



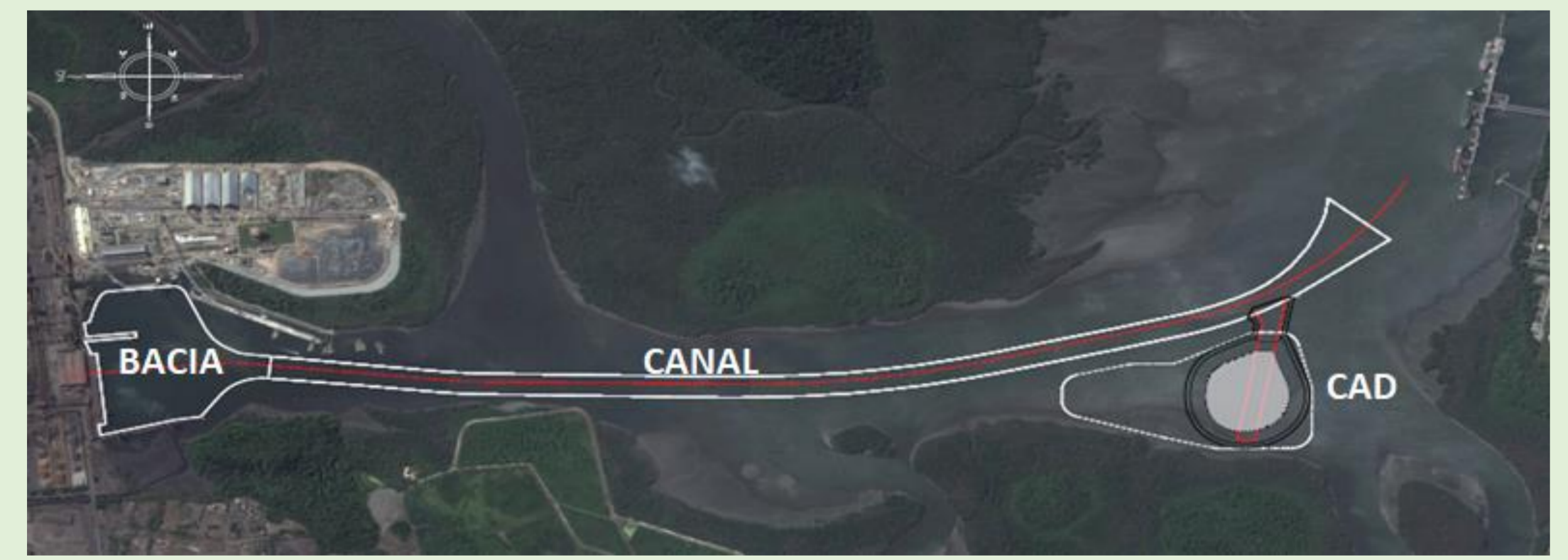
# PIAÇAGUERA CHANNEL CLEANUP DREDGING PROJECT



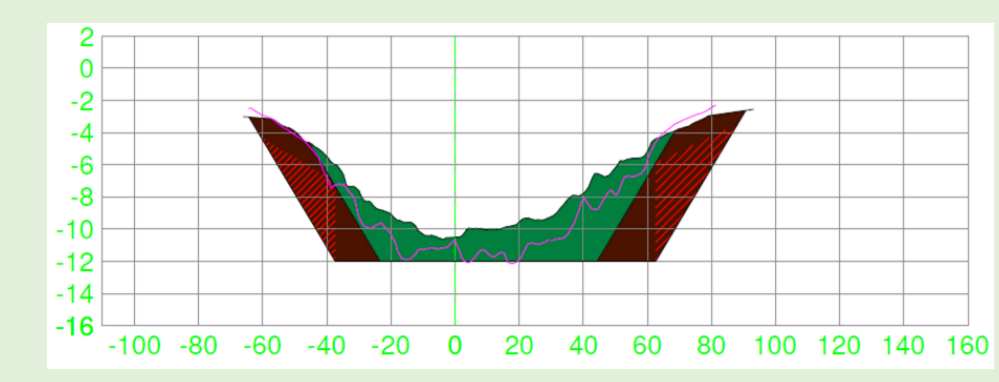
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## Background/Objectives

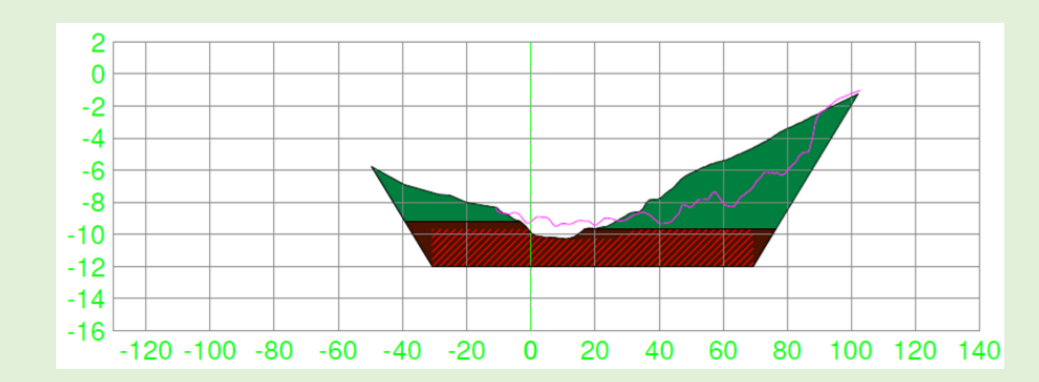
The Piaçaguera Channel is an estuarine channel located on an industrial area, linking private terminals to Port of Santos, the most important port of South America. In the past, untreated industrial effluents were released directly into the estuarine system, contaminating the sediment. Since the 1980's strict control measures have resulted in sharp decrease in the input of contaminants into the estuary promoting the sedimentation of much cleaner sediment in the estuary. However, legacy contamination, mainly by some metals and PAHs, remains below the surface. Channel sediment was extensively characterized in the context of both dredging to maintain navigation and to remove legacy contamination as a cleanup effort.



Localization the Piaçaguera Channel and CAD.



Piaçaguera Channel longitudinal section.



Red circles = oceanic disposal; other areas = confined disposal in CAD



Controls during filling on site

## Approach/Activities

- Sampling: vibracore (0.5m depth strata between -12m and -16m);
- Evaluation of suitability for unrestricted ocean disposal (OD) according to Brazilian regulation CONAMA 454/12;
- Conservative approach: when a given layer was considered unsuitable for ocean disposal, the whole segment was considered unsuitable and assigned for confinement;
- Segments of the channel considered suitable OD in the entire depth were placed at the offshore disposal site (PDO);
- Placement of contaminated sediments in CDF and CAD was evaluated taking into account costs, logistics, regulatory acceptance, environmental risk;
- 2.4 million m<sup>3</sup> to near-shore CAD cell adjacent to the channel; 589,000 m<sup>3</sup> to PDO
- Disposal process in CAD: controls to minimize loss – diffuser to direct the dredged material at the bottom of the CAD and silt curtain in the whole CAD perimeter to reduce plume dispersion during disposal. Following placement, a 1.5 m thick sand cap will provide adequate stability.

## Results/Lessons Learned

The whole process of confining in CAD has been extensively monitored since the excavation phase and all information was gathered in a database. Past and ongoing monitoring activities include sampling water and sediment for quality evaluation, some of them in a daily basis (and semi-annual sampling of fisheries resources and toxicity testing). Monitoring results so far has shown full compliance with regulatory parameters. No apparent adverse effects of the dredging and disposal operations were observed in the environment, in accordance with the results of similar monitoring studies on contaminated sediment placement in CADs from past projects around the globe.



CAD panoramic photo with detail on the silt curtain.



Sediment and water sampling



Sampling of organisms



Meeting with artisanal fishing leaders