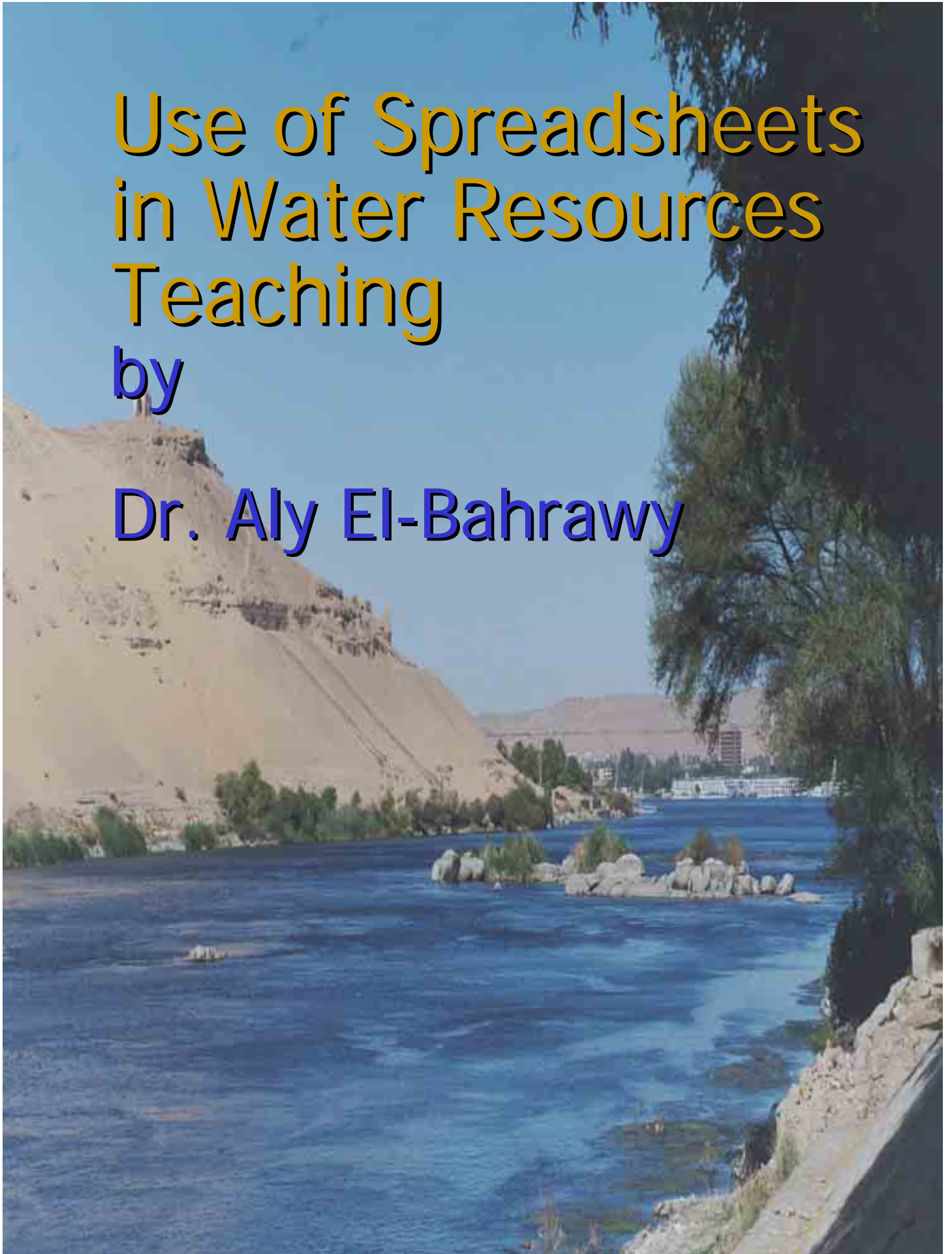


Use of Spreadsheets in Water Resources Teaching

by

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Computation Environment

The background of the slide is a photograph of a construction site. On the right side, a tall, multi-story building is under construction, with a yellow crane mounted on top. To the left, there are concrete structures and a large excavation pit. The sky is clear and blue.

- Slide rule
- Nomographs
- Calculators
- Computers
 - High level language
 - Commercial programs
 - Other (e.g. Spreadsheets)

Importance of tool

- Nature of calculation
- Ease of use
- Size of problem
- Availability
- Suitability for education



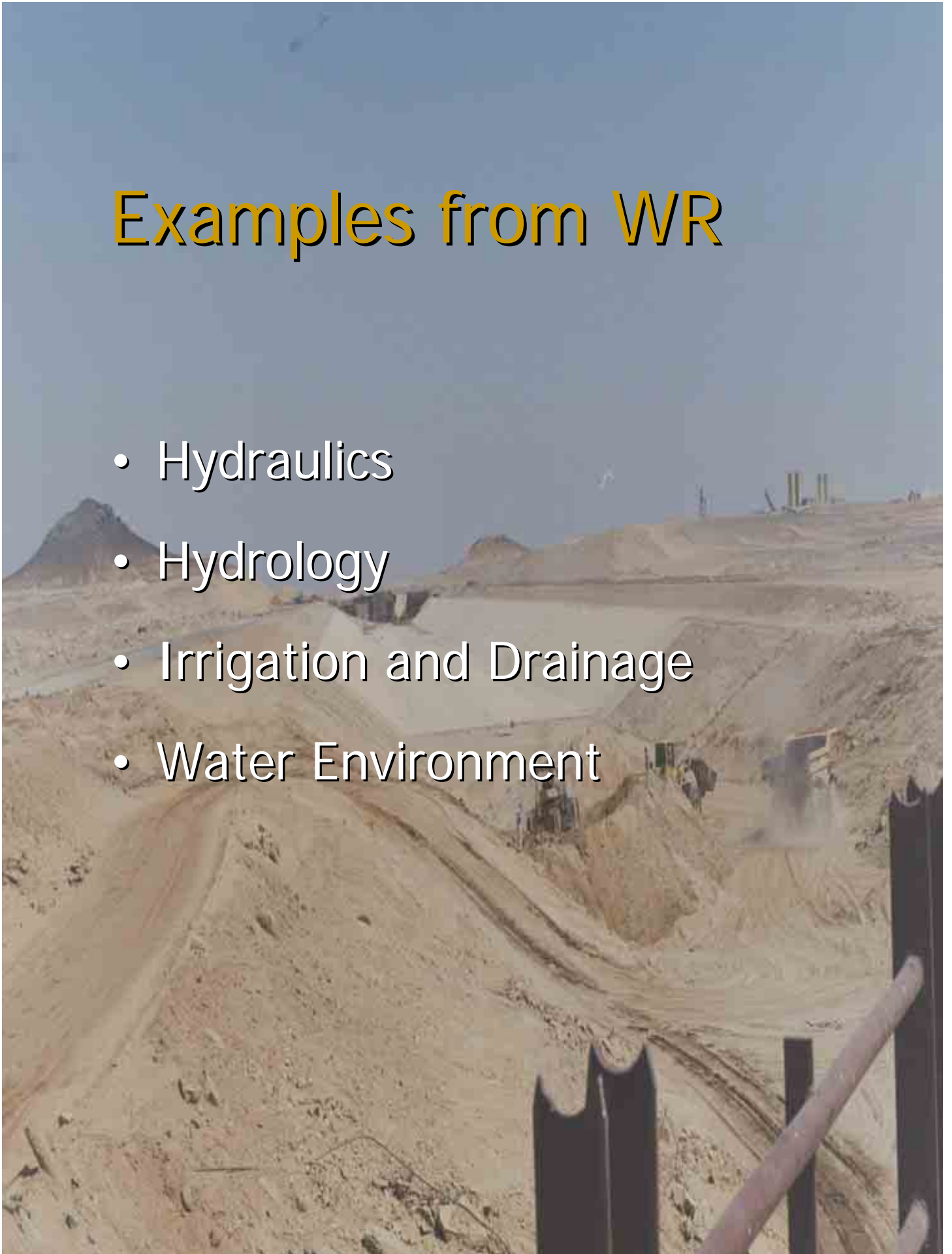
Why Spreadsheets

A photograph of a construction site under a clear blue sky. In the foreground, there are stacks of grey metal beams and some greenery. In the middle ground, a large red crane is positioned on the left, and several concrete structures are under construction. In the background, more cranes and building frames are visible against the horizon.

- Easy to learn
- Easy to use
- Available
- Suitable for engineers
 - trial and error
 - sensitivity analysis

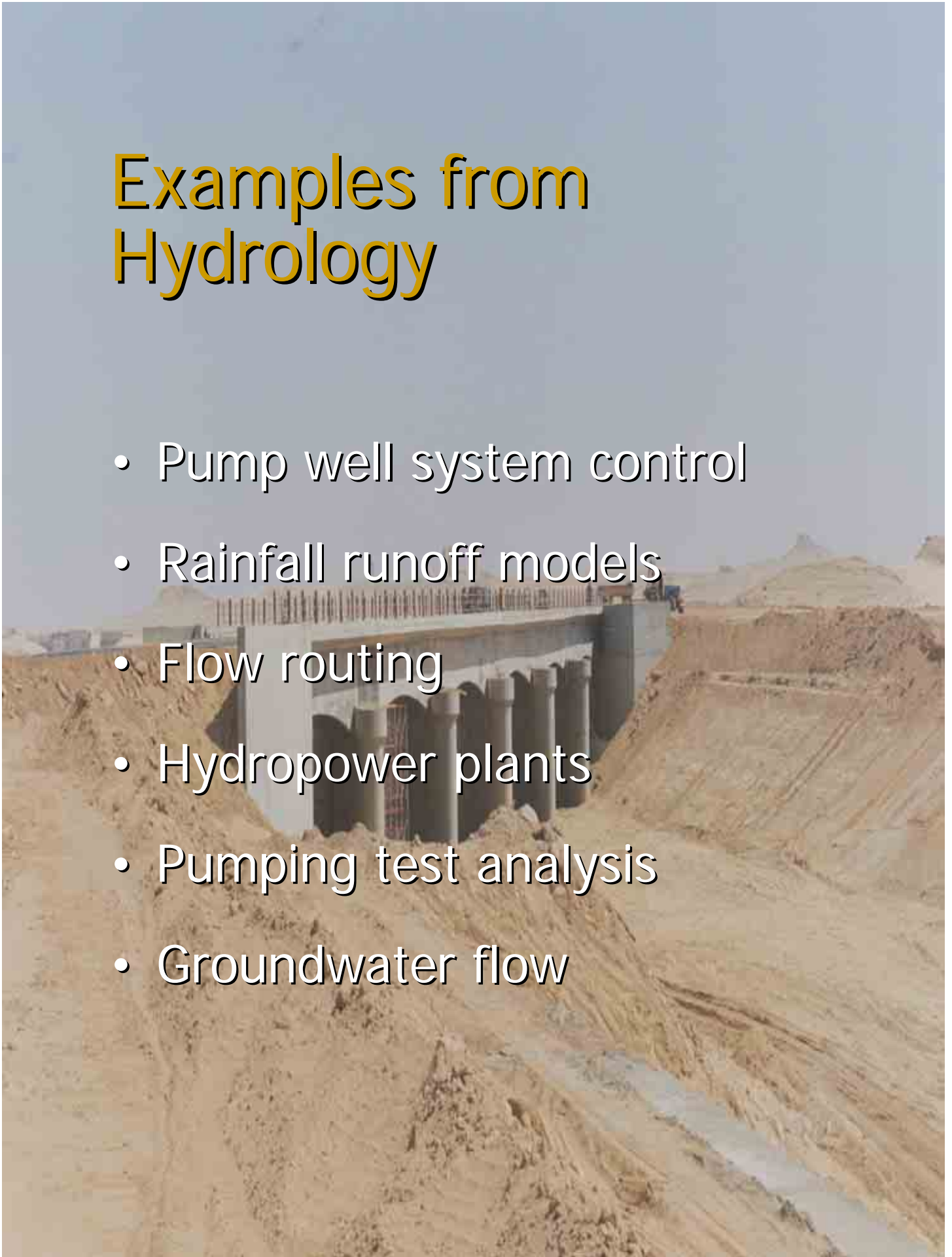
Examples from WR

- Hydraulics
- Hydrology
- Irrigation and Drainage
- Water Environment



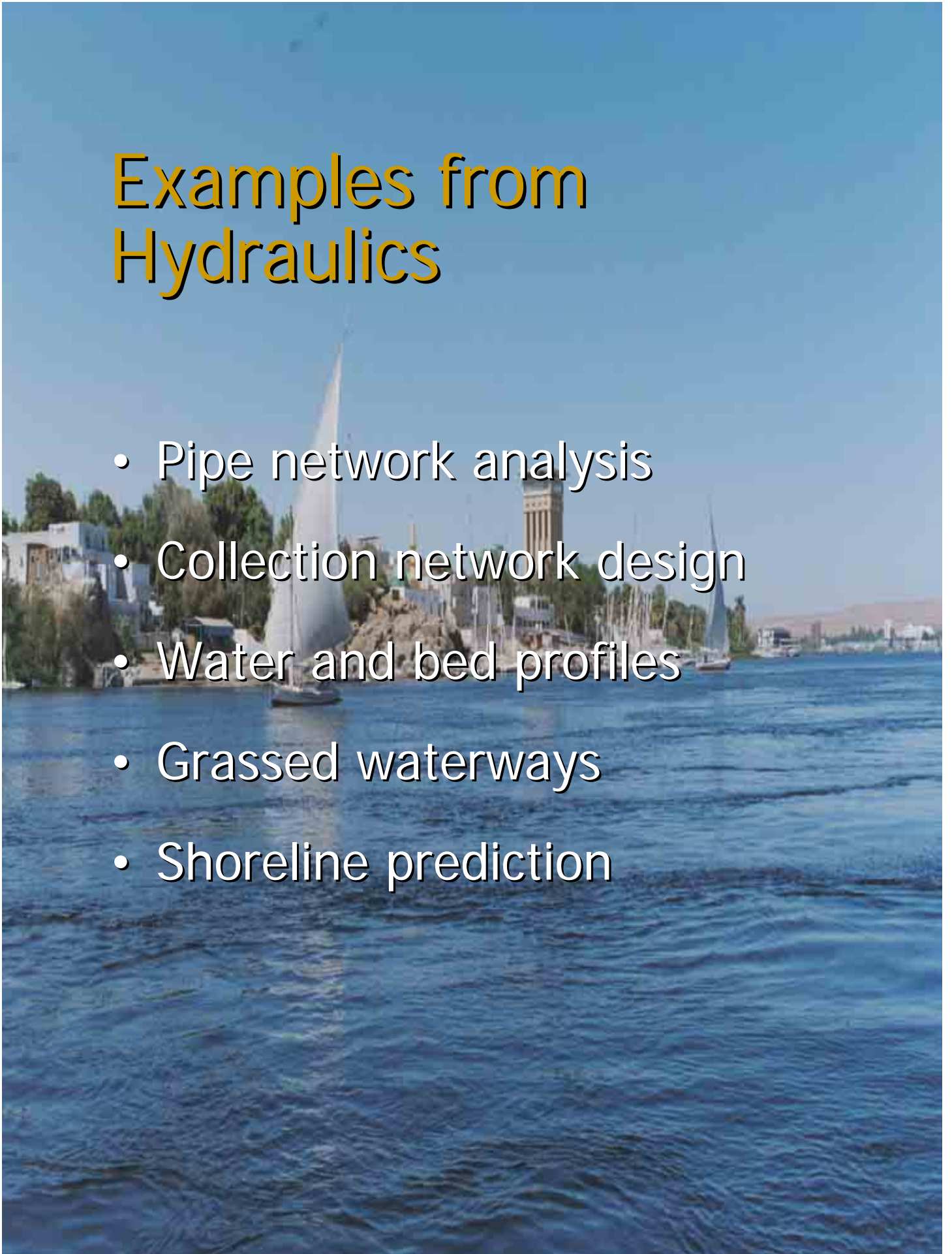
Examples from Hydrology

- Pump well system control
- Rainfall runoff models
- Flow routing
- Hydropower plants
- Pumping test analysis
- Groundwater flow



Examples from Hydraulics

- Pipe network analysis
- Collection network design
- Water and bed profiles
- Grassed waterways
- Shoreline prediction



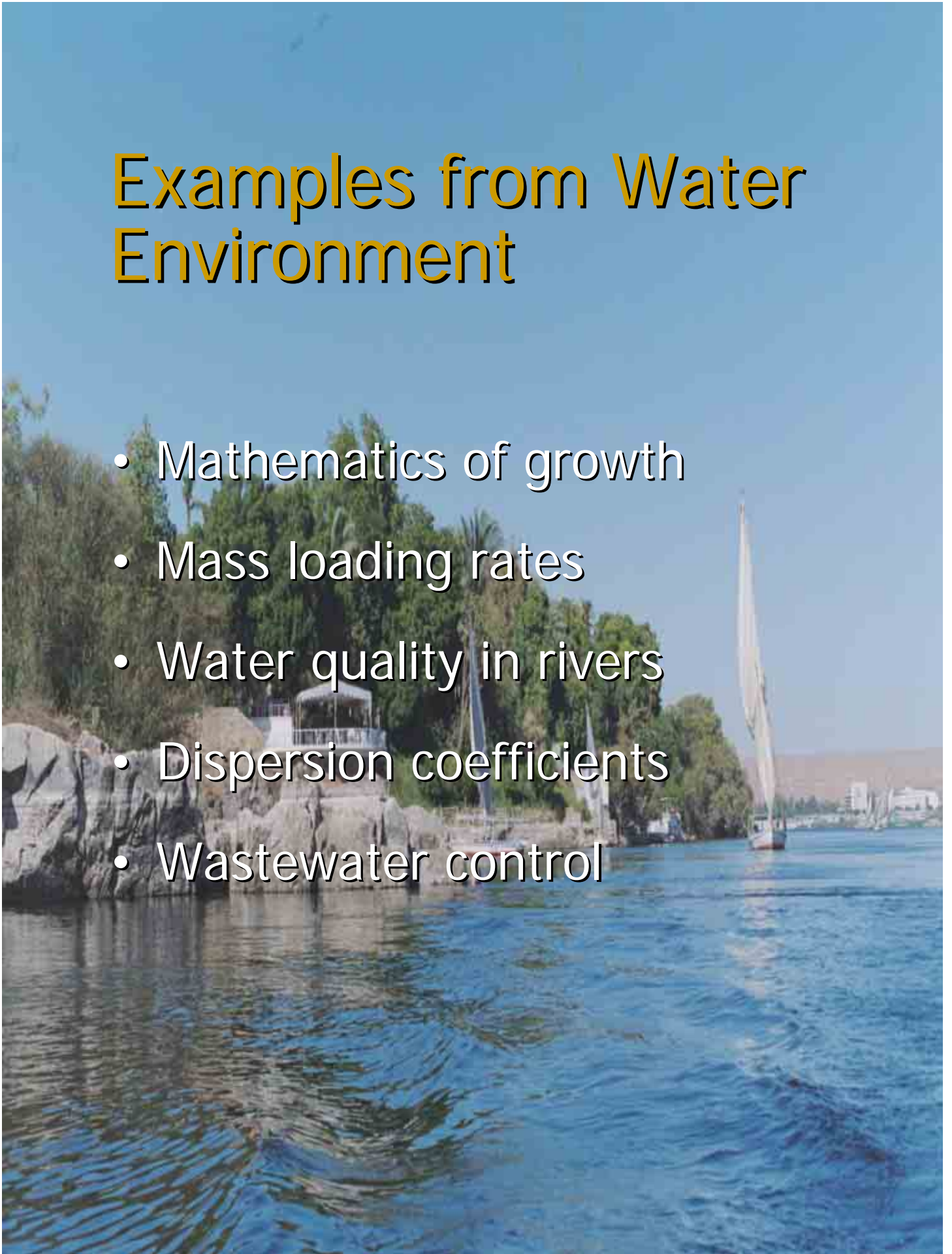
Examples from Irrigation



- Evapo-transpiration
- Scheduling
- Earth embankments
- Land grading
- Pipe irrigation network
- Surface irrigation design

Examples from Water Environment

- Mathematics of growth
- Mass loading rates
- Water quality in rivers
- Dispersion coefficients
- Wastewater control



My own experience

- Small classes
- Computer labs available
- Enhances learning process
- Real size problems
- Side benefits

Conclusion

- Importance of calculations
- Spreadsheets as teaching tool
- Computer labs in WR
- Easy to implement
- Can work for you too

