	**The Project is co-funded by the European Regional Development Fund (ERDF) and by national funds of the countries participating in the Interreg V-A "Greece-Bulgaria 2014-2020" Cooperation Programme.**	
INTERREG V-A "GREECE - BULGARIA 2014 – 2020" COOPERATION PROGRAMME		
PROJECT BENEFICIARY:	**Municipality of Pilea - Hortiatis**	
PROJECT:	**Management of underground water resources for the needs of non-portable water, heating and underground areas protection (GREEN PUMP) within the framework of INTERREG V-A ''Greece-Bulgaria 2014-2020.**	
OBJECTIVE:	**Preparation & supervision of initial tests' good performance, technical reports, improvement proposals & trial operation of installations**	
OPERATION:	**4.5.3 Policy report document on the simplification of permits required, and the elimination of bureaucratic barriers for both countries (Greek partner contribution)**	
BUDGET :	*«TOTAL BUDGET FOR THE OPERATION (CONTRACTED BUDGET in €) (ERDF: 766.194,23 € / National Funds: 135.210,75 €)»*	

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CONTENTS

1. GENERAL

The report refers to the services related to WP4/4.5.3 ''Gathering information to write a report / guideline for simplifying bureaucratic procedures (authorizations, etc.)''. This service package relates to the contract between ALTEREN SA and the Municipality of Pilea-Hortiatis that is part of the project *"Management of underground water resources for the needs of non-potable water, heating and underground areas protection (GREEN PUMP)"* within the framework of INTERREG V-A "Greece-Bulgaria 2014 – 2020". The report includes the following:

- Process for the water resources utilization project implementation and bureaucratic problems
- Process for the water use procedure, required documents and bureaucratic problems
- Required drilling monitoring and execution procedures and proposals to reduce requirements for shallow aquifer
- Electromechanical facilities of shallow water aquifer resources utilization in irrigation and WC facilities and markings on those

2. PROCEDURES FOR PERMITTING A WATER RESOURCES UTILIZATION PERMIT

2.1. Authorization process and required documents

For new waterwell projects, the Greek ministerial decision 146896 applies ''Categories of licenses for the use and execution of water use projects. Procedures and conditions for issuing licenses, their content and validity and other relevant provisions'' Government Gazette 2878/2014. According to this decision, the following apply to the authorization process of the project:

Article 4: Authorization procedure

1. The issuance of a water resource or/and water use project authorization, requires the interested party to submit in three times (the original in hard copy and digital form accompanied by two copies) to the relevant department of the relevant municipalities where applicable, hereinafter referred service. The file contains an application with the required supporting documents as set out below. The host agency must provide interested parties with the application in hard copy as long as electronically and provide the necessary assistance and information to complete it properly.
2. The host service carries out a formal check on the completeness of the file in order to determine whether the required supporting documents have been provided and whether the application details are complete and in addition: a) if the host service is municipality, it will be examined whether the water needs for the intended use are or could be covered by a public or municipal water supply network and b) if the host is region, the possibility of covering the requested needs by a public or municipal water service provider shall be considered on its own initiative. In the event that the above-mentioned network is found to be covered or capable of covering the needs requested, the provisions of article 8 of the above decision 146896.
    2.1. The audit shall be carried out within ten (10) business days of the date of submission of the file. During this time, the host may ask the interested party to write any clarifications, as well as additional information and supporting documents in support of its request. In this case and after the submission of the requested information, the deadline for examination of the file shall be extended by five (5) additional working days. In the event that the file is found to be

manifestly incomplete, the service shall return the file to the person concerned without delay in writing.

2.2. The host agency carries out the necessary sample checks in accordance with paragraph 3 of article 10 of Law 3230/2004 and in its opinion, the necessary on-the-spot checks to facilitate its work. In this case, the above deadline shall be extended for a further ten (10) working days.

2.3. Upon completion of the formal check of the file, the host within (5) five working days, shall draw up a summary report on its actions. After retaining a copy of the file, they shall send the original file in hard copy and digital format as well as the other copy of the file along with its report to the competent Directorate for Water of the Decentralized Administration.

3. Upon receipt of the dossier, the competent Directorate of Water of the Decentralized Administration shall examine and evaluate its compatibility with respect to (a) the River Basin Management Plan, (b) any regulatory measures and restrictions that may have been adopted, (c) any legislation that may specify a specific water protection regime in the area and (d) the general water management policy of the area in pursuit of the environmental objectives set out in Article 4 of decision 51/2007.

3.1. The above evaluation is completed within twenty (20) business days of receipt of the dossier. During this time, the above service may ask the interested party to write any clarifications, as well as additional information and supporting documents in support of its request. In this case the above deadline may be extended for another five (5) business days.

4. Within fifteen (15) business days of completing the evaluation of the dossier in accordance with paragraph 3, the licensing authority shall issue a permission to execute water resources and/or water use projects, or a decision to reject the application license. The rejected decision, which is issued by the Secretary General of Decentralized Administration upon recommendation by the competent Directorate of Decentralized Water, must be adequately reasoned.

4.1 The licensing authority, at its discretion, may carry out on-the-spot checks to facilitate its work, either independently or in co-operation with the host services concerned.

4.2. Upon issuance of the license, the licensing authority shall inform the relevant municipality concerned and shall make available, upon request, a copy of the licensing dossier to facilitate checks.

5. In the case of new projects to meet public utility needs or new projects financed by the European Union, the licensing authority may consider giving priority to applying for a permission for the execution and/or use of water if the person concerned submits a preference request together with the necessary information, documenting the need to expedite the issuance of such authorization.

This file is accompanied by the following supporting documents:

A. GENERAL DOCUMENTS

They are submitted to the host service.

A1. Application - Statement

A2. Cadastral map or topographic copy, or orthophoto map, or digital application image, or GIS topographic map on an appropriate scale, depending on the type and size of the project, presenting:

a) the point of hydration with projector coordinates,

b) the outlines of the water use areas from the abstraction point, unless this information is provided by the Greek register as well as building and other installations, provided that they are connected and serviced or serviced by the project,

c) for linear projects, the route and the coordinates of the beginning and the end of the project and the focal points of their route.

B SPECIAL DOCUMENTS IN CASE

B1. If the applicant is acting on behalf of a legal person, a legal authorization of representation.

B2. Opinion of the competent Archaeological Services for the construction of the required works if they are located in whole or in part within a declared archaeological site, protection zones A or B or near ancient, within the meaning of Articles 12, 13 and 10 par. 3028/2002 (AI53).

B3. Opinion of the competent Forestry, Environmental Services and / or Management body in the case of projects which are wholly or partly in the NATURA 2000 area, in forest areas and in general areas of special protection.

B4. For surface water abstractions (watersheds, lakes) of Category A projects, a hydrological study that captures the other hydrations from that surface body and includes the minimum downstream benefits required to protect the environment and to provide quantities for the needs of downstream water uses during peak demand. For surface water abstraction (watercourses, lakes) Category B hydrological report which captures the other abstractions from this

surface body and includes the minimum downstream requirements required to protect the environment and to provide the quantities for their needs downstream water use during peak demand.

B5. For drillings/wells/springs, hydrogeological report includs at least:

- Technical characteristics of water intake (such as depth, anchorage diameter, type and diameter of piping, type and diameter of piezo tube in case of drilling).
- Geomorphology of the area.
- Geological - Hydrological - Hydrogeological Elements (such as geological formations, hydrogeological behavior of formations, expected level - flow) - Geological map of the area - assessment of the quantitative and qualitative status of the groundwater body in accordance with the current Management Plan.

B6. In case of individual water supply, building permit or legalization document from the competent town planning authority or permit.

B7. Specific drilling level lowering program for quarrying / mining and protection of technical works, including a provision for the use of abstracted water.

C SUPPLEMENTARY DOCUMENTS

The supporting documents shall be filed with the competent Water Directorate, in accordance with the river basin management plan concerned and any applicable regulations.

The term of validity of licenses follows the revision cycle of the Management Plans and for licenses issued after the entry into force of the KYA their validity is set to one (1) year after the second revision of the River Basin Management Plans, that is, until 2022.

3. WATER LICENSE PROCEDURES

3.1. Procedure and required supporting documents

The provisions of paragraph 2.1 shall apply accompanied by the following supporting documents:

A. GENERAL DOCUMENTS

A1. Application - Statement

A2. Cadastral map or topographic copy, or orthophoto map, or digital application image, or GYS topographic map, on an appropriate scale, depending on the type and size of the project, presenting:

a) the point of abstraction with projector coordinates,

b) the outlines of the water use areas from the abstraction point, unless this information is provided by the Greek register.

B. SPECIAL DOCUMENTS IN CASE

They shall be deposited with the Host in accordance with Article 4 (2).

B1. New projects require:

a) Any other technical data reports/studies requested by the competent Directorate of Water for Decentralization at earlier licensing stages. (b) Project implementation report which shall include at least:

- Execution site.
- Technical specifications of hydration such as: drilling method, drill type, operator name, project execution dates, depth of drilling, type and diameter of tubing, type and diameter of piezo tube, hydrostatic flow meter, flow meter, flow meter.
- Geological-hydrological-hydrogeological data that emerged during the execution of the project. Perforation stratigraphy and recording depth and type of aquifers.
- Estimation of project capacity (especially in wells after test pumping).
- Calculation of hydraulic parameters of water permeability, water transfer capability after pumping, as well as radius of convection from the abstraction, and estimation of interactions with adjacent abstractions and impacts on existing water projects.

B2. If the applicant is acting on behalf of a legal entity/collective body, a legal authorization of representation. In this case, a copy of the legal constitution of the legal entity of private law or of the collective body shall also be accompanied by any amendments thereto.

B3. For agricultural use recorded in the Integrated Management and Control System (IACS), copies of statements of the last five (5) years.

C. SUPPLEMENTARY DOCUMENTS

They shall be deposited with the competent Water Directorate if required, in accordance with the river basin management plan concerned and the applicable regulations.

4. DRILLING MONITORING AND IMPLEMENTATION PROCEDURES

4.1. Requirements for applying PETET specifications

The Greek Specifications "PETEP 08-09-01-00 Water Well Drilling" is applied for the drilling. In the course of the execution of the work, a work log should be kept showing at least the following:

- Weather conditions
- Work start and end time
- Drilling duration and applied methodology
- Geological features to be met
- Water level
- Length and diameter of mounted pipes
- Quantity of gravel filter
- Injection start and end time and data analysis according to PETEP 08-09-03-00
- Other performed work (eg test pumps)
- Sampling

The soil material will be sampled every three (3) meters of drilling progress while in the aquifer zone every one (1) meter. Samples weighting at least 500 gr shall be collected immediately after extraction from the hole, dried and packed in plastic bags indicating the drilling code and depth of origin. Samples will also be arranged on the ground in regular series so that the driller and the service can have a direct understanding of the stratigraphy. On the basis of these samples the hydrogeological register shall be drawn up in the form of a technical report which shall at least includes:

- Drilling code/license number
- Date of commencement and completion of work
- Service and drill details
- Drilling method
- Hole diameter and depth
- Stratigraphy
- Enclosure pipe types, safety and sealing method
- Details of concrete
- Filter tube position, type, cross sections, characteristics and quantity of gravel filter
- Details of test pumps
- Water features

- Pump complex
- Drilling development procedures
- Landscape depicting drilling property boundaries and key topographic features
- Description of research or unsuccessful holes/sealing procedures

Note that in order to ensure the above, the contractor will provide during the procedure a geologist who must certify and observe the correctness of the above as well as the technical adequacy of the drilling process.
The technical report on completion of the drilling is also required by the drilling permit and must be submitted by the contractor to the water authority licensed for the project.

4.2. Proposals to reduce the above procedure

Shallow depth irrigations do not have the complexity of large-big depth irrigations, so the process can be simplified by the following suggestions.

Cases of drilling to simplify the process

Application limit: supply < 5 m^3/h

Drilling depth: < 40 m

Cause of drilling: Use of groundwater supplied by rainwater

Calendar and contents:

Only the drilling log for which it is proposed to contain the following should be kept during the course of work:

- Drilling code/license number
- Date of commencement and completion of work
- Service and drill details
- Drilling method
- Drilling section
- Stratigraphy
- Enclosure pipe types, safety and sealing method
- Filter tube position, type, cross sections, characteristics and quantity of gravel filter
- Water features
- Pump complex
- Description of research or unsuccessful holes/sealing procedures

5. REQUIREMENTS OF ELECTROMECHANICAL EQUIPMENT AND FACILITIES OF SHALLOW WATER AQUIFERS

5.1. General requirements

The electromechanical equipment and components of the drilling water recovery system for irrigation and WC supply must meet the requirements for the safe operation of the installation (pump operation, strengths and dimensions of piping network, etc.) according to project design study. Equally important is the distinction between new installations (tanks, piping), drinking water and sanitation, with appropriate marking and different color schemes. Such actions will make it easier to monitor new installations and make it easier for technicians to work on cleaning or repairing them in the future. In addition to ensuring the correct design of the installation, it is required to be implemented by licensed technicians of appropriate expertise. The aim is to avoid any failures and problems in the operation of the installation.

5.2. Labeling networks and uses

The use of water should be pointed with an appropriate label so that there is no risk to health. Examples of general labeling on networks or end-uses are given in the following figure.

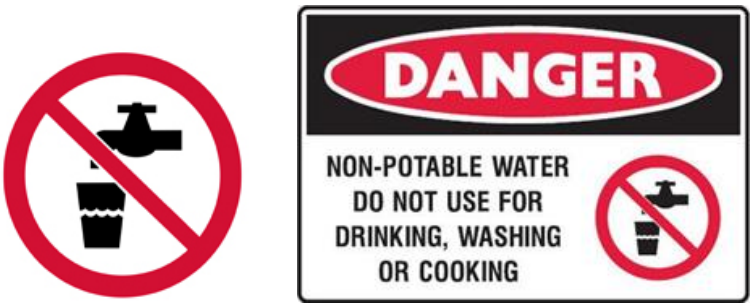

Figure 5.1. Examples of general network signaling

Various standards have been developed for marking networks such as:

1. ASME/ANSI A13.1 – Scheme for the Identification of Piping Systems
2. BS 1710 – Specification for Identification of Pipelines and Services
3. IS 2379 – Pipelines Identification Color Code
4. PFI ES-22 – Recommended Practice for Color Coding of Piping Materials
5. ISO 17426 Color marking of pipes

The EU follows the proposal of BS 1710, whose full color palette is set out in the annex, while the following figure lists the basic color palette of the grids.

Basic Identification Colours

Pipe Contents	Example	Colour Name	BS Colour Identification	RAL Colour Identification
WATER	*Drinking Water*	GREEN	12 D 45	6025
STEAM	*Waste Steam*	SILVER-GRAY	10 A 03	9002
OILS - mineral, vegetable or animal Combustible Liquids	*Diesel Fuel*	BROWN	06 C 39	8008
GASES - in either gaseous or liquefied condition (except air)	*Carbon Dioxide*	YELLOW OCHRE‡	08 C 35	1017
ACIDS & ALKALIS	*Ammonia*	VIOLET‡	22 C 37	4005
AIR	*Compressed Air*	LIGHT BLUE	20 E 51	5024
OTHER LIQUIDS	*Saline Solution*	BLACK	00 E 53	9005
ELECTRICAL SERVICES & VENTILATION DUCTS	*Ventilation Ducts*	ORANGE	06 E 51	1034

Figure 5.2. Basic network color palette according to BS 1710

As there is no clear color distinction, the standard practice for gray waters is followed. These networks usually use the color "purple".

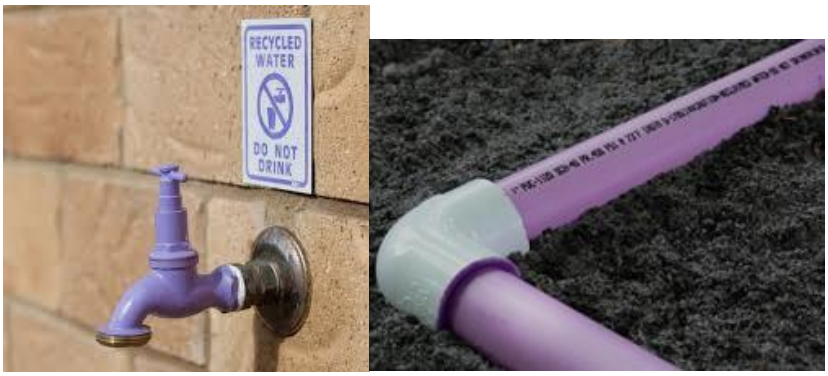

Figure 5.3. Gray water network labeling

5.3. Drilling requirements

The site where the drilling is to be carried out should be fenced and marked with installation related to the protection and proper operation of the installation, as well as to prevent unauthorized access.

A water meter should be fitted to the well to control the amount of water used. In case of problems or change of the water meter it is necessary to inform the licensing authority (Water Directorate of C. Macedonia). In all cases, compliance with what is stated in the Water Resources Utilization Permit (No 3007 / 2-4-2018 and Permit 6ZTHNOP1Y-PTF) and the Water Use License (once issued) by Central Macedonian Waters Directorate of Decentralized Macedonia - Thrace.

5.4. Storage tank requirements

Although permanent water storage is not recommended in gray water plants, it is still required in shallow aquifer networks. This storage is usually done by the use of plastic tanks, which has the following advantages:

- Lightweight construction.
- Low cost for small dimensions.
- Quick installation.
- Easy transportation.
- Easy maintenance.

Accordingly, plastic tanks have the following disadvantages:

- Fragile.
- Stagnant waters.
- High cost for large dimensions.
- Wiring limitations.

The storage tanks and their storage should have the following basic characteristics:

- Underground tanks should have a door to prevent unauthorized access.
- The floor of the space must have grids - wells connected to the sewer system in which any leakage of the tanks can be disposed of.
- The tanks should be fixed.
- The space should be properly marked

The tanks should also provide for the installation of valves and other systems such as:

- Evacuation device.
- Pipe interfaces.
- Filters.
- Anti-return safety valve
- Connecting the tanks together for uniform filling.
- Tank filling control system.

The main requirement in the case of gray waters is the chlorination of water. In this case it’s not required, but microbial overload parameters of this water should be monitored as mentioned in the following paragraph.

5.5. Network requirements

The general requirements for irrigation pipes include:

- The water distribution pipes will be made of low-density (LD) polyethylene (PE) 2nd generation (DIN) pipe according to DIN 8074/8075, and will go underground at a depth of about 50 cm.
- The paving material of the trench should be free of stones and other sharp objects that could hurt them. It is recommended to use sand without excluding the excavation materials free from stones.
- Above the conduit is proposed the use of 3A which can be squeezed on either side of the pipe, while the final coating can be made of excavating materials that are squeezed per layer until full coverage at ground level.
- It is recommended to use support rings inside the building. The openings in the masonry should be such that during installation the pipe does not have any deformation stresses.

There are the following requirements for pipeline routing:

- Design of a new pipeline network, which will be properly marked.
- In any case, the drainage pipe and hydraulic receptacle may not cross the water pipes to avoid the risk of water contamination.
- Specific cuts must be used in changing pipe directions.
- Ventilation valves (ventilation valves) will be installed where there is a risk of accumulation of air in the grid.
- The pipes will branch off from the horizontal supply grid at an angle of 90° to avoid resistors.
- If the piping network is in an open space, it must be protected from frost (by insulation).
- In cases where there is a risk of water flowing in the opposite direction, a non-return valve will be installed.
- Before any type of hygiene (basins), switches or brass valves (switchgear) shall be fitted. Connection of the receiving points of the wash cans to the water supply network will be carried out by means of special cuts and by means of an angle switch.

6. FACILITIES MANAGEMENT

For the proper operation and monitoring of these installations, a supervisor should be appointed who will record any problems - malfunctions, take the necessary actions to resolve them, and keep a maintenance record.

Its main tasks should be:

- Supervision of the facilities.
- Informing the building or maintenance officer of any problems that may arise.
- The evacuation of installations if the building is not operational for a long time.
- Completion of facilities after shutdown and evacuation.

The most important course of action is to monitor the implementation of the microbiological analyzes that need to be done. The following microbiological analyzes are recommended:

Table 6.1. Microbiological analyzes

Parameter	Limits	Frequency
Total coliforms	≤ 2 (for 80% of the samples) ≤ 20 (for 95% of the samples)	Once every three months

ANNEX I

NETWORK COLORING ACCORDING TO BS 1710

BS 1710

Basic identification colours		
Pipe Contents Name Reference	Colour	Colour
Water	Green	
Steam	Silver-Grey	
Oils (mineral, vegetable or animal) Combustible liquids	Brown	
Gases in either gas or liquid phase - except air	Yellow Ochre	
Acids / Alkalis	Violet	
Air	Light Blue	
Waste effluents	Black	
Electrical Services & Ventilation Ducts	Orange	
Safety Colour		
Safety Reference	Colour	Colour
Fire	Red	
Water from a public supply	Auxiliary blue	
Water from any other source	Flint grey	
Warning	Yellow	