. Its techniques have been applied in many legal settings, with produced strategies providing up to 57% improvement over those developed without S-O modeling. These techniques supply constructible designs, planning and management strategies, and metrics for performance-based contracts. Learn how to:

- Recognize opportunities for applying S-O models
- Lead client, agency, and consultant personnel through the strategy design and adaptation process
- Formulate common situations as clear deterministic/stochastic and single/multiobjective mathematical optimization problems
- Distinguish between problem nonlinearities resulting from physical system characteristics versus management goals
- Create an S-O model appropriate for your specific needs or select an existing transferrable model
- Develop acceptable feasible solutions and compute optimal solutions
- Quantify tradeoffs between multiple objectives
- Evaluate and adapt a selected optimal strategy, or use it as a metric for comparison

Drawing on the author's numerous real-world designs and more than 30 years of research, consulting, and teaching experience, this practical handbook supplies design procedures, detailed flowcharts, solved problems, lessons learned, and diverse applications. It guides you through the maze of multiple objectives, constraints, and uncertainty to calculate the best strategies for managing flow, contamination, and conjunctive use of groundwater and surface water. Ancillary materials are available from the Downloads tab on the book page at www.crcpress.com.

Book Information

Hardcover: 532 pages

Publisher: CRC Press; 1 edition (April 26, 2012)

Language: English

ISBN-10: 1439838062

ISBN-13: 978-1439838068

Product Dimensions: 6.1 x 1.3 x 9.1 inches

Shipping Weight: 2 pounds (View shipping rates and policies)

Average Customer Review: Be the first to review this item

Best Sellers Rank: #1,964,314 in Books (See Top 100 in Books) #110 in Books > Engineering & Transportation > Engineering > Civil & Environmental > Environmental > Groundwater & Flood Control #532 in Books > Science & Math > Nature & Ecology > Water Supply & Land Use #661 in Books > Engineering & Transportation > Engineering > Civil & Environmental > Environmental > Water Quality & Treatment

Customer Reviews

"In my experience, most text books only cover the theory behind a topic and go into great detail on the research and derivation of various methodologies. However, practitioners in the field also need to know how the theoretical underpinnings of the science get applied in the real world. Few books actually accomplish this and thus are not really all that useful to those of us who "get our hands dirty". Dr. Peralta's book covers both aspects quite well. The theory behind various optimization techniques is presented along with how these theories and methods are used to solve real problems. The examples in the book are not just small synthetic problems that bear no resemblance to reality. They illustrate the solution to large-scale, real optimization" â •James Rumbaugh, Environmental Simulations, Inc., Reinholds, Pennsylvania, USA"The book provides a good summary of the fundamental optimization techniques from the classical approaches to the current state-of-the-art methods, but provides excellent guidance on the appropriate application to ground water problems. The book illustrates most of the important concepts with simple theoretical examples and/of real-world applications of the techniques. The efficient application of these techniques requires experience and perhaps intuition, and Dr. Peralta has tried his best to convey some of the insights from his extensive portfolio of successful optimization projects to the reader. The strength of the book really lies beyond the early chapters covering the basics of optimization; it is in the discussion of these actual applications."â •David J. Becker, University of Nebraska at Omaha

Richard Peralta, PhD, PE, has used S-O modeling to design strategies for more than 20 sites or real-world projects. As a Utah Cooperative Extension Service water quality coordinator, he optimized nonpoint and point source contamination management, and collaborated with state and federal agencies in technology transfer and public education. Through the University of Arkansas, and subsequently Utah State University, private work, and the U.S. Air Force Reserve, he worked in

25 U.S. states and in numerous countries. For the military, he participated in and led many environmental contamination remediation evaluation teams and helped provide optimal solutions that were successfully implemented in the field. After several years of advising on environmental matters in the Pentagon, Colonel Peralta retired from the U.S. Air Force Reserve as a chief bioenvironmental engineer. He is a professor in the Civil and Environmental Engineering Department at Utah State University, consults privately, and is the distributor of SOMOS software. For more information, see Dr. Peralta's page at the College of Engineering at Utah State University. Contributing author Ineke M. Kalwij, PhD, PEng, collaborates with Dr. Peralta, working on groundwater optimization software development and publications. She also provides consulting services to clients, primarily in the area of groundwater system management. For more information, see Kalwij Water Dynamics Inc.

[Download to continue reading...](#)

Groundwater Optimization Handbook: Flow, Contaminant Transport, and Conjunctive Management
Flow and Contaminant Transport in Fractured Rock Modeling Groundwater Flow and Pollution
(Theory and Applications of Transport in Porous Media) Applied Groundwater Modeling, Second
Edition: Simulation of Flow and Advective Transport Applied Groundwater Modeling: Simulation of
Flow and Advective Transport Applied Contaminant Transport Modeling Introduction to the
Numerical Modeling of Groundwater and Geothermal Systems: Fundamentals of Mass, Energy and
Solute Transport in Poroelastic Rocks (Multiphysics Modeling) Groundwater Hydraulics And
Pollutant Transport The Little Book on Digital Marketing SEO - Search Engine Optimization: Tips
and tricks for keyword research in SEO or Search Engine Optimization Introduction to Linear
Optimization (Athena Scientific Series in Optimization and Neural Computation, 6) Pyomo - A
Optimization Modeling in Python (Springer Optimization and Its Applications) Engineering Design
Optimization using Calculus Level Methods: A Casebook Approach: Math Modeling, Simulation, &
Optimization Light Scattering, Size Exclusion Chromatography and Asymmetric Flow Field Flow
Fractionation: Powerful Tools for the Characterization of Polymers, Proteins and Nanoparticles The
Agricultural Groundwater Revolution: Comprehensive Assessment of Water Management in
Agriculture (Comprehensive Assessment of Water Management in Agriculture Series) (v. 3)
Hydrology for Engineers, Geologists, and Environmental Professionals, Second Edition: An
Integrated Treatment of Surface, Subsurface, and Contaminant Hydrology Freight Forwarding and
Multi Modal Transport Contracts (Maritime and Transport Law Library) ASTNA Patient Transport:
Principles and Practice, 4e (Air & Surface Patient Transport: Principles and Practice) ASTNA
Patient Transport - E-Book: Principles and Practice (Air & Surface Patient Transport: Principles and

[Contact Us](#)

[DMCA](#)

[Privacy](#)

[FAQ & Help](#)