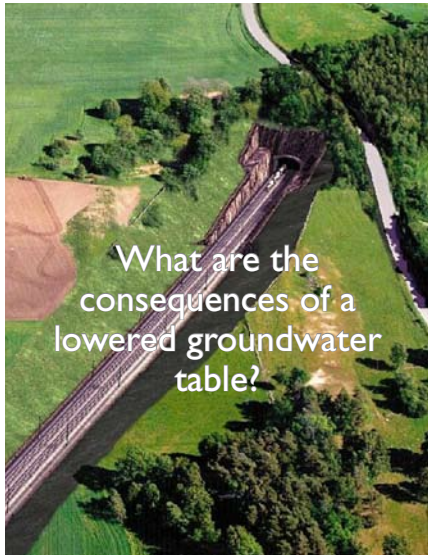




## Water Modelling



What are the consequences of a lowered groundwater table?



Can this sewage system handle increased flow?



How can this water supply be made more efficient?



Is this house safe during floods?



Will contaminants reach this well?



How is this river affected by changes in flow regulation?

## Numerical modelling – a tool to answer questions about water

*Water is a resource - and sometimes a problem - in society. Numerical modelling has become a useful tool to provide more information on water quantities, flow directions and water quality. The benefits are many and varied. A model can be continuously updated which gives great flexibility, for instance when incorporating future climate change scenarios. Modelling offers an integrated approach to water problems through the possibility of combining the impact of different parts of the water cycle. Moreover, model visualization tools provide excellent presentation material.*

## What can we help you with?

### Surface Water

- Effects in and around waterways due to e.g. new constructions or change in flow regulation. Floodmapping for spatial planning and emergency action planning.
- Erosion and sediment transport in rivers and coastal areas. Waves and currents in harbours and shipping lanes.
- Residence time and contaminant transport in lakes and coastal areas.

### Groundwater

- Areas of influence due to dewatering, documentation for water permit applications. Infrastructure projects, quarry and mining operations.
- Contaminant pathways in water protection areas, leachate transport from dump sites.
- Residence time/ groundwater flow patterns in water supply aquifers.

### Water, sewage and stormwater networks

- Water, sewage and stormwater networks: pipe sizing, dimensioning of pumping and booster stations, capacity analysis of existing networks, calculation of water quality and pressure waterhammer effects.
- New development areas: simulation of change in demands, runoff and analysis of stormwater detention. Effects of saline water in coastal developments.
- Analysis of firewater capacity in hydrant systems.

## We are experienced in modelling

WSP Sweden has over 40 staff who works with different types of water modelling. We work in WSP offices throughout the country and in different departments within WSP Civils and WSP Environmental. With our joint experience we can offer an integrated approach within water modelling. We also do terrain modelling and flow measurements. We work with clients from public and private sectors, within the fields of construction, environment, energy and transport.

## Contacts

Please contact us for further information.

### Surface Water

Stina Åstrand  
+46 8 688 66 78  
stina.astrand@WSPGroup.se

### Sewage network

Åsa Bengtsson Sjors  
+46 26 54 38 13  
asa.bengtsson.sjors@WSPGroup.se

### Groundwater

Charlotte Jonelind  
+46 8 688 70 12  
charlotte.jonelind@WSPGroup.se

### Water network

Thomas Johansson  
+46 455 447 82  
thomas.johansson@WSPGroup.se



## Reference Projects

Modelling Software



### Modelling and Mapping of Extreme Floods in the Ljungan River

MIKE 11, GIS



### Hydraulic Analysis of Water Supply Network, Borgholm Council

AQUIS



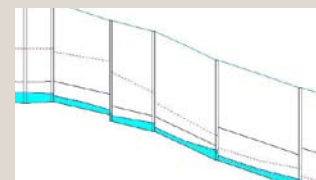
### Vombfältet, Lund. Continuous Monitoring of Reservoir Levels and Risk Investigations, Sydsvatten

Visual MODFLOW



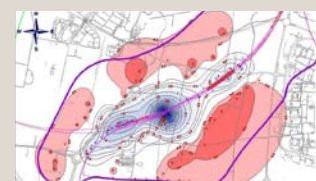
### Integrated Floodrisk Assessment in Soderstalje

HEC-RAS, MIKE SHE, ArcGIS



### Hydraulic Analysis of Sewage Network in Bergshamra

MOUSE, MIKE URBAN



### Design of a Dewatering System for the City Tunnel in Malmo

Visual MODFLOW,

WSP Group is a global design, engineering and management consultancy, specialising in projects for the property, transport, environment and energy sectors. We are located in 35 countries.

WSP Sweden is a nationwide consultancy with more than 2,000 staff. Though we are united by our shared pride, passion and desire to collaborate, we have very different areas of expertise, specialism and innovation.

Water modelling is one of our expertise services.

We are **United by our difference.**