Research into practice: The influence of sampling location on FS characteristics

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Key objectives

- Understand the importance of sampling on FS characteristics, and give an overview of available methods

Main points

1. Sampling location determines FS characteristics

2. Different methods based on study aim and scope

3. Various difficulties associated to onsite technology

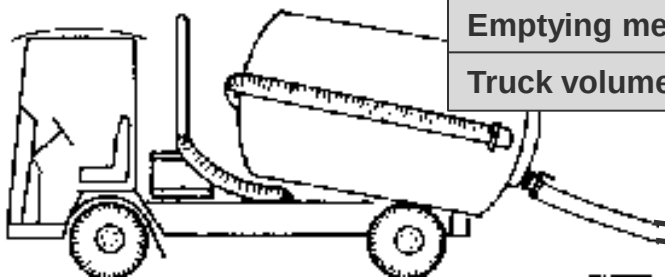
Importance of sampling

1. Lack of standardized methods
    1. Incomplete characterization information
    2. Difficulty to compare results
2. Characterization objectives
    1. Local infrastructure VS research
    2. Type of infrastructure and available means

➢ **Sampling requires proper planning**

What influences FS characteristics?

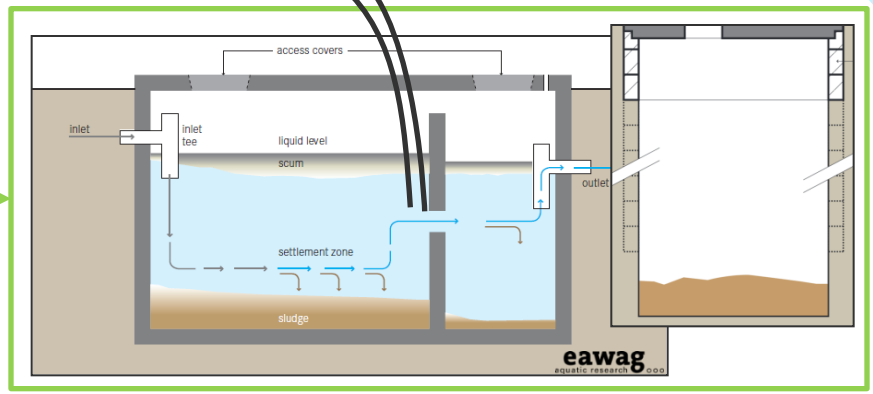
Emptying method and means
Water volume added to pump
Number of truck to empty one tank
Part of tank emptied
Emptying method
Truck volume



User habits
Type of user
Number of user
Type of influent
Use of additive

Local context
Country “habits”
Climate
Hydrogeology

Design
User interface
Storage technology
Number of chambers
Volume
Age of system
Age of FS
Isolation



Which kind of samples

Core samples

!!! Influence of depth!!!

?? Where??

OR

Grab samples

??mixed content??

??How many sub-samples??

??Where??

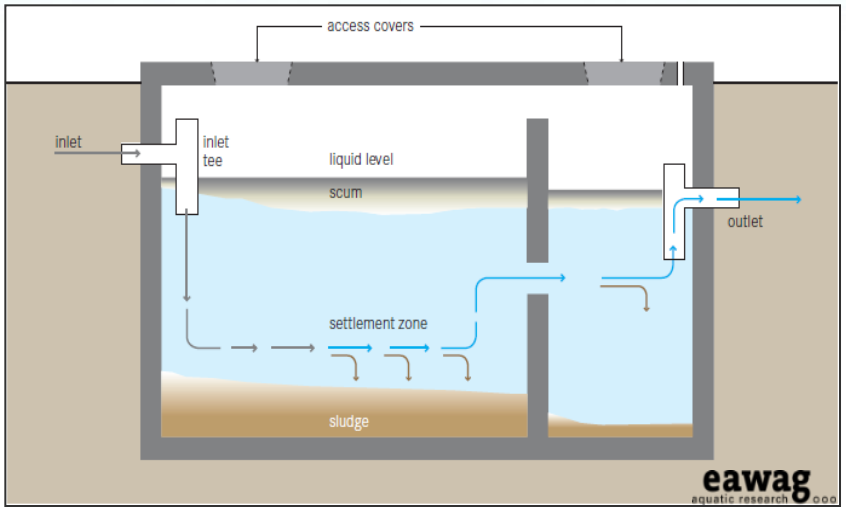
Where to collect samples

FROM

- a storage technology
  - ?? Which part
- a transportation tank
  - ?? How to access
- a transfer / treatment tank
  - ?? What quantity
- a channel
  - ?? Which depth
- a discharging truck
  - ?? What timing

Sampling in septic tanks

- ✓ Liquid FS
- ✓ Settled solids
- ✓ Several chambers



1. Onsite
    1. Need to sample whole depth to be representative
    2. Grab samples not recommended
    3. Not ideal for design of treatment technologies
2. Emptying truck / transfer tank
    1. Complicated access (manhole or discharge site)
    2. Frequency / mixing influence
    3. Numerous composites
3. Channel / treatment site
    1. Site selection??

Sampling in pit latrines

- Sludge in the pit varies
  - Wet
  - Dry
- Sampling Locations
  - Within the pit
  - At the storage site
- Sampling during pit emptying
  - Manual emptying using shovels
- Types of sampling within the pit
  - Different depths
  - Different sections
  - Composite sample
- Number of samples

Sampling in pit latrines

- Sampling in layers
  - Dry VIPs

  Measure sludge depth frequently

  Determine the number of layers necessary

  Different samples within the layer

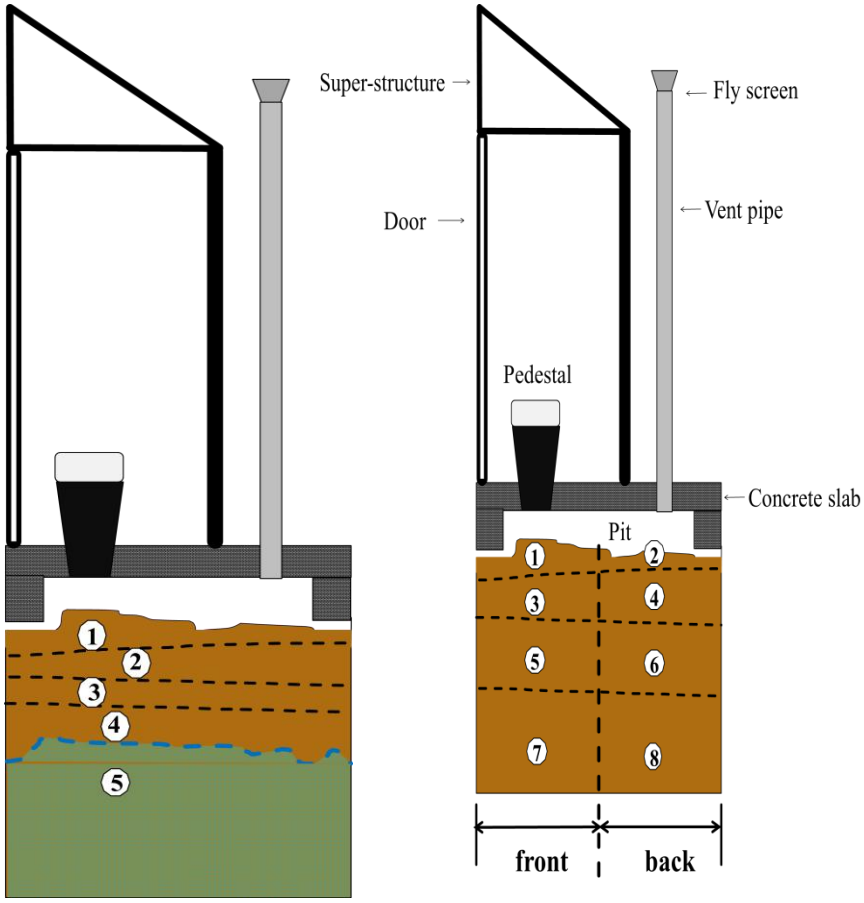
  - Wet VIPs

  Mixture of sludge and water

  Difficult to sample manually in layers

  Water can be sampled in the pit or in the truck at discharge

- Composite sample
  - Made-up on site
  - Taken at the storage site
  - Calculated from the analysis data



Sampling at the storage site

- Sampling at the FS storage site
  - During FS off-loading
  - Sampling at the stockpile
  - Sampling before FS is processed

Sample storage and analysis

- Sample storage
  - Plastic containers
  - Low temperature storage (4 ° C)
  - Analysis to be conducted as soon as possible

- Sample analysis
  - Mix to ensure the sample is representative
  - Room temperature

Conclusions

- Type of sampling should fit the end use of the data
- Information on sampling helps understanding what was analyzed
- Standardized methods for different types of OSS facilities
- Sampling should be done based on local FSM and context
- Sampling timeline must be co-ordinated with laboratory analysis timeline

Acknowledgments

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IESE

ÉCOLE POLYTECHNIQUE
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MPFS – Mechanical Properties of Faecal Sludge

PRG
pollution research group

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