

crossover with groundwater protection for rural water supplies

Posted by SeanFurey - 22 Nov 2012 15:08

Dear WG11,

To introduce myself, I'm Sean and I work for Skat, based in St Gallen, Switzerland. My main role is in the Secretariat of the Rural Water Supply Network (RWSN) and one of our four themes is 'Sustainable Groundwater Development' (www.rural-water-supply.net/en/sustainable-groundwater-management), which comprises three topics:

- Handpump Technology (we hold the international public domain standards for the India Mark II/III, Afridev, Tara and others)
- Cost Effective Boreholes (which is focused on professionalising the water well drilling sector)
- Cost Effective Groundwater Management

The last one is new in this strategy period and is focused on measures to protect groundwater quality near boreholes and wells in a way that is cost effective (which doesn't necessarily mean cheap!). There are links to Water Safety Planning, and that was the starting point for a project that I am doing for the Ministry of Water & Environment in Uganda where we are preparing and piloting national Guidelines for Water Source Protection.

There are also links to IWRM, and in particular the Community-based IWRM being promoted by WaterAid, and Water Use Management Plans (WUMPs) which have been used in rural Nepal for over ten years by Helvetas.

With this as a bit of background, I would interested to find out from SuSanA members how you approach groundwater protection and what successes, tools, and documented case studies you have?

Thank you!

Sean Furey

Water & Sanitation Specialist

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Re: crossover with groundwater protection for rural water supplies

Posted by SeanFurey - 26 Nov 2012 20:21

Thanks all - lots of really good information and links, hopefully I will have some time and good enough internet connection to have a look at those resources will I am still in Uganda.

When I get back I may follow up with a number of you because there is clearly some really interesting work that has been done in this area.

Has anyone come across any studies or projects that give an indication of how much catchment protection activities cost? e.g. tree planting costs per hectare, river bank restoration per km, soil-management training for farmers and so on? It may not be easy to make international comparisons but it could be useful for getting a feel for the order of magnitude of how much implementing protection costs.

Thank again!

Sean

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Re: crossover with groundwater protection for rural water supplies

Posted by kanalwolf - 20 Dec 2012 01:37

Hi all,

I notice your discussion about groundwater protection measures and the difficulty of implementing them, especially when this is about protection zones.

Traditionally, groundwater protection is based on precautionary principles and quite often, the protection zones which would be required based on the concepts which are mentioned for example in the SuSanA

WG11 Factsheet, are not possible due to economic or social constraints.

Just to widen the perspective with a bit of stochastic modelling, i would like to make you aware of some very flexible groundwater protection guidelines which were recently introduced in New Zealand: "Guidelines for separation distances based on virus transport between on-site domestic wastewater systems and wells".

The Guidelines calculate separation distances for domestic on-site wastewater treatment systems based on virus movement and removal in the subsurface environment. The document provides a process and tables of calculated data, which, in conjunction with the specifics of a particular location, allow safe minimum separation distances (or the required log reduction in virus concentration) to be estimated.

You can directly access the report at:

www.google.de/url?sa=t&rct=j&q=&...69,d.Yms&cad=rja

But i also include it as an attachment to this message, probably i will open a new topic on the issue of gw-protection zones.

I am aware that the concept is more complex, but it offers a much more fact based approach and may help in situations where you need to make difficult choices and want to take probabilities into account.

Regards,

Leif

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Re: crossover with groundwater protection for rural water supplies

Posted by Dave - 04 Jan 2013 07:51

Hi all

I did a simple study monitoring groundwater contamination from pit latrines in a sandy aquifer ten years ago (see attached). In that case we found that the pollution plume was limited to just a few metres around the pit latrine.

Soil hydrology is very complex due to the often non - homogeneity of in-situ soils. However, one of the oldest methods of water disinfection is the slow sand filter, which typically achieves log 4 reductions in pathogens within just a few centimetres in high flux saturated flow conditions in porous sands. It therefore does not make sense to me that pathogens can travel tens let alone hundreds of metres through soils and I am skeptical of reports that claim that they do (the proper and accurate monitoring and sampling of groundwater is not simple). Obviously with very high permeability (fissured and fractured rock, coarse gravel) and very high flux (production boreholes) then longer distance contamination will be possible.

Users of wells and boreholes often contaminate the source through spillage and poor sanitary practice around the well head. Anyone worried about public health risk from contamination of groundwater should start by ensuring that well heads and springs are properly protected from surface contamination.

Meanwhile in the town where I live the greatest threat to environmental water quality stems from poorly maintained sewer systems. The pathogen count in our rivers below fully sewered catchments is orders of magnitude greater than the pathogen count in rivers below catchments which have only on-site sanitation. I would not be surprised if this were the case more often than not elsewhere in the world.

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Re: crossover with groundwater protection for rural water supplies

Posted by Khan - 06 Jan 2013 08:56

Dear David,

I like your research work, my research some like that. I had research on Ground water quality and pit latrines in a rural area. I found the water was contaminated and most of the people had water born diseases in the area.

Thank you for sharing your research work.

Wish you best of luck in future.

Regards

Asif Khan

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Re: crossover with groundwater protection for rural water supplies

Posted by LorentzSA - 09 Jan 2013 08:31

Dear Asif

We are currently monitoring near-surface water and groundwater near pit latrines and would be very interested in your results. Are you able to share these?

regards

Simon Lorentz
