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Environmental issue: Rainwater treatment

Relevance to the 5 Es framework of the ESPO Green Guide: Enable

THE STUDY OF RAINWATER OVERFLOW ON THE SOLID BULK DOCKS AND THE INSTALLATION OF STORMWATER TREATMENT UNITS IN THE PORT OF SANTANDER

Rainwater on the docks where solid bulk is transported drags particles towards the drainage system. These particles come from the handling, transport and erosion of merchandise piles exposed to the weather. This leads to increasing pollution on the port waters, affecting negatively on the natural surroundings and reducing the water depth where the vessels berth.

The aim is to reduce the sea contamination and to fulfil the legal water quality parameters. The Port Authority installed stormwater treatment units on the solid bulk public docks. Additionally, the port merchandise operators are involved in improving the solid bulk loading and unloading.

The study of the main materials characterization carried by rainwater and the monitoring of the treatment unit allowed to know the type of pollutants generated, the efficiency of pollutants removal in the treatment unit, the current legal limits' compliance and the volume of sediment retained.

To achieve this, we undertook effluents samples from the washing down and sweeping of the affected areas on the docks. The collecting samples strategy followed the recommendations in the study *"Design and Construction of Urban Stormwater Management Systems"* by ASCE-WEF (1993).

The effluent collected by the cleaning vehicle was deposited in a decantation pit and pumped into the stormwater treatment unit where the contamination was measured entering and leaving the equipment.

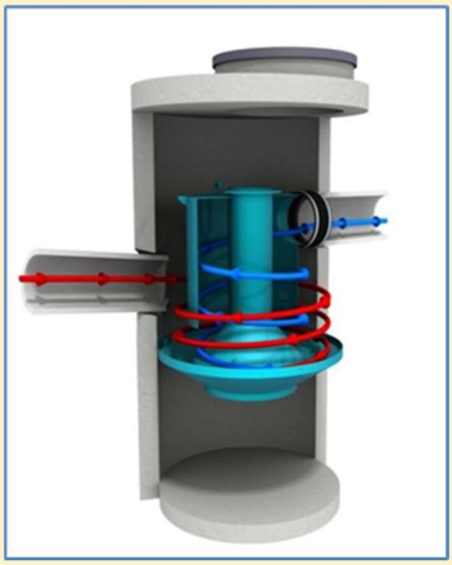
The methodology to calculate the pollutants reduction followed the manual *Urban Stormwater BMP Performance Monitoring* by the Environmental Protection Agency (USA).

The solution was the installation of underground hydrodynamic separators in the solid bulk dock, to separate particles up to 20 microns from the runoff waters. Five of 1,800 mm in diameter hydrodynamic separators and three of 2,500 mm were installed next to the drainage system prior the discharge point to receive the waters of the port area and treat them before dumping them into the sea.

Links:

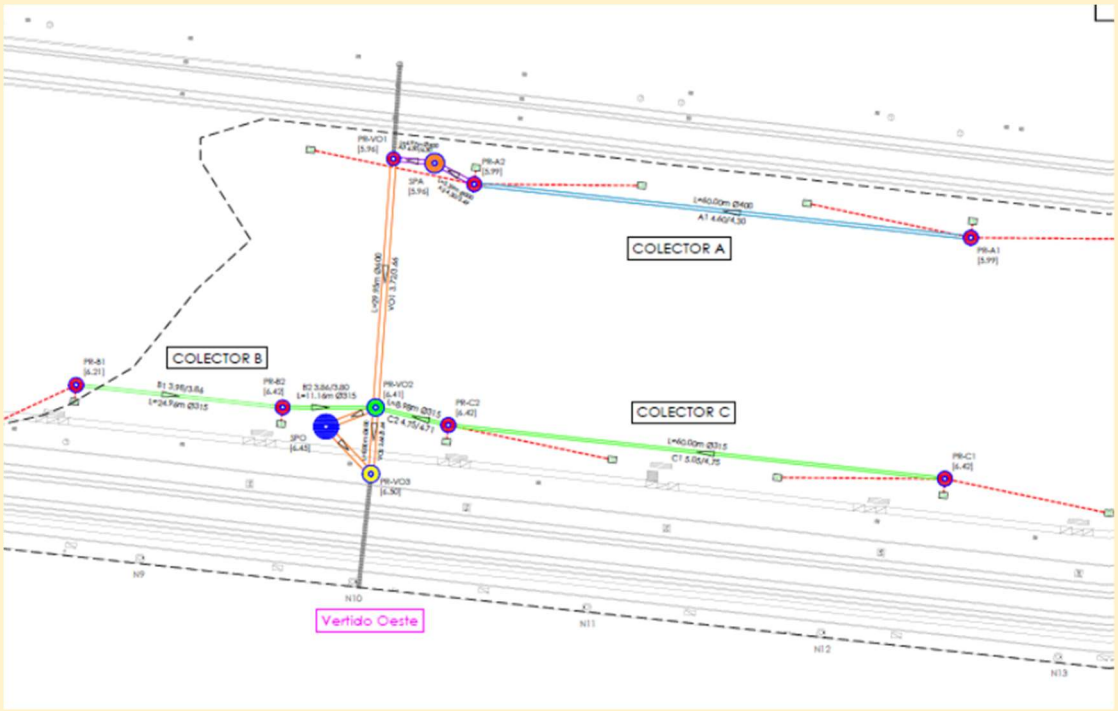
Illustrations:

Sampling equipment and treatment and discharge of waste from cleaning, by washing down and suction



Hydrodynamic separator

Actual hydrodynamic separator at dock installation



Location of the hydrodynamic separators on the dock