Conceptual Design of a Decentalized Treatment Concept in Raipur, India

Posted by Moritz - 17 Jul 2012 18:07

Dear Susana Community,

As monsoon in Raipur is commencing we are about to finish the data collection for the design of a decentralized treatment system.

It was identified that our project area consists of rougly 950 residents, including several small shops and one major temple. Additionally a school with approximately 400 pupils is embedded in the planning area. About 60 % of the residents are discharging 72 cubic meter of domestic wastewater through the drainage system into Bandhwa Talab, which should be protected through the implementation of a decentralized treatment unit. A v-notch was used to estimate four diurnal hydrographs. As 17 % of the residents discharge greywater and blackwater straight into Bandhwa Talab, 9 % into an adjacent pond and 11 % are not connect to the drainage system and the wastewater evaporates and infiltrates, the amount of wastewater will roughly sum up to 100 cubic meter per day.

For the prognosis of future increase of population or change of e.g. mode of water supply we use data evaluated from the household survey conducted in the project area which identified three different modes of water supply: Individual (tap) water supply with storage facilities equals to roughly 130 lcd, common water supply (tap on the street) with roughly 50 lcd and common water supply without storage facility with 15 lcd. Water supply is provided by the municipality for roughly one hour in the morning, and on our in the afternoon.

Open defecation and solid waste disposal were identified as major problems in the project area. It needs to be investigated if a construction of a community toilet, which needs be connected to the decentralized treatment units, should be recommended. The abundance of solid waste could be of major concern for the operation of the treatment unit.

A literature review on different treatment technologies and a feasibility study of the conceptual design taking the local boundary conditions into account (land availability, elevation) will be prepared till end of August and submitted to the local authorities. A detailed project report as basis for the construction of the treatment unit will be designed after funding is secured.

For the conceptual design we would be keen to get input from the Susana Community

- **Do you know of a case study/project were a treatment unit was constructed adjacent to an urban water body and discharging into a stagnant water (eutrophication) body which is used for**

bathing?

- **How can such a unit be integrated ecologically into the lake surroundings and be used as a educational interface?**
- **Which low tech treatment steps (e.g. rock filters, adsorption by different substrates/soils) could be used for the removal of phosphorus to minimize eutrophication effects, how are you experiences?**
- **Which soils (in India) are best suitable for the adsorption of phosphorus which could subsequently used as fertilizer?**
- **Which limits of pollutants (BOD, COD etc.), Indian guidelines should be used for the output of the treatment facility to a sensitive waterbody?**
- **What guidline should be used for the hydrochemical benchmark of such an urban waterbody.**
- **Could the washing of utensils and clothes, the personal hygiene which involves the use of phosphate containing soaps be moved from the pond to a community washing place?**

Please kindly share your experiences/case studies (not only in India) to include previous experiences and lessons learned in the development of an adapted decentalized treatment concept in Raipur.

Thank you very much for you support.

Greetings from Raipur,

Moritz

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Re: Conceptual Design of a Decentalized Treatment Concept in Raipur, India

Posted by Moritz - 21 Aug 2012 04:13

Thanks a lot Florian. I agree, in the case of a simplified sewer I definitely have to stress the desludging of septic tanks.

The topic of phosphorus removal was mostly to get all technologic options on the table, same for nitrification and denitrification, as effluent guidelines for phosphporus and nitrogen are rather high, anyway.

Development has to go step by step. If required an iron-rich sand filter for p-removal can be upgrated at a later stage.

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Re: Conceptual Design of a Decentalized Treatment Concept in Raipur, India

Posted by Moritz - 06 Nov 2012 17:32

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Dear all,

My contract in Raipur came to an end recently. My output was part of a feasibility study of three sanitation concepts proposed by our local partner to the municipality who need to decide with advisory of the local partner and GIZ, and apply for funding at the different national programs (e.g. JNNURM):

- On-site disposal of blackwater trough subsurface infiltration and off-site treatment by a decentralized greywater treatment system.
- Combined discharge of black- and greywater through a low-cost sewerage network and off-site treatment by a decentralized wastewater treatment system.
- Connection to the existing and/or proposed conventional centralised sewer network.

I am thankful to all of you for your contribution. The Susana platform proved to be a very helpful tool for me.

I will try to share my diploma thesis which summarize my findings in the Susana library by the beginning of 2013.

Best regards,

Moritz

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