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Covering the project activities from 02/10/2006 to 15/07/2007

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<**30/07/2007**>

LIFE PROJECT NAME
<**ASAP - Actions for Systemic Aquifer Protection**> - <**Implementation and demonstration of a Protocol to scale down groundwater vulnerability to pollution due to overexploitation**>

Data Project

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1List of the acronyms and key words used

ASAP	Actions for Systemic Aquifer Protection
ACQSPA	Acque SpA
ACQING	Acque Ingegneria S.r.l.
FUNITG	Fundación Instituto Tecnológico de Galicia
ILI	Infrastructure Leakage Index
PROVPI	Provincia di Pisa
RSS	L'RSS (Really Simple Syndication) is a format of notification of the publication of new contents on the Web based on the standard XML
UARL	Unavoidable Annual Real Loss

2 Executive summary

The project *LIFE06 ENV/IT/255 A.S.A.P. - Actions for Systemic Aquifer Protection* - **<Implementation and demonstration of a Protocol to scale down groundwater vulnerability to pollution due to overexploitation** aims to demonstrate on a representative scale the technical and economic feasibility of a protocol to remove an aquifer from conditions that risk causing critical changes in its characteristics.

The works will be carried out on the overexploited aquifer of Bientina (Pisa, IT); the **objective** is to reduce captation by 10%, **reverse the trend (from -0.5m/a to +0.5 m/a) and return the level to -16.5 m from the head of the well (elevation 2000)**. In this way the following risks will be reduced: pollution of the recharge waters from deep waters; greater exposure to pollutants due to the extension of recharge; critical changes in the characteristics of the underground flow and of the adjacent aquifer systems. Linked objectives are **to halt the decline of the humid zones and phenomena of subsidence; reduce the use of energy by 10%**, at the same time guaranteeing citizens the constant availability of good quality water; disseminate the ASAP approach, facilitating its repetition as a method of protection/remedy of overexploited aquifers.

The Project is implemented by the beneficiary **Acque SpA (IT)**, together with the partners **Acque Ingegneria srl (IT)**, **Fundación Instituto Tecnológico de Galicia (ES)** and **Province of Pisa (IT)**.

Activities began in October 2006 with the phase of acquisition of knowledge of the system (T2) and continue with the phase of improvement of the water network and reduction in extraction from the stratum (T3) and the setting up of the operative framework for optimizing extraction (T4). The action model (protocol A.S.A.P.) embraces the phase of evaluation and validation (T5) for publicising (T6). Task T1 is dedicated to the management of the project and to reporting to the European Commission, and has as main output good management and accountability of the project. The other main outputs are explicit knowledge of the system and its initial conditions in order to programme the optimizing works (T2) which results in the reduction in extractions bringing the network to optimal dynamic conditions and repairing the leaks (T3) and the initiation of the raising of the head of the aquifer (T4). The monitoring and evaluation of the effect of the action and the manual of the ASAP protocol (T5) feed the dissemination (T6), the main outcome of which is the publicising of knowledge for the repetition of the ASAP approach and for awareness-raising.

The deliverable principles of the project are:

- T1: the starting document (Master plan and Consortium Agreement), the GO/NOGO report, the Progress reports, the interim report and the final report to the Commission;
- T2: risk analysis, the report on uncharged water, the planning of priorities and measurement campaigns, the interfaces for the georeferencing of the measurement data on the modelling system, the measurement data and their interpretation; the drafting of the first section of the manual of the ASAP protocol;
- T3: the technical reports on zoning, supply, the pattern of the extraction, the calibration of the model, and the second section of the ASAP manual;
- T4: the field measurement data and their comparative table, the hydraulic model and the documentation of the refining of control and the 3rd section of the ASAP manual;
- T5: the reports on the initial and final conditions of the aquifer, on the evaluation of the environmental, employment and dissemination effects; the ASAP manual and the final evaluation of the project;
- T6: high level meetings with operators, policy makers, towards the public; the explanatory material sent with the bills, printed material and placards; technical notes and press releases to the press of the sector and on the web, the final conference and the Layman's Report.

The project is currently in line with the plan.

The management of the project has been carried through in a linear manner and the resources allocated punctually. The Teams began work promptly. Communication is effective. A slight delay in beginning the activities with FUNITG was made up for by the time of the first Steering Committee. The relationships with the monitoring Team were excellent.

The phase of acquisition of knowledge of the system was begun and conducted according to plan.

The activities of modelling, zoning and extraction were begun some weeks in advance because of the situation of water crisis and the estimate of longer authorizable times than forecast, without substantial changes in the execution of the project. The monitoring of the state of the aquifer was begun and has already provided some useful elements. Publicity was facilitated by some favourable opportunities (congresses, exhibitions) and made it possible to establish more contacts than forecast, improving the efficiency of expenditure with respect to what had been envisaged.

3Project management

From the first days of October, after the communication from the Commission – and before the signing of the contract – the partners held the first informal meetings to discuss the organization of the activities.

The informal meeting between ACQING, ACQSPA and PROVPI took place in **Pisa** on **12/10/2006** at the **main offices of the Province** in the presence of the Councillor for Jobs, Professional and permanent Training and Employment Policy Anna Romei, to agree on the participation in the fair Review Dire & Fare for the official launching of the ASAP Project. Engineer Oberdan Cei (Project Manager – ACQSPA), Managing Director of Acque Ingegneria Engineer Damasco Morelli (Team Leader – ACQING) and representatives of the Community Policies Office of the Province of Pisa were present.

Il secondo meeting (formal) took place in **Marina di Carrara** on **15/11/2006** at the same time as the **conference to launch** the ASAP Project in the presence of the Chairman of Acque SpA Fausto Valtriani, the President of the Province of Pisa Andrea Pieroni , Councillor Anna Romei, Doct. Paolo Prosperini (Team Leader – PROVPI), Head of Community Policies of the Province of Pisa, the Director of the Servizio Acquedotto di Acque SpA Engineer Mario Chiarugi (Team Leader – ACQSPA), Engineer Cei and Engineer Morelli.

The Spanish partners ITG sent their formal greetings, conveyed by the Project Manager. The internal reorganization of ITG prevented the Spanish presence at the event.

The management structure of the project has remained essentially stable as forecast by the Master Plan. Only at mid-March 2007, did ITG inform us of a change in their own Team Leader with the substitution by Engineer Carlos Sobreira of Doctor José Marino Fontenla.

Relations with the Commission (following the formal signing of the contract stipulated on 18/10/2006) were maintained on a regular basis starting from the invitation to participate in the Conference to launch the project.

Relations with the external Monitoring Team (Astrale-Timesis) were regular, through telephone communications and e-mail and with the participation of the project Team in the informational meeting on **30 January 2007 in Pisa**.

The overall management of the ASAP project is entrusted to the beneficiary Acque Spa, (ACQSPA P1) and to other partners Acque Ingegneria Srl (ACQING P2), Fundación Instituto Tecnológico de Galicia (FUNITG P3) and the Province of Pisa (PROVPI P4).

To guarantee the overall management of the ASAP project, ensuring the coherence and efficacy of the actions, the project organigram indicated below has been developed :

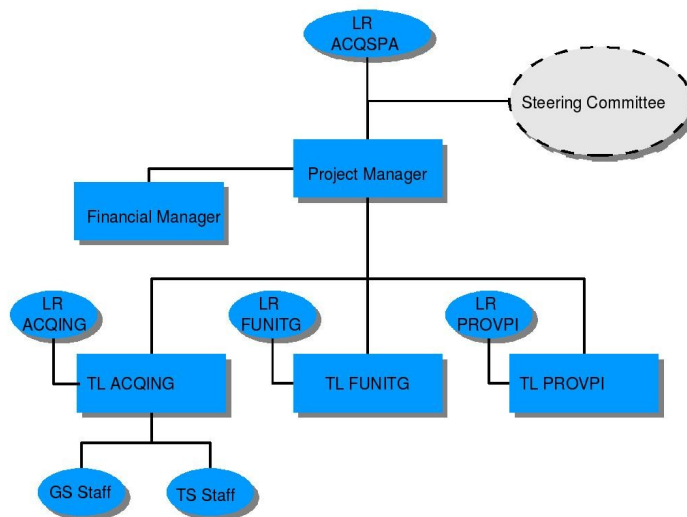


Fig. 1: Project organigram

Legal representatives (LR) Indicating the legal persons representing the 4 partners of the project , included in the subvention Contract as legal representatives and responsible parties, towards the company represented, towards third parties and towards the European Community, for the fulfilment of legal and statutory duties

relative to the ASAP project.

Steering Committee Indicating the body composed of a representative of each partner and presided over by the Project Manager. The Steering Committee meets at least once every 6 months, on the basis of previously decided agendas and calendars. The Steering Committee is charged with the main decisions regarding the management of the project (planning, budgeting, variations in the partnership or its tasks, etc.).

ACQSPA – Mario Chiarugi

ACQING – Damasco Morelli/Valeria Monaco

FUNITG – Maria Jose Marino Fontenla

PROVPI – Paolo Prosperini

II Project manager Indicating the person who has the role of intermediary between the participants and the Commission and is responsible for the execution of the Project and its tasks, as described in the contract. In particular he/she is responsible for the consignment of all the deliverables provided for to the Commission, the preparation of the Steering Committees, the passing on of all the information necessary for the correct execution of the project to the resources and partners involved in the various tasks.

Project Manager : Obedan Cei

The **Financial manager** Indicating the person who carries out continuous monitoring of expenditure in relation to the technical progress and the environmental benefits produced by the ASAP project safeguarding the calendar of activities proposed. He/she also watches over the nature of the financial relations and the management strategies of the ASAP project; being responsible for insurance and risk, he is also responsible for accounting and estimate subdivisions.

Financial : Oberdan Cei

I Team leader (TL) (o Task leader) Indicating the persons that have the job of coordinating the activities of the Tasks assigned to them, monitor their progress and inform the Project Manager of any delays that might affect the course of the activities, prepare documentation and any suggestions to be submitted to the Steering Committee.

ACQSPA – Mario Chiarugi

ACQING – Damasco Morelli/Valeria Monaco

FUNITG – Maria Jose Marino Fontenla (later replaced by Carlos Sobreira)

PROVPI – Paolo Prosperini

Technical staff (TS) Indicating persons that carry out preliminary analysis of losses, draw up sampling programmes based on the cartography and study of the characteristics of the water network. They collect data in the field, carry out hydraulic modelling and zoning, install pressure regulation devices, look for and repair the leaks, optimize the capacity and pressure and guarantee the calibration of the ASAP model.

General services (GS) Indicating those persons on the Staff that are identifiable and accountable within the item Other costs.

The main reports produced since the beginning of the project in relation to Project Management are attached to this Progress Report.

- 04/12/2006 - D1.1 - Master Plan
- 30/07/2007 - D1.4 - GO/NOGO Progress Report.

At present the activities are in line with the planning and the need to prolong the activities of project is not expected.

4 Technical developments of ASAP

4.1 Introduction

The technical development of the project appears substantially in line with the activities envisaged. In the early phases there were no particular management difficulties. Thanks to the aid of a series of management tools and to the continuous sharing of the state of progress, the partners have been able to carry out the tasks envisaged. It became however necessary to anticipate tasks 3.1 *Hydraulic modelling and zoning* and the connected Task 3.2 *Procurement of control devices*. The reasons are explained in detail in the relative paragraphs.

4.2 Task 1 - Management and reporting to the European Commission

4.2.1 Sub-task 1.1. - Reporting to the European Commission

Relations with the Commission were maintained on a regular basis since the invitation to participate in the project launch Conference. Relations with the external Monitoring Team (Astrale-Timesis) were regular, through telephone communications and e-mail and with the participation of the project Team at the briefing meeting on 30 January 2007 in Pisa (IT). The monitoring visit of the Team Astrale Timesis led by doct. Paolo Ghezzi took place on 30/3/2007 in the presence of the entire partnership. In the course of the visit the progress of the project activities and expenditure was verified and the Team gave useful advice concerning management and administration.

Relations among the partners were already quite intense by October 2006 with some early informal meetings and the collaboration for the organization of the presentation event *Dire & Fare (Say & Do)* (cfr. § 6). The first **Progress report (D1.3)** – this report and its attachments – was prepared in collaboration with the entire partnership.

With the **GO/NOGO Progress Report (D1.4)** (cfr. attachments) Acque SpA. proceeded to the phase of revision of the planning of the project which proved to meet expectations adequately. The progress report describes the progress of the project in relation to the proposal approved by the Commission. The judgement that emerged in the evaluation phase, confirms to the partnership the validity of the initial hypotheses and confirms the opportunity of continuing with the execution of the activities. It will be up to the Commission to judge the reasons put forward by the partnership.

4.2.2 Sub-task 1.2 – Technical management

The technical management effects the basic coordination and the management of the activities. The partnership drew up a **Master Plan (D1.1)** (cfr. attachments) reviewing the executive planning, defining roles, responsibilities and constraints in the project specifying clearly the budget subdivisions (including the precise redefinition of the resources forecast). The Master Plan was moreover accompanied by the preparation of a set of tools to be used for the correct execution and control of the project (project portal, system of planning and control, templates, etc.). All the documentation (both of the private and public areas is available on the project portal).

4.2.3 Sub-task 1.3 – Steering Committees

The partners initiated activities before the formal signing of the Consortium Agreement following the first Steering Committee which took place in Pisa on 29/03/2007, at the head office of Acque Spa. On that occasion a review was made of the in itinere activities. The financial and accounting aspects of the project were also discussed and further communication procedures among the partners established.

The **Consortium Agreement (D1.2)** was formally signed on 14/05/2007 (cfr. attachments for the original to be sent to the EC)

4.3 Task 2 – Acquisition of the knowledge of the system

4.3.1 Sub-task 2.1 – Preliminary requirements analysis and risk assessment

The aim of the **Preliminary risk analysis assessment report (D2.1)** (cfr. attachments) is to highlight and predict the potential risks that could affect the execution of the ASAP project and to identify and decide preventive or corrective measures. It will be integrated into the control functions of the management of the project (together with the controls on times, performance, quality and costs). The document is open to subsequent additions and modifications regarding the identification of future risks, on the one hand, and the corrective actions to be taken, on the other.

The aim of the Report is to identify the potential risks that could affect the the execution of the project in order to describe preventive and corrective measures regarding in particular:

- the prompt identification of potential problems
- increase in the chances of success of the project
- the most efficient use of the resources
- the promotion of the team work through the involvement of the staff at all levels of the project
- the balance between conflicting priorities

4.3.2 Sub-task 2.2 - Preliminary loss analysis

The analyses concentrated on three network performance indicators

- loss of revenue,
- average monthly capacities
- ILI [Infrastructure Leakage Index] .

In the first case the data relative to the volumes entering the network and to revenue were obtained using the official data that are collected monthly by Acque Spa to monitor the water system.

The loss of revenue made it possible to quantify the long-term leakage losses (on an annual basis). It was possible to assess the relationship between the volume entering the network and revenue, taking into account that the revenue for 2003-2004-2005 was compared with the respective volumes entering the network, while for 2006 the revenue for 2005 was used for comparison. Indeed the revenue data are normally made available in June-July of the following year.

In the second case the average monthly capacities (short-term) entering the distribution networks were archived systematically and from a comparison with the average monthly capacity values of the previous year it was possible to evaluate the anomalies attributable to leakages.

In the third case, by introducing a new concept of performance indicator, it was necessary to calibrate new data with high degree of initial uncertainty relating, for example, to the number of user connections, real network Km (because the only datum available is that of the quantity of network cartographed which in some cases is only a percentage of the real quantity), average distance between the property boundary and the meter, and the average functioning pressure (in this last case the datum will be available with a smaller degree of uncertainty only when we have concluded the part relative to the monitoring and modelling of the networks). This last indicator is calculated over the long-term (annual basis) assessing the relationship between real estimated leakages and UARL (volume of avoidable real leakages).

The activity was carried out by a team whose main reference was Franco Minuti whose task was to obtain and analyse data both from remote control and from measurements carried out by the staff of the company (internal activity of Acque SpA). These data are disaggregated for the relative feed sources and then recomposed for the formulation of water budgets at the level of individual Municipalities (the minimum reference of the analyses). In some cases of uncertainty regarding non-remote-controlled measurements it was necessary to carry out instantaneous measurements to reduce the uncertainty of the data assessed.

The difference between the volume of water entering the system and the water invoiced is commonly considered to coincide with the concept of “losses”; in actual fact, apart from errors of measurement, it represents the non-invoiced water and is made up of the sum of the real losses, of the apparent losses, and of the unreckoned authorized consumption. The aim of the project is above all that of reducing the “real leakages”, that is, the part represented by the resource dispersed by the system through the pipes, but at the

same time, thanks to an integrated analysis of all the components, also the reduction of the so-called administrative losses (measured unreckoned consumption, undermeasurement by meters, thefts) (consult report regarding uninvoiced water). Such data can be visualized in the **Non-revenue Water Baseline report (D2.2)** (cfr. attachments) .

4.3.3 Sub-task 2.3 –Field Action Planning

An early effort was made to schematize the ASAP system because the existing cartography – although adequate – is not able to convey the hydraulic functioning of the network. It was therefore necessary to simplify to the level of single objects (reservoirs, lifting stations, distribution network, abstraction conduits, regulating valves, capacity gauges, inverters, etc.) all the geographical data present in the GIS of Acque SpA. This led to a definition of a schematic map on which a further enquiry was carried out regarding the energy supplied to the system in order to evaluate other indices that could then be used in the definition of action priorities (this index is the energy per cubic metre supplied at the various points of the system) all contained in the **Actions Priority ranking report (D2.3)** (cfr. attachments)

The report highlights the zoning actions, concentrated in those Municipalities in which there are the greatest risks, i.e. where the operative margin, that is, the differential relationship between the capacity required by the distribution system and the maximum capacity that the system of production and transport is able to transfer to distribution, is smaller. Territorially they involved the Municipalities of San Miniato, Santa Croce, Calcinaia, Bientina. Attached (subdivided by Municipality) are present the capacity measurements necessary for the determination of the realtime sector and district accounts and pressure necessary for the calibration of the simulation models.

4.3.4 Sub-task 2.4 – Build Data Input Interfaces

The Project team developed a software to transform the cartography in format DXF (design exchange format – autocad) into a georeferenced format that can be visualized through a modified version of EPANET V.2 . **The Epanet interface**(cfr. attachments) **(D2.5)** for the input of background geo-referenced data provides the possibility of inserting and visualizing in the software vector backgrounds for the representation of the land cartography necessary for the digitalization of the network and for the visualization of the contour line elevations etc. The software has already been tested and is operational. On the other hand, as regards the **Data entry programme (D2.4)** (cfr. attachments) for the input of data a database has been created that is accessible with web interfacing both through intranet and internet.

The system is composed of the following elements:

- interfacing procedure for the entering, normalization and consultation of the instrumental data (e.g. capacity, pressure, acoustic analysis, etc.) ;
- upload procedure for the upload of data onto the database, of files onto storage and for links with the measurement references;
- procedure for the consultation of data on the database and for their extraction in csv files;
- procedures for the maintenance of the files;
- back-up procedures;
- access management procedures;
- software platform(operative system, database, content management system, etc.).

The data entry Programme is used for the uploading onto the database of the pressures and capacities that are measured by the instruments and makes it possible to combine calibration sheets with the graphic visualization of the data. It is used through a web interface and can therefore be consulted from any location, including a laptop connected to the internet.

4.3.5 Sub-task 2.5 – On-Field data sampling

The measuring campaign was begun with the creation of three operational teams using the instruments already available to Acque SpA. The campaign for the moment regards the sample points of the Municipalities of Santa Croce , San Miniato, Vico Pisano.

In order to optimize the analysis of consumption two ultrasound capacity gauges were installed on the outlets of the water towers on the Santa Croce site. The gauges were in turn connected to the remote control system which makes it possible to visualize the pattern of instantaneous consumption and the typical consumption

characteristics (night minimum, day-time average, day-time maximum).

A pressure measuring campaign at the strategic points was carried out in San Miniato and can be used for the subsequent installation of the pressure regulating valves and a capacity measuring campaign with portable measuring instruments.

In Vico Pisano a capacity measuring campaign with portable measuring instruments was carried out. The **Sampling & Measurement Plan (D2.6)** (cfr. attachments) envisages the use of specific measuring points which in the case of the water-bearing stratum represented by the sample wells arranged around the Bientina plants C1 and C2.

The series of data on the dynamics of the water-bearing stratum regard:

- the depression with respect to the campaign plain with absolute reference to sea level (Metres a.s.l.)
- the concentration of the main solutes.

The data relative to the distribution network are acquired with a time scan of 5 minutes in such a way as to monitor the more extreme dynamic events (minimum pressures, capacities at the peak hour etc.) always with reference to a hydraulic analysis of permanent motion.

The data measured are:

- the capacity expressed in litres per second
- the relative pressure expressed in bars
- the levels of the reservoirs expressed in metres with respect to the bottom of the basin.

Considering the weekly variations in consumption, there will be a monitoring period extended over several days which also includes preferably the weekend.

To sum up, these controls make it possible to perceive the event that influence the maximum and minimum pressure levels.

The **Field Measures Data Set (D2.7)** (cfr. attachments) regard the totality of knowledge acquired concerning the present state of the water-bearing stratum and the distribution system.

In the first case the development of the project envisages the use of historical data and the analysis of the stratum data of the sample well that has been monitored for years at the Production Plant C2 well 14 (attached the strata pattern).

The knowledge currently acquired on the distribution system regard the municipalities of Bientina, Calcinaia, Santa Croce and San Miniato. The data were collected by means of measurements carried out in the field using instruments currently in use at the ACQSPA and ACQING. The small number of instruments determined a reduced series of data which did not prevent, in the four Municipalities concerned, the formulation of sector water accounts and the monitoring of the network pressures necessary for the subsequent phases of the project (installation and adjustment of valves, calibration of models, etc.).

4.3.6 Sub-task 2.6 – Outline ASAP Step 1 Protocol

The **ASAP Protocol & Guidelines – First section draft (D2.8)** (cfr. attachments) deals with the methodological aspects for the acquisition of knowledge of the system for use analogous contexts to those of the ASAP project:

The application modules of the the protocol aim to increase the efficacy of the actions, making it possible to achieve better objectives and strategies of the various policies as well as identifying homogeneous action groups according to a logic of internal organic unity and operativeness in terms of coordination and efficiency of spending.

In the phase of acquisition of existing data a representative schematic of the lines of functional process of the waterworks system was created, from the wells to the distribution network.

The state of the art in October 2006 (date of start of project) is represented by means of a process schematic in which the existing structural works functional for the execution of the ASAP project were highlighted.

The representing graphics is differentiated by means of a colour system that identifies in red pre-existing objects in the ASAP area while the colour blue identifies the structural works that are to be carried out.

4.4 Task 3 – Network Optimisation and cut-down of aquifer abstraction

4.4.1 Sub-task 3.1 –Hydraulic modelling and zoning

On the basis of the evidence emerging from the risk Analysis, the partners of the project decided to anticipate this task by a few weeks, beginning it in June 2007 instead of at the end of July. The main reason for the choice was the water 'emergency already contextualized in the analysis. .

As specified previously, the zoning actions were concentrated in those Municipalities that ran the greatest risks (San Miniato, Santa Croce, Calcinaia, Bientina).

The zoning was carried out using a diagram representing the lines of the functional process of the waterworks system, from the wells to the distribution networks, subdividing the districts and sectors of interest schematically for each Municipality. The first pressure/capacity gauges were installed at strategic points: reservoir outlets, terminal network sections, main junctions etc.

The sampling was carried out by trying to monitor a day of high and a day of low consumption. Having observed that the day of greatest demand was Saturday, the measurements were concentrated at the weekend, succeeding in effecting more than 60 measurements.

In the four Municipalities in which zoning was begun the main objective of the sampling was to identify the instantaneous sector capacity, determining an obligatory choice of measurement points.

For the determination of the instantaneous water account, the points of entry of capacity into the system , represented by reservoir outlets towards the distribution network, were taken into consideration. Indeed the networks served as pensile reservoirs or as partially underground reservoirs and only in a few cases did feeding take place through structural connections with other systems (extraction point San Piero Bientina, extraction point La Catena San Miniato).

The network of capacity and pressure gauges in no case affected the current equilibrium of the flows. Since the gauges used were ultrasound, with non-invasive technology, it was possible to carry out the installation and measurement without interruptions in the service.

In this first phase, given that structural works were not planned, we limited ourselves to carrying out measurements on existing metal work, preferring measurement on stainless steel elements where the internal diameter is a known parameter, or else on fluvial crossings or inside the inspection wells, where it was possible to operate directly on the conduit.

With zoning it was possible to acquire the necessary data for the determination of the instantaneous accounts of the following sectors:

<i>Municipality</i>	<i>Sector</i>
Bientina	Bientina capoluogo
Bientina	Quattro Strade Santa Colomba
Calcinaia	Calcinaia Capoluogo
Calcinaia	Incanto
Calcinaia	Fornacette
Santa Croce Sull'Arno	Santa Croce Capoluogo
Santa Croce Sull'Arno	Staffoli
San Miniato	Ponte a Egola
San Miniato	Poggio
San Miniato	San Donato
San Miniato	Ponte a Elsa

The capacity data necessary for the formulation of the accounts are still in the qualification phase so that the night minimum capacity sector values have not yet been validated.

Comparison of the minimum night capacity will make it possible to characterize each portion of the water network and identify the sectors affected by hidden leakages.
On the basis of qualification of the data it will be possible to develop the monitoring and active control model.

4.4.2 Sub-task 3.2 – Procurement of control devices

Task 3.2 – closely linked to the previous one it was also begun some weeks before the planned date with the initiation of the procurement processes for the procurement of pressure regulating devices, hydraulic machines that require accessories with specific systems of automation.

The process of procurement was conducted on the basis of the exemplary nature of the application of the principles of directive 18/2004 also in terms of simplification and rapidity.

The procurement procedures were begun in June but have still not produced accountable expenditure.

4.5 Task 4 Setting up of the optimal abstraction operational framework

The start of this task is planned for the month of May 2008 and has not at the present time been involved by specific activities.

4.6 Task 5 – A.S.A.P. protocol evaluation and validation

4.6.1 Sub-task 5.1 – Monitor aquifer status

The task was begun in conformity with the plan at the beginning of June 2007.

The monitoring made it possible to highlight the nature and origin of the various factors contributing to the formation of the underground water resource extracted in the Bientina area as emerges from the **Aquifer initial condition analysis report (D5.1)** (cfr attachments)

The monitoring actions on the aquifer are subdivided into:

- monitoring at piezometric level;
- monitoring of the chemism of the stratum water.

The initial study of the state of the Bientina aquifer included the taking of samples and the relative chemical isotopic analyses: in total 76 samples were taken from the various wells with depths varying from 10 to 100 metres; the measurements were subdivided into five distinct, but homogeneous, groups which overall involve the area between the Lucca and Bientina plains.

The chemical and physical taken into consideration were: Ph, temperature, conductivity, concentration of Ca, Mg, Na, K, Mn, Fe, SO₄, NO₃, HCO₃, Cl, TDS, δ18O.

The initial piezometric state of the Bientina aquifer is represented by a map that identifies the pattern of the piezometric surface.

The area of reference includes the zone of Production Plants C1 and C2, where the main wells are located and further north the land components where the underground circulations involving the reference area of the projects originate.

According to this first analysis, in addition to the main component originating in the river Serchio, a secondary component deriving from the interaction of the waters of Monte Pisano with the Pliocene sands characteristic of Bientina.

5Problems encountered

In the first phase of execution of ASAP on the whole no particular problems of a technical or financial nature arose.

The difficulties emerging were overcome through the redefinition of some priorities, made possible also by the good structuring of the system of management of the project⁰¹.

Some delays – due however only to an internal reorganization of ITG – prevented, for example, the presence in Italy of the Spanish representatives and led to the postponement by some weeks of the formal signing of the Consortium Agreement.

With the Spanish partners, however, direct channels of communication were always kept open (through mail, telephone and the use of the project portal) and allowed them to participate actively in all the activities planned.

The situation was realigned perfectly with the meeting of 29-30 January 2007 in Pisa.

The progress of the ASAP project is currently in line with the plan with the exception of subtasks 3.1 and 3.2. These activities were anticipated (but only by a few weeks) following the conditions of risk clearly evident in the months immediately before they were begun and with the prospect of a serious water crisis that could have put the activities at risk.

Moreover, with the anticipation, an attempt was made to anticipate any other problems deriving from the times – generally very long – for the authorizations that the Municipalities involved in the project area have to issue for the installation of pressure regulation valves in urban areas. After an initial verification, the possibility emerged that some municipal bodies intended to impose special urban-planning conditions that could cause discontinuity in the installation of the valves within the urban areas and possibly affect the times relative to subtask 3.3.

Finally, precautionary measures were taken to implement the best possible coordination with the service that manages the waterworks in order to establish periods in which to be able to execute the control device installation works that necessitate interruptions in the service for pipe cutting.

It will be the responsibility of the Project Manager to inform the Commission and the monitoring Team of any substantial planning changes in the project activities.

6 Dissemination

In the first 9 months of activity the dissemination activities were actually continuous.

The immediate availability of the **ASAP living website (D6.1)** activated in October 2006 with the address <http://www.klink.it/gate/asap> made it possible to make the project more visible.

The site was developed with Plone technology (open source).

The use of the portal (from the point of view of the user) is quite simple and makes it possible to have both public areas and private areas with access restricted to the partners.

As envisaged by the project forums have been created on the web site and the RSS service has been introduced onto the public area.

The documentation in the public area is available in the versions EN IT and ES. In the private area the site is available in versions EN/IT.

The beneficiary Acque Spa has inserted in its homepage (www.acque.net) a link to the ASAP portal.

The other partners have put news onto their sites and on internal publications (the Spanish partners on issues 5 – March 2007 and 6 – June 2007 of their magazine “*Cultura innovadora*” in 9.200 copies).

So far the ASAP portal has had a total of more than 500 accesses with more than 120.000 pages visited.

The Fair Dire & Fare (Say & Do) in Marina di Carrara (**MS, IT**) from 14 to 18/11/2005 seemed an ideal occasion for the Project launch conference.

Dire & Fare is one of the main exhibitions for the Public administration taking place annually in Italy.

The 2006 edition saw the participation of 240 exhibitors (the majority local Bodies – and as such potential stakeholders of the project), 6.800 visitors (citizens/users are also stakeholders of the project), a web site (in which the ASAP project also appeared) that had about 7.876 visitor contacts from the 1st to the 19th of November.

The ASAP Project also appeared in the Newsletter of Dire & Fare which is sent to 800 subscribers.

The ASAP Project had a town presentation space at a workshop that took place on 15/11/2006 in which about 30 people took part and in the presence of the press and local television.

For the occasion the partnership hired a corner to exhibit a bilingual stand on the ASAP Project and distributed about 600 pamphlets (3 fold) that were created for the occasion.

The Province of Pisa has sent 300 e-mails to mayors, environment councillors, associations involved in the field, universities, accompanied by the programme and presentation of the project.

More than eighty invitations were sent by post (political addressees) with the pamphlet enclosed.

National Press Releases (IT, ES) (D6.4) were made available in two versions (IT/ES). The presentation event was publicized in some newspapers (Il Tirreno) and recorded by local Italian television (Rai 3).

News of the ASAP Project launch Conference appeared on the portal of the Ufficio Politiche Comunitarie (Community Policies Office) of the Province of Pisa

<http://www.politichecomunitariepisa.eu/news.php?id=21>

Regarding television, again on the occasion of Dire&Fare the Province of Pisa bought from the local broadcaster Canale 50 a "Focus" of 15 minutes with interviews and in loco film footage, broadcast for three consecutive days during the week following the event.

Ad ASAP è stato inoltre dedicato anche A video space was also dedicated to ASAP at the stand of Publiservizi.

In the following months the ASAP Project was also presented at Seminars and Congresses on the area such as the one that took place on **19/12/2006** in **Bientina (PI, IT)** at which local administrators were present and it was an occasion for raising the awareness of local institutions of systemic aquifer protection, given also that it was in the area covered by ASAP action.

Participating in the Conference were the President of Acque Spa Fausto Valtriani, the Provincial Environment Councillor of Pisa Walter Picchi, the Mayor of Bientina Marco Braccini, the Director of the Waterworks Mario Chiarugi and the ASAP Project Manager Oberdan Cei.

Another occasion for publicizing, this time in the direction of the users was at the conference “*Usa ragionato dell’acqua e dell’energia – tema acque*” “*Rational use of water and energy – the theme:water*” that took place on **16/2/2007** in **Pisa (PI, IT)** at the Complesso scolastico “Concetto Marchesi”.

The ASAP project was also the subject of an article entitled “*Meno perdite e prelievi*” “*Fewer leakages less extraction*” published in the three-monthly review *Reti Idriche & GAS* (Numer 2 April 2007) supplement n. 3 of the monthly magazine *Hi-Tech Ambiente* on 31/3/2007.

Reti Idriche & GAS is the main Italian organ of information for the waterworks, sewage and gas distribution

sector and has a circulation of 8.000 throughout Italy.

The ASAP partners were particularly desirous to include as planned the logo Life In the dissemination materials (leafles, slides, etc.) and give emphasis to the Community cofinancing.

7 Predicted progress (next 6 months)

In the next months the activities are expected to progress according to plan.

Task 3.1. Hydraulic modelling and zoning – The task will proceed according to plan and on the basis of the Programme of priorities envisaged the next municipalities to be involved will be San Miniato, Cascina and Pontedera.

Task 3.2. Procurement of control devices – The procedures for the procurement of the control devices and probes necessary for the activities will continue.

Task 5.1 Monitoring of the state of the aquifer – Other sample wells will gradually be used for the monitoring and measurement of the state of the aquifer.

Task 6.1 Construction of instruments for communication – The ASAP web Portale will be progressively updated both in the public and private areas. All the placards will be placed permanently in the places of the project actions.

Task 6.2 Dialogue with the water consumers – The dissemination of the results obtained by the project among the users will be continued to keep them informed through key messages that are already being studied by the partnership. The Partners in the project will also programme the sending of information about the project, together with the bill.

6.3 Dialogue with the technicians of the water network management sector – The partnership will continue with the task of informing the technicians in the sector through specific articles in technical magazines, participation in congresses or meetings with specialists. We will also proceed with the validation of the first part of the ASAP Protocol by the Instituto Tecnológico del Agua – linked to the Spanish partners of ITG – by a team led by Prof. Enrique Cabrera Marchet.

8 Financial issues

8.1 Project costs incurred

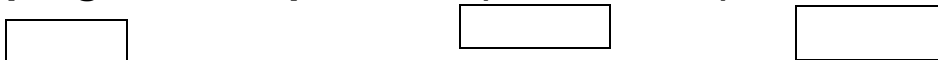
Cost category	Total cost according to the Commission's decision*	Costs incurred from the start date to 31/05/2007	%**
1. Personnel	1.182.278,00	263.361,18	22,28
2. Travel	12.700,00	838,80	6,6
3. Outside assistance	509.550,00	7.243,60	1,42
4. Durables: total <u>non-depreciated</u> cost		0,00	0
- <i>Infrastructure sub-tot.</i>	3.375,00	0,00	0
- <i>Equipment sub-tot.</i>	244.250,00	0,00	0
- <i>Prototypes sub-tot.</i>	0,00	0,00	0
5. Consumables	52.179,00	5.700,00	10,92
6. Other costs	48.000,00	0,00	0
7. Overheads	138.500,00	19.400,05	14,01
SUM TOTAL	2.190.832,00	296.543,63	13,54

There are no variance worthy of note between the anticipatory budget and the present state.

Please note: all the amounts refer to **actual payments**; in the item of budget 4 – Equipment expenditure costs? are not registered, but promises to pay (orders) have been made.

On the basis of estimates and promises to pay (orders issued but not yet paid), the partnership assumes that it will reach 30% of the total expenditure towards the end of February 2008.

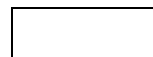
9Activities in progress and planned (Gantt-chart)



Tasks/Activities		2006				2007				2008				2009							
		1T	2T	3T	4T	1T	2T	3T	4T	1T	2T	3T	4T	1T	2T	3T	4T				
Overall project schedule	Proposed				0				X		0					X					0
	Actual				0				X												
Task 1 – Management & reporting to the EC	Proposed				-----				-----				-----				-----				-----
	Actual				===				=== =>												
Task 2 – Acquisition of the knowledge of the system	Proposed				-----				-----												
	Actual				===				=== =>												
Task 3 – Network optimisation & cut-down	Proposed								-----				-----				-----				
	Actual								== =>												
Task 4 – Setting of the optimal abstraction ...	Proposed												-----				-----				
	Actual																				
Task 5 – ASAP protocol evaluation & validation	Proposed								-----				-----				-----				-----
	Actual								===				== =>								
Task 6 - Dissemination	Proposed				-----				-----				-----				-----				-----
	Actual				===				=== =>												

Legenda:

-	Start, proposed
-----	Execution, proposed
=	Start, actual
===	Execution, actual
X	Progress report(s)



10 Attachments /References

- D1.1 - Master Plan
- D1.2 - Consortium Agreement [original copy on paper]
- D1.4 - GO/NOGO Progress Report (vis-a-vis the EC)
- D2.1 – Preliminary risk analysis evaluation report
- D2.2 – Reference report on uninvoiced water
- D2.3 –Priority actions report
- D2.4 – Data entry, software DB, CD Rom and licence programme
- D2.5 – Epanet Interface for the import of background geo-referenced data
- D2.6 – Measurement sample programme
- D2.7 – Set of measurement field data
- D2.8 –ASAP Protocoll and guide lines (ASAP manual) - draft of first section
- D5.1 – Technical report on the initial conditions of the aquifer
- D6.2 – Publicity material[part of the documentation on paper]
- D6.4 – National Press Releases
- D6.6 – Technical ASAP notes for experts of the sector: