

The Historical Heritage Map of the Ostiense Marconi Urban Project

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Abstract

The project, *The Historical Heritage Map of the Ostiense Marconi Urban Project*, was created thanks to the setting up of a Working Team of Experts and to the collaboration between the offices of the Rome City Council and the Ministry of Cultural Heritage. The project, developed with software ESRI (ArcView 8.3, Spatial Analyst, 3D Analyst), investigates 1,500,000 square meters of great archaeological relevance, where disused industrial structures have turned this area into the most important industrial archaeological site of Rome. The need to integrate different data on the geographical base and to develop complex analyses in line with the modern strategies of urban planning required the use of GIS methodology.

The project was awarded the 2003 Poster Section at the 6th ESRI Italian User Conference and has been selected by the Department of Public Affairs to be placed on the Web as an example of “good practice” to be propagated.

Introduction

The Historical Heritage Map, named COsMa (Carta Ostiense Marconi), covers two districts, (fig. 1) located in the south-west area of Rome,² which are crossed by the Tiber River and by two main roads named Ostiense and Marconi.



Figure 1 - A symbolic overview of the area investigated

The whole area is characterized by significant archaeological evidences and by a large number of archaeological industrial structures, with remarkable historical and environmental value. Today, the latter are, mostly no longer used. Among these, the following former archaeological industrial structures are of particular relevance:

- Mattatoio (Slaughterhouse)
- Former Officina del Gas (Gas Plant)
- Porto Fluviale (River-port)
- Mira Lanza (Soap Manufacturer)
- Mercati Generali (General Markets)
- Centrale Elettrica Montemartini (Power Plant)
- Vasca Navale (Naval Basin - Ship testing laboratory)
- Ottica Meccanica Italiana - OMI (High-precision optical appliances for the Air Force and aerophotogrammetry)
- Società Aereostatica *Avorio* - SIBA (Parachutes Manufacturer)
- Magazzini Generali (General Stores)
- Federazione Italiana Consorzi Agricoli (Italian Federation for Agricultural Consortia).

The Historical Heritage Map has been developed within the framework of the Urban Project Ostiense Marconi, (fig. 2) aimed at the recovery of this formerly industrialized area. Its industrial destination and development were initially foreseen in the urban development plan of 1873. This was then confirmed in 1909 in the Sanjust's urban development plan and in the one approved in 1931. Although this area has played a significant economic role for several decades, at the beginning of the 1970s, a new scenario emerged, leading to a progressive de-industrialization of this area.



Figure 2 - Urban Project for the Ostiense Marconi Area

The Urban Project Ostiense Marconi

The Urban Project Ostiense Marconi³ was developed by the Ufficio Città Storica (Historical City Office) of the Rome City Council, directed by Arch. G. Farina. The Office, through the use of innovative tools and a new vision of the historical city aims at providing a new concept of the city's cultural, environmental and historical identity and dimension as well as enhancing its spatial and architectonic qualities. The roadmap towards innovation will proceed along a radical re-thinking of the cultural heritage domain and of its intrinsic essence, including new organizational models, advanced technological solutions, knowledge management and dissemination. This strategic approach enables to develop internal capacity, utilizing existing expertise and building the alliances necessary for a well-integrated urban development programme that places at its heart the rehabilitation of the historical city and its environment.

The Urban Project, a planning tool widely used in Europe, has been included in the New Urban Development Plan of Rome⁴ to transform strategic parts of the city, with the objective of improving the quality of the urban environment.

The New Urban Development Plan proposes the idea of *historical city* as a concept that breaks with that of *historical center*, and extends beyond the ancient roman walls (Aurelian walls). This concept focuses on safeguarding and enhancing the historical heritage of the entire city territory and covers all historical periods, including the modern and the contemporary ones. Within this context, where history becomes a key component for the design of the city, the area Ostiense Marconi gains historical value and the possibility to take advantage of one of Rome's more unique resources. This new approach helps to bridge the gap created by the old debate on conservation and transformation and brings historical memory into the planning of the new city.

The strategic objective of the Urban Project Ostiense Marconi, covering an area of more than 115,000 inhabitants focuses on creating an *urban centrality*⁵ and on enhancing the following strengths of this no longer peripheral area:

- access to city rail transport
- abundance of areas with deep historical memory and unique identity
- final arrangements for the new locations of Roma Tre University.

The most significant interventions for the urban and environmental rehabilitation foreseen by the urban programme are:

- new use of old industrial structures
- developing an environmental system
- rehabilitation through the development of new functions and practices
- enhancement of the historical fabric.

COsMa - The Historical Heritage Map

The Historical Heritage Map, covering an area of more than 1,500,000 square meters was developed with GIS technology, capable of assembling, storing, manipulating, analyzing and displaying a complex of heterogeneous, micro and macro geographically referenced information, arranged chronologically, from the geomorphologic layer, through the historical evolution of the urban settlement, up to the interpretation of the contemporary urban scenario.

The development of the Historical Heritage Map relates to the need to create a GIS Management Information System for urban planning, preserving and valuing cultural and historical heritage as well as the strategic elements found in the areas examined.

The project, still in progress, began in 2002, thanks to the setting up of a team composed of members of the Rome City Council and of the Ministry of Cultural Heritage⁶ and aimed at studying and evaluating the aspects related to the knowledge and preservation of the cultural and environmental heritage as well as to ensure the dissemination and the exchange of updated and refined data developed within the framework of the various bodies and institutions.

The system has been designed to make it possible to use historical knowledge to support programmes for the development and management of the territory as well as saving both time and financial costs in implementing the interventions. It also enables the creation of high standard cultural services and the improvement of the quality of the urban environment.

Furthermore, the development of a GIS System is linked to the need of performing diachronic investigations and making complex spatial analysis of the phenomena investigated (geological and archaeological critical elements, state of conservation of the ancient buildings as well as introducing a system for developing historical data management (fig. 3) and monitoring rehabilitation activities.

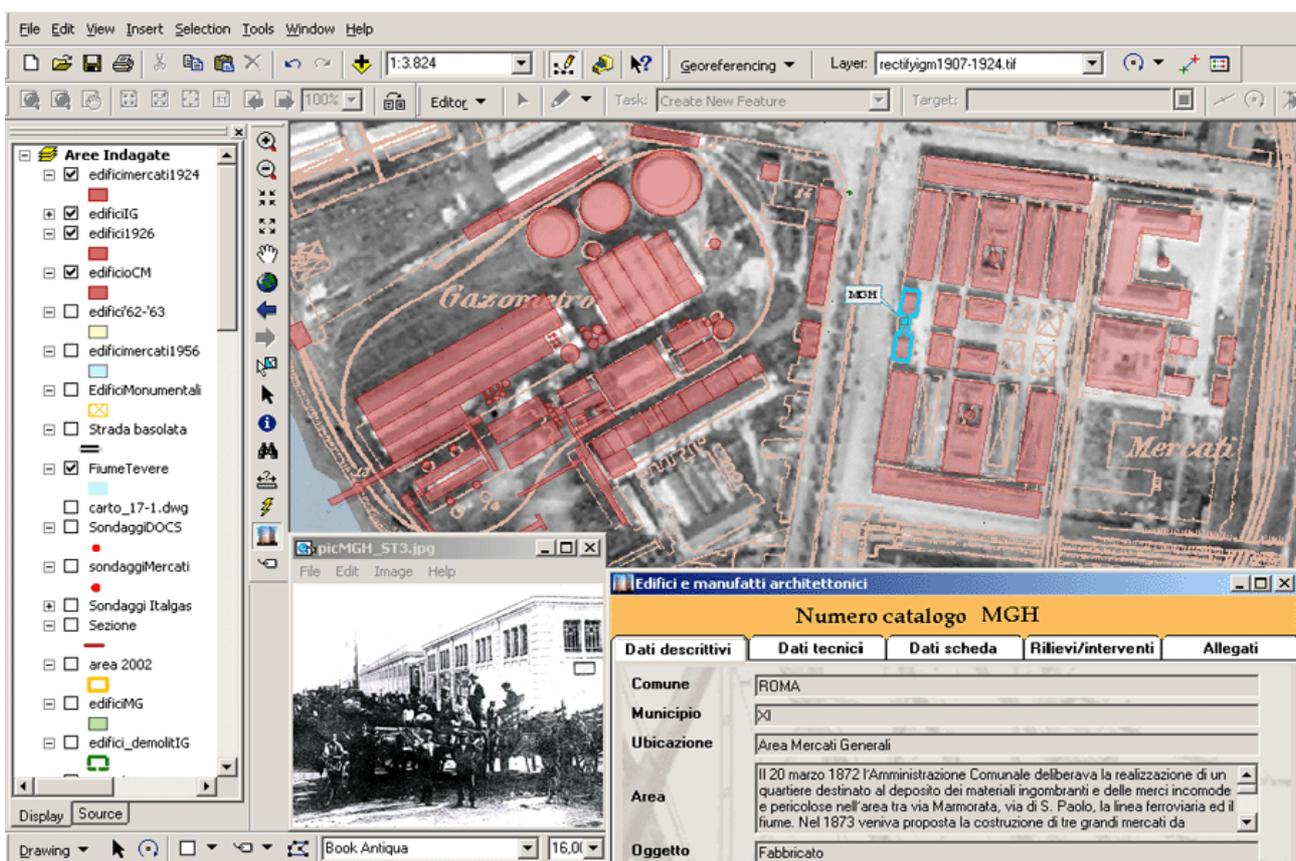


Figure 3 - General Markets and Gas Plant Areas: I.G.M. Map (1924) and SARA-Nistri aerial photograph (1934)

The system is based on the concept of landscape. This represents a combination of natural and human elements, interwoven through a continuous reciprocal changing and modifying relationship. A dynamic geographical space, due to the evolution of human settlement and to the influences and modifications both undergone by and operated on the environment. The remains of past cultures

are, therefore, an integral part of the landscape. These are elements for tracing and reconstructing the patterns of ancient societies and the geographical environment as it was lived and perceived.

The project has required an interdisciplinary approach and the use of different data acquisition methods such as:

- geological and geo-archaeological corings
- archaeological excavations
- bibliographic and archive research
- document reviews
- photo documentation
- analysis of historical buildings, monuments and former industrial sites
- aerial photo-interpretation and remote sensing
- geomorphological and archaeological analytical studies
- compared studies between geological, geomorphological, archaeological data and the state of conservation of buildings, cartography, Cadastre and current Land Registries.

The methodology adopted has required comparing and merging a large amount of data sets regarding all the study areas. The overlaying of the layers produced has generated subsets of features which identify traces, presences and absences of the historical memory of the territory. It is also planned to develop a 3D reconstruction of the areas investigated, including buildings and archaeological layers. (fig. 4)

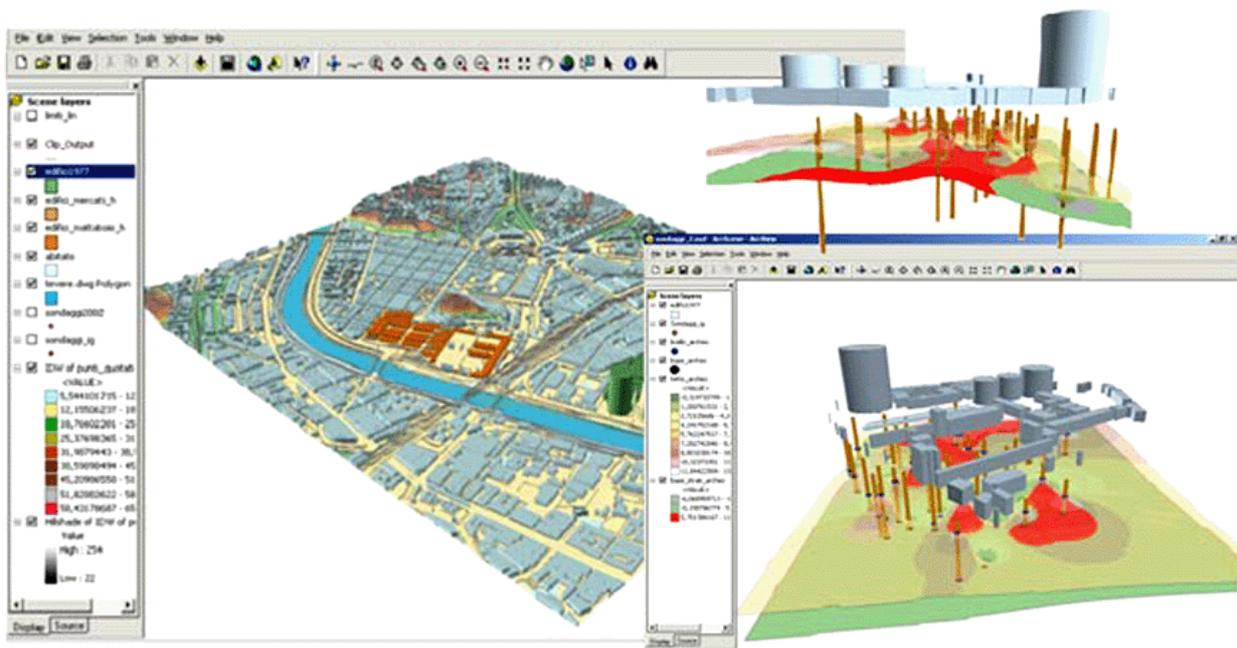


Figure 4 - 3D view of the former General Markets and Gas Plant Areas: reconstruction of the archaeological layers

The system is developed with software ESRI (ArcView 8.2; 3D Analyst and Spatial Analyst). The Rome Council vectorial base (Scale 1:2000) is geo-referenced with the Coordinate System Gauss-Boaga (Roma 40).

Selected historical maps, drawings, plans and aerial photographs are scanned and geo-referenced on the vectorial base used. The descriptive information relative to archaeological, historical and

environmental data is managed through a relational data base. (fig. 5) It is a highly normalized DB, characterized by scalability, exportability and modularity. Its schema can be implemented both in DB Desktop (Access) and in RDBMS server (Oracle, SQL Server). This will facilitate the migration to the ArcSDE architecture without requiring major modifications. Furthermore, an external application was developed that utilizes ADO (ActiveX Data Object), interfaces with the DB, interprets the data and visualizes it. The development of a new function in ArcGIS, through the use of ArcObject Utilities, enables to get the code of the selected feature and to transfer it to the data explorer application developed. The new application has a particular relevance for the management of attached documents such as pictures, drawings, plans, etc., being managed as OLE data. This enables the Operative System to open any document with the same application which generated it. The analysis performed in ArcGIS is managed through the DB View. This enables to generate and manage reports and layouts.



Figure 5 - Database forms

At present, the system is composed of more than 70 layers relating to different study areas. A new layer is currently being developed and focuses on film production. The locations of the movies shot in the areas investigated are being geo-referenced on the cartography. These features become *dynamic* representations of the viewed and imagined landscape through querying data, pictures and clips stored in the DB.

Investigations and Findings

The study of cartography and of the historical aerial photographs together with a review of the bibliographic and archived data on archaeological evidences found during the urban development works performed since the end of the 18th century, have made it possible to locate archaeological

remains and demolished buildings as well as identifying the changes undergone by the Tiber River and by its tributaries in this area.

The course of the Almo River⁷ has been identified as it was before being channeled under the circonvallazione Ostiense (Ostiense ring road), during the urban development works carried out at the end of the 1930s.

The analysis of the geo-archaeological corings and of the archaeological excavations carried out in the areas of the former Italgas (Gas Plant), Mercati Generali (General Markets), Federazione Italiana Consorzi Agricoli (Italian Federation for Agricultural Consortia) and in the area where it is planned to build the Ponte della Scienza,⁸ (Science Bridge) has enabled to identify archaeological layers located four to eight meters under ground level, with a superimposed periodical alluvial sedimentation. This analysis has also enabled to gain a better understanding of the paleomorphologic evolution of the Tiber alluvial plain, since the Roman age up to the beginning of the last century. Furthermore, a gradual shifting of the Tiber River has been found from east to west with an aggradation of the river bed⁹ and the sediments of the final part of its tributary, the Almo River. Archaeological layers have been found in these latter sediments, placed in an area which reminds of the war between Rome and Carthage and it is seemingly dedicated to the worship of the goddess Cibele.¹⁰

The geo-archaeological corings performed in the area of the Mercati Generali have enabled to reconstruct the paleo river-bed of the Almo and to identify different quotas of archaeological levels. A subsequent excavation in the area has evidenced layers with features of the Roman age, and has, therefore, confirmed the validity of the methodology adopted.

The methodology applied to the investigation on the industrial archaeological heritage foresees the census of the individual structures, their classification, digitalization and cataloguing. This procedure aims at achieving a deep structural and functional knowledge of the industrial buildings and to provide guidance for carrying out the transformations with due consideration for their technical and historical characteristics. The analysis of the different areas and/or buildings documents both the timing and characteristics of the process that has led to their falling into disuse and the changes foreseen by the Urban Development Plan. As at today, the areas examined include the former Mercati Generali, Italgas, Magazzini Generali, Federazione Italiana Consorzi Agricoli and the Centrale Elettrica Montemartini.

Furthermore, another section of the system analyzes the data relative to demolished churches and historical, industrial and monumental buildings that were located along the Ostiense Road, from Porta S. Paolo (Aurelian Walls) to the Valco S. Paolo Area. (fig. 6)

The area currently under investigation is Valco S. Paolo, part of the floodplain, which shows on its east side small volcanic reliefs, which form the top of each hillside of the original alluvial Tiber valley.

The geological studies¹¹ show the structure of the Holocene alluvial sediments, cut by the actual flow of the river. The original characteristics of the area are identifiable in the historical maps which depict it as a swamp, crossed by draining channels heading to the Tiber.

Most of the archaeological remains (banks, roads, building and cemeteries) found since the end of the 19th century relate to the Roman Age. The existing old farm houses and those which appear only in the historical maps and in the Land Registry, seem to indicate, over the past centuries, the presence of scattered settlements in the countryside next to the city. (fig. 7) A large number of

industrial structures that are being catalogued and mapped prove that this area was characterized by a significant focus on industrial activities.



Figure 6 - Demolished churches and monumental buildings located along the Ostiense road geo-referenced on the Topographic Map of Rome and its Suburbs (1839)

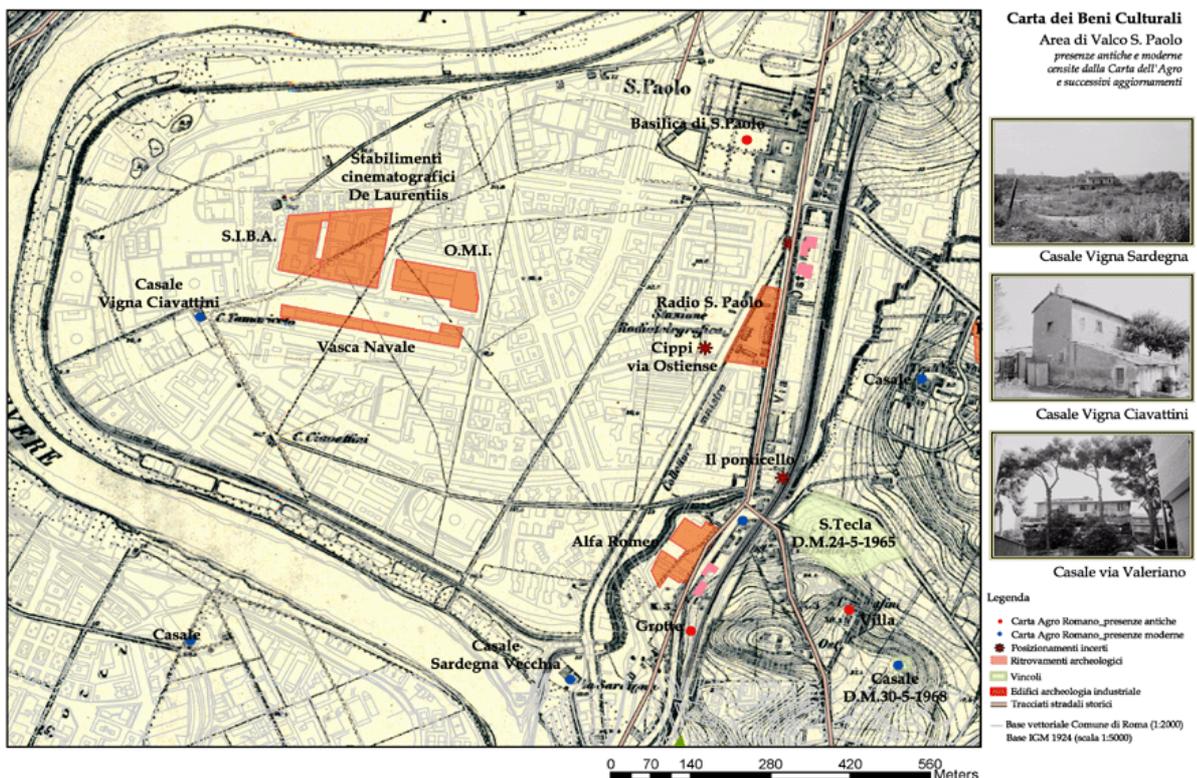


Figure 7 - I.G.M. Map (1924): ancient and modern evidences including old farm houses in the Valco S. Paolo Area

Conclusion

The COsMa project is an advanced knowledge and communication tool. It is capable of developing and managing effective data with the aim of supporting urban planning, safeguarding and enhancing the value of the territory and facilitating transformations. The data integrated management, its updating and implementation, together with a new study methodology and a new approach to research, based on sharing and interdisciplinary collaboration represent its main strength.

This project moves along the path of a more holistic and integrated approach to historical, cultural and environmental heritage. It provides an effective solution to face new and increasing challenges, combining the historical memory and the opportunities of the present in a theoretical and technical framework that forms part of a re-engineering process generated by an increasing demand for high standard, value added cultural services and for better quality of the urban environment.

Acknowledgments

The project has been developed thanks to the partnership between the following Bodies and Institutions:

COMUNE DI ROMA (ROME CITY COUNCIL)

ASSESSORATO ALLE POLITICHE DELLA PROGRAMMAZIONE E PIANIFICAZIONE DEL TERRITORIO - ROMA CAPITALE

Assessore Roberto Morassut

Dipartimento per le Politiche della Programmazione e Pianificazione del Territorio – Roma Capitale

Direttore Virginia Proverbio

Ufficio Città Storica

Direttore Gennaro Farina

Servizio Progetto Urbano Ostiense Marconi

Giuseppe Lantieri

SOVRAINTENDENZA AI BENI CULTURALI

Sovrintendente Eugenio La Rocca

Servizio Carta dell'Agro e Forma Urbis

Antonio Mucci

Unità Monumenti Medioevali e Moderni

Servizio Monumenti del '900 e Contemporanei

Luisa Cardilli

MINISTERO PER I BENI E LE ATTIVITÀ CULTURALI (MINISTRY OF CULTURAL HERITAGE)

SOPRINTENDENZA ARCHEOLOGICA DI ROMA

Soprintendente Adriano La Regina

Ufficio Tutela Territoriale

Laura Cianfriglia

Rita Paris

Laboratorio geologico-cartografico e di aerofotointerpretazione

End Notes

¹ The team members are:

Gennaro Farina (director of the Historical City Office); Antonella Carbone (project coordinating, planning and GIS management); Fabio Di Biagio (graphic development); Maria Teresa Maida (administration); Maria Vittoria Mancinelli (bibliographic researches and cataloguing); Marina Marcelli (archaeological researches and cataloguing); Renato Matteucci (geo-archaeological researches and cataloguing); Alberto Pellegrino (planning and database development); Renato Sebastiani (geo-archaeological researches, cataloguing and data analysis).

² Rome, the capital city, covers 129,000 hectares and is composed of nineteen Municipalities. The project covers the I, XI and XV Municipalities.

³ The Urban Project Ostiense Marconi, drafted in 1999, has been updated and approved by the City Council in February 2003.

⁴ The new Urban Development Plan for Rome was adopted by the City Council in March 2003.

⁵ The new Urban Development Plan foresees a polycentric model with the objective of creating several fully developed and serviced centres. The focus, therefore, shifts from the main historical centre which characterizes all the large cities to a new urban vision where these new centres are interconnected *centralities* linked to the historical centre.

⁶ The team work has enabled to begin an effective networked system of collaboration between Local and Central Bodies, emphasizing sharing and cooperation. The diverse professional profiles of the participants and the interdisciplinary and collaborative approach adopted have proved successful and represent the main strengths of the project.

⁷ The Almo River, in the Lazio region, is a Tiber tributary. In the Greek mythology, Almo is the father of the naiad Lara, also called Tacita and it is one of the River Gods.

⁸ The following geo-archaeological investigations were performed by:

- Italgas - C. Rosa, (Fondazione Ing. C.M. Lericci - Politecnico di Milano) and GEA S.C.;
- Mercati Generali - S. Mellace and Risorse per Roma on behalf of Dept. VI of the Rome City Council;
- Federazione Italiana Consorzi Agricoli - Cooperativa Archeologia di Roma;
- Ponte della Scienza - C. Rosa and Risorse per Roma on behalf of Dept. VI-IX. of the Rome City Council.

⁹ The shifting is confirmed by archaeological evidences such as: The Roman Villa named Pietra Papa on the right bank of the river, the building remains and burials found in the areas of the former Magazzini Generali and in the Federazione Italiana dei Consorzi Agricoli.

¹⁰ Cybele is an ancient Oriental and Greco-Roman deity, known by a variety of local names. The name Cybele or Cybebe predominates in Greek and Roman literature from about the 5th century BC onward. Her full official Roman name was Mater Deum Magna Idaea (Great Mother of Gods).

¹¹ Dipartimento di Scienze della Terra, Roma Tre University and Ugo Ventriglia.

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