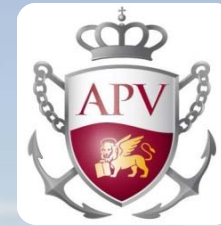




Commissario Delegato per
l'Emergenza Socio Economico
Ambientale relativa ai Canali Portuali
di Grande Navigazione della Laguna
di Venezia



Venice Port Authority

Dredging and remediation of Porto Marghera industrial canals in the context of Italian port dredging needs and practices

Roberto Casarin, Porto Marghera Commissary

Paola Cossetini, Commissary Staff

Emanuele Zanotto, Venice Port Authority

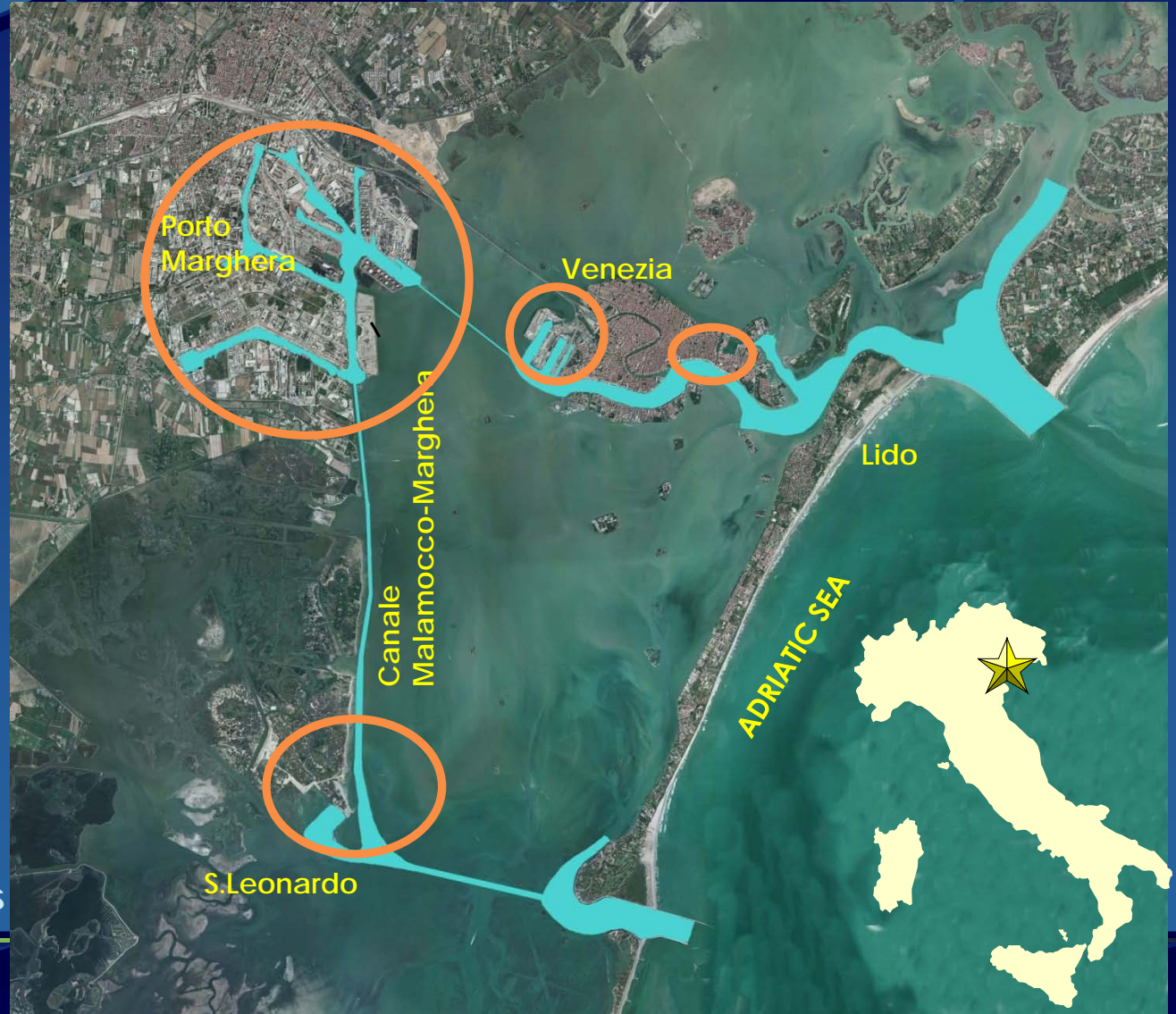
Venezia, SedNet – 6th April 2011

Venice Lagoon and Port Facilities

Channels administrated and managed by Venice Port Authority:
54,62 km²

The lagoon is about 50 Km long and 10 Km wide.

The average depth of the lagoon is about 1 meter being 75% of the lagoon water surface less than 2 meters in depth while canals deeper than 6 m covers no more than 5% of this surface.

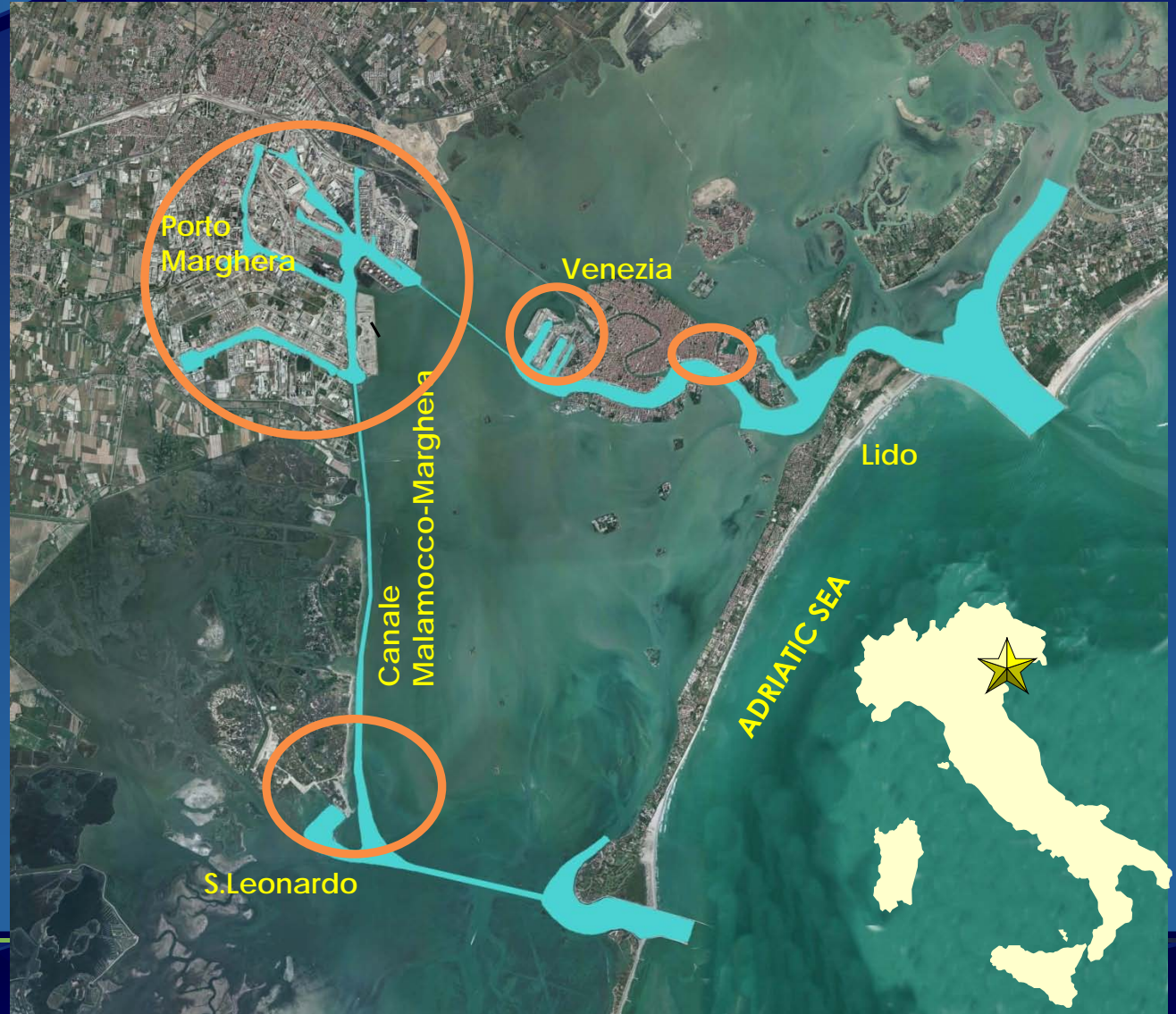


Venice Lagoon and Port Facilities



PORT OF VENICE

- Surface: 2.045 hectares
- Channels: 16 km²
- 30 km wharves
- 163 operational berthing
- 38' depth
- 24 cargo terminals
- 70 km internal road
- 205 km of railways network

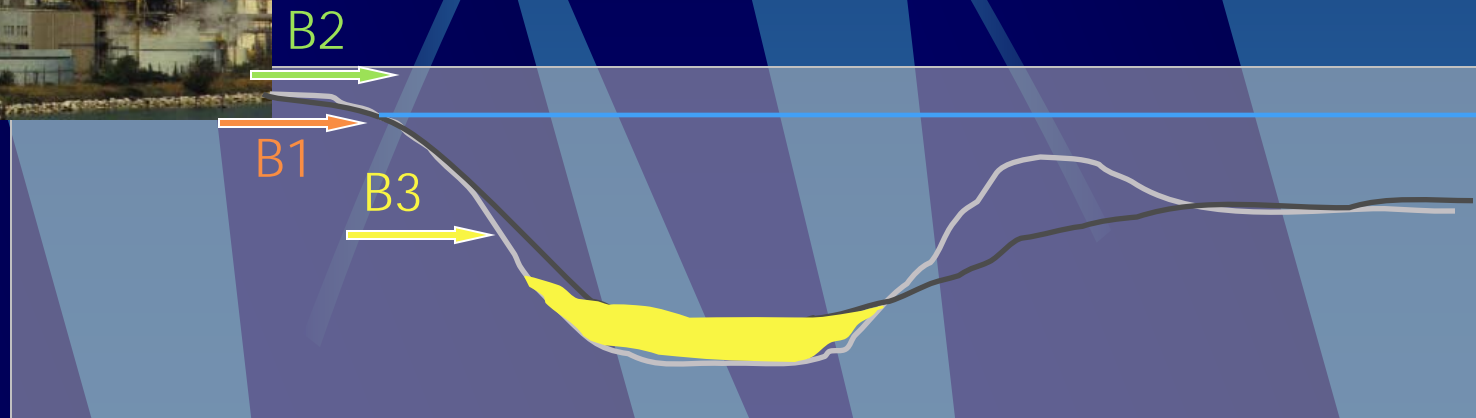


Venice Port Development Plan (1965)



Pollution of navigational channels

Erosion of contaminated soils and uncontrolled wastewater discharge



Current Three-Tiered Venetian Sediment Classification Scheme

Chemical	Class A	Class B	Class C
● As	15	25	50
● Cd	1	5	20
● Cr	20	100	500
● Cu	40	50	400
● Hg	0.5	2	10
● Ni	45	50	150
● Pb	45	100	500
● Zn	200	400	3000
● Tot. Hydrocabons	30	500	4000
● Total PAHs	1	10	20
● PCBs	0.01	0.2	2
● Chlor. Pesticides	0.001	0.02	0.5

DISPOSAL SITES

A,B,C: in lagoon

C+: no contact with lagoon

but

Lack of disposal generates:

- Interruption of maintaince dredging;
- Draught

"Commissario" Crisis Manager Appointment

March 19th 2004 – Harbor Master Decree #7363:
Draught reduction
Navigational depth along Malamocco Marghera
Channel (access to port area) **reduced to 30'0"**



December 3rd 2004 – Prime Minister Decree
Navigational Crisis Declaration
Social-Economic-Environmental crisis for navigational lagoon
Channels due to polluted sediment in port waterways.



December 3rd 2004 – Prime Minister Ordinance # 3383
**Urgent Actions for Managing the
Social-Economic-Environmental Crisis.**
Appointment of the "Commissario" Crisis Manager for Navigational
Channels of Venice Lagoon contaminated by polluted sediment.

Commissary and Venice Port Authority roles

Venice Port Authority had to maintain draught for Venice port accessibility referring to Venice Port Development Plan.



Venice Port Authority is in charge of planning the dredging activity and acting it

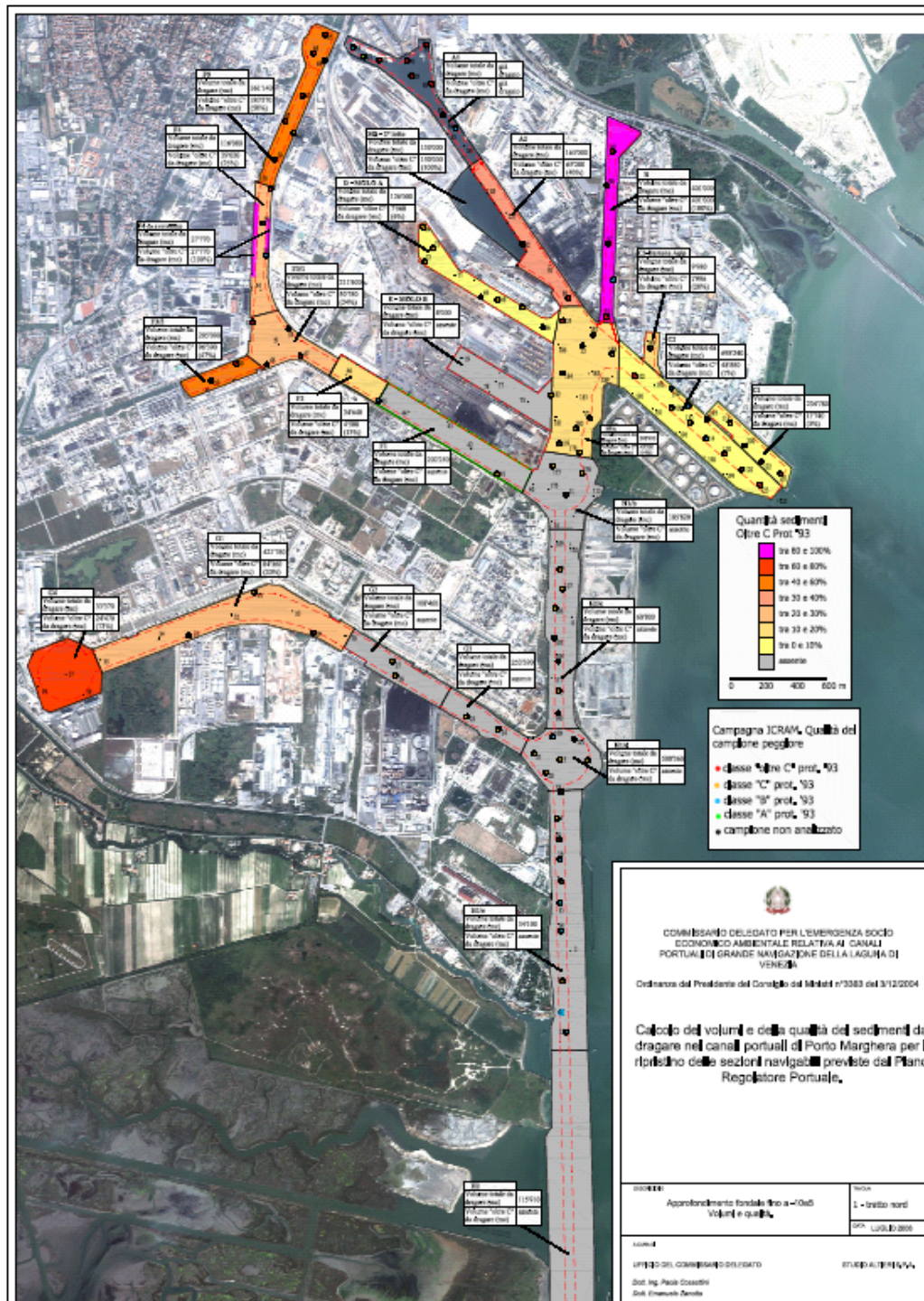


Commissary is in charge of design dredging plans and disposal sites
Commissary is responsible for their approval

Sediment characterization

Channels quality for dredging

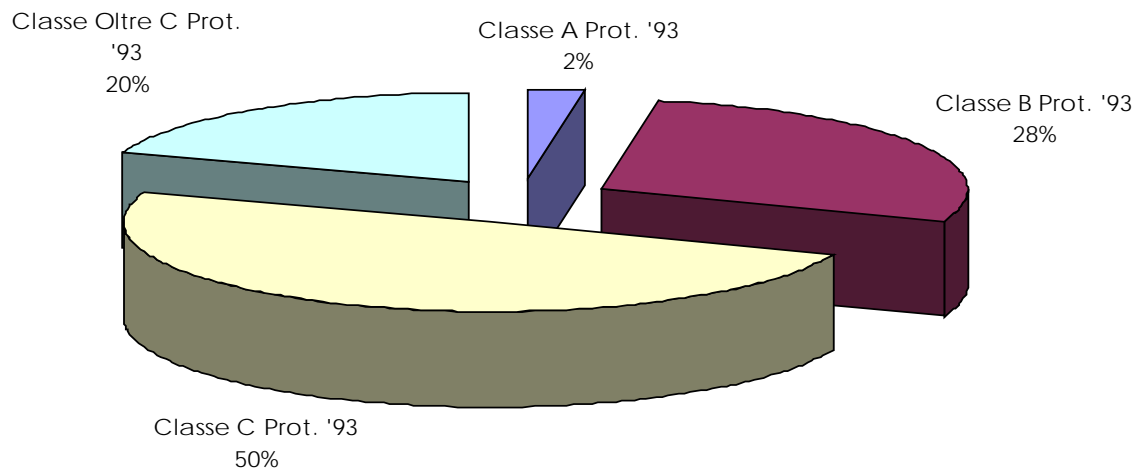
“ISAP - Indagine sui sedimenti e sulle acque dei canali di Porto Marghera e delle aree lagunari antistanti” – MAV/CVN - ICRAM 2005 results



Actions for restoring navigational depth

“ISAP - Indagine sui sedimenti e sulle acque dei canali di Porto Marghera e delle aree lagunari antistanti” – MAV/CVN - ICRAM 2005 calcolo dei volumi

Sediment quality	Dredging depth (m MSL)		
	- 10.50	-11.00	-12.00
Class A – Prot. '93	100'000	150'000	300'000
Class B – Prot. '93	1'350'000	1'750'000	3'000'000
Class C – Prot. '93	2'650'000	3'200'000	4'400'000
Class > C – Prot. '93	1'100'000	1'300'000	1'700'000
Total [m³]	5'200'000	6'400'000	9'400'000



Quantities related to Venice SQGs

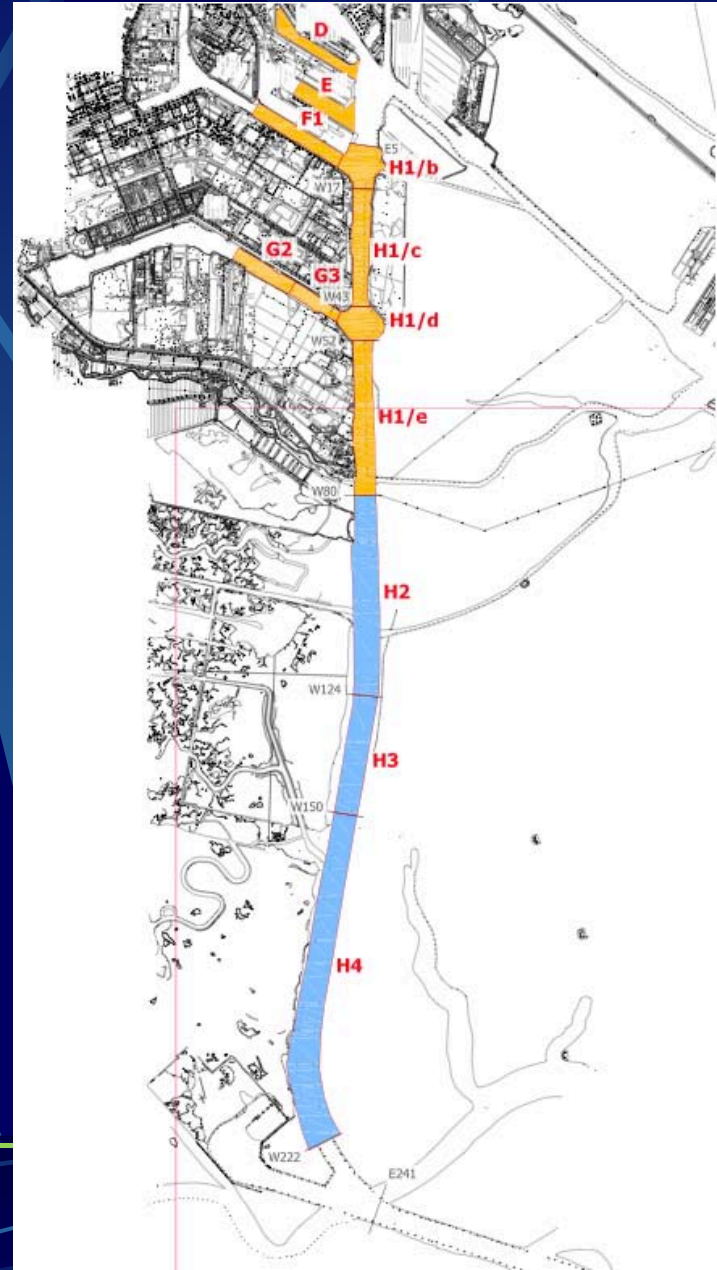
Venice Port Accessibility projects

Malamocco Marghera

- First phase -11.00 (already obtained)
- Second phase -12.00 (summer 2012)

About 4M m³ sediment dredged and disposed

Venice Port Authority investments: 75 M€



Venice Port Accessibility projects

West and South Canals

- First phase -10.50 (summer 2011)
- Second phase -12.00

About 880.000 m³ sediment dredged and disposed

Venice Port Authority investments: 13M€
Commissary investments: 27 M€



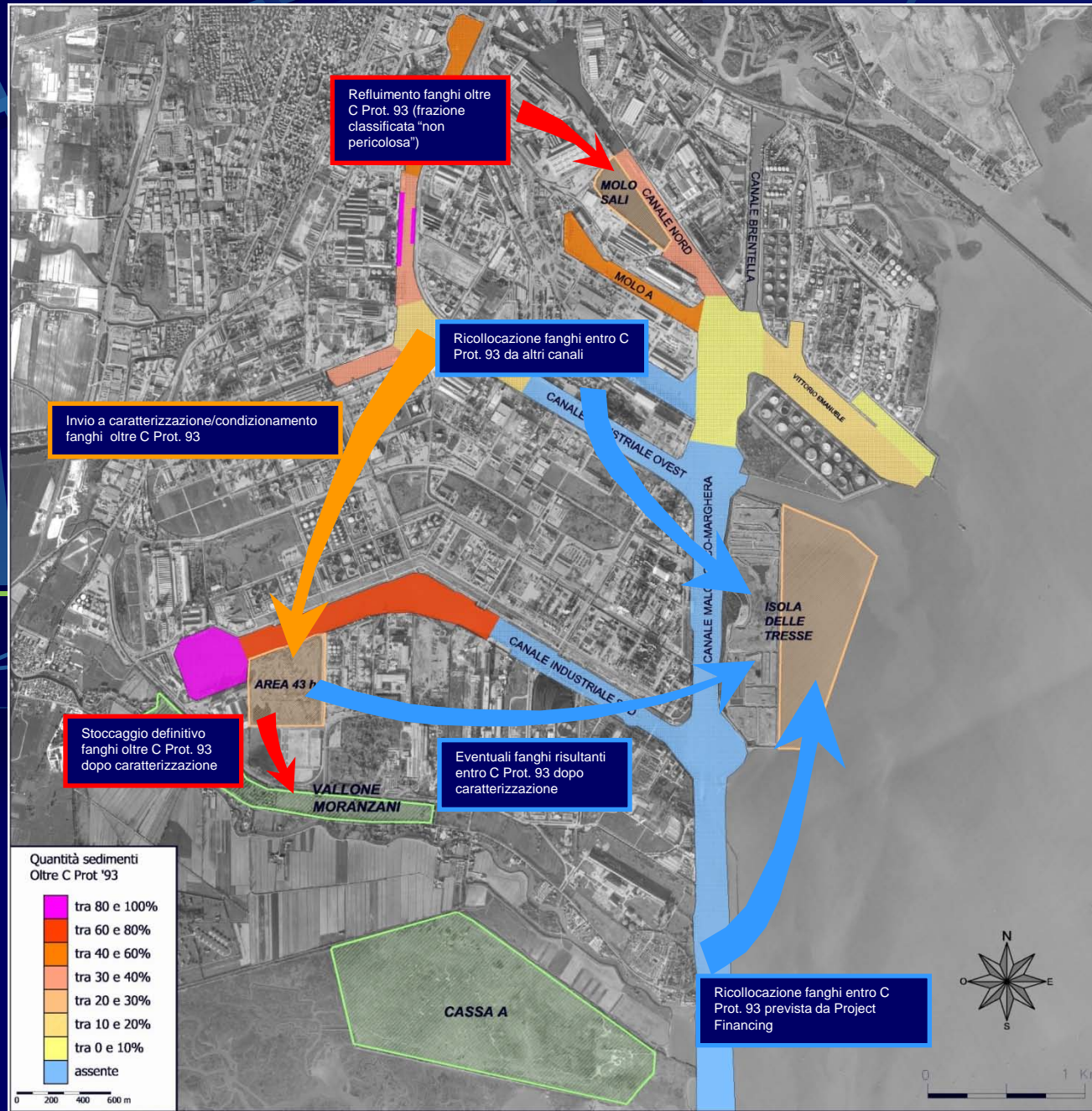
The background is a dark blue gradient with several lighter blue, semi-transparent geometric shapes and lines. These include a large 'X' shape formed by two intersecting lines, several diagonal lines, and some rectangular shapes. The overall effect is a modern, abstract design.

DISPOSAL SITE PROJECTS

DISPOSAL SITE PROJECTS GUIDELINES

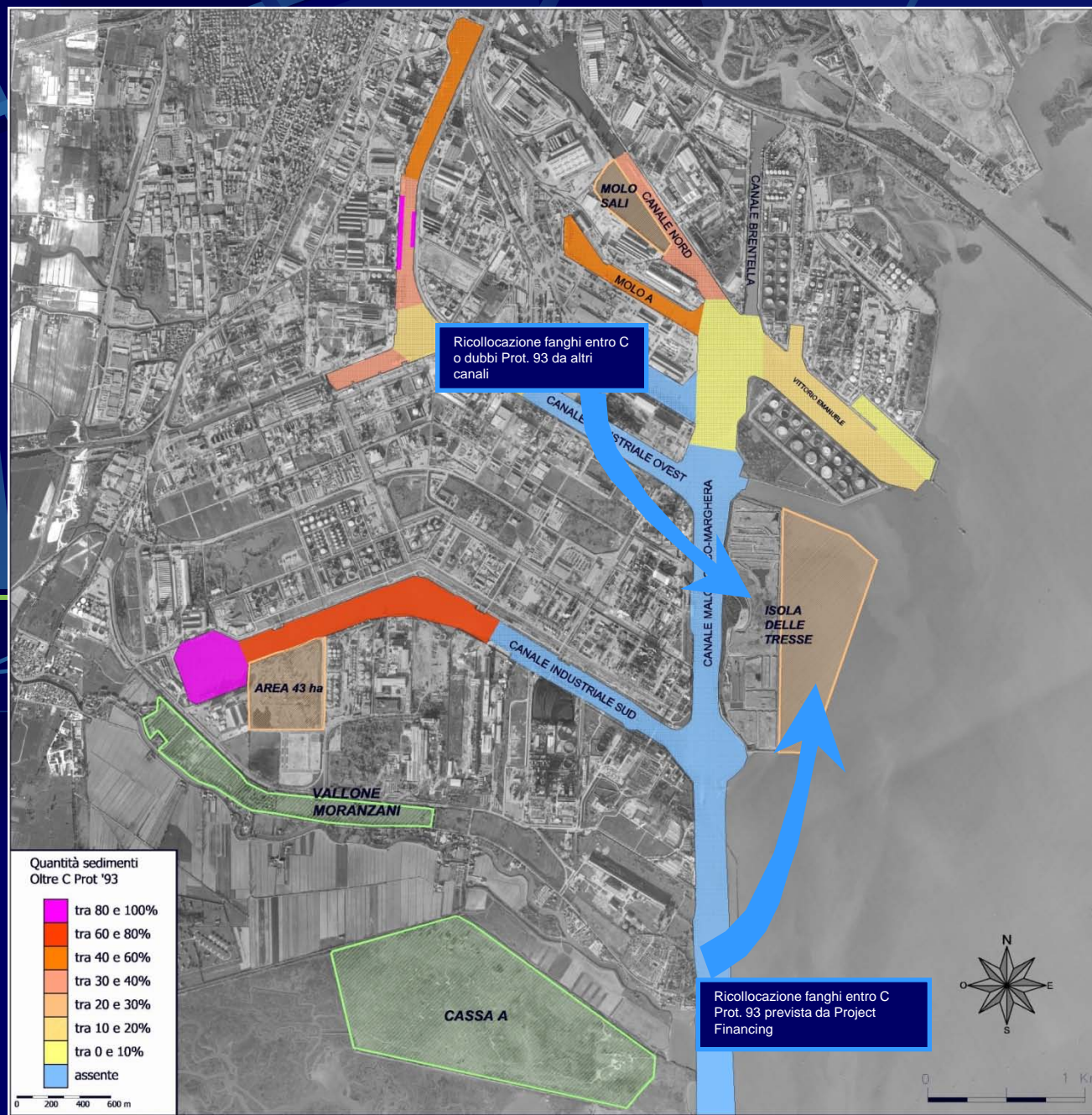
- Within Venice Lagoon or Marghera Industrial Area
- Low impact in the Venice Ecosystem
- Integration with other relevant environmental Projects
- Environmental compensation as a project key guideline

Sediment management Disposal Sites



Sediment Management:

- C Class
- further analysis



TRESSE ISLAND ELEVATION AND ENLARGEMENT

B and C Class material (Prot. 93) disposal site

First phase

- Increase volume of 2.500.000 m³
- Cost: 11.4 €/m³

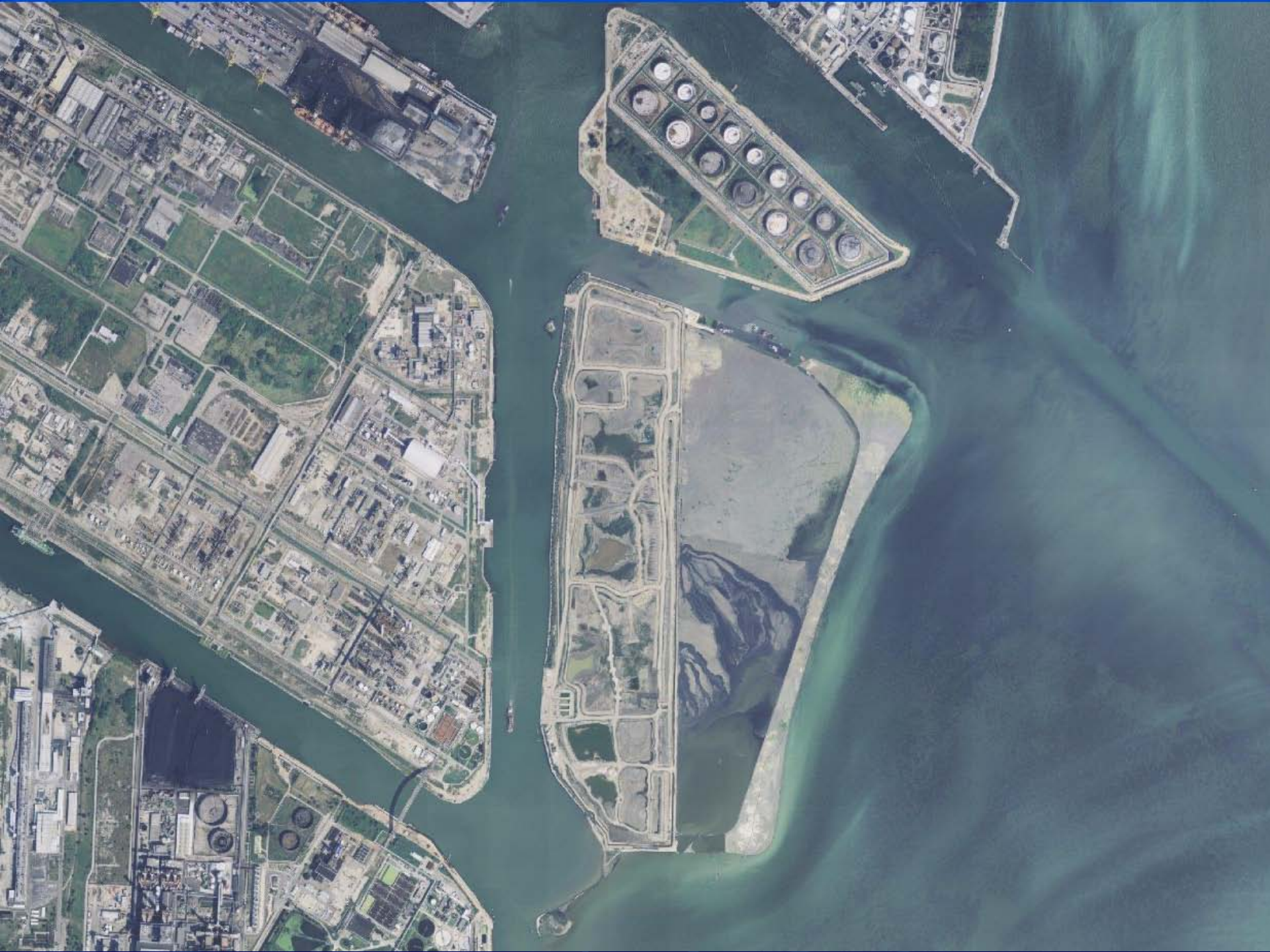
Second Phase

- 50ha enlargement for 3.000.000 m³
- Cost (including dredging): 12.3 €/m³

Tresse Island enlargement

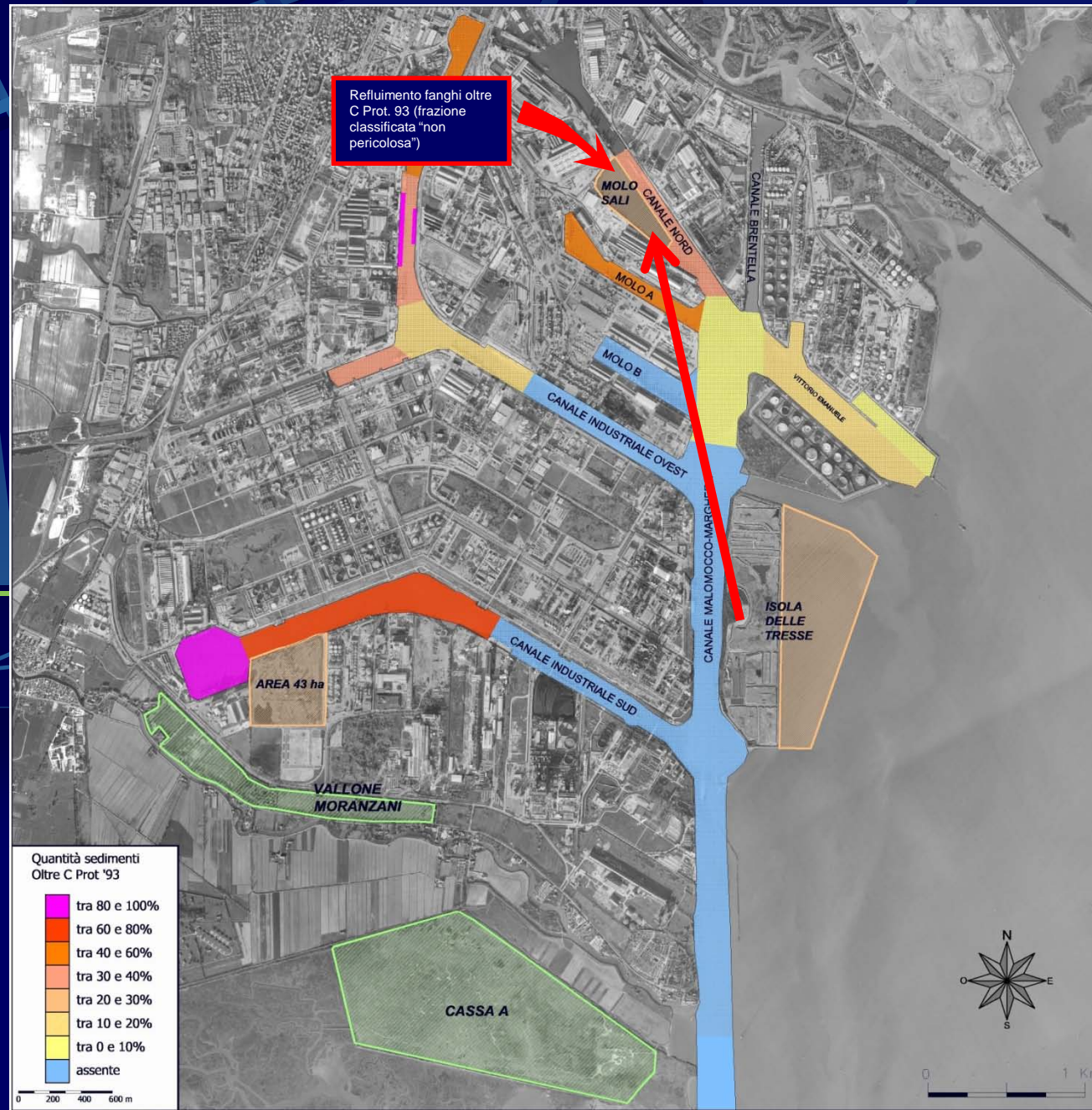
Disposal site for 3.000.000 m³
B/C Class material from Malamocco Marghera
channel navigational dredging (-11 m)

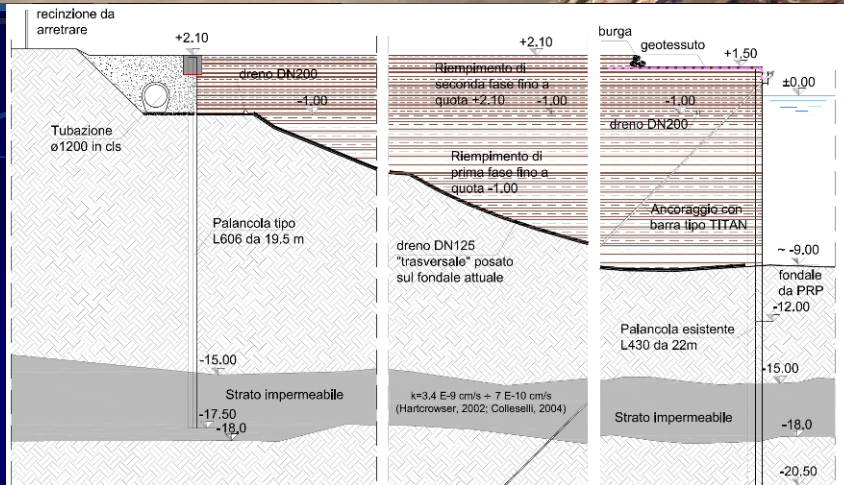




Sediment Management:

- > C Class not hazardous





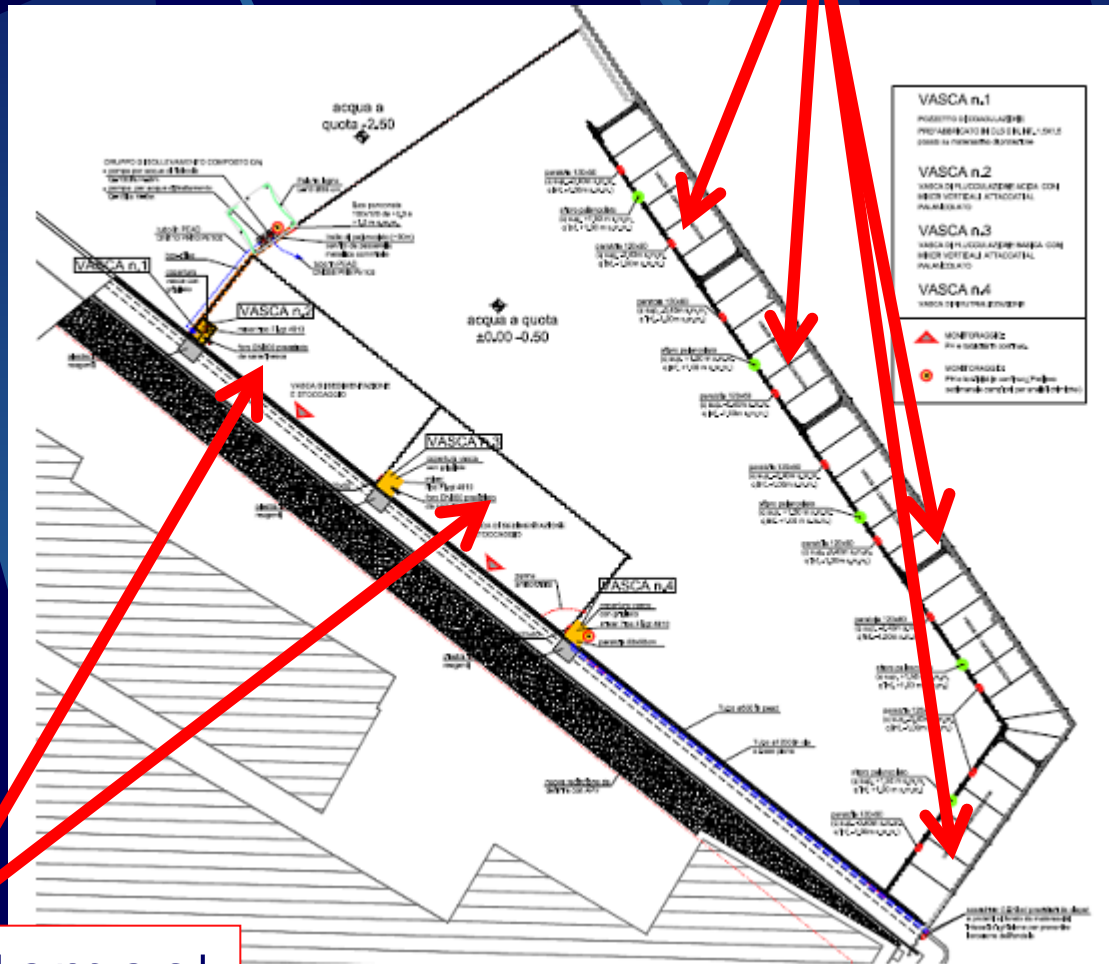
- 750.000 mc disposal site
- 5 analysis storing tanks
- Drainage water system



CDF Molo Sali

Sediment analysis facilities

Commissario Delegato per l'Emergenza Socio Economico Ambientale relativa ai Canali Portuali di Grande Navigazione della Laguna di Venezia



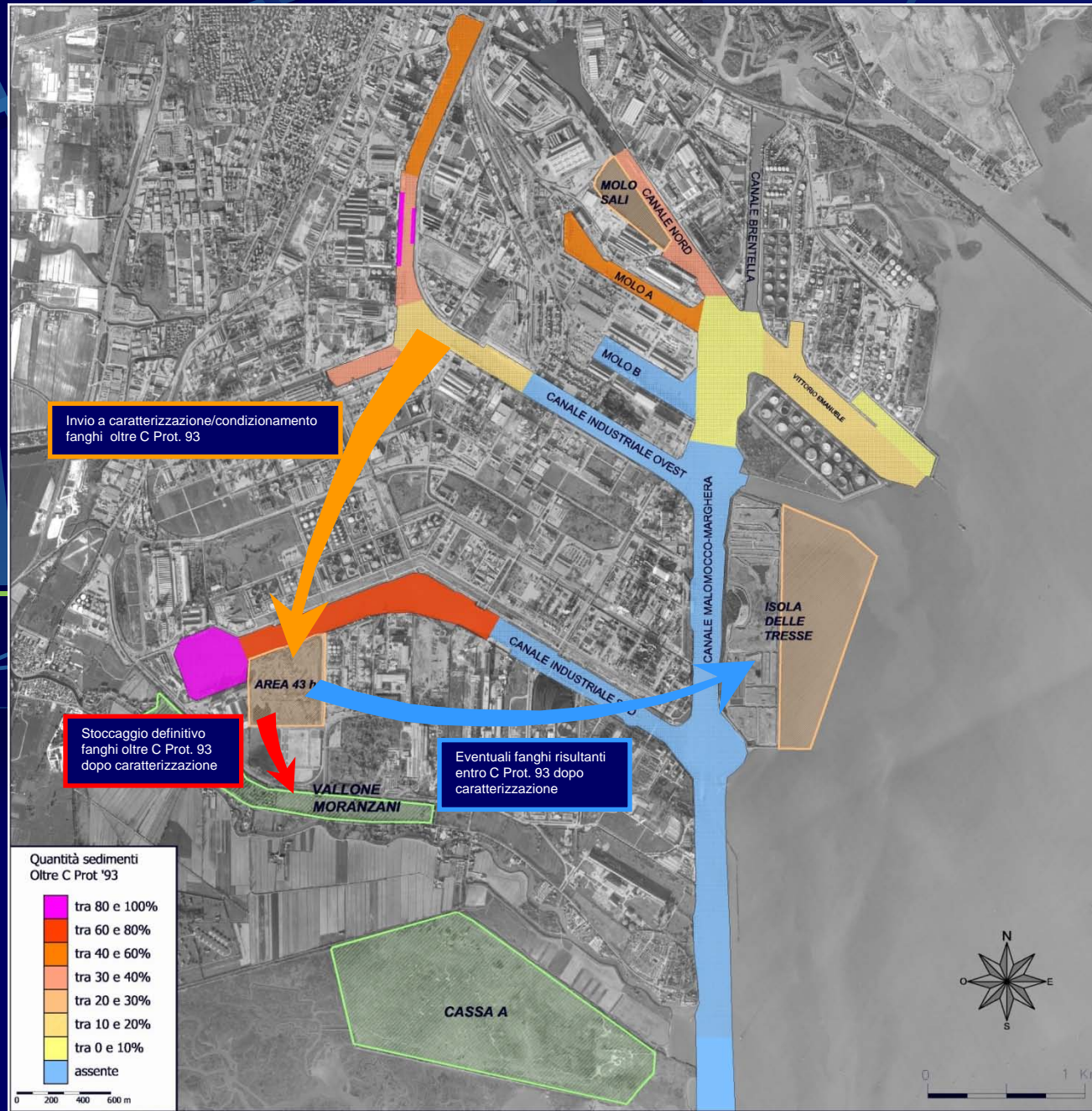
Water Treatment



Commissario Delegato per l'Emergenza Socio Economico Ambientale relativa ai Canali Portuali di Grande Navigazione della Laguna di Venezia

Sediment Management:

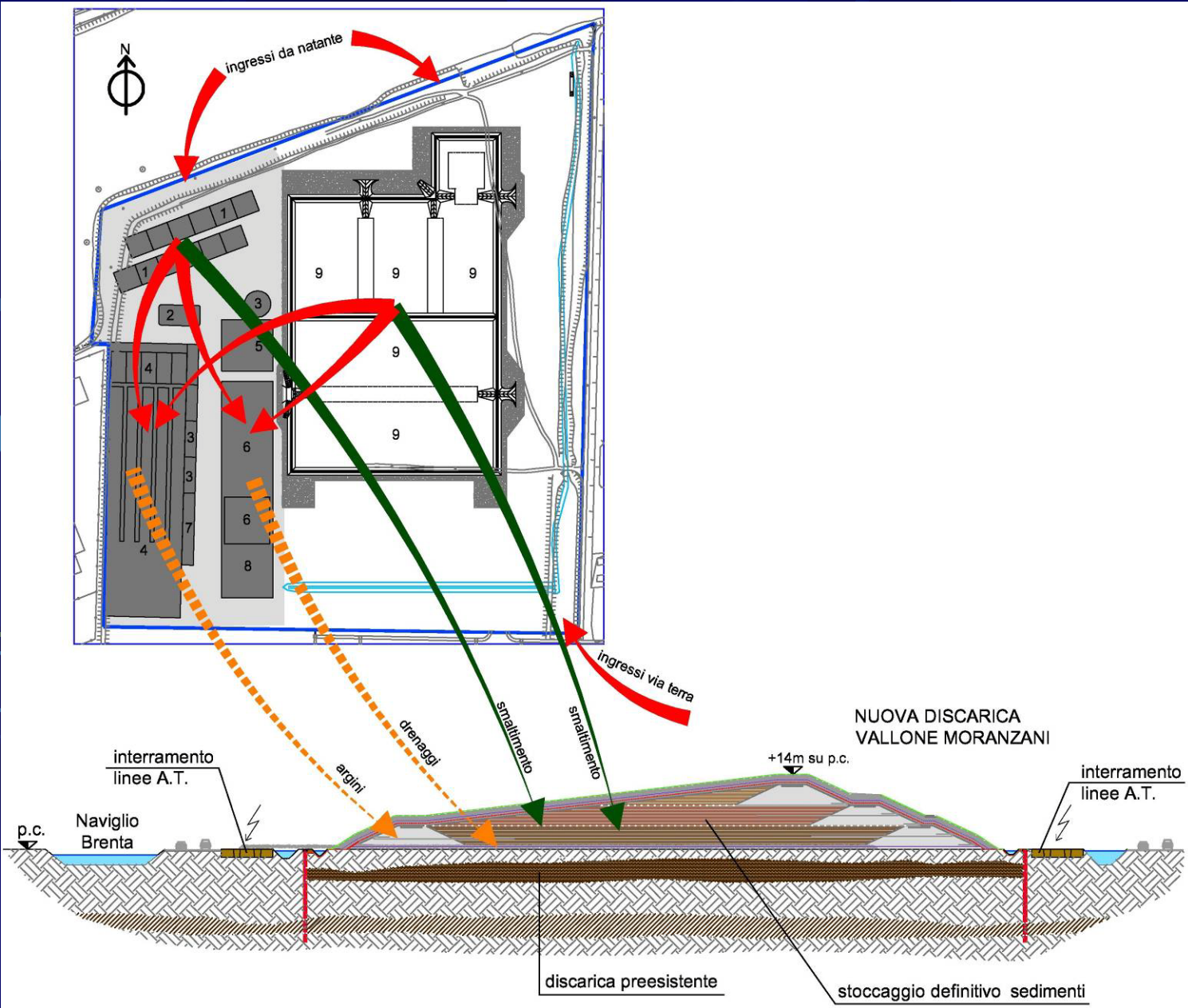
> C CLASS HAZARDOUS



Invio a caratterizzazione/condizionamento fanghi oltre C Prot. 93

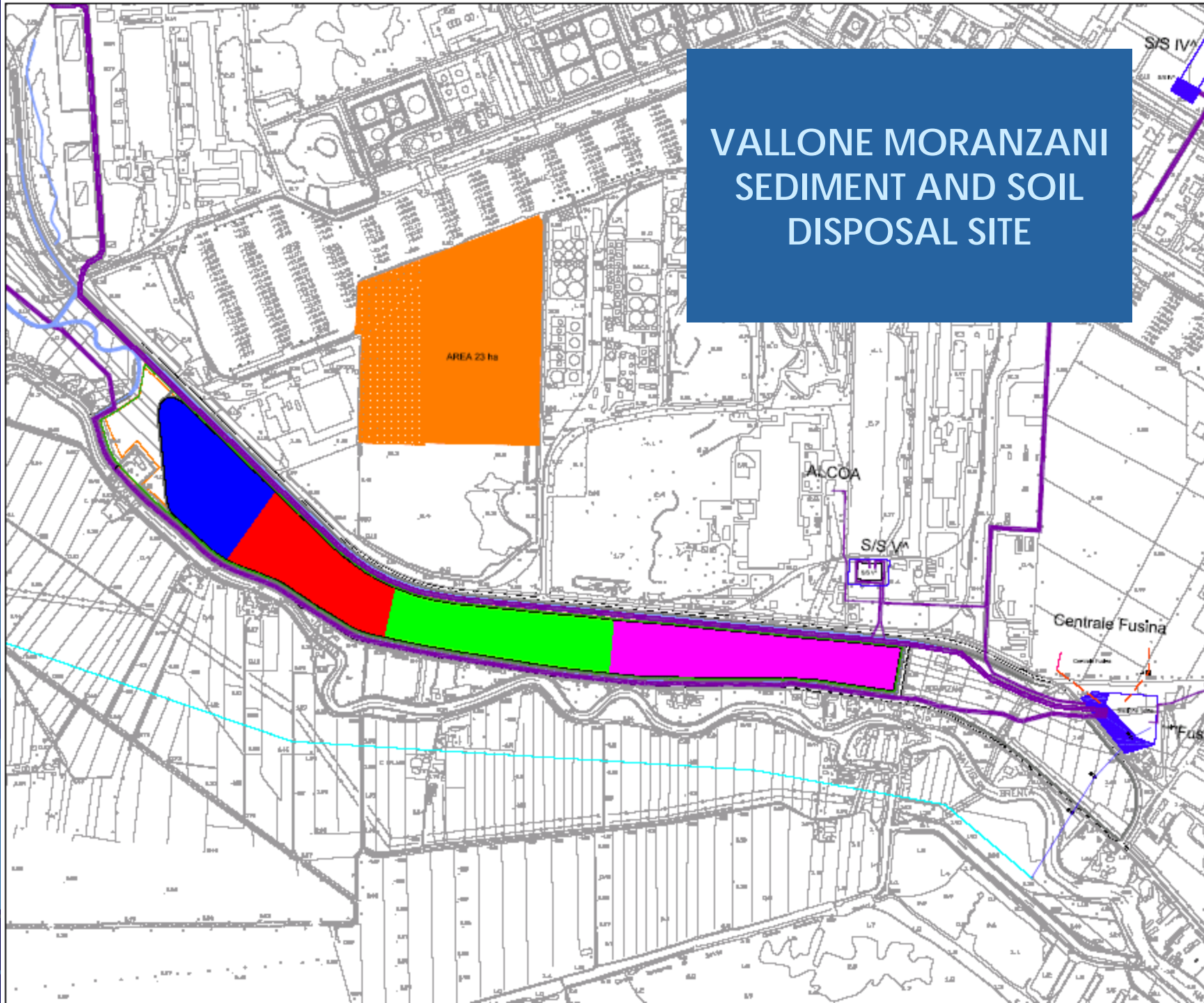
Stoccaggio definitivo fanghi oltre C Prot. 93 dopo caratterizzazione

Eventuali fanghi risultanti entro C Prot. 93 dopo caratterizzazione



23 ha treatment plants and Moranzani landfill

VALLONE MORANZANI SEDIMENT AND SOIL DISPOSAL SITE





VALLONE MORANZANI – FINAL LANDSCAPING

ACCORDO MORANZANI COSTS



**FINANCIAL NEEDS TO BE COVERED
BY SEDIMENT DISPOSAL RATE (95 €/m³).**

MORE THAN 1/3 IS INVESTED FOR ENVIRONMENTAL COMPENSATION

The background is a dark blue gradient with several lighter blue geometric shapes, including triangles and lines, creating a dynamic, abstract pattern. The text is centered in a white, sans-serif font.

FUTURE DEVELOPMENT AND SCENARIOS

ACTION FRAMEWORK: AGREEMENT FOR PORTO MARGHERA CHEMESTRY

CONTAMINATED
SITES
REMEDICATION
AND CLEAN-UP

POLLUTED SOIL
AND
GROUNDWATER
ISOLATION FROM
LAGOON BY SHEET
PILING

DREDGING
CONTAMINATED
SEDIMENT



SOURCES
REDUCTION

AGREEMENT FOR PORTO MARGHERA CHEMISTRY

Once Agreement actions will be concluded:

- no more heavy contamination sources will be present;
- maintenance dredging will manage only light polluted sediment;
- reuse of material for morphological restoration,

DREDGED MATERIAL REUSE SUSTAINABILITY APPROACH

In future maintenance dredging will count on solutions, tested in Venice Lagoon, for:

- light polluted sediment decontamination using “natural” washing technology coupled with bioremediation;
- reuse of dredged material for road basement.

Commissario had already permitted some tests.

In future, once crisis will be closed, Veneto Region will promote these technologies for a sustainable management obtaining all necessary permits.



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Venice Port Authority

Thank you for your attention

Contacts:
www.ccpv.it
www.port.venice.it