

Sabbioncello canal

Quingentole (MN) | Italy



Sabbioncello canal

Overview

The Sabbioncello Canal is one of the most significant irrigation infrastructures in the Ferrara plain, an integral part of the regional hydraulic system that supports agriculture, hydraulic safety, and the environmental balance of the territory.

Originating from a derivation from the Po River, the canal crosses an area with a high agricultural vocation, ensuring water supply to hundreds of farms and contributing to the productivity of the local agri-food sector. The water requirement for crops served by the canal is estimated at 13,344,796 cubic meters of water annually.

Problem

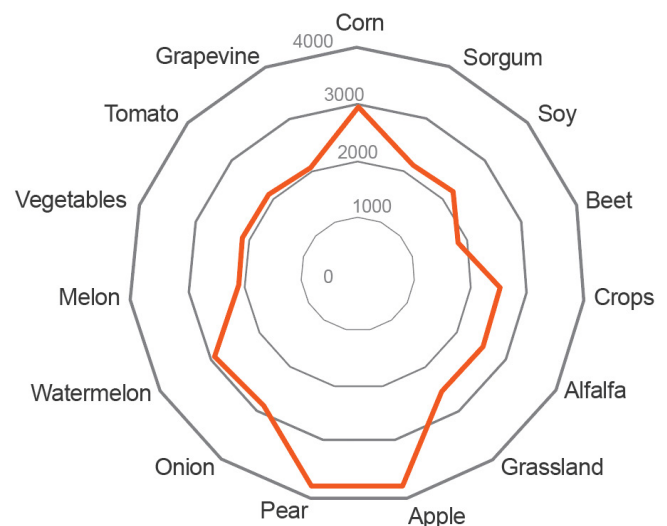
In recent years, the increasing pressure on water resources – accentuated by climate change and the reduction of river flows – has made it urgent to modernize existing facilities. In this context, the Sabbioncello Canal is undergoing a significant redevelopment intervention aimed at reducing water losses along the route, improving distribution efficiency, and digitizing the control system.

The engineering challenge is to minimize hydraulic losses to mitigate possible droughts caused by increasing climate change, thus ensuring the irrigation functionality of the canal.

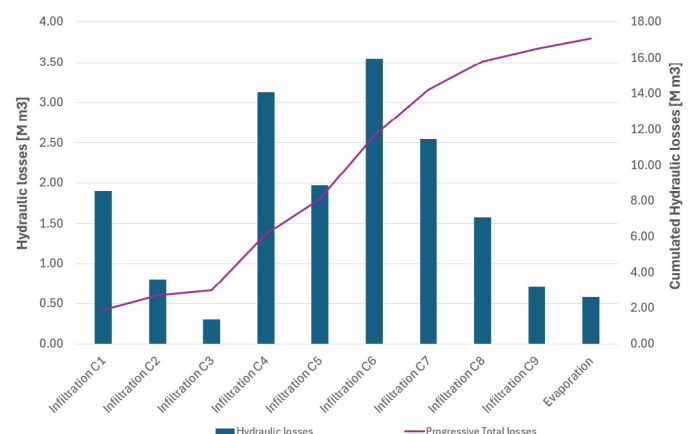
Solution

One of the technical solutions adopted to improve the hydraulic integrity of the canal is based on the insertion of metal diaphragms into the ground to create a barrier effect between the canal and the embankment. Specifically, GU7S sheet piles have been used to create a continuous wall of sheet piles to be installed at the embankment. In some sections, the inner embankment has been covered with gravel or geotextiles to prevent erosion and infiltration. These measures have a stabilizing function for the embankment itself, as well as deterring local fauna from creating burrows. Additionally, the sheet pile wall not only acts as a physical barrier for hydraulic integrity but also has a stabilizing function for the outer embankment by diverting the flow lines generated by the potential difference between the groundwater level and the maximum derivation level of the canal.

Specific yearly water requirements per crop in cubic meters per hectare

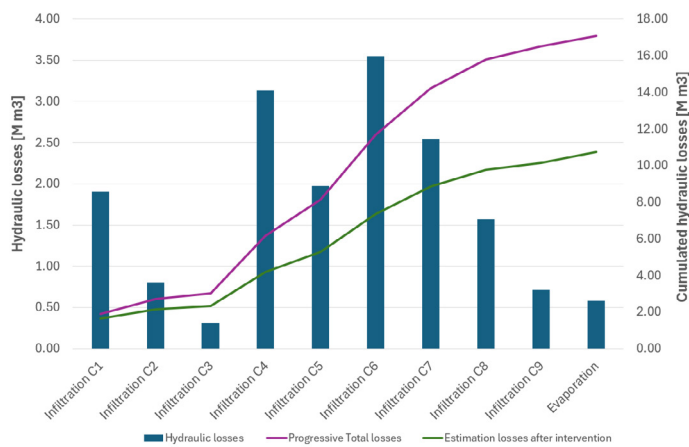


Annual hydraulic losses per section of the canal



(Raimondi, G.S. [2013] Progetto ITER); (Cinalberto Bertozzi, Fabio Paglione in Economia agro-alimentre)

Hydraulic savings resulting from intervention: 6 million cubic meters



Through the described waterproofing works and modernization of the gates, the project aims to combine environmental protection and climate resilience. A concrete example of how water management can evolve sustainably, focusing on innovation, territory, and agriculture. The water savings resulting from the intervention can be estimated at 6 million cubic meters of water annually.

Involved parties

Interventions on the Sabbioncello Canal to requalify the Irrigation System of the Sabbioncello District in the Lombardy Region.

Owner: Consorzio della bonifica Burana
<https://www.consorzioburana.it/index.asp>

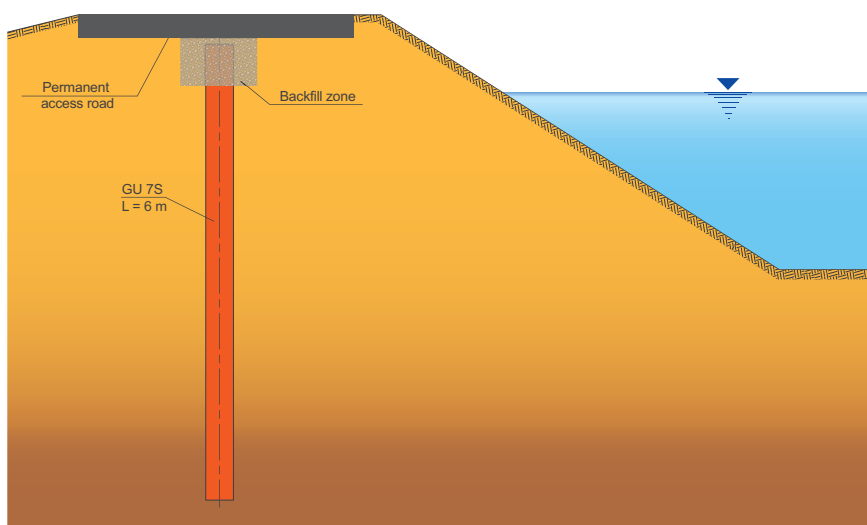


Contractor: Frantoio Fondovalle
<https://www.frantoiofondovalle.com/azienda/gruppo/>



Sheet piles producer: ArcelorMittal, 4450 tonnes GU7S

Section type of the project. ArcelorMittal GU7S



References

* Economia agro-Alimentare/FoodEconomy: New advanced designed systems to ensure safeguard of the territory and preservation of water resources for irrigation. Cinalberto Bertozzi, Fabio Paglione.

Acquisizione di conoscenze sulla falda ipodermica come contributo per la gestione delle rate di canali di bonifica e irrigazione gestita dal consorzio della bonifica di burana. Raimondi, G.S. (2013). Progetto ITER.

Informazioni sulle coltivazioni e necessità (AGREA): *Dati aperti sull'uso del suolo - Agenzia regionale per le erogazioni in agricoltura*