



Welcome at Waternet!

Dune filtration and drinking water treatment plant 'Leiduin'

10 September 2009

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Waternet: water cycle company



Waternet takes care for the water cycle of Amsterdam and surroundings, including:

- Dikes and flood protection
- Management of surface and ground water
- Sewage system and waste water treatment
- Production and distribution of drinking water

Water system: Dikes, polders, water management



Drinking water: Distribution and production



Waste water: Sewage and waste water treatment







Egypt

Egypt facts & figures

- Cooperation projects since 1992
- Location: Alexandria, Damietta and the province of Beheira
- 5 million capita
- Activities: Reduce unaccounted for water in order to cover the costs, introduction of quality guidelines, improve management process, protection of groundwater resources, improve surface water quality (law + public awareness), organise knowledge exchange between the companies involved.

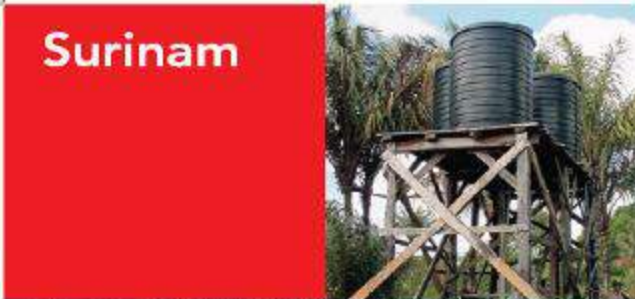
AWS made available support and advice for the introduction of preventive maintenance systems, and the consciousness needed to issue quality guidelines for the organization and local governments. AWS also introduced a pilot installation, enabling better analysis and understanding of the purification process. By making the right adjustments, the Beheira Water Company managed to double its production capacity within one year!

Surinam facts & figures

- Twinning projects since 1996
- Location: Paramaribo, Nickerie-West, the inlands of Surinam
- Activities: the improvement and expansion of the general drinking water service, distribution networks, reducing unaccounted water, setting up a management information system and ensuring supply to rural areas.

AWS employees work together with colleagues from the Surinaamse Waterleiding Maatschappij (SWM) on the rehabilitation of the drinking water distribution network, the design of a new pumping station, and optimisation of the production plants. Furthermore, AWS is exploring how to set up, maintain and manage a new water treatment plant in the rainforest, in close cooperation with the local population.

Surinam



Indonesia



Indonesia facts & figures

- Cooperation projects since 1976
- Location: Jakarta, the province of Banten (the city Tangerang)
- 9 million capita
- Activities: master planning for the drinking water service in the Banten province, board room consultancy, supplying resources for a GIS system, optimisation of purification processes, reducing unaccounted water

In 2001, the Indonesian drinking water company PDAM Tangerang requested to prolong the cooperative relationship with AWS. Together both companies worked on process engineering, process optimisation by investing in small purification units, and training programmes for plant engineers. AWS and PDAM Tangerang are currently managing a project for the Banten province, in which five local water companies aim to work together under provincial control.

Organisation

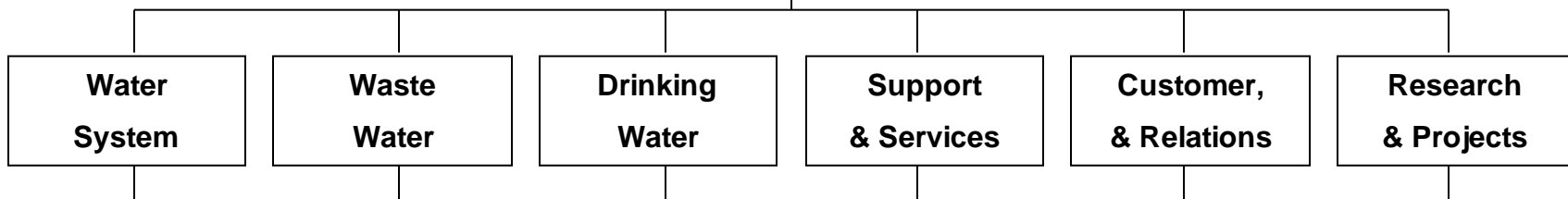


agv

Hoogheemraadschap Amstel, Gooi en Vecht



Director
Roelof Kruise



1600
employees

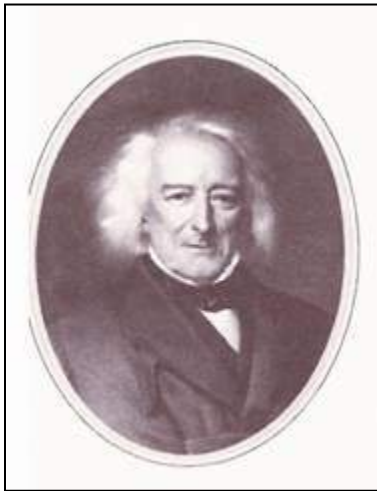
Drinking water



First drinking water company in the Netherlands

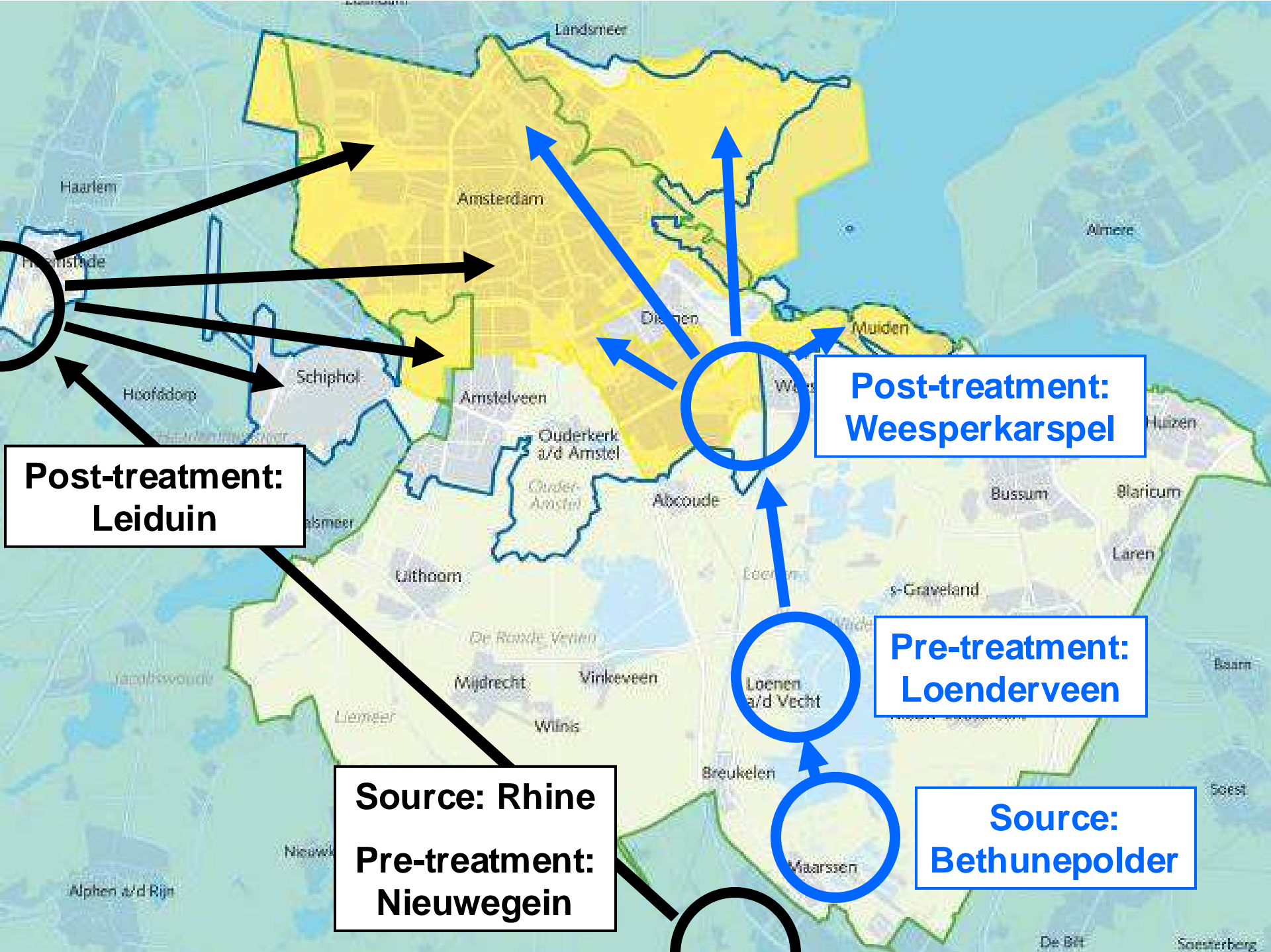
- Early days: water from river Amstel
- 1300 – 1600: rapid expansion city of Amsterdam
- 1600: water from rivers Vecht and Gein
- 1786: Versch Water Maatschappij (water barges)
- 1846: Jacob van Lennep: idea to transport water from the dunes to Amsterdam, investment by British earl
- 1853: first water at Willems gate
- 1888: start drinking water production at Weesperkarspel
- 1896: city of Amsterdam buys Dune Water Company for 12.000.000 guilders
- 1957: start WRK and dune infiltration
- 1983: introduction central pellet softening at Leiduin
- 1995: introduction ozone and activated carbon at Leiduin
- 2006: start Waternet

Facts and Figures Waternet – drinking water



Jacob van Lennep

- Founded in 1853 (1 cent per bucket)
- Private => Municipality
- 600 fte's drinking water
- 1600 fte's total
- Drinking water price 2006: € 1,50 per m³
- Production
 - Sources: Lek canal and Bethunepolder
 - Maximum capacity: 101 Mm³/year
 - Actual production: 90 - 95 Mm³/year
- Distribution:
 - Amsterdam and surrounding municipalities
 - 450.000 connections
 - 800.000 inhabitants
 - Amsterdam Harbour, Schiphol, Corus

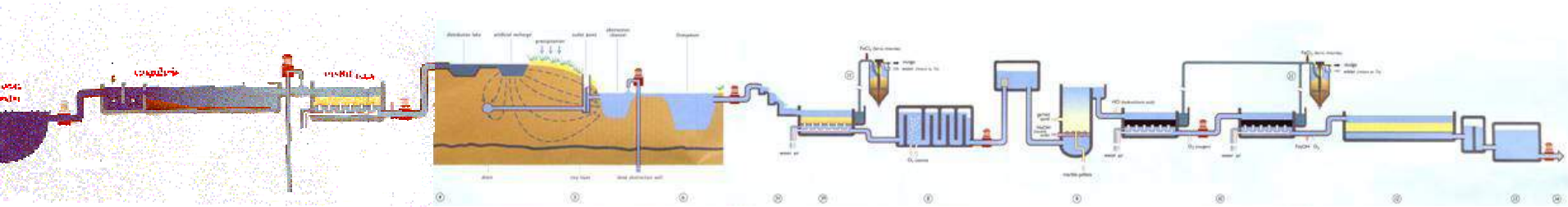


Coagulation

Sedimentation

Rapid sand filter

Process scheme Nieuwegein – Leiduin



Artificial infiltration

Aeration

Rapid sand filter

Ozonation

Pellet softening

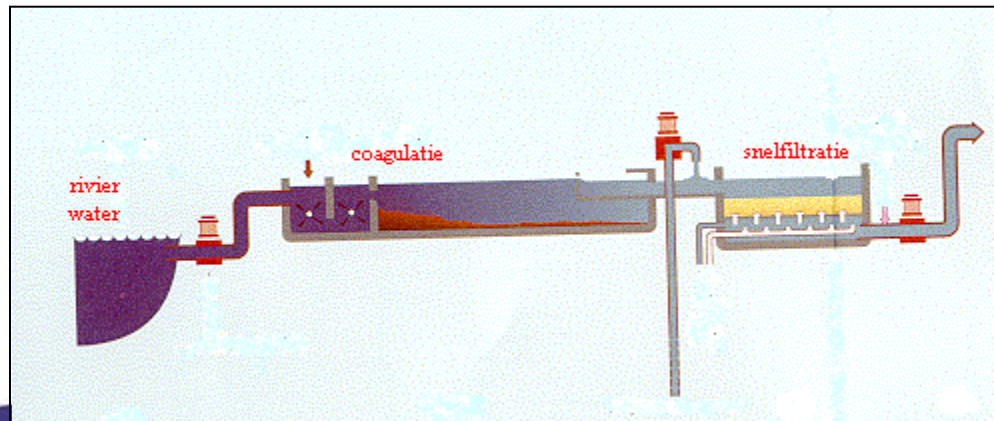
Activated carbon filter

Slow sand filter

Pre-treatment Nieuwegein: coagulation – sedimentation – rapid sand filtration

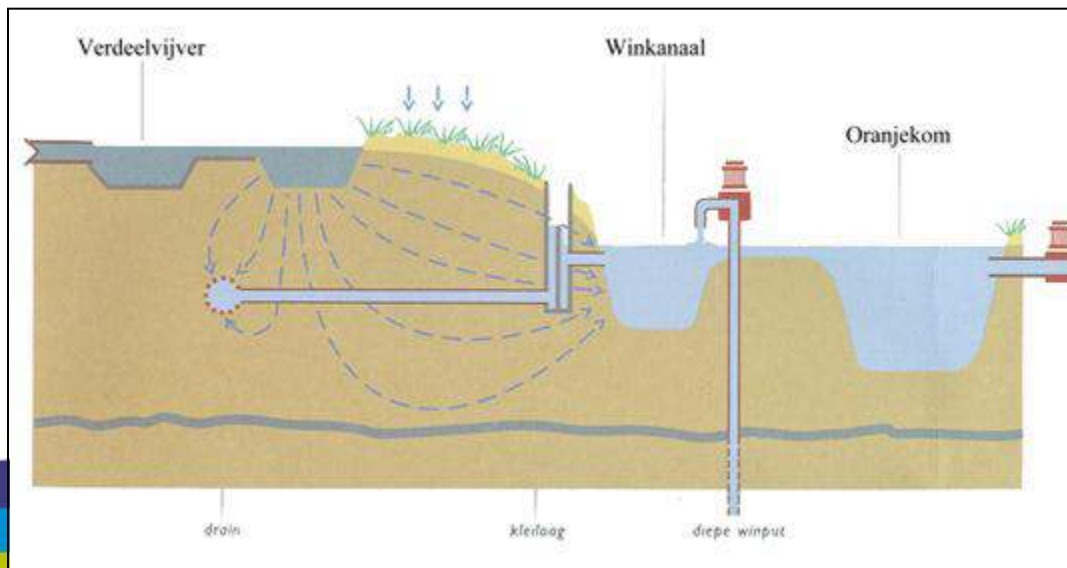
Dosage FeCl_3 , removal of:

- Suspended solids
- Phosphate
- Heavy metals
- Bacteria, protozoa, virusses

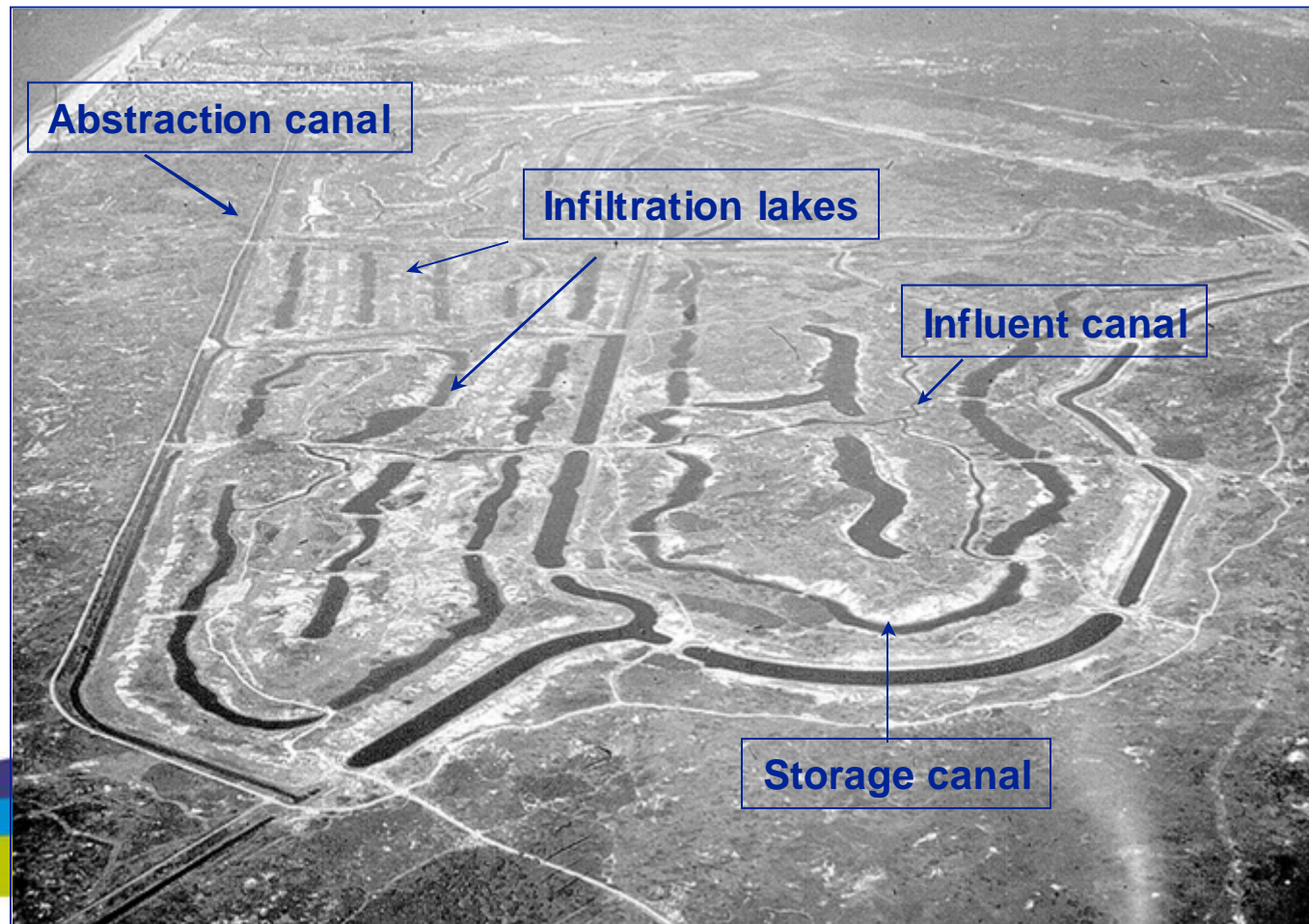


Artificial infiltration

- Minimum residence time: 2 months
- Storage: 2 months
- Improvement hygienic and chemical water quality
- Reduction of peak concentrations



Overview artificial infiltration



Aeration – rapid sand filtration

Aeration

- Increase of oxygen concentration

Rapid sand filtration, removal of:

- Ammonia
- Suspended solids, including algae
- Iron, manganese



Ozonation

- Desinfection: bacteria, protozoa, viruses
- Oxidation of organic matter, including micro pollutants





Pellet softening

- Hardness reduction to 1.5 mmol/l
- Reduces solubility of lead (public health) and copper (environment)
- Economic benefits and comfort
 - Reduction of washing powder
 - Increase life time hot water equipment
 - Cleaner laundry, tasteful tea

Biological activated carbon filtration

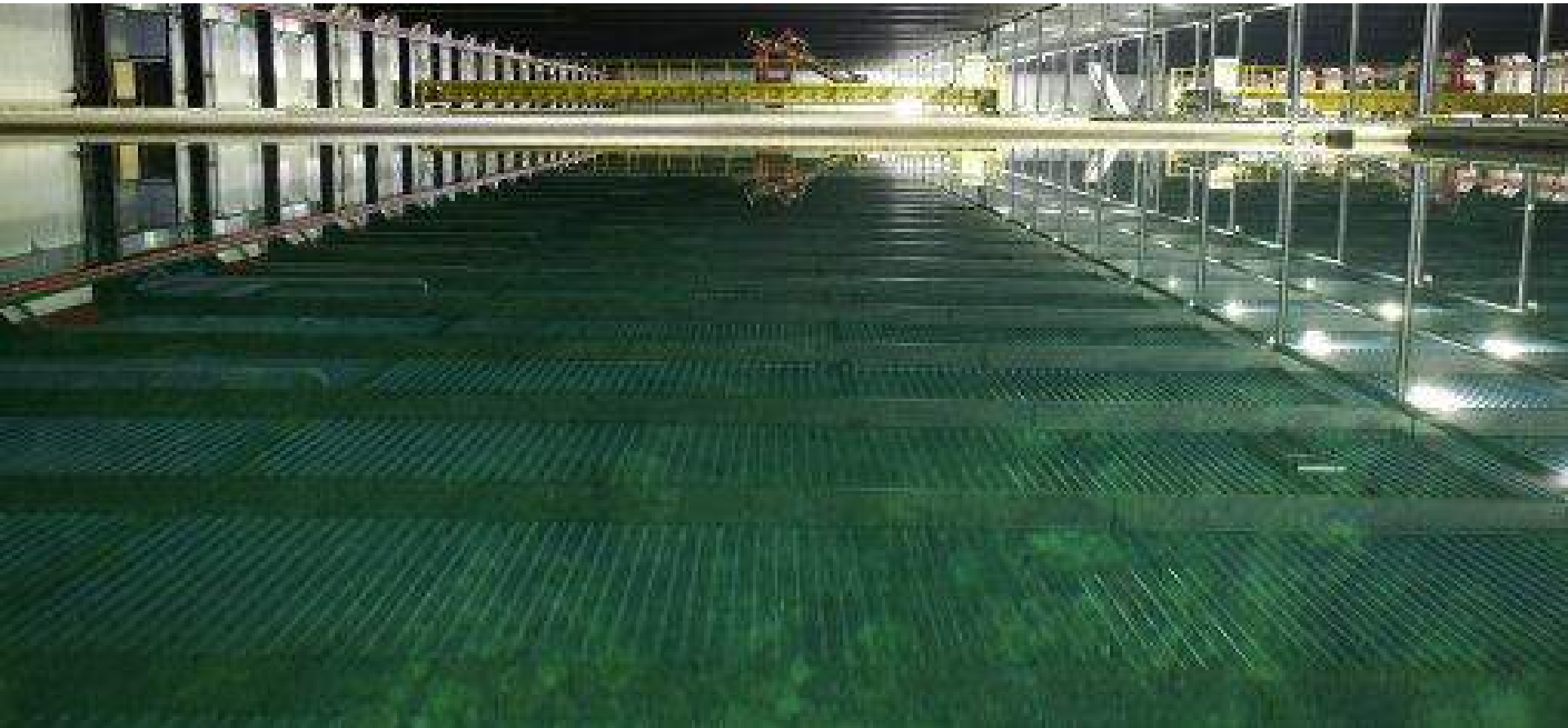
Adsorption and biodegradation of organic matter:

- Improvement of colour, taste and odour
- Removal of organic micro pollutants
- Improvement of biological stability



Slow sand filtration

- Disinfection: bacteria, protozoa, viruses
- Nutrient removal to improve biological stability



Summary:



Physical and chemical water quality:

- Removal of suspended solids
- Removal of heavy metals
- Removal of iron and manganese
- Hardness reduction
- Improvement of colour, taste and odour
- Barrier against micro pollutants

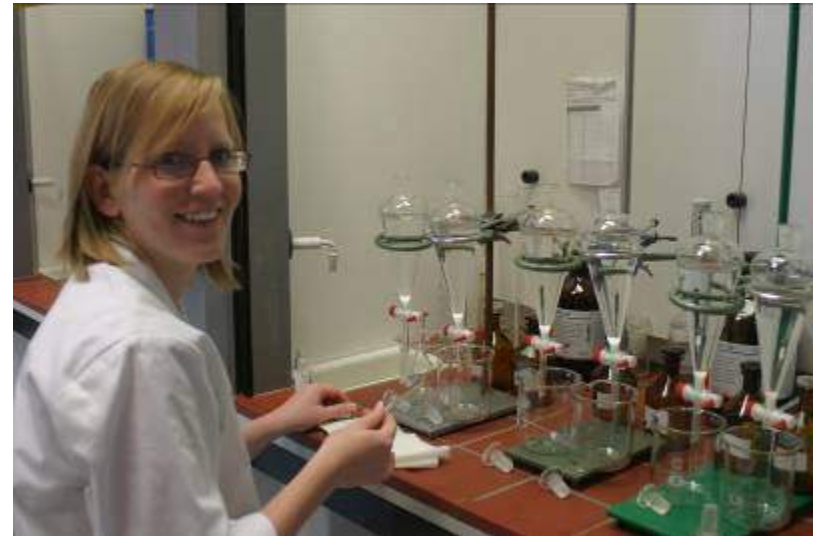
Microbiological water quality:

- Disinfection: multiple barrier
- Removal of nutrients
- No chlorine!
- Only in combination with high quality distribution system

Treatment philosophy

The 5 rules of Peter Huck

1. Protect your sources
2. Good treatment
3. Good distribution
4. Monitoring
5. Act when your monitoring shows something is not normal



water

waternet

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Kookadvies voor beperkte groep drinkwatergebruikers

Door een storing in het zuiveringsproces op een van onze productielocat bestaat een geringe kans dat het drinkwater niet voldoet aan de hoge eis: **Waternet stelt.**

Om alle risi
(verzorging
voor consur

Als u denkt
afdoende; i

Het kookad
wordt gebr

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ALGEMEEN

Wo 9 september 2009. Het laatste nieuws het eerst op nu.nl



Ouderen in regio Amsterdam moeten water koken

Uitgegeven: 8 september 2009 20:17

Laatst gewijzigd: 8 september 2009 20:16

AMSTERDAM - Bejaarden, zieken en nierdialysepatiënten in een deel van Amsterdam en de omliggende regio kunnen de komende dagen het beste uit voorzorg hun drinkwater koken.



© Inertia Stook

Wegens een storing in een waterzuiveringsinstallatie is het water van iets minder goede kwaliteit dan normaal. Dat heeft waterbeheerder Waternet laten weten.

De plaatsen waar het om gaat zijn de Amsterdamse wijken Watergraafsmeer en Zuidoost, Ouderkerk aan de Amstel, Diemen, Weesp, Muiden en Muiderberg.

Mensen moeten het water sinds dinsdagmiddag koken en dat de komende vier dagen blijven doen. Het koken moet minimaal drie minuten gebeuren.

Voorzorgsmaatregel

Waternet heeft zorginstellingen en ziekenhuizen in het gebied geïnformeerd. Een woordvoerder benadrukte dat het om een voorzorgsmaatregel gaat.

Als mensen toch ongekookt water drinken, betekent dat niet

hetnieuwewo

AT5 Bovenop Amsterdam
Analoog - 26+

09 september 2009

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dinsdag 08 september 2009 17:26

Wateralarm in Watergraafsmeer en Zuidoost

Bejaarden, (chronisch) zieken en nierdialysepatiënten in een deel van Amsterdam en de omliggende regio kunnen de komende dagen het beste uit voorzorg hun drinkwater koken.



Ouderen moeten kraanwater koken



AMSTERDAM Bejaarden, zieken en nierdialysepatiënten in een deel van Amsterdam en de omliggende regio kunnen de komende dagen het beste uit voorzorg hun drinkwater koken. Wegens een storing in een waterzuiveringsinstallatie is het water van iets minder goede kwaliteit dan normaal, meldt Waternet.

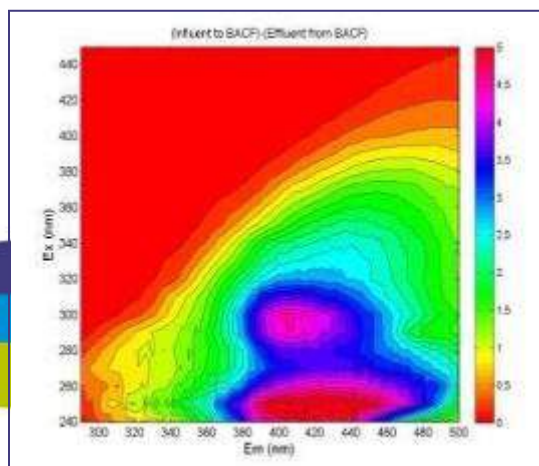
De plaatsen waar het om gaat zijn de Amsterdamse wijken Watergraafsmeer en Zuidoost, Ouderkerk aan de Amstel,



About research and development



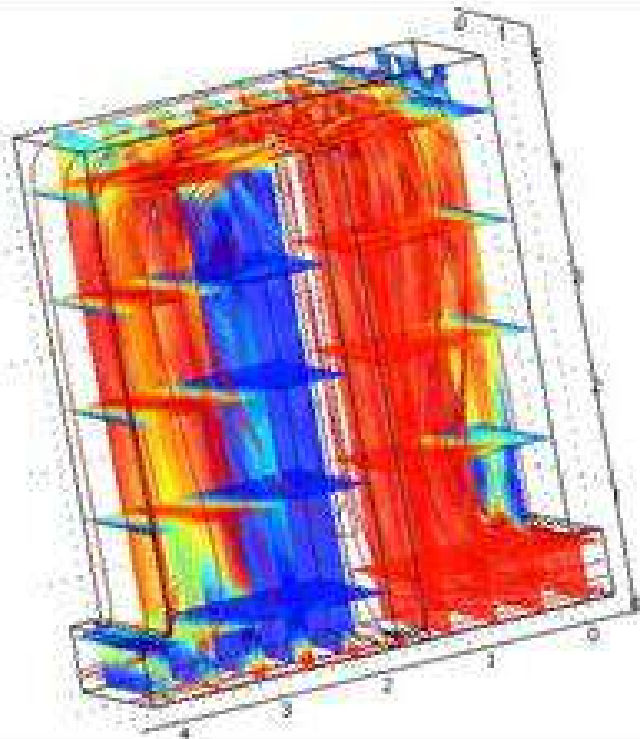
- Troubleshooting, optimisation, selection of new processes
- Desk studies, laboratory experiments, pilot plants, full scale plant, modelling
- Cooperation within all of Waternet, so also water cycle projects
- Cooperation with other companies, Kiwa, universities, etc.
- Students, trainee's, PhDs
- R&D watertechnology: 15 employees



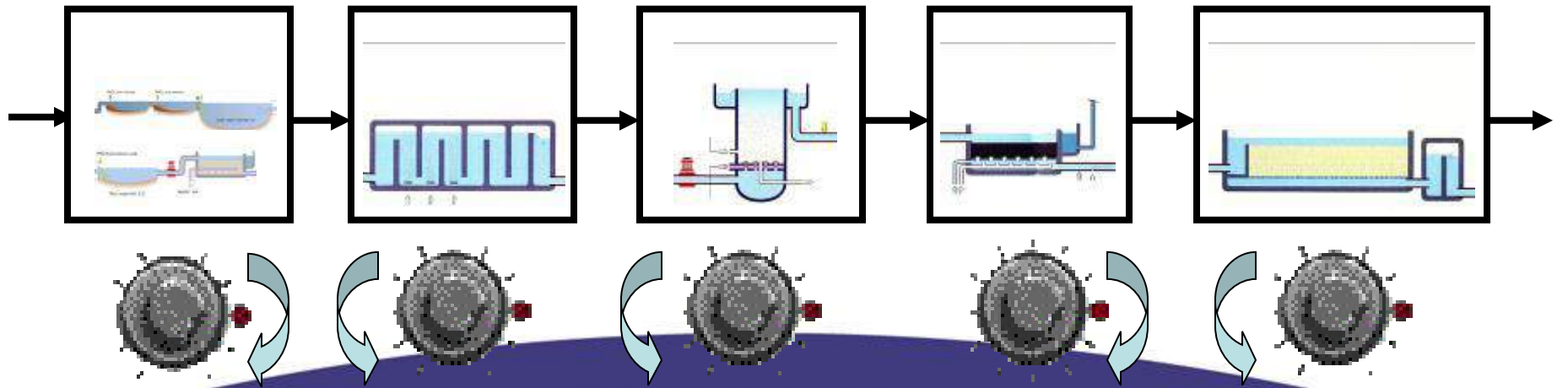
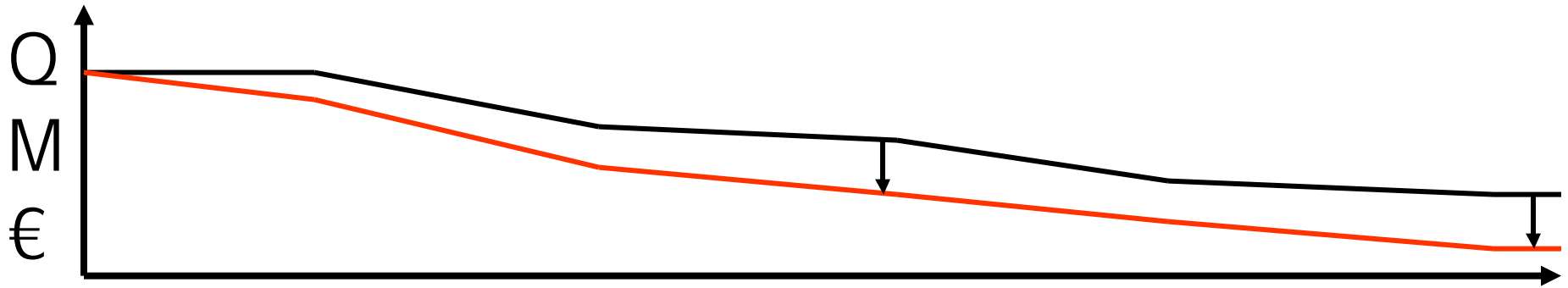
Integrated disinfection



Ozonation



Promicit: integrated modelling and control





Drinking water in the Netherlands

- 1200 Mm³/year
- 2/3 ground water: North, East, South
- 1/3 surface water: West
 - Rhine
 - Meuse
- 10 drinking water companies



Treatment philosophy (2)

Water quantity

Microbiological water quality

- Multiple barriers for pathogens
- No chlorine
- Biologically stable
- High quality distribution network

Chemical water quality

- Multiple barriers for micro pollutants
- Central softening