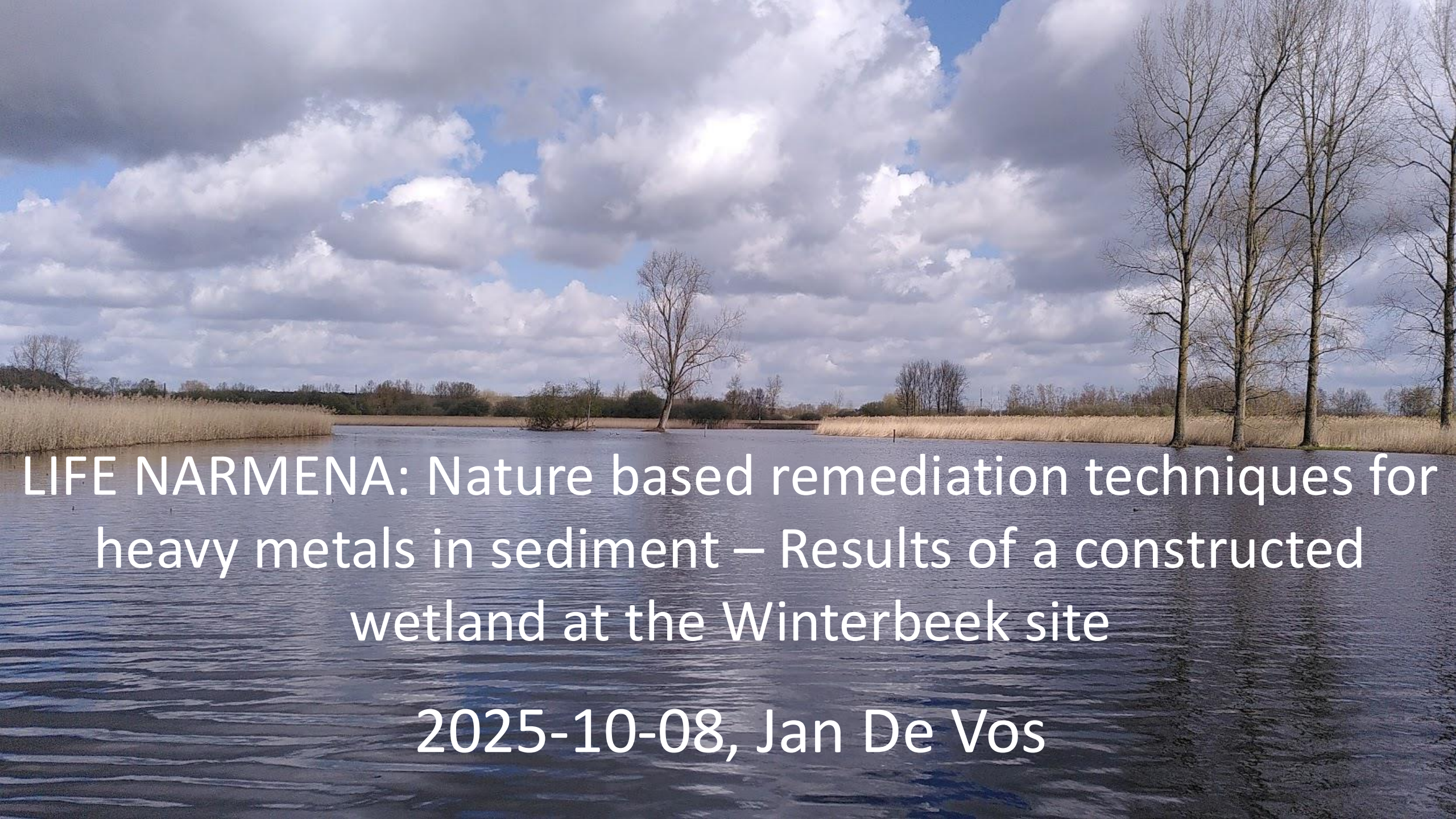




LIFE NARMENA: Nature based remediation techniques for heavy metals in sediment – Results of a constructed wetland at the Winterbeek site

2025-10-08, Jan De Vos



narmena¹
Ruimte voor schone waterlopen





Context

- Belgium & Flanders : densely populated => pressure
 - FL : 500+ aquatic & terrestrial sites => polluted heavy metals
 - Classical remediation:
 - Substantial waste
 - Soil erosion
 - Impact on nature
 - Dynamic nature of sediments + risk of flooding
-



LIFE Narmena

- NAture-based Remediation of MEtal pollutants in Nature Areas to increase water storage capacity
 - Objectives
 - Reduce bioavailable concentrations
 - Create water storage space for watercourses: natural flood control areas
 - Habitat for threatened species
-

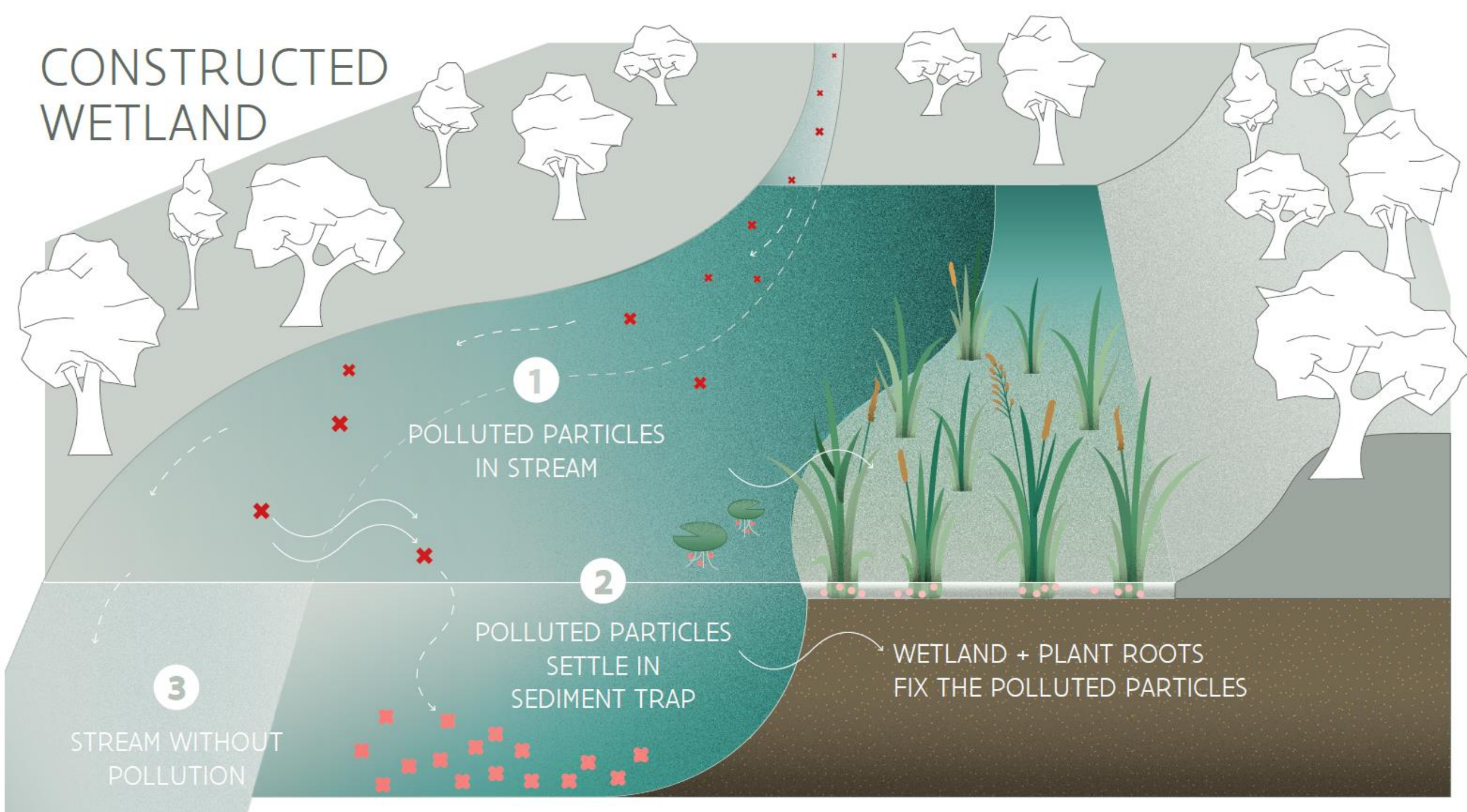


LIFE Narmena: pilot sites

- 3 natural reserves
- Along 3 waterways
 - Grote Calie: Cr & CrVI
 - Grote Laak: Cd
 - **Winterbeek: Cd**

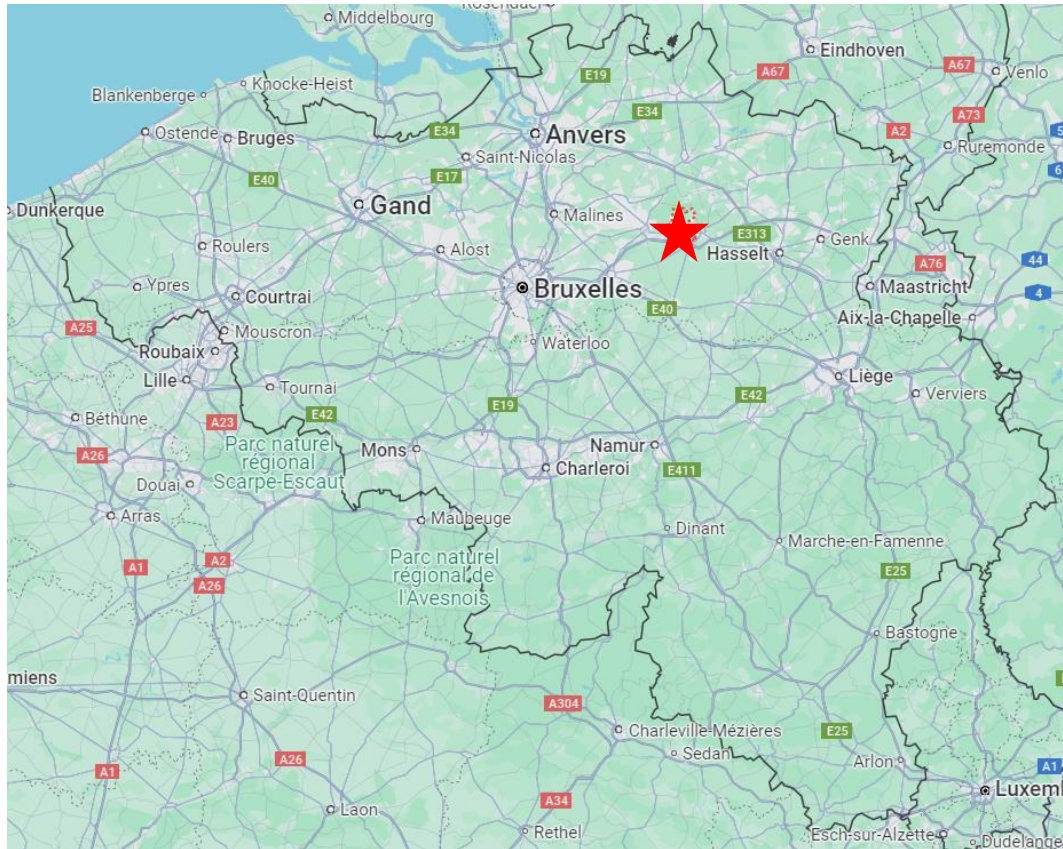


CONSTRUCTED WETLAND





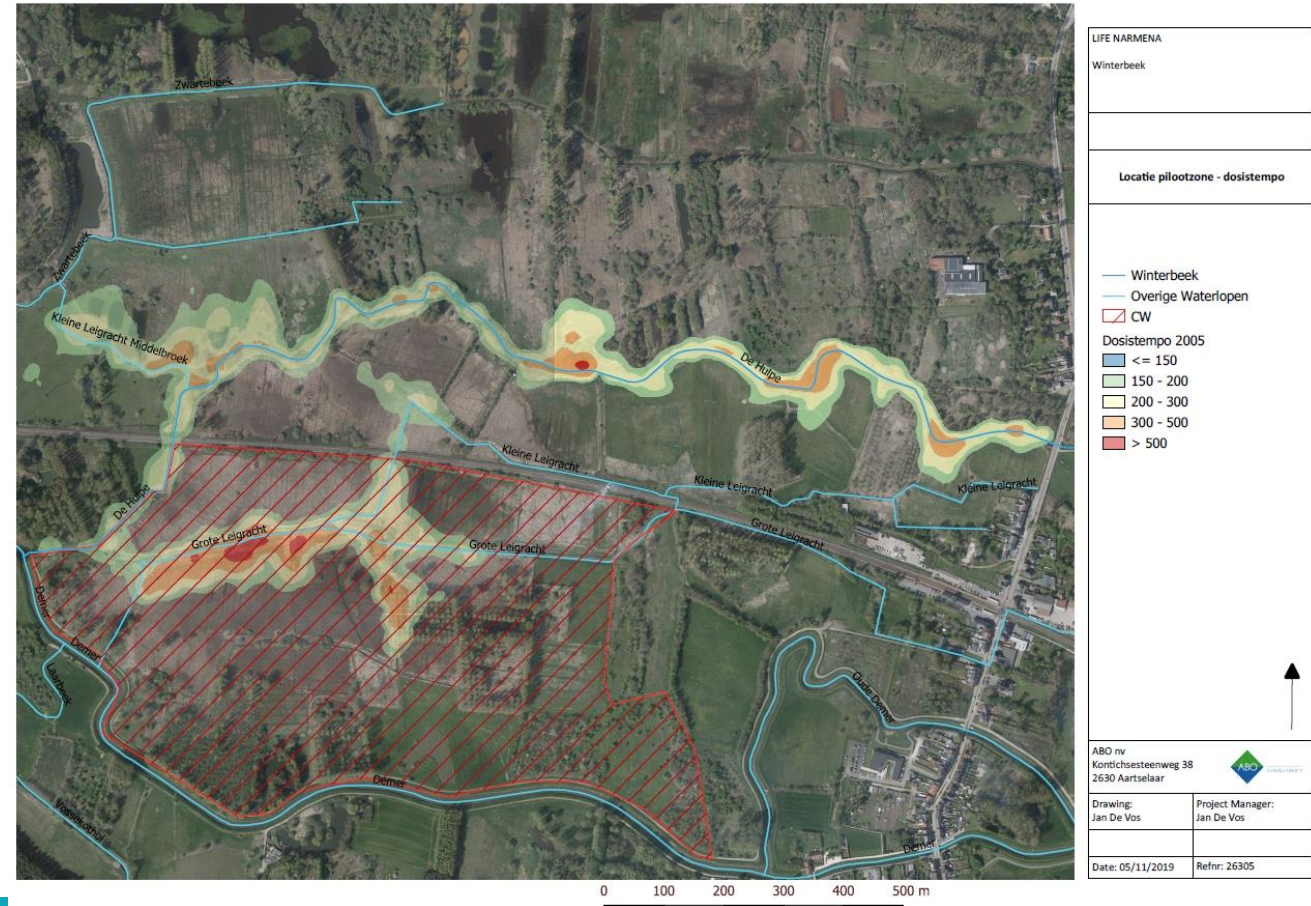
LIFE Narmena: Winterbeek





Winterbeek: site history & methodology

- Metal contamination - upstream chemical industry
- Artificial drains in lowland flood plain – connecting to river
- Solution: 'constructed' wetland



Shallow excavation of central zone

Excavation of connecting trench

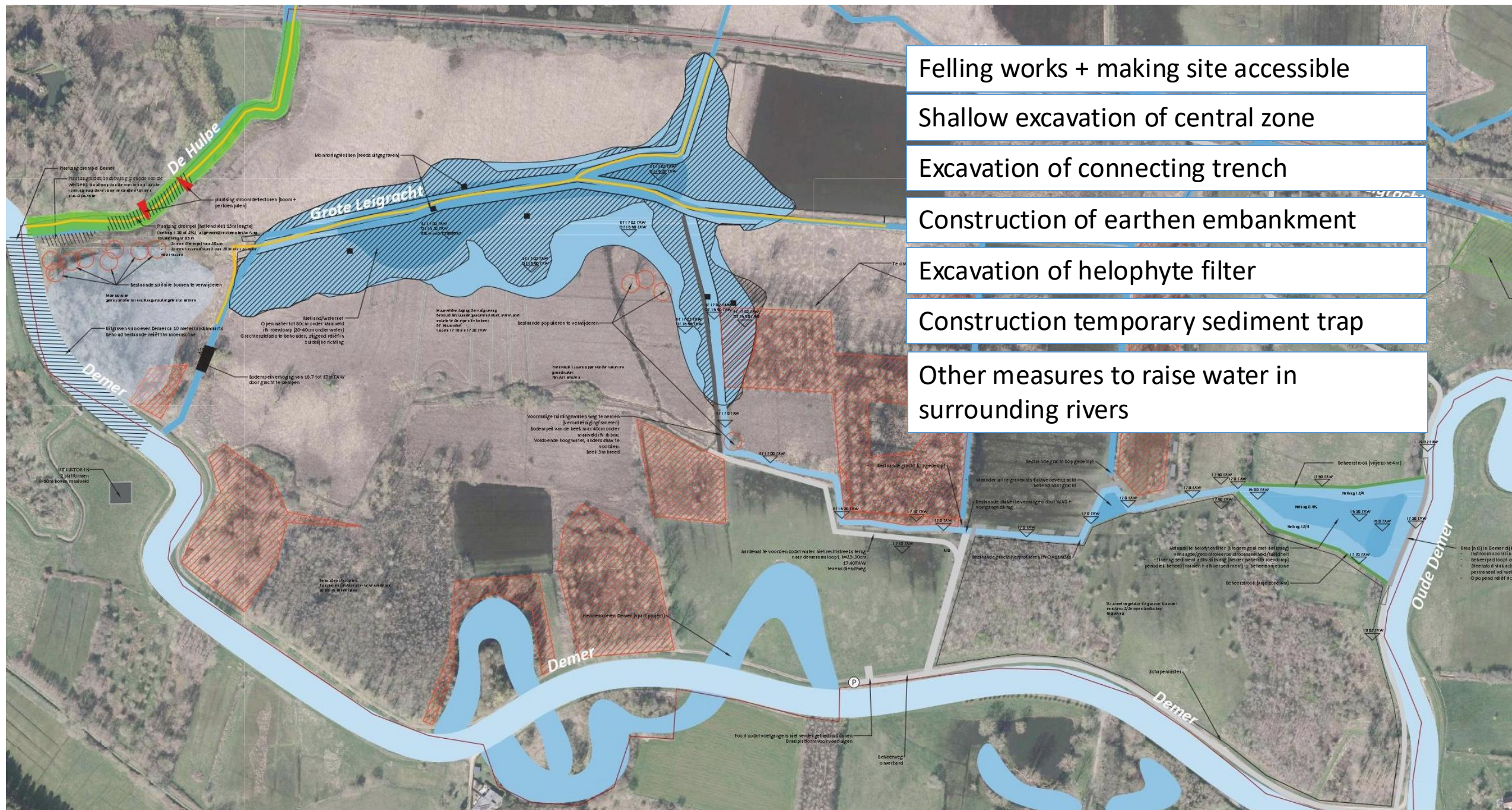
Construction of earthen embankment

Excavation of helophyte filter

Construction temporary sediment trap

Other measures to raise water in

surrounding rivers





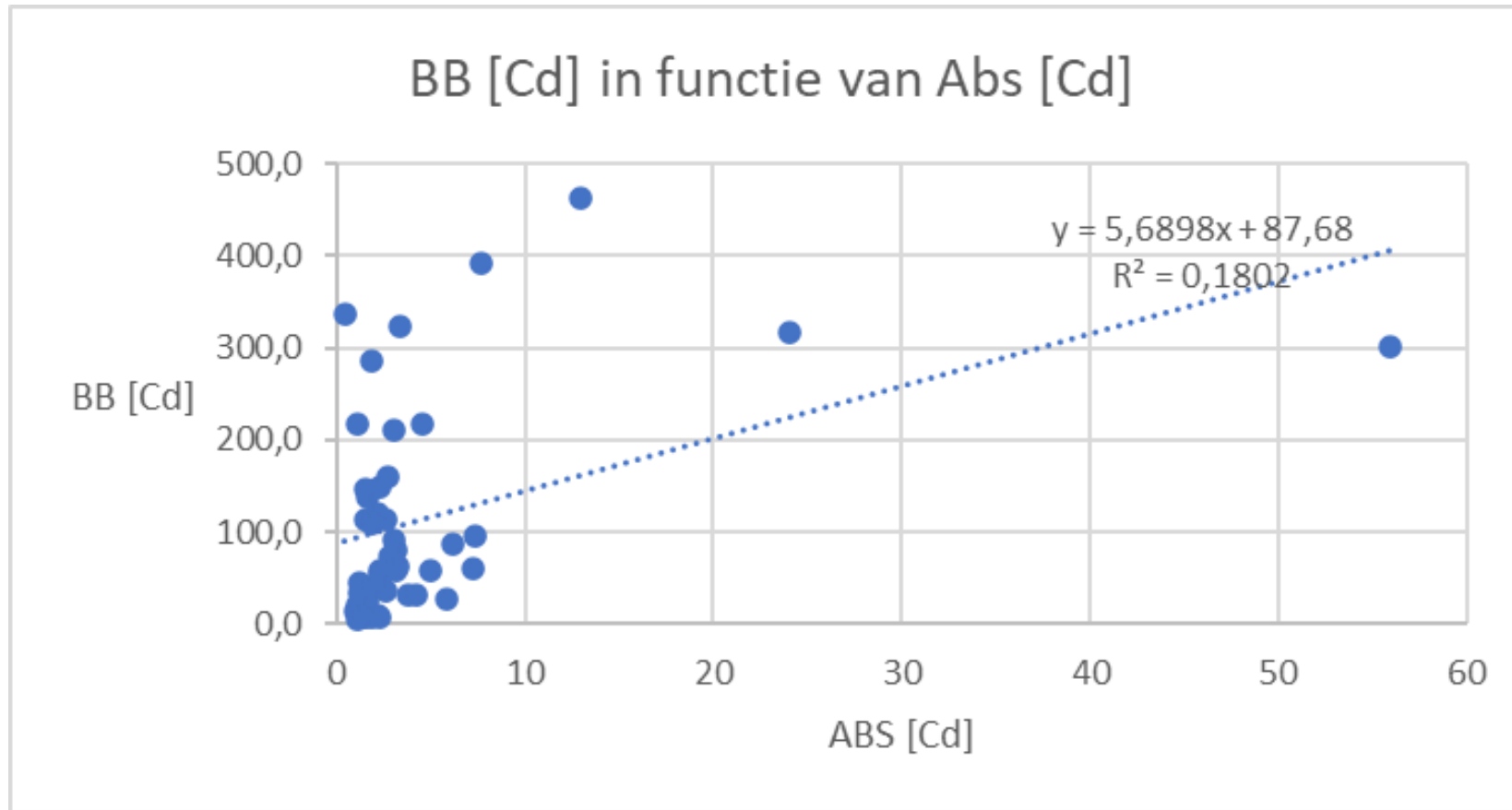


Winterbeek: results



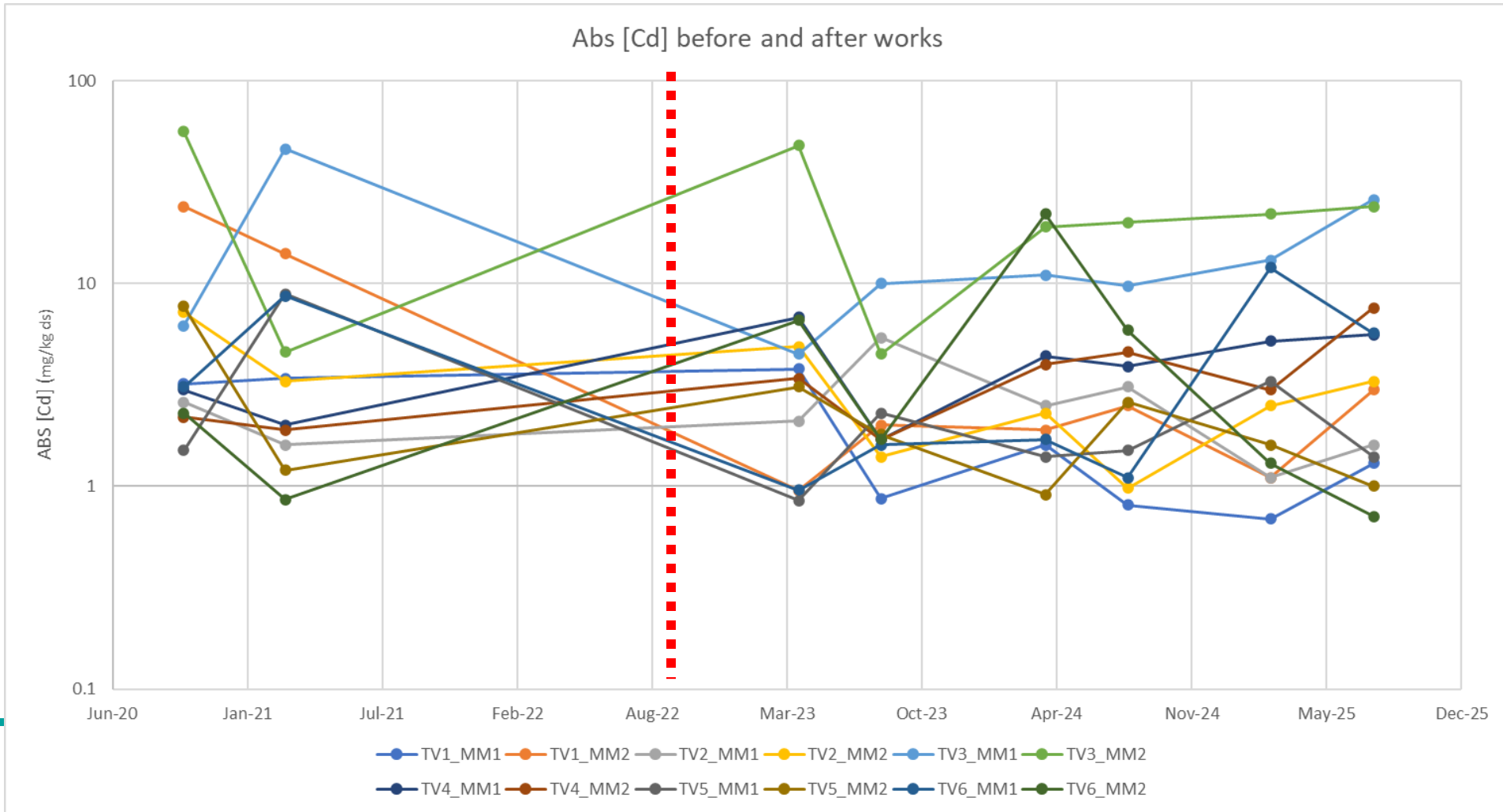


Bio-available [Cd] in function of abs [Cd]





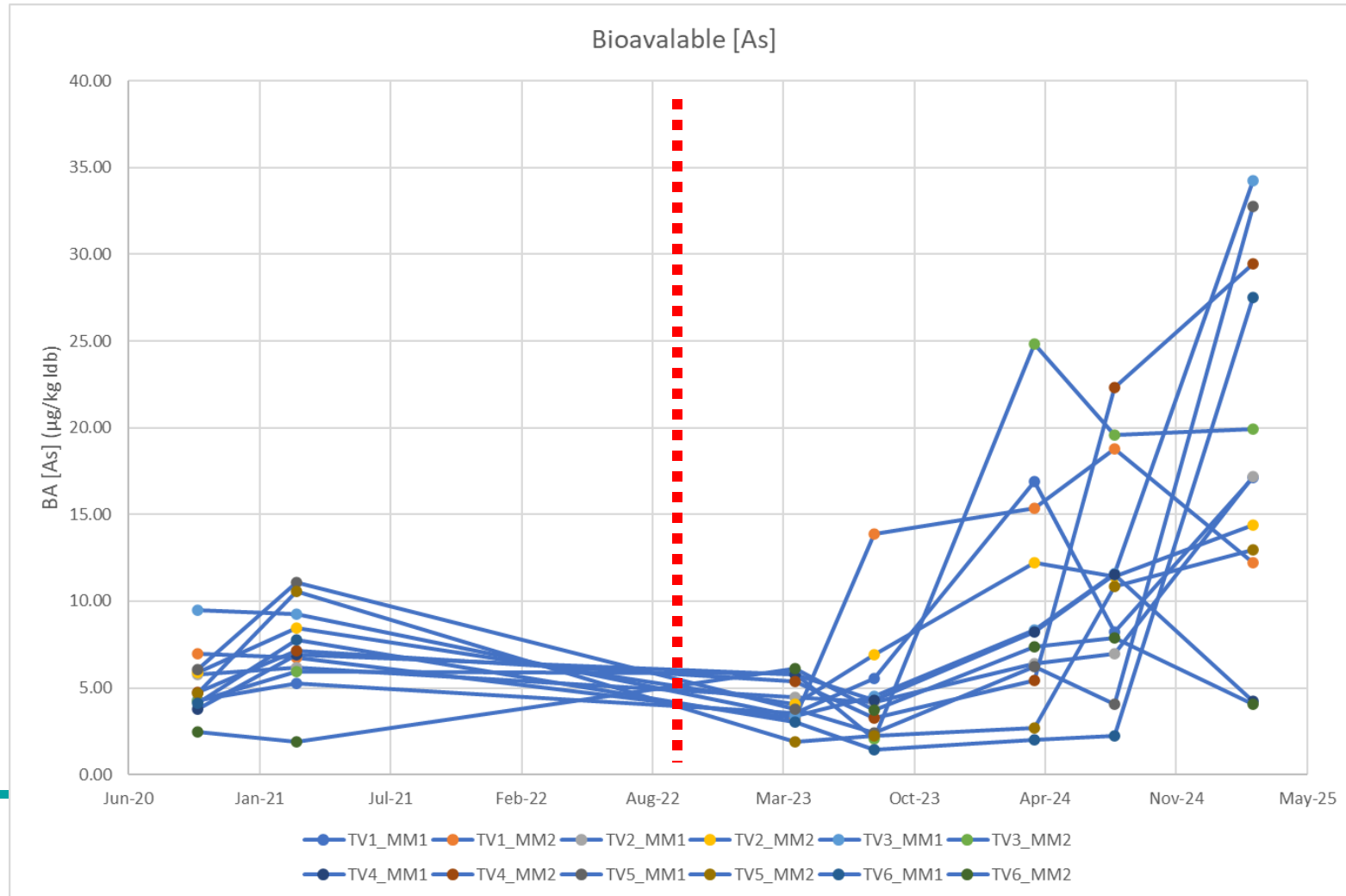
Evolution of abs [Cd]?





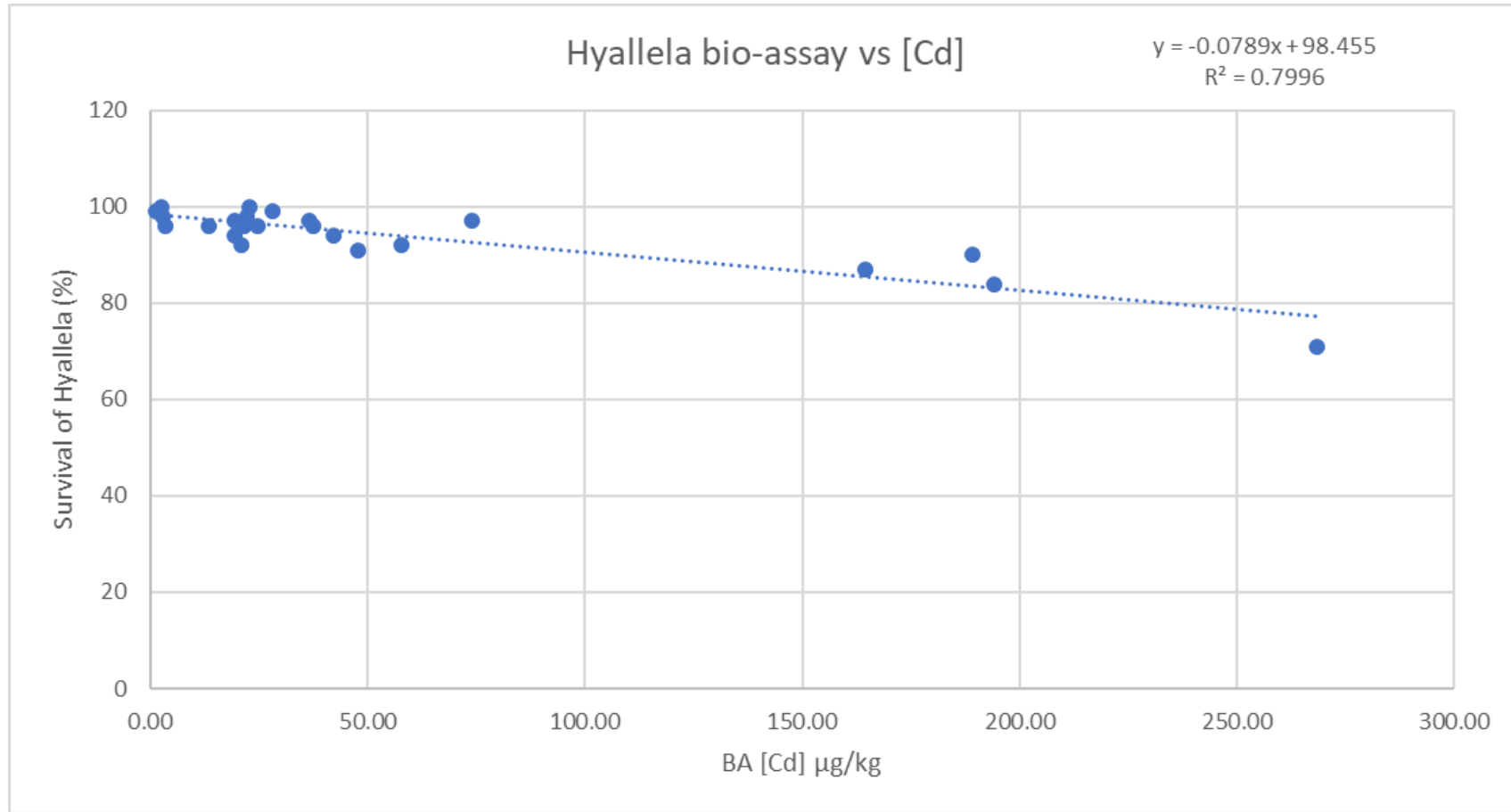


Bio-available concentrations As



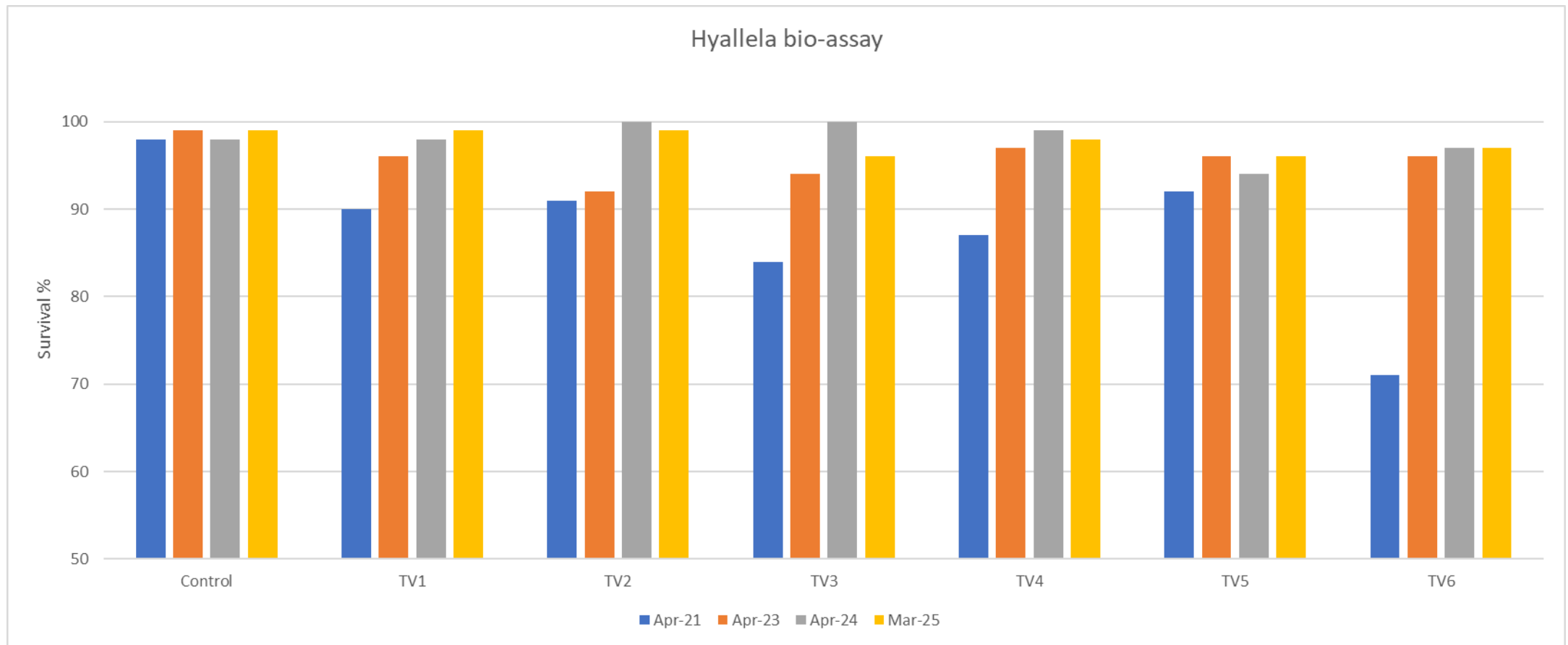


Eco-tox tests: survival rate (*H. azteca*)





Eco-tox tests: survival rate (*H. azteca*)



Partners



LIFE Narmena

www.narmena.be

Jan De Vos:
Jan.devos@abo-group.eu



narmena¹
Ruimte voor schone waterlopen

<http://www.narmena.be/>