Sediment management
port of Rotterdam

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Introduction

Dredging Department

- responsible for maintenance dredging in port basins
- dredging amount 5 - 7 million m³ annually

(Ministry of Infrastructure and Environment: river area)
Why dredging?

- To deepen or maintain navigable waterways
- Restoration of navigable depth
- Removal of recently settled materials, such as sediments, sand, gravel
Sedimentation

Sedimentation originating from sea & rivers
Sedimentation

From source to sink
Sediment Management Rhine

Rhine Research Project 1985-2007 as starting point

Inventory of historical contaminated sediment in Rhine Basin and its tributaries

Final report

October 2004

Technical University Hamburg Harburg
in Cooperation with the University Stuttgart
Sediment Management Rhine

- On the agenda International Rhine Commission for the Protection of the Rhine (ICPR)
- Sediment Management Plan (SMP) Rhine 2009
- Inventory contaminated sedimentation locations
- Agreement in ICPR on ‘Reporting’ about measures to be taken at locations from SMP
- Good first step!
- Measures should be part of next River Basin Management Plan (2015-2021)
Monitoring and Classification

Monitoring Program

Annually the Port of Rotterdam Authority in cooperation with the Ministry of Infrastructure and Environment assesses the quality of the sediment in the port of Rotterdam by taking samples of the upper sediment layer.
Monitoring and classification

Objectives Monitoring Program

- Destination of dredged material
  - Relocation at sea or
  - Disposal at the Slufter
- Information for license to operate
  - restrictions during dredging (light mixture overboard, overflow)
Lay-out Monitoring Program

- Port contains of 225 sections
- Each section is sampled at 6 locations
- The 6 samples are mixed and analyzed at the laboratory
- Substances analyzed:
  - Heavy metals (As, Cd, Cr, Cu, Hg, Ni, Pb, Zn), Mineral oil, PAHs, PCBs, OCBs, TBT
Monitoring and classification

Dredged Material classification
The Slufter

*poster presentation about the Slufter by Ronald Rutgers
The Slufter

- Confined disposal facility for contaminated sediments
- Partnership between Port of Rotterdam Authority & Ministry of Infrastructure and Environment
- Operational since 1987
- Surface area 250 hectares
- Bottom Slufter is 28 m below sea level, surrounding dike is 24 above sea level
- Length surrounding dike is 6 km
- Volume 143 million m³ (100 large football stadiums)
- Remaining capacity more than 50 million m³
Marine relocation
Marine Relocation

- Sustainable relocation at sea
- Pilot project + research
- Partnership between Port of Rotterdam Authority & Ministry of Infrastructure and Environment
- Combined sand mining and relocation site
- 6 pits each of 1500 meters long and 500 meters width
- Depth of each pit is 10 meter
Marine Relocation

Research outcomes

- Influence area of sediment is 5–7 km, which means no effect on Natura-2000 areas
- Circumstances for ecological recovery are present
- Ecological recovery is dependent from sand sedimentation on the pit
The end

Thank for your attention