

SedNet Conference
November 25-26, 2004, Venice

Perspective on sediment management in European rivers

By: Paul de Beijer
Port of Rotterdam



Port of
Rotterdam



Hamburg - Le Havre range

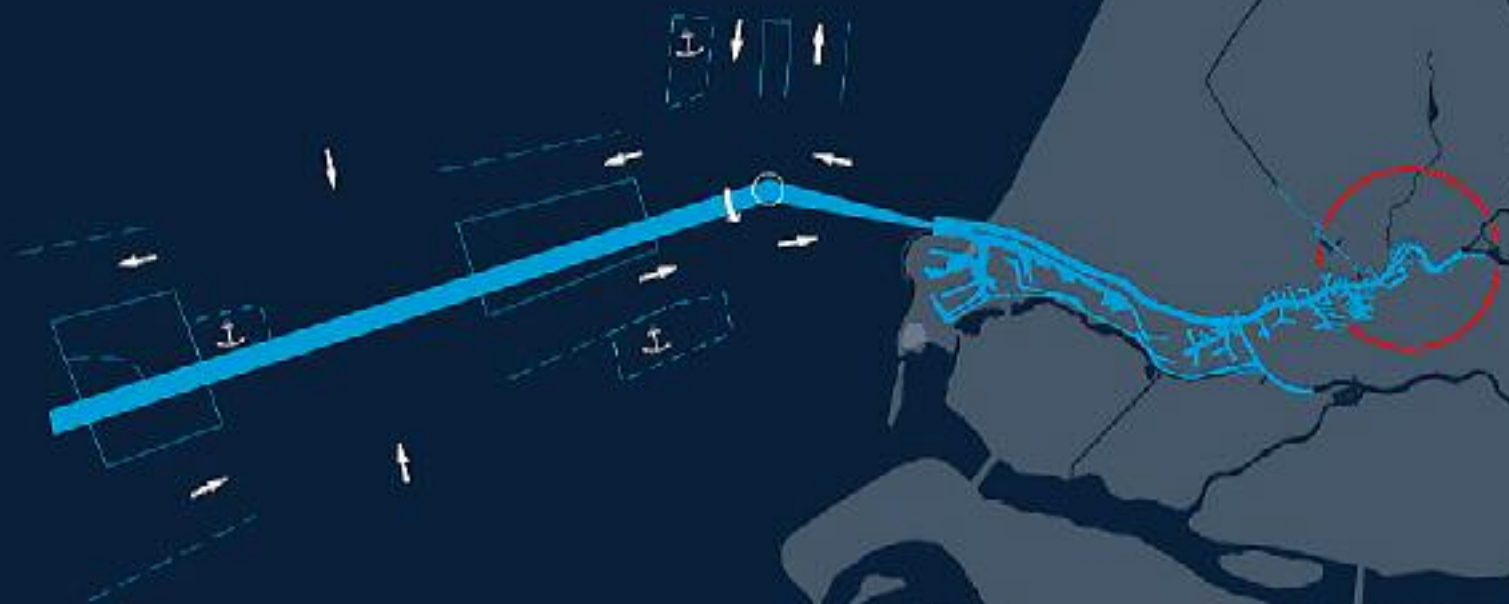


A map of Europe with a blue gradient background. The Hamburg - Le Havre range is highlighted in a darker blue. Several ports are marked with yellow dots and labeled: Wilhelmshaven, Amsterdam, Zeebrugge, Duinkerken, Le Havre, Rotterdam (marked with a red circle), Antwerpen, Gent, Hamburg, Bremen, and Venice.

Wilhelmshaven
Amsterdam
Zeebrugge
Duinkerken
Le Havre
Rotterdam
Antwerpen
Gent
Hamburg
Bremen
Venice



New Waterway and Euro Channel







Dredged material classification



North Sea

OSPAR

(ministerial agreements)

Rhine

ICPR

(ministerial agreements)

European Water Framework Directive

not well harmonised !

more protective ?

less protective ?

not well balanced !

Port



Rhine Research Project II

Main objective:

- *Further reduction of the contamination of the dredged material, as benefits the concept of a sustainable clean port and environment*

So far:

- Diffuse sources are problematic (including sleeping sources)
- Sediment management on river basin scale



Inventory of historical contaminated sediment in Rhine Basin & tributaries

Motive:

As new inputs will continue to decrease, the relative contribution of 'historically' contaminated sediments to loads in the Rhine basin will gain in importance.

Objective of the study:

Estimate what risks exist for the Port in the next decades by these legacies of the past in the Rhine under consideration of anthropogenic activities (e.g. dredging) and potential natural events (e.g. floods).



Inventory of historical contaminated sediment
in Rhine Basin and its tributaries



(Foto: BfG)

Final report

October 2004

Technical University Hamburg Harburg
in Cooperation with the University Stuttgart



Approach of the study

(fuzzy) classification of

1. substances of concern
2. areas of concern
3. areas of risk

under uncertainty consideration.



Substances of concern (step 1)

Table ES.1 Substances of concern and their ranking

Substances of concern	Hazard class
Cadmium	2
Chromium	1
Copper	1
Mercury	2
Nickel	1
Lead	1
Zinc	1
DDT+DDD+DDE (SUM)	2
Dioxins and Furans	2
Hexachlorobenzene	2
Polycyclic aromatic hydrocarbons	2
Polychlorinated biphenyls	2
TBT	1
Aldrin (Dieldrin, Endrin)	1
γ -hexachlorocyclohexane	1
Nonyl-phenol compounds	1

Cd and Hg:
High bioaccumulative
Potential, high toxicity.



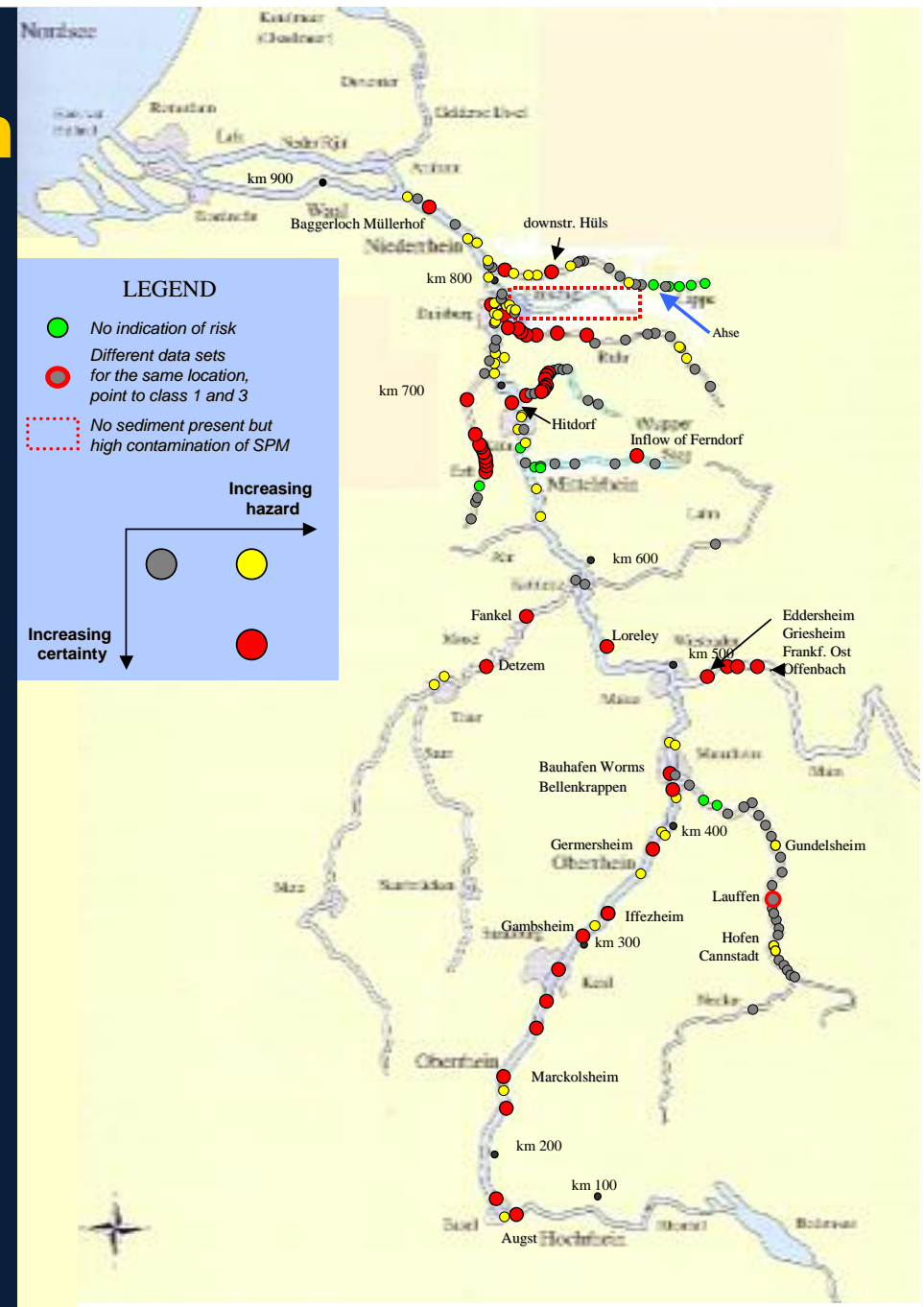
Areas of concern (step 2)

Classification of areas of concern:

Class 1: potential hazard

Class 2: potentially high hazard

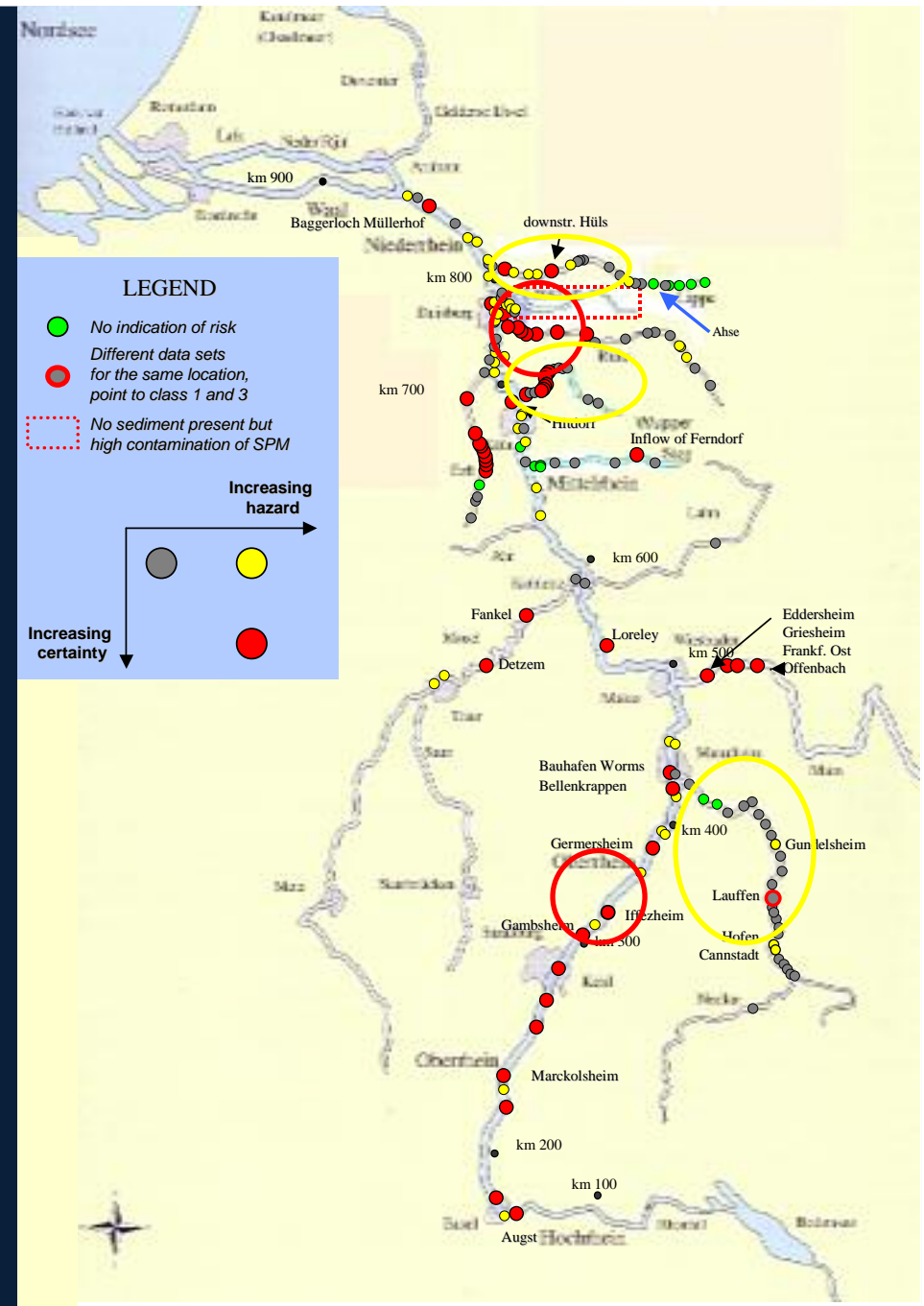
Class 3: potentially high hazard with high certainty.



Areas of risk (step 3)

Taking into account the probability, that the sediment is resuspended and transported to the Port, and that it still has a concentration that may exceed the level for relocation of sediment at sea.

- Evidence for high risk
- Evidence for risk



European Environmental Policy (Water Framework Directive)

- historic contamination recognized as source
- 2009: establishment of measures against contaminating sources at river basins
- No-deterioration principle, which implies:
Presentation of evidence, that management techniques do not lead to deterioration (f.e. relocation of contaminated sediment into rivers)
- Sediments are moving into the focus of EU



Outlook

- Balanced action in level of protection (sea – river; EU Marine Strategy – EU Water Framework Directive)
- Need for management of historic contaminated sediments in the (European) river basins
- River basin wide water and sediment management concepts are under development but should be elaborated upon
- SedNet the network to put these issues forward



Inventory of historical contaminated sediment in Rhine Basin and its tributaries



(Foto: BfG)

Final report

October 2004

Technical University Hamburg Harburg
in Cooperation with the University Stuttgart



This report was written on behalf of the Port of Rotterdam

by

Dr. Susanne Heide,
Consulting Centre for Integrated Sediment Management at the TUHH
(BIS)
Hamburg, Germany

Prof. Ulrich Förstner,
Technical University Hamburg-Harburg (TUHH)
Hamburg, Germany

In Cooperation with

Prof. Bernhard Westrich,
Thomas Jancke
Joachim Kamahl
from the „Institut für Wasserbau“
University of Stuttgart, Germany

Prof. Wim Salomons,
University Amsterdam
The Netherlands

Dr. Harald Schönberger,
Regierungspräsidium Freiburg
Germany