The Water Harmonica session
A summary

The 7th INTECOL International Wetlands Conference
Utrecht, The Netherlands 25-30 July 2004
Some basic principles of Waterharmonica:

- Polishing and reuse of wastewater
- Integrating waterchain and watersystem
- Using ecological engineering concepts
Water Harmonica is about communication

- communicating the need for integrated water management
  - Wastewater managers should consider the effect of their activities on adjacent ecosystems – including humans
- communicating "integrated knowledge in a usable form"

The Waterharmonica: the link between wastewater and surface water
Possible consequences of Water Harmonica approach

• Contribute to wetland creation and restoration using wastewater
  ➞ spreading economic and environmental benefits to other citizens than the immediate landowners and wastewater managers
Some goals of the Environmental Reuse project at the Empuriabrava WWTP

• To provide water of sufficient quality to the Cortalet lagoon to avoid its dessication in summer and/or to flood the wet meadows in the surrounding area

• To restore the healthy ecological condition (flora and fauna) of the area in order to achieve a degree of biodiversity similar to that of natural ecosystems
Wastewater polishing wetland as part of lake restoration, Hässleholm SE.
Water Harmonica in EU and North America

• Wise management of wastewater to promote hygienically safe surface water (for use and reuse), promote biodiversity and create recreational values

⇒ wastewater has to be managed using a catchment and ecosystem approach

The Waterharmonica:
the link between wastewater and surface water
Water Harmonica in tropical and developing countries

Raw wastewater

Sewage treatment plant (STP) → Raw wastewater → Surface water

Phosphate removal with FeSO₄ → aeration → oxidation ditch → basin

Safe biomass production

Sewage treatment plant (STP) → Wetland system → Surface water

Phosphate removal with FeSO₄ → aeration → oxidation ditch → basin → reed → ditches → discharge ditch
Water Harmonica in tropical and developing countries

• Wise use of water and nutrient resources in wastewater to alleviate poverty and achieve sustainable development while maintaining viable ecosystem functions

⇒ wastewater has to be managed using a catchment and ecosystem approach

The Waterharmonica:
the link between wastewater and surface water
Principles for sanitation systems in developing countries

• Low external energy requirement
• Easy operation
• Low maintenance requirements while maintaining acceptable effluent quality
• Contribute to safe biomass production
• Different systems needed; feasible for urban, periurban and rural areas
Waterharmonica task: Communicating knowledge in a usable form

- knowledge about how to use a catchment and ecosystem approach when managing wastewater
  - examples of successful, and less successful, cases of such management
  - access to technical and practical knowledge about design and management of e.g. constructed wetlands and aquaculture systems
Water Harmonica task:

Providing a contact network of scientists and practitioners promoting this approach