



Executive Summary

Introduction

This report summarizes practical experiences from the TECHNEAU studies on Riverbank Filtration (RBF) for Managed Aquifer Recharge (MAR) in India. The aim of the report is to provide information for other RBF projects, especially for the investigation of sites and the development of facilities in developing and newly industrialized countries. In a first step, this report gives recommendations for the project preparation and management. The second part includes an overview on strategies and methods for the installation of field sites and their investigation and for the monitoring of relevant parameters. Examples from the experiences during the studies in Delhi demonstrate conditions and potential challenges in the context of the international co-operation project work.

Importance

In the USA and especially in Europe, RBF is assessed as a reliable method for drinking water production. As a low-cost and a low-tech method it holds great potential for development, especially in newly industrializing and developing countries. However, practical experience and research communications from these countries are scarce. Sharing experiences from the TECHNEAU studies in Delhi can help to promote RBF by facilitating the organisation of future research and development activities and help to manage the challenges of similar projects.

Approach

The report mainly relies on experiences of the TECHNEAU work package 5.2 and 7.9 studies in Delhi. Relevant information on project preparation, and research methods are summarized, complemented with citations from international literature, and exemplified with practical examples.

More information

The complete report is available as TECHNEAU deliverable D.2.5.8.

Authors:

Gunnar Lorenzen
Christoph Sprenger
Asaf Pekdeger

Contact

Freie Universität Berlin, Hydrogeology Group, Malteserstr. 74-100, 12249 Berlin, Germany, tel.: +49 30 83870629; fax: +49 30 83870742

Dipl.-Geol. Gunnar Lorenzen, e-mail: lorenzen@zedat.fu-berlin.de

Dipl.-Geol. Christoph Sprenger, e-mail: chspreng@zedat.fu-berlin.de

TKI Categorisation

Classification									
Supply Chain		Process Chain		Process Chain (cont'd)		Water Quality		Water Quantity (cont'd)	
Source		Raw water storage		Sludge treatment		Legislation/regulation		- Leakage	
- Catchment		- Supply reservoir		- Settlement		- Raw water (source)		- Recycle	
- Groundwater	X	- Bankside storage		- Thickening		- Treated water			
- Surface water	X	Pretreatment		- Dewatering		Chemical			
- Spring water		- Screening		- Disposal		- Organic compounds			
- Storm water		- Microstraining		Chemical dosing		- Inorganic compounds			
- Brackish/seawater		Primary treatment		- pH adjustment		- Disinfection by-products			
- Wastewater	X	- Sedimentation		- Coagulant		- Corrosion			
Raw water storage		- Rapid filtration		- Polyelectrolyte		- Scaling			
- Supply reservoir		- Slow sand filtration		- Disinfectant		- Chlorine decay			
- Bankside storage		- Bank filtration	X	- Lead/plumbosolvency		Microbiological			
Water treatment		- Dune infiltration		Control/instrumentation		- Viruses		Consumers / Risk	
- Pretreatment	X	Secondary treatment		- Flow		- Parasites			
- Primary treatment		- Coagulation/flocculation		- Pressure		- Bacteria		Trust	
- Secondary treatment		- Sedimentation		- pH		- Fungi		- In water safety/quality	
- Sludge treatment		- Filtration		- Chlorine		Aesthetic		- In security of supply	
Treated water storage		- Dissolved air flotation(DAF)		- Dosing		- Hardness / alkalinity		- In suppliers	
- Service reservoir		- Ion exchange		- Telemetry		- pH		- In regulations/regulators	
Distribution		- Membrane treatment		Analysis		- Turbidity		Willingness-to-pay/accept	
- Pumps		- Adsorption		- Chemical		- Colour		- For safety	
- Supply pipe / main		- Disinfection		- Microbiological		- Taste		- For improved taste/odour	
Tap (Customer)		- Dechlorination		- Physical		- Odour		- For infrastructure	
- Supply (service) pipe		Treated water storage						- For security of supply	
- Internal plumbing		- Service reservoir				Water Quantity		Risk Communication	
- Internal storage		Distribution						- Communication strategies	
		- Disinfection				Source		- Potential pitfalls	
		- Lead/plumbosolvency				- Source management	X	- Proven techniques	
		- Manganese control				- Alternative source(s)	X		
		- Biofilm control				Management			
		Tap (Customer)				- Water balance			
		- Point-of-entry (POE)				- Demand/supply trend(s)			
		- Point-of-use (POU)				- Demand reduction			

TKI Categorisation (continued)

Contains		Constraints		Meta data				
Report	X	Low cost	X					
Database		Simple technology	X					
Spreadsheet		No/low skill requirement	X					
Model		No/low energy requirement	X					
Research		No/low chemical requirement	X					
Literature review		No/low sludge production	X					
Trend analysis		Rural location						
Case study / demonstration	X	Developing world location	X					
Financial / organisational								
Methodology	X							
Legislation / regulation								
Benchmarking								