



Widespread introduction of constructed wetlands
for a wastewater treatment of Agro Pontino

LIFE+08 ENV/IT/000406

CONSORTIUM FOR THE LAND RECLAMATION OF THE "AGRO PONTINO"

ACTION 7.2

ANALYSIS ON THE HYDROGRAPHICAL NETWORK IN THE CONSORTIUM AREA

Partner:



ANALYSIS ON THE HYDROGRAPHICAL NETWORK IN THE CONSORTIUM AREA

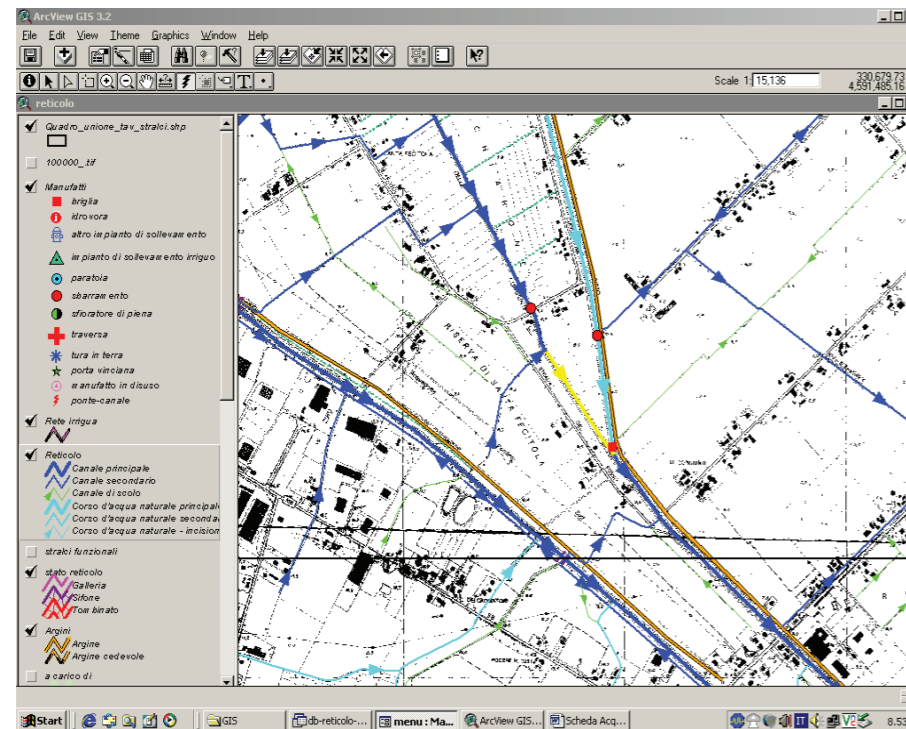
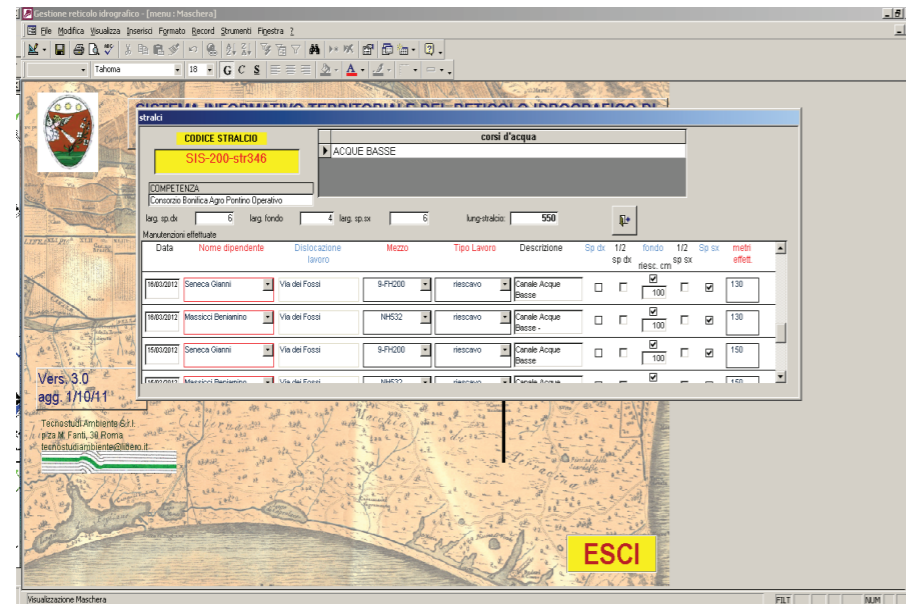
¹The present report describes the activities completed, and the ones currently being completed, of Action 7.2 (“Analysis of the hydrographical network in the Consortium area”).

Main outputs of the action were:

- elaboration of a line-vector GIS layer (equivalent scale 1:10.000) representing the hydrographical system under the responsibility of the Consortium for the Land Reclamation of the “Agro Pontino” (CBAP), validated as described below;
- implementation of a relational database, on the basis of the one elaborated by the “Autorità dei Bacini Regionali del Lazio” (Authority for the Regional River Basins). The database is able to include all pieces of information associated to the graphical elements representing the hydrographical network;
- survey of the main drainage works and description of the maintenance activities seasonally carried out by CBAP;
- completion of the survey of the hydraulic works and of the related descriptive information (general characteristics, conservation status, maintenance activities, photographic documentation, filing of related projects...), with particular attention to the draining plants;
- digitisation of data related to riverbeds (geometry, bank typologies, conservation status, maintenance activities...), according to the typical sections of the original design by the Consortium, and to field verification;
- implementation of a network model, able to visualise variations in stream directions and to evaluate flow capacities according to the state (open/close) of every hydraulic work or derivation;
- characterisation and digitisation of CBAP’s irrigation systems and survey of the distribution network;
- deployment of data regarding CBAP’s monitoring network;
- development of the database, with specific applications for the accounting and monitoring of maintenance works.

Due to the considerable dimension of CBAP’s network, the realisation of the above mentioned activities will be carried out section by section, each corresponding to the different river basins.

¹ This document is a summary of the Italian version.



The project also envisages the implementation of an Automatic Environmental Monitoring System. The system will monitor the hydrographical network through the detection of hydro-meteorological parameters and quality of water flows of the Consortium's network.

The criteria for identifying the environmental parameters for the survey, set out in the design of this monitoring system, derive from the need to register real-time the trend of the water levels for each canal branch of the Consortium, in relation to their double function of transporting the available water resource, and of being recipients of the drains of the drainage basin.

Values object of detection will explore both quantitative and qualitative aspects.

The quantitative aspect will be related to the survey of the water flow levels of the main canals; these values, integrated with the existing monitoring systems installed by other institutions, are fundamental for the hydraulic defence of the territory, and for the prediction and management of emergencies. The qualitative aspects are fundamental both for irrigation purposes and for the environmental protection.

The stations, composed of various types of sensors connected to an electronic control unit, carry out the expected measurements, process the data locally for estimating both the average values and a number of derived values, and temporarily store it until the time of its transmission to the supervision subsystem.

In this context, it can be said that the environmental benefits – as regards the use of raw materials and energy – will regard the possibility of achieving a greater efficiency in the management of the irrigation districts, thanks to the close examination and the continuous knowledge of the hydrometric values of the entire network.

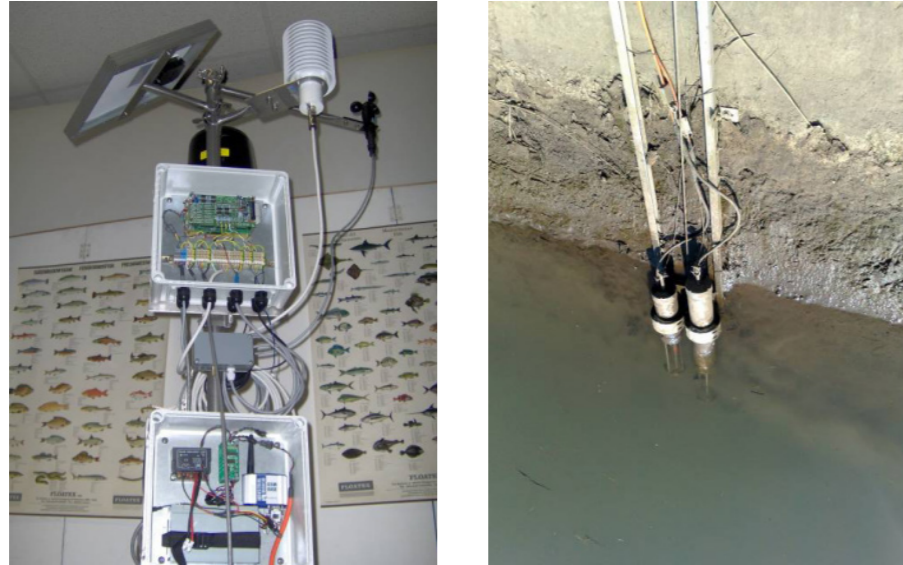


Fig.3 Weather station and probes for checking water quality.

Weather station

The weather station will be able to measure the following environmental parameters:

- Temperature
- Humidity
- Atmospheric pressure
- Intensity and direction of wind
- Rainfall level

Hydrometric station

The hydrometric station measures the distance between the sensor and the surface of the water, it is therefore a real-time measurement of the level of the watercourse.

Water quality monitoring station

The monitoring station may be composed of two different probes mounted on a sledge.



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