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PROVIDING CLEAN WATER TO RURAL VILLAGES

Water research, well borings, purification, distribution, and reuse.

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Highlights: 100 million people live without fresh/clean drinking water in Punjab rural areas

Social awareness and education towards a sustainable water reuse

Complex projects need Project Controls practitioners and Third Party Validation as system integrator of paramount importance

GDL Graphic Data Link to speed up the realization of GIS Portals

water research in ground water and the challenge of salty/polluted layers of the aquifer with Bio activators for the reuse of water

Keywords: Rural semi arid areas, water research, well borings, purification, distribution, reuse, water sensitive urban design

1. Introduction

The paper describes the results of a Third Party Validation TPV experience in Punjab. The Client, Punjab Saaf Pani Company, the State owned Authority has the tasks to provide fresh water to the rural villages.

The task is enormous: 100 million people live without fresh/clean drinking water. The seasonal distribution of the rain regimes gives the villages the two challenges water poses: too much water in the monsoon season and no water during the dry months.

The agricultural land is very fertile but the limit is the available water resources. The ground water is rich in water that has not the quality to be a drinking source. The salty water layers are a predominant feature of the underground water tables. The available waters with a better quality can be found in the first layers. Electrical campaign was made to determine the location of the best possible resource.

2. Material and Methods

The need of providing fresh water to 100 million people can be considered applying a complex project. To manage such a complex project GIS portal is a priority to be able to map the water quality inventory tests performed along the project area and thereafter to map the water supply network and related features.

The Water supply Web GIS portal required the setting up of the Web Gis environment also to register progress of site work on site: from the main application the menu map leads to two different environments: one is the mapping and the other is the Clouds Georeferencing services.

Nos. two mapping environments have been set up: one using the AutoDesk Inc. Map Server with his online application GDL Infomap & Metadata Server produced by Alpha Consult srl of Rome (Italy) to have a full Web GIS portal and to register progress of site work on site: the other as a tool for the georeferencing procedures that takes in input the data prepared on Client by GDL Graphic Data Link as Application of Autodesk Inc. AutoCad Map.

Alpha Consult is made up of an independent group of highly qualified, skilled and experienced professionals, providing consultancy and technical assistance in GIS to both the public and the private sectors. A technology centre for the development of customised solutions using commercial and in house GIS products and facilities to set up web GIS sites are installed in the firm's premises. Alpha Consult has produced the application GDL Graphic Data Link to speed up the realization of GIS Portals preparing data in a suitable manner to be converted in "intelligent" layers connected to the proper database table in order to prepare data for online hydraulic calculation.

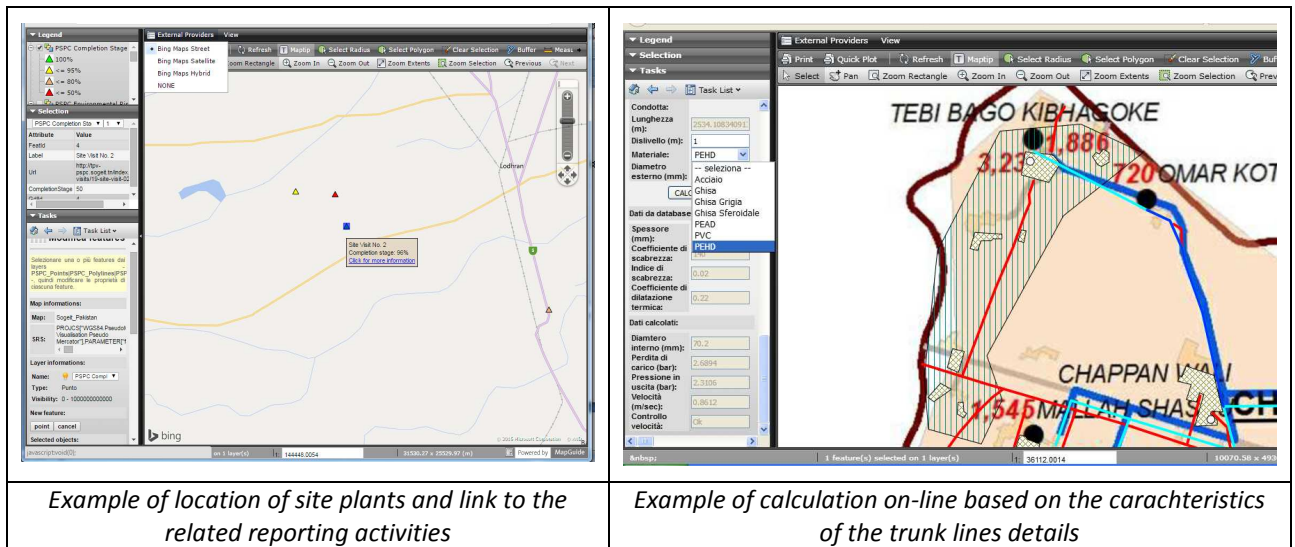
GDL Infomap & Metadata Server side environment that allows to apply calculation models on the flight to the data stored in the geodatabase and/or supplied online by end users.

The first mapping environment is based on Map Guide Open Source Application running preferably on Google Chrome. It is presented as a layered based representation using the aerial photograph of Bing (By Microsoft maps). Above the base the geographic features are represented in UTM 42 North.

The second map application is geared to assist in the georeferencing processes and is a "Shell" combining Google Map and Map Guide Map Server linked together: with the two applications the process of georeferencing and storing the TPV data are fully covered.

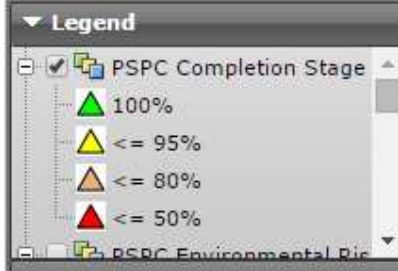
3. Results and Discussion

The results was achieved with the inauguration and commissioning of the plants and the realization of the Water supply Web GIS portal.



The map portal based on Map Guide Enterprise open source and it is a full Web GIS environment.

The layer on the legend show the plants sites characterized by the degree of completion stages. The completion stage is divided in 4 intervals to show the progress of work in an intuitive manner on the map :

<ul style="list-style-type: none"> from 0 to 50% completion stage the site is shown in red from 51 to 80% completion stage the site is shown in light pink from 81 to 95% completion stage the site is shown in yellow from 96 to 100% completion stage the site is shown in green 	 <p>Part of the legend of the map</p>
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4. Conclusion

Complex projects like the Punjab Water Supply need project controls: saving of general project costs pays the project controller fees. In fact the Project Controls practitioners assist in identifying intangible benefits, such as the early recognition of schedule impacts or slippage. This allows the team to implement corrective actions, and maintain the 'go live date of the project. Moreover, in projects where the complexity of harmonizing equipment from different parts of the world ranging from solar panels, UV plants, pumping stations, ..., needs expertises in the various fields that have to work together, the role of Third Party Validation as system integrator is of paramount importance. Different technologies, with different design approaches, procurements challenges in a global world makes room for a new professional that not only has the technical capacity of managing large projects but also is able to blend international designs and work methodologies in the local conditions to guarantee an high quality of the work. A quality controller coordinator acting also as system integrator is the new professional figure emerging in international projects where a multidisciplinary knowledge and global experience is necessary.

The problem that remains is the safeguard of the resource, the recycling of waters, the possible use of enzymes and the impoundment where possible.

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