

CONFINED DISPOSAL FACILITY (CDF) SLUFTER: A PERFECT SOLUTION FOR CONTAMINATED SEDIMENT IN NORTHWEST EUROPE.



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Rijkswaterstaat
Ministerie van Infrastructuur en Milieu

Beheerorganisatie Slufter

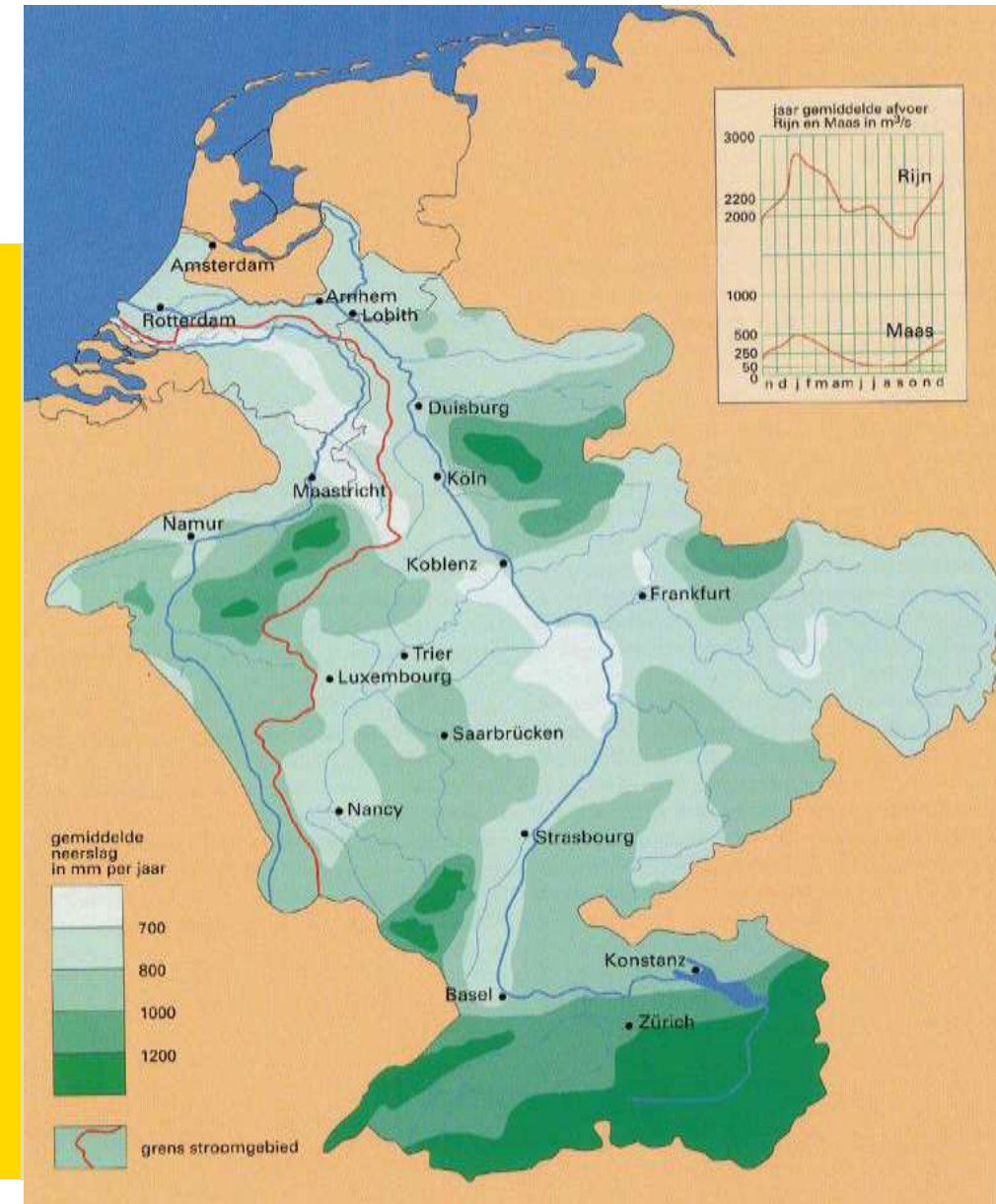
Characteristics of CDF the Slufter

- Operational since 1987
- Partnership between Port of Rotterdam Authority & Ministry of Infrastructure and Environment
- Surrounding dike is 24 m above sea level
- Bottom Slufter is 28 m below sea level
- Area approx 260 ha (2,6 km²).
- Road on the dike is approx 6 km long
- Storage capacity is 150 million m³
- For 55% used

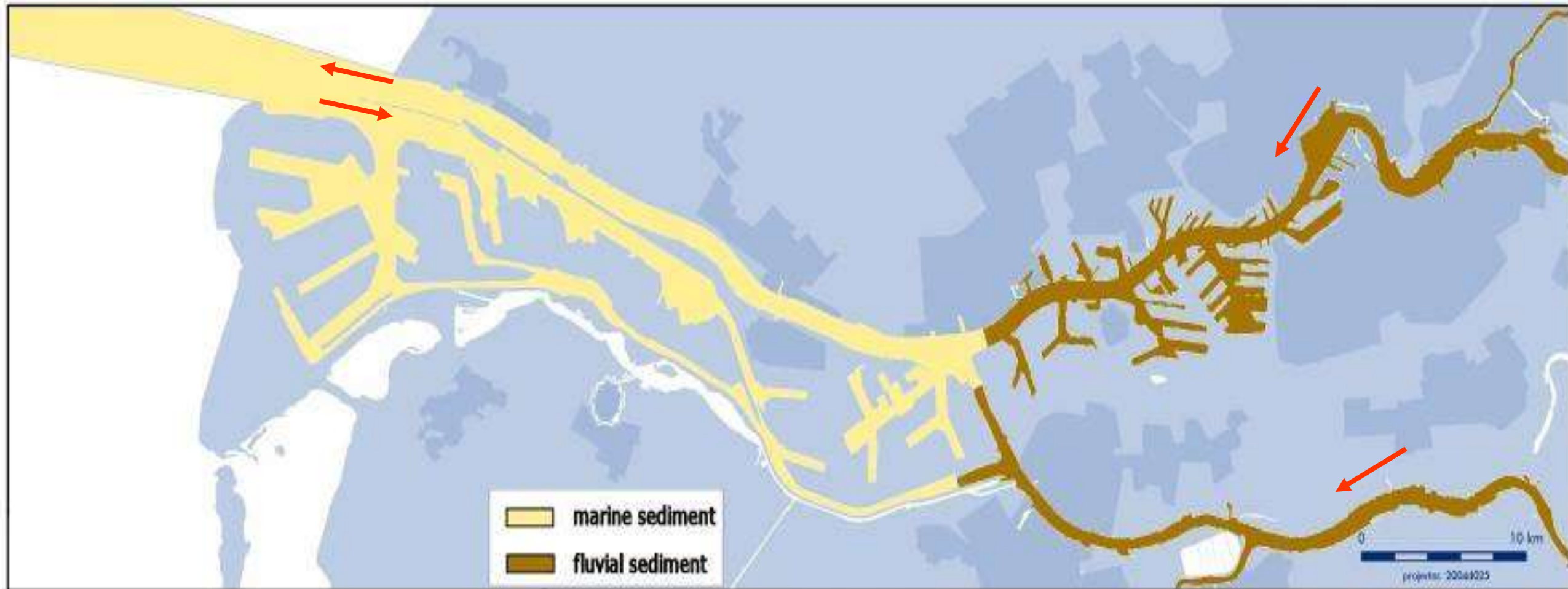


Why a CDF

- Rotterdam is situated at the end of the basin of the rivers Rhine and Meuse
- Sediments from two major rivers (Rhine & Meuse) stream to Rotterdam



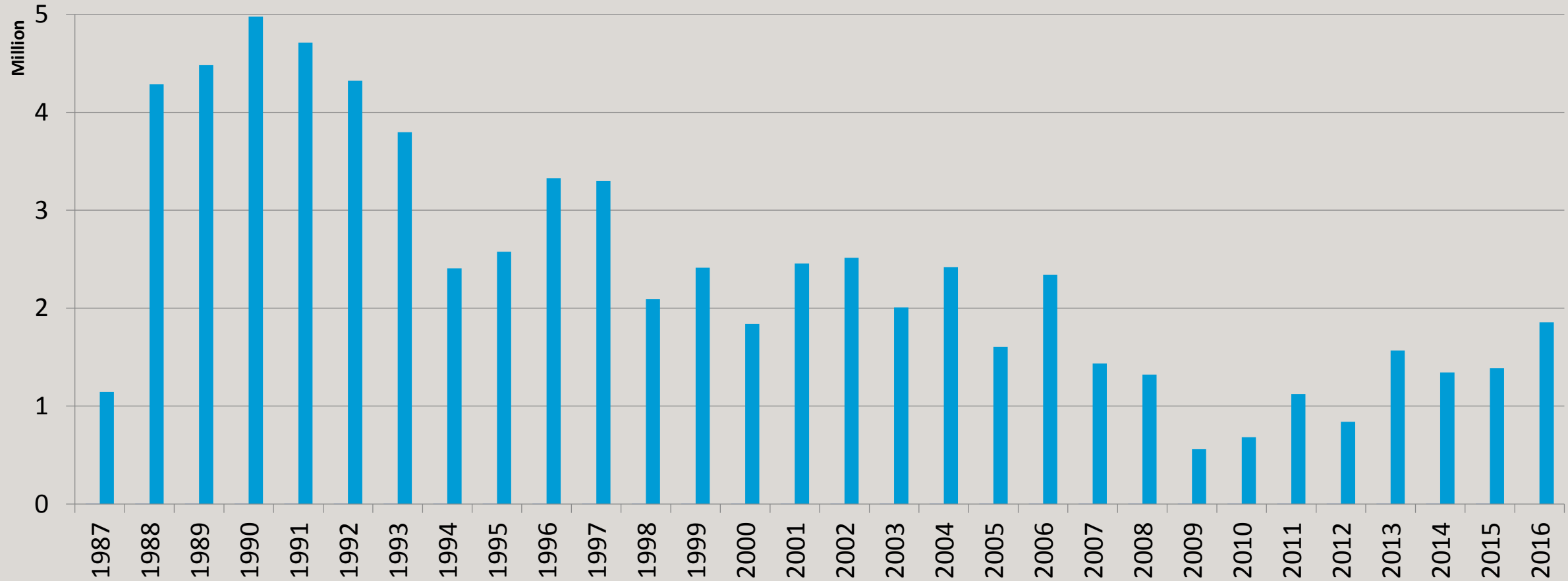
Why a CDF



Why a CDF

- Originally the Slufter was built to store contaminated sediments from the port of Rotterdam and the surrounding waterways
- Stricter legislation and agreements with companies and industries in the Netherlands and surrounding countries, Rhine Research Project, resulted in less contaminated dredged material
- Since 2000: sediments from the whole of The Netherlands were accepted
- Since 2010 it is possible to store contaminated sediments from outside of The Netherlands

Annual Amount of stored sediment at CDF the Slufter



Why sediments from outside of The Netherlands?

- Surrounding countries still have a lot of contaminated sediments in their ports and waterways
- Surrounding countries don't always have the capacity to store or treat contaminated sediments
- These sediments can pollute sediments in Dutch ports and waterways
- Reason for Dutch Authorities to agree on changing the environmental permit of CDF the Slufter

Why sediments from outside of The Netherlands?

Historical contaminated sediments

- In the Upper Rhine hexachlorobenzene is one of the pollutants
- Potentially 1 part can contaminate a 10-50 times larger part down stream.
- In 2009 the ICPR made a risk assessment and found more then 20 high risk areas from where pollutants could spread downstream
- These risk areas can also be found in the Meuse



Why sediments from outside of The Netherlands?

- Untill 2005 it was practice in Germany to re-mobilise clean sediment behind locks in the Rhine
- Potentially hazardous material can be re-mobilised
- Flood events can re-mobilise the hazardous materials
- In 2004 Port of Rotterdam Authority already suggested to bring the material to the Slufter
- In 2009 the ICPR suggested in their Sediment Management Plan to dredge these hotspots and bring them to the CDF's in the Netherlands

Getting the sediment to CDF the Slufter

- Application for storage, including:
- A survey of the sediment (in accordance to local standards)
- Analysis result of the sediments .The results are tested for 55 different parameters such as: Heavy metals, PCB's TBT, PAH's, etc.
- Total volume
- A storage contract is granted when everything is in accordance with the acceptance conditions of the Slufter

Results Chemical analysis in mg / kg dry weight (µm)

ANALYSE PARAMETERS	ZBT	over 50%		
Organic matter (% d.m.)				
Dry Matter (weighted %)				
Calcite (% d.m.)				
< 63 mm (% d.m.)				
< 2 mm (% d.m.)				
> 2 mm (rubble)				
Sand %	0,0			
Tin-Sn				
Tin-Sn		0,1		
Metals				
Cadmium		4	50	
Mercury		1,2	50	
Copper		60	5.000	
Nickel		45	5.000	
Lead		110	5.000	
Zinc		365	20.000	
Chromium		120	5.000	
Arsenic		29	50	
PAHs				
Napthalene	0,0			
Anthracene	0,0			
Phenanthrene	0,0			
Fluoranthene	0,0			
Benz(a)anthracene	0,0			
Chrysene	0,0			
Benzo(k)fluoranthene	0,0			
Benzo(a)pyrene	0,0			
Benzo(g,h,i)perylene	0,0			
Indeno(1,2,3-cd)pyrene	0,0			
Sum 7-PAH	0,0	0,0		
Sum 10-PAH (Sum 7 + abc)	0,0	0,0	8,0	40
PCBs				
PCB-number 28	0,0			1
PCB-number 52	0,0			1
PCB-number 101	0,0			1
PCB-number 118	0,0			1
PCB-number 138	0,0			1
PCB-number 153	0,0			1
PCB-number 180	0,0			1
Sum 7-PCB	0,0	0,0	0,10	3,5
other compounds				
Mineral oil (GC)*	0,0	1.250	6.667	
EDX				20
Volatile Aromatic Hydrocarbons				
Hexachlorobenzene	0,0	0,02		1
Pesticides				
Aldrin	0,0			1
Dieldrin	0,0			1
Endrin	0,0			1
Sum Aldrin, Dieldrin, Endrin	0,0	0,0		
Isodrin	0,0			1
Telodrin	0,0			1
DDT	0,0			1
DDD	0,0			1
DDE	0,0			1
Sum DDT / DDD / DDE	0,0	0,0	0,02	
Alpha-HCH	0,0			1
Beta-HCH	0,0			1
Gamma-HCH (lindane)	0,0			1
Heptachlor	0,0			1
Heptachlorepoxyde	0,0			1
Hexachloro-1,3-butadiene	0,0			1
Sum 15 Pesticides	0,0	0,0		6,5
Slufter classificatie				
			II-III	IV

Getting the sediment to CDF the Slufter

- When there is an agreement for storage an application for ex- and import permits can be done.
- Holder of the sediment, the notifier, has to submit a notification in accordance with EU Regulation (EC) No. 1013/2006 (EVOA)
- Notification is submitted in the country of origin
- Authorities of that country are responsible to send the notification to the Authorities in The Netherlands and Authorities of transit countries
- If the notification meets the requirement,s permits can be received within 30 work days

What is stored at CDF the Slufter from outside of The Netherlands

- Since 2011 sediments from outside The Netherlands are stored at the Slufter
- Yearly the Slufter receives around 150.000 m³ of foreign sediments
- These sediments are, until now, originating from Belgium and Germany
- Interest for storing at the Slufter from other countries; UK, Sweden, Denmark, Ireland

Lessons learned

- International transport of contaminated sediments is something special for the Authorities
- Explanation is needed, most foreign Authorities don't know CDF the Slufter
- Communication with Authorities during the process
- It helps when there is support and understanding from policy makers and market parties.

Questions?