VAN WALT
monitoring your needs

VERSOS, vertederos y sostenibilidad

V Congreso internacional sobre Mejores Tecnologías Disponibles (MTD) en vertederos suelos contaminados y gestión de residuos

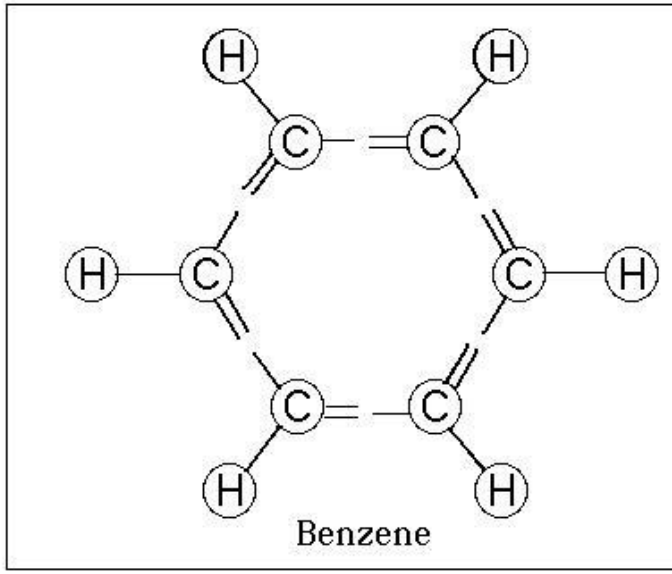
verso
vertederos
sostenibilida

… a presentation, especially the last one of the day, should be like a mini skirt

short enough to engage the attention

but

long enough to cover the subject



Benzene

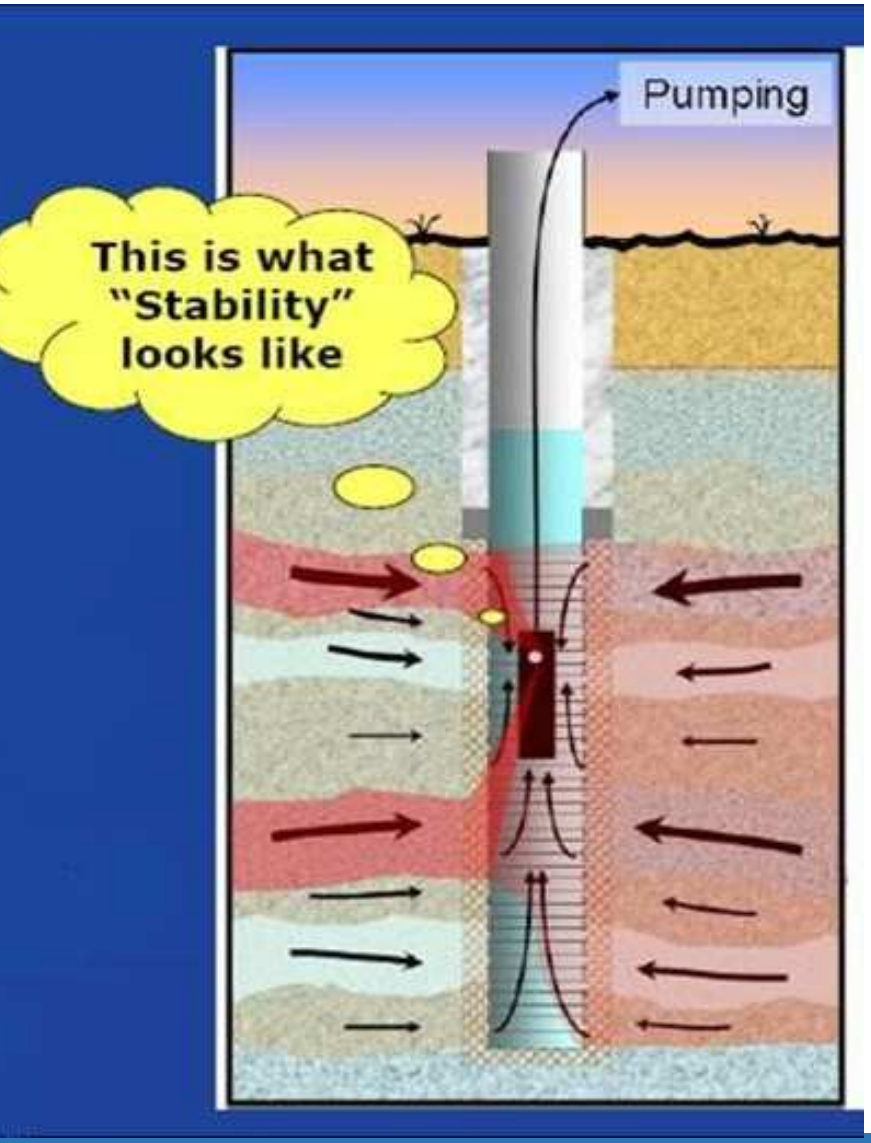
$24H_2O + 2C_6H_6 \rightarrow 12CO_2 + 60H^+ + 60e^-$ half reaction e-donor

$60e^- + 60H^+ + 15O_2 \rightarrow 30H_2O$ half reaction e-acceptor

$2\ C_6H_6 + 15O_2 \rightarrow 6H_2O + 12CO_2$ net reaction

Passive Sampling:

A new more cost effective and reliable technique for taking groundwater samples



We might as well take samples with a tennis shoe

t before taking the sample, the standards say you
ould purge.

ny?

- To remove silty material and deposits from the bottom of the well.
- To remove stagnant oxidised water
- To attract groundwater from the aquifer!!

ost used methods:

High Flow or High Volume Purging

- 3X wetted volume

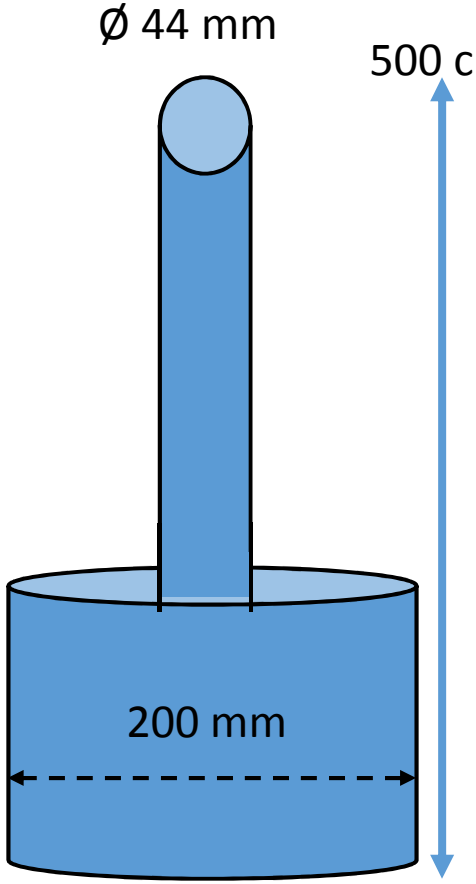
Low Flow Purging (sometimes called micro-purging)

- Normally assessed by finding parameter stability

oblem 1:

lassical Procedure" 3 X wetted well
lume
tal volume = (wet volume + volume
ter pack) x 3

this example, the total purge
lume is 60 litres!!!



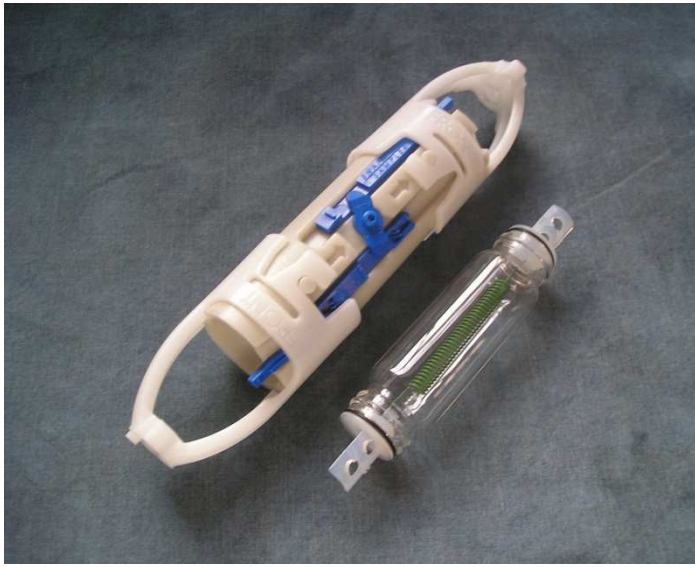
Disposing of pur
water is getting
increasingly
expensive

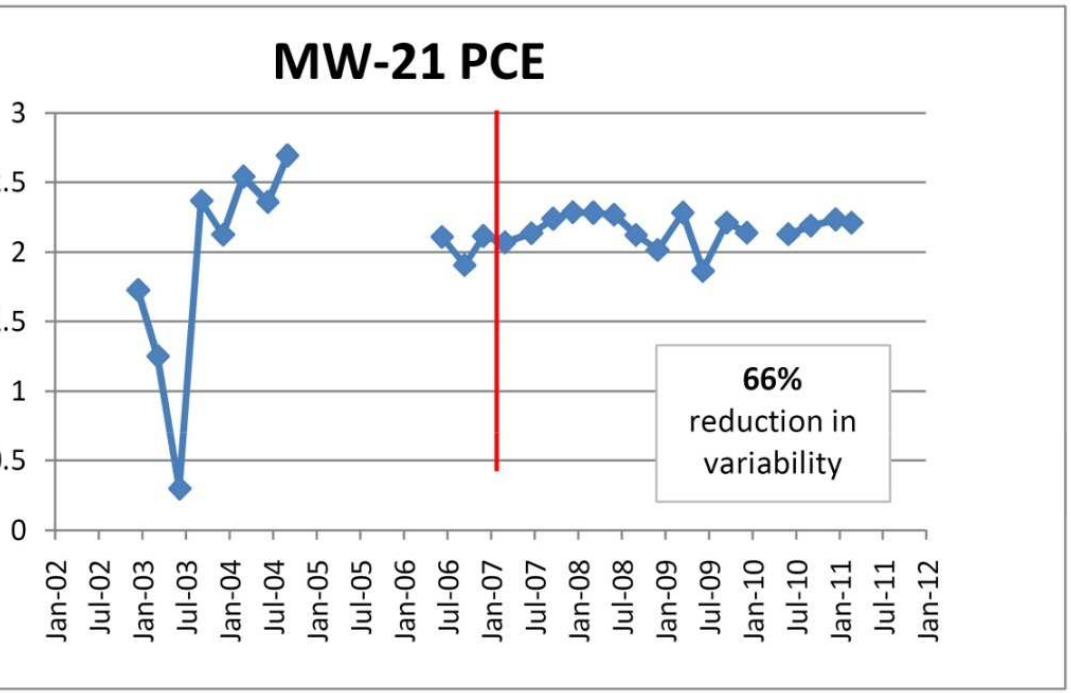
blem 2:
ipment can be expensive and
be a source of contamination

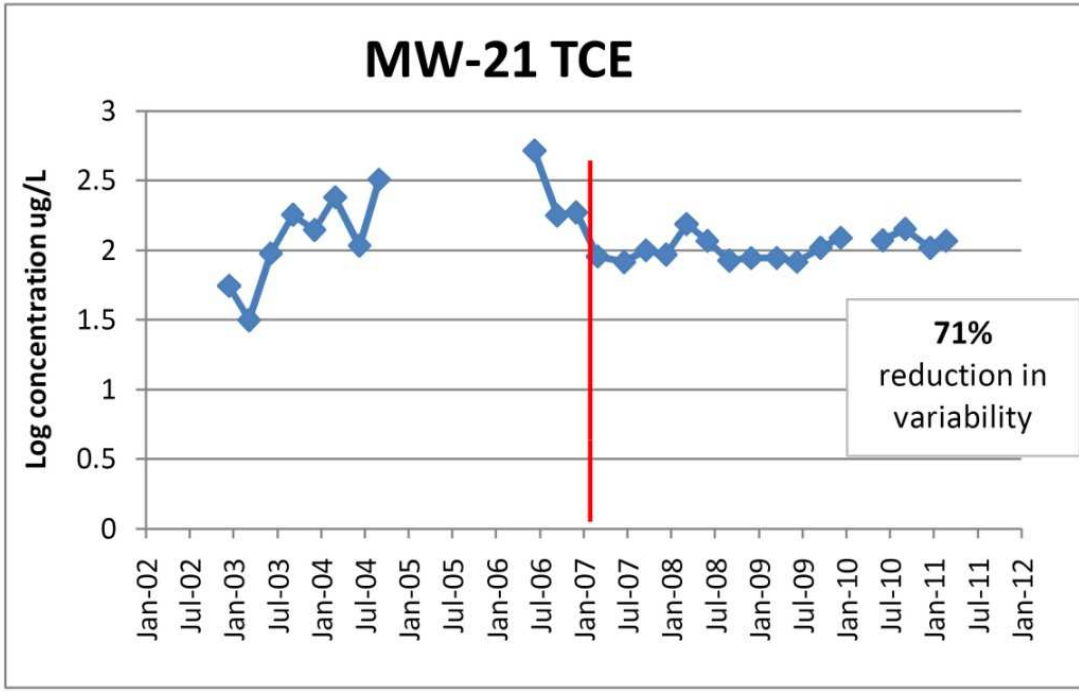
blem 3:
e “people” factor
ampling errors
Manpower expenses

No-Purge Sampling or Passive Sampling

No water purged prior to sampling
Initially developed (+/- 2002 DOD, USA) to improve the cost effectiveness of groundwater monitoring programs for VOCs.
Many different studies on cost saving.
Vary from 70%-40%







"Bonus"

Passive sampling produces less variability

Three different principles:

- Diffusion
- Grab
- Adsorption

ags common to all Passive Samplers

Must be left in place for a “period” so the samples are not affected by movement of the ampler through the water

his time-lag is variable depending on several factors such as the groundwater emperature, the physicochemical properties of the compound of interest, the diffusive nembrane used in the samplers….

ll very good for low recharge wells

ll save substantial cost and produce no purge water

esults obtained using these devices will not always be comparable with results obtaine sing conventional sampling

asy to use - no training or special tools required

The Future?

ethods for Minimization and Management of Variability in Long-
n Groundwater Monitoring Results" ESTC Project ER-201209,
ember 2015

tract:

he sample method (except Active No Purge) has only a modest
mpact on monitoring variability and concentration.
As a result, monitoring well sampling methods should be selected
ased on factors such as cost, ease of implementation and volume
ampling requirements rather than concerns regarding data quality.

Thank you