

MINISTRY OF AGRICULTURE,
NATURAL RESOURCES AND ENVIRONMENT

WATER DEVELOPMENT DEPARTMENT

ANNUAL REPORT 2009

V. WATER DEVELOPMENT DEPARTMENT

www.moa.gov.cy/wdd

1. INTRODUCTION:

1.1 The Water Development Department (WDD) is responsible for implementing the water policy of the Ministry of Agriculture, Natural Resources and Environment, to provide effective protection, rational development and sustainable management of water resources in Cyprus. In this context, the WDD implements the necessary measures to prevent the qualitative and quantitative deterioration of water bodies from contamination, pollution and uncontrolled exploitation. The WDD is also responsible for the feasibility studies, design, implementation, operation and maintenance of infrastructure, such as dams, ponds, irrigation, domestic water supply and sewerage schemes, water and wastewater treatment and recycling systems, as well as desalination plants.

In order to fulfil its mission, the Department systematically collects, classifies, archives, analyses and evaluates hydrological, hydro-geological, geotechnical and other data necessary for the protection and sustainable management of water resources in Cyprus. The WDD regularly organises campaigns and lectures to cultivate consumer conscience for water saving and the proper use of this precious recourse.

1.2 The Department of Water Development was reorganised in 2009. The new structure consists of four Sectors, which have thirteen Divisions under their responsibilities:

Sector I – Water Resources and European Union: Consists of Hydrometry, Hydrology & Hydrogeology, Water Quality Control and European Union Divisions.

Sector II – Planning and Design: Consists of Planning, Design, Wastewater & Reuse, Tenders & Contracts, and Information Technology & Publicity Divisions.

Sector III – Construction, Operation and Maintenance: Consists of Construction, Operation & Maintenance of Irrigation Works, Operation & Maintenance of Domestic Water Supply Works, and Electromechanical Works Divisions.

Sector IV – District Offices: Consists of Nicosia, Limassol, Paphos, Larnaca and Famagusta District Offices.

The Department also has an Internal Audit Unit, a Health & Safety Unit, a Geographic Information Systems (GIS) Group, a Drawing Office, a Topography Section, a Materials and Machinery Warehouse, a well-equipped

Laboratory for geotechnical and concrete testing, a Library, an Accounts Office and a Registry.

1.3 Through the WDD website (www.moa.gov.cy/wdd), the public has access to the activities and projects undertaken by the Department. The website also includes information on the environment, the Water Framework Directive 2000/60/EC (WFD), the water related Cyprus legislation, the chemical and quantitative status of groundwater aquifers and the reservoir storage. Additionally, it includes statistical data on the collection and use of water in Cyprus, publications of the Department, photos and links to other water related websites. Furthermore, the site enables communication with the public via electronic mail. Statistics show that about 6.500 people visit the website per month.

1.4 During 2009, the WDD put a lot of effort in organising campaigns and lectures to cultivate public awareness as to the importance of saving water. For this reason, four teachers were hired and together with WDD officers, they gave lectures at educational institutions (about 250 lectures at Elementary and High Schools) and military camps promoting a water saving culture and efficiency of water use. At the end of each lecture, leaflets, stickers and other promotional material on water saving measures were given to children, teachers and soldiers.

Furthermore, the Department, in cooperation with the Federation of Environmental and Ecological Organisations of Cyprus, held two workshops and participated in various events on water and environment protection.

The Department accepts requests from educational institutions to organise lectures and presentations on how to save water through its website.

Additionally, the Department sponsored musical performances with piano recitals devoted to water, which took place in Nicosia, Limassol and Paralimni and were attended by more than 500 people. The Department also sponsored television and radio shows broadcasting messages on water saving measures.

2. POLICY OBJECTIVES:

2.1 The Government's water policy focuses on providing effective protection, rational development and sustainable management of water resources in Cyprus to address water scarcity and droughts and uncontrolled exploitation. Within the framework of the Government's water policy, other non-conventional water resources, such as recycled water (the use of which releases equal quantities of good quality water), desalination of seawater and brackish groundwater as well as rainwater utilisation are promoted. In addition, the cultivation of a water saving culture is promoted across all citizens.

The implementation framework of the Government's water policy also includes the harmonisation of the European acquis through the establishment of the necessary consolidated institutional framework. For this purpose, the Bill on the Establishment of an Integrated Water Resources Advisory Board and the

Bill on the Modernisation and Consolidation of the Water Legislation have been prepared. The Bills are currently being processed by the Legal Service.

2.2 During 2009, the hydrological situation in Cyprus had improved compared to previous years, due to higher rainfall and as a result higher inflow into the dams, as well as due to an increased desalination capacity (extension of existing and construction of new units).

Existing Desalination Plants:

Desalination Plant	Operation Date	Increased Production CM/day		Total Production CM/day	
		Nominal	Minimum Contractual Obligation	Nominal	Minimum Contractual Obligation
Larnaca Desalination Plant	December 2008	10.000	9.000	61.667	55.500
Dhekelia Desalination Plant (Second Extension phase)	15/4/2009	10.000	9.000	60.000	54.000
Pyrgos Mobile Desalination Plant (Moni)	December 2008	-----	-----	20.000	18.000
Processing system for cleaning water of Garyllis Aquifer	16/1/09			10.000	9.000

* The minimum contractual obligation is 90% of the nominal production.

Planned Desalination Plants:

Desalination Plant	Expected Operation Date	Total Production CM/day	
		Nominal	Minimum Contractual Obligation
Kouklia Mobile Desalination Plant in Paphos**	May 2010	30.000	27.000
Kouklia Desalination Plant in Paphos**		40.000	36.000
Desalination Plant in Vasilikos Limassol Βασιλικό (ΑΗΚ) Λεμεσού	February 2012	60.000	54.000
Μονάδα αφαλάτωσης στην Επισκοπή	August 2011	40.000	36.000

** The mobile desalination unit at Kouklia in Paphos will operate until the permanent facility is completed.

2.3 In April 2009, the restrictions on the supply of drinking water to local authorities were reduced to 15% from 30% that were in 2008. By the end of the year, water savings of the order of 8% were achieved compared to the corresponding amount in 2007, when no water supply restrictions were imposed.

2.4 The water situation during 2009 had substantially improved compared to previous years. Rainfall reached 527 mm or 105% of the average rainfall, whereas, water inflow into the dams reached 120.9 MCM (from January to December 2009).

The total reservoir storage was 15.97 MCM or 5.4% of total capacity on 01/01/2009 and 95.4 MCM or 32.8% of total capacity on 31/12/2009.

Given the improved water conditions, water was provided for irrigation from the Southern Conveyor Project to cover 40% of the permanent crops needs and 50% of the greenhouses needs. In addition, a total quantity of 2.6 MCM was supplied for seasonal plantations and 3.5 MCM for potatoes.

Details are presented in Table 9 of Annex.

The WDD activities for 2009 are outlined, per Division, as follows:

3. HYDROMETRY DIVISION

3.1 The collection and processing of hydrological and hydrogeological data from surface water and ground water resources continued, as was the control of abstractions, the use of groundwater and the monitoring of water pollution.

3.2 In the field of quantitative monitoring of surface waters, continuous stream flow monitoring was continued at 51 hydrometric stations. As regards groundwater, water levels were monitored regularly at more than 1.400 boreholes. In addition, the flows of 45 springs were measured on a regular basis. The Division's efforts for the modernisation of monitoring techniques were carried forward with the installation of data loggers at a number of monitoring stations. With respect to water quality monitoring, the monitoring programme for the implementation of Article 8 of Directive 2000/60/EC concerning rivers, lakes/reservoirs and groundwater was continued. In the framework of this programme, 37 sites on rivers, 11 reservoirs and 84 boreholes were systematically monitored. To this end, more than 440 samples were collected. With regard to priority substances, the concentrations of around 60 substances from 24 river sites and from 8 reservoirs were regularly evaluated. With respect to the monitoring of biological quality elements for the implementation of Directive 2000/60/EC, more than 70 samples from rivers and reservoirs were collected and analysed and the participation in the related Intercalibration Exercise that is organised by the European Commission was continued.

3.3 With respect to applications for permits for the sinking of wells, more than 2.500 applications for the sinking of a well, for the installation of pumping equipment etc. were examined. In addition, about 470 applications for subsidies for the sinking of a well for domestic purposes were examined. A new database was developed into which all information and data related to applications for permits for the sinking of wells are entered.

3.4 The delineation of protection zones for domestic water supply wells was continued and by the end of 2009, protection zones had been delineated for about 130 of about 350 domestic water supply wells. The delineation of protection zones for domestic water supply reservoirs, as required by the Directive 2000/60/EC, was started. With the help of a Consultant from abroad a methodology for reservoir protection zone delineation was established and applied in a pilot implementation for Kouris and Arminou reservoirs.

4. HYDROLOGY & HYDROGEOLOGY DIVISION

4.1 The Division, being responsible for the sustainability of the EU Transition Facility Project 2004 (€1.84 M), coordinated all relevant activities of the 3 Co-operating Agencies in the Project i.e. Water Development Department (Implementing Agency) Department of Fisheries and Marine Research and State General Laboratory.

4.2 The Division staff continued:

- Monitoring and managing the Implementation Plan regarding the qualitative and quantitative status of waters in Cyprus as defined by the Water Frame Directive.
- Managing and monitoring 4 Services Contracts (Hydrologist, Hydrogeologists, Database Manager, and Database Assistant Manager).
- Testing of Cyprus Monitory System, the Hydrological/Hydrogeological Database system of WDD.
- Providing support to the Consultants responsible for the development of CYMOS.
- Validating and entering data into CYMOS.
- Providing support and training to WDD, DFMR, SGL and GSD staff in the use of CYMOS.
- Re-evaluating and re-establishing the groundwater National and the WFD monitoring networks.
- Conducting monthly water sampling and field measurements of physicochemical parameters at groundwater monitoring stations.
- Contributing to the analysis and evaluation of the results of laboratory tests of water samples. At 6 groundwater monitoring stations, at which chemical compounds were found to be at higher than acceptable values, the Division proceeded to investigate the causes responsible for the problem.
- Contributing to the design and organisation of programmes for the repetition of groundwater sampling in the cases that was required.

- The work (in co-operation with other Departments and the Division of Hydrometry of WDD) for the assessment of the qualitative and quantitative status of groundwater, and the preparation of the relevant reports as per WFD.
- The work for the assessment of the qualitative and quantitative status of groundwater based on the analysis of the results of the groundwater National monitoring programmes.

4.3 In 2009 the Division staff also:

- Evaluated 26 hydrological, hydraulic and flood studies prepared by Consultants on behalf of various Local Authorities and Departments and prepared relevant reports.
- Prepared 3 hydrological studies for WDD and supported and assisted other Government Departments in the elaboration of hydrological studies and flood studies.
- Established the GIS methodology and contributed in the determination of the criteria for the designation of Drinking Water Reservoirs' protection zones.
- Continued the collection and classification of historical floods in Cyprus (1878 to date) as required by the EU Directive "Assessment and Management of Flood Risk" (2007/60/EC).
- Visited flood affected areas, assessed and recorded flood related information.
- Prepared isopiezometric digital maps (groundwater levels) of coastal aquifers.
- Classified and recorded rock formations as identified in samples collected during the drilling of 6 new groundwater monitoring stations (boreholes).
- Worked out the 2008 water balance for the areas under government control in Cyprus.
- Maintained and managed CYMOS as well as developed additional CYMOS supporting tools.
- Designed, developed and maintained a GIS-based geodatabase for WDD.
- Provided support and training to WDD staff in the use of the WDD geodatabase.
- Prepared thematic maps related to the work of the Division and the WDD.
- Continued the development of the database on the licensing procedures for drilling and pumping wells.
- Continued the development of a specialised database concerning the quantities of water used for irrigation.

- Continued gathering and digitising information on the quantities of water abstracted from aquifers and the quantities of water used for irrigation in Cyprus.
- Evaluated 11 Studies/Reports prepared by Consultants for WDD.
- Contributed to the preparation of Terms of Reference and the evaluation and preparation of Tender Evaluation Reports for two tenders published by the WDD.
- Continued the work of coordinating the execution of WDD Contract "Review of the Study on the Environmental Impact of the Use of the Limassol-Amathounta Treated Effluent in Artificially recharging the Akrotiri aquifer (Contract No. WDD 74/2009).
- Prepared and submitted for ratification the Bill and Regulations regarding the transposition into Cyprus Law of the European Directive 2006/118/EK on the Protection of Groundwater against Pollution and Deterioration.

4.4 Within the Division's and WDD's scope of work members of the Division's staff:

- Represented WDD at meetings of Parliamentary Committees, prepared and presented articles for radio and TV programmes, participated in conventions, seminars and workshops both in Cyprus and abroad, were assigned as members of Steering Committees and working groups of various WDD Contracts and attended training and courses related to the Division's and WDD work.

5. EUROPEAN UNION DIVISION

5.1 During 2009, important work has been carried out on the harmonisation and monitoring of various obligations and requirements of the European Union.

5.2 The Division coordinated between various Divisions / Departments for the effective implementation of the European acquis, disseminated information and informed interested parties about European water issues. At the same time, it collected and processed data, compiled reports and prepared research proposals. The Division also participated in various Steering Committees / Advisory Groups.

5.3 The Division delivered several informative lectures / presentations in Cyprus as well as abroad, covering a wide range of topics such as water resources management in Cyprus, water scarcity and drought, the implementation of the Water Framework Directive 2000/60/EC in Cyprus, etc. It also represented the Department at various meetings organised for the implementation of this Directive.

5.4 The Division was responsible for the coordination of the co-financing process of water management projects from European Union Funds and held various meetings and consultations with the Managing Authority and the Intermediate Body regarding the water management projects proposed to be included in the Operational Programme "Sustainable Development and Competitiveness 2007 – 2013".

6. PLANNING DIVISION

6.1 The Environmental Impact Study for "Aradippou flood dams" and for "Souskiou diversion dam" was completed and the Environment Service gave its approval with certain conditions.

6.2 The feasibility study of the "Use of recycled water from Larnaca Sewage" was continued.

6.3 The Environmental Impact Study for the "Use of recycled water from Larnaca Sewerage system" was signed on the 03.05.2009 and the preliminary final report of the above contract was submitted by the Consultants.

6.4 The contract for the feasibility study for "Water supply of Peyia" was completed.

6.5 The Preliminary Environmental Impact Study of "Anadius Government water project" was started and completed.

6.6 The contract for the "Investigation of the status of Water Supply Networks" was signed in August 2009, and is expected to be completed in April 2010.

6.7 The Feasibility study of the Project for the "Supply of Eastern communities of Limassol district and Western ones of Larnaka district from Vasilikos desalination plant" was prepared.

6.8 The "Strategic Environmental Assessment of Environmental Impact from Desalinations" was tendered in January 2009 and the contract was signed on 15/05/2009.

6.9 The contract for the feasibility study of the project for the "Use of recycled water from Limassol Sewage" was tendered.

6.10 The "Investigation of Use of Rain Water" was tendered in February 2009 and the contract was signed on 22.05.2009. There were two public presentations of the project which was attended by stakeholders on 15.07.2009 and 14.12.2009. The final project design will be submitted with final comments of the Works in February 2010.

6.11 Technical specifications for the preparation of tender documents for feasibility and environmental studies of proposed projects were prepared.

Officers of the division participated in competitions and evaluations and also continued to coordinate the above contracts.

6.12 The Topography Section of the division has carried out all the necessary surveying works for the projects of the Department.

6.13 The Geotechnical Investigations Section of the division is responsible for the planning and technical supervision of the geotechnical investigations for the different projects of the Department. The Concrete and Soils laboratory is part of this section where all the necessary testing is carried out for the design and quality control of the projects.

7. DESIGN DIVISION

7.1 Quality checking and approval of the design of the project for the reuse of recycled water of greater Nicosia area.

7.2 Extension of Dhali-Potamia-Ayios Sozomenos irrigation network, which is part of the project for the reuse of recycled water of greater Nicosia area.

7.3 Design of the water supply system for villages West of Nicosia and new plots in the Kokkinotrimithia /Mammari area.

7.4 Estimation of the capacity of the Main Pipeline supplying the greater area of Paphos, in order to proof its adequacy for conveying extra quantities of water, produced by Paphos Desalination Plant.

7.5 Preparation of part of the Tender Documents (Terms of References / Technical Specification) for the Design of Aradhippou Dams on Archangelos and Kammitsis river.

7.6 Preparation of working drawings for part of the Main Pipeline of Water Supply to villages West of Larnaca.

8. WASTEWATER AND REUSE DIVISION

8.1 91/271/EC Directive concerning Urban Wastewater Treatment for agglomerations with population equivalent greater than 2.000.

- Negotiations with EIB for the project finance.
- Submission of the Compliance Report for Limassol and Paralimni to the EC.
- Input to the EC electronic questionnaire based on Article 15, regarding the 2007 status of the wastewater infrastructure and compliance.
- Preparation of Technical Specifications for the Tenders of 2 sewerage networks (Athienou, Xylophagou) and various services.

- Contract Implementation for Peyia Municipality Techno-economical studies and other services contracts.

8.2 Studies and Implementation Programme for Sewerage Systems in rural communities with population equivalent less than 2,000

- Promotion of the implementation programme of the sewerage systems in rural communities. The implementation programme has been updated according to the conclusions of the relevant Reconnaissance Studies and following negotiations with the corresponding District Administration Offices and Local Authorities.

8.3 Operation and Maintenance of Wastewater Treatment Plants:

- Monitoring and Coordination of operation and maintenance contracts of 9 wastewater treatment plants for army camps.
- Preparation of Technical Specifications for the renovation and operation and maintenance of the Agglisides Community Wastewater Treatment Plant.
- Provision of services for the study preparation for the industrial wastewater central treatment unit of Ypsonas industrial area.
- Renewal of operation and maintenance contracts for wastewater treatment plants of 2 army camps.
- Technical advice regarding sewerage matters

8.4 Monitoring of the Recycled Water Quality:

- Sampling for chemical, microbiological, ionic, metals and toxicity analyses from 33 Wastewater Treatment Plants according to the Discharge Permits.
- Sampling for chemical analyses of untreated wastewater.
- Sampling for chemical and microbiological analyses of water from Polemidia Dam and sea water, before and after the period of recycled water discharge in these locations according to the Discharge Permits.
- Sampling for chemical analyses of soil, which is irrigated by treated wastewater according to the Discharge Permits.

8.5 Vathia Gonia Central Wastewater Treatment Plant (Septage – Industrial Waste):

- Monitoring and coordination of the operation and maintenance contract.
- Monitoring of the imposition and collection of discharge rates in the plant.
- Monthly sampling, for conducting microbiological analyses and analyses of metals and toxicity.

8.6 Urban Sewerage Boards – Tertiary Treatments

- Payments concerning the operation and maintenance of the tertiary treatment of the treatment plants and the reuse scheme, of the Urban Sewerage Boards.

8.7 Other European Matters:

- Input to the 4th Annual Report for Lisbon Strategy.
- Meetings with the General Directorate of Environment of the EU for the Cohesion Policy and Strategic Environmental Assessment.
- Representation of the Department in the Commission expert group for construction products in contact with water intended for human consumption, according to Article 19 of the Directive 89/206/EC concerning the products of the division of construction.

8.8 Co-funding of the Sewerage Systems by Community Resources:

- Submission of the Applications for co-funding for 2 wastewater projects: Complex of Astromeritis – Akaki – Peristerona and Athienou Municipality.
- Approval of the applications and commencement of implementation and project management, according to the regulations and procedures of the Operational Programme “Sustainable Development and Competitiveness”.

9. TENDERS AND CONTRACTS DIVISION

The main duties and responsibilities of the Tenders and Contract Division are:

i) The preparation and announcement of the tender procedure, from the preparation of the tender documents through to the award of the contract, regarding the Department’s acquisition, of supplies, services and works, all in accordance to the Public Procurement Process. Some of the tasks the Division performed during the year are as follows:

a) Supplies

- Supply of Ductile Iron Pipes and Fittings for the Water Supply Projects of the Department’s District Offices.
- Supply of Water from the EAC Desalination Plant to Vasiliko Power Station.
- Supply of hydrological instruments.
- Supply and Installation of electrical panels.
e.t.c.

b) Services

- Provision of consulting services for the study of Mylouri Dam at Palechori.
- Provision of consulting services for strategic environmental study from Desalination Plans.
- Operation and maintenance of the wastewater treatment plants and the irrigation system of recycled water and sewer maintenance for five years at Lefkara Military Camp.
- Provision of Civil Engineering Services for the execution of the Project “Sewerage System of Astromeritis-Peristerona-Akaki Complex”.
e.t.c.

10. INFORMATION TECHNOLOGY AND PUBLICITY DIVISION

10.1 The monitoring of the Southern Conveyor Project (SCP) is done through a SCADA (Supervisory Control and Data Acquisition) system. This includes VAX stations located in the Control Center at Headquarters Premises of Water Development Department and the Regional District Centers. Through these stations an online and up-to-date picture and also tele-control of all the Major Government Water Works connected to SCP. During 2009, the new mobile desalination plant at Moni was added to the telemetry system.

10.2 In the ordinance of educating the personnel 44 training courses were organised and held within the Department. The topics were technical, economic, environmental, accounting, administrative, legislative, budgetary procedures, new work methodologies, use of software programmes and technology issues.

Officers of the Department attended a series of training courses held by the Academy of Public Administration for newcomers aiming at their smooth induction in the public service through familiarisation with the Government mechanism, the institutional framework and the environment within which public officers' act.

Officers also trained by the Academy of Public Administration to act as "Learning Unit" within the Department and be able to diagnose learning needs. These officers are responsible to conduct annual learning needs assessment within the Organisation and plan, implement and evaluate learning activities to meet the needs that have been identified.

Also many of the WDD Officers attended lectures on health and safety, first aid, fire and other general matters relating to safety and health at work.

10.3 The WDD computer network of the Department includes more than 430 computers (PCs), printers and other network peripherals. All PCs have access to the internal network. All the scientific staff, and almost all technical, and clerical staff employed by the Treasury Department have access to the Internet and email service. The WDD computer network is controlled by 11 Servers, five of which accommodate the Departments databases, (LIMS, Water Billing, CYMOS, ENVIS, and Equipment Management) and also the library database ABEKT).

10.4 WDD headquarter premises wiring is of the latest technology, i.e. optical fibers connecting the buildings together and cat.6 wires, at speeds up to 1000 mbps to each endpoint.

Within the principle of upgrading the technology there was a partial replacement of old Computers and printers. On a daily basis technical support is provided to the Department both in hardware and software. In 2009 the process of condemnation old and obsolete data processing equipment began.

10.5 Within the scope of implementing the Water Framework Directive 2000/60/EC (WFD) the Department established or maintained network

connections with the Department of Fisheries and Marine Research, the Department of Geological Survey and the State General Laboratory. This was necessary to collect the required information under the databases CYMOS and ENVIS.

10.6 In the scope of modernisation and better utilisation of the Department's library, in November 2009, the libraries' database ABEKT was installed. The target is to electronically record the information available in the library, for easy search and retrieval.

In perspective of accrediting the Department's Water Laboratories for quality control, a database system LIMS (Laboratory Information Management System) was deployed.

The System for the Economical Analysis of Water Use was implemented and began testing for acceptance.

10.7 The Division is updating the Department's website daily, also responses to questions and comments of the public coming through the website.

For the purposes of developing Water Awareness, lectures on water conservation were organised in Primary Schools, High Schools, and Army Camps.

In collaboration with the Water Boards, WDD organised "Water Saving Week".

Officers from the Division participated in the following events with respect to water protection and environmental contributions and the distribution of instructive material:

- International Conference organised by the University of Cyprus on "Xenobiotics in the Water Cycle".
- Conference organised by the University of Nicosia, in cooperation with UNESCO with topic "Water: Source of Life and Culture".

10.8 Works of the contract WDD 97/2007 for implementing articles 11, 13 and 15 of the Water Framework Directive 2000/60/EC (WFD) in Cyprus, with regard to the preparation of the Draft River Basin Management Plan, including the Programme of Measures, the Drought Management Plan and proposals for Revision of Water Policy, were continued during 2009. Within the framework of the Directive the contract WDD 26/2009 for the preparation of Strategic Environmental Assessment for the above plans, along with Public Consultation Campaign (Article 14 of WFD) were initiated. Furthermore, the contract WDD 54/2009 for the assessment of the surface water status, in the context of the implementation of the monitoring programmes (Article 8 of the WFD) was initiated and completed during 2009.

Furthermore, the EU co-financed programme WaterInCore for the sustainable management of the water resources through the strengthening of the shared responsibility of the Mediterranean River Basins was started in 2009.

Finally, Contract WDD 61/2009 for the reassessment of the alternative scenario C for the use of the Nicosia recycled water was also started in 2009.

11. CONSTRUCTION DIVISION

11.1 The installation of the central conveyor between Kannaviou Dam and Asprokremmos Water Treatment Plant, has been completed.

11.2 The installation of another 6 km of pipelines and the construction of a 750 m³ reservoir have been completed. These constructions are part of the Anadiou Water Supply Project.

11.3 The design of Kannaviou Water Treatment Plant and Pumping Station has been completed. The construction will last 18 months and the Plant will have a nominal capacity of 10.000 m³ water per day.

11.4 "Pafiana" reservoir is completed, which is part of Paphos Water Supply Project.

11.5 Dhekelia and Larnaca Desalination Plants have been upgraded. Their nominal capacity is now 60.000m³ and 62.000m³ water per day, respectively. The Contract for the construction of Limassol Desalination Plant was awarded on 07/08/2009, with a nominal capacity of 40.000m³ water per day.

11.6 Ayioi Vavatsinias Sewerage System has been completed. The construction of Astromeritis – Peristerona – Akaki Sewerage System began on April. The Contract for the construction of Athienou Sewerage System was awarded and construction works will start early 2010. Tenders regarding the construction of Xilofagou Sewerage System are evaluated.

11.7 Maintenance works took place at Kouris and Yermasoyia Dams.

11.8 Improvement works on Communities' Water Supply Systems continued.

11.9 The construction of Solea Dam will begin on January 2010.

12. OPERATION AND MAINTENANCE OF IRRIGATION WORKS DIVISION

12.1 The Management and Operation of the Government Water Works ("G.W.W.") is undertaken either by the WDD or the Management Committees, while the WDD is responsible for maintenance.

12.2 The application of the computerised water invoicing system, which was used to facilitate managing and pricing water provided by the G.W.W. for drinking and irrigation purposes, was continued during 2009.

12.3 Also, the Division proceeded with the implementation of the study to examine the water pricing policies that would have to be applied in Cyprus in order to fulfil the provision of the Water Framework Directive.

12.4 The policy of the Golf courses and their related development works with regards to the water supply, in accordance with the Decision of the Council of Ministers dated 03/06/2009 was implemented (Redefinition of the policy on the Golf Courses).

12.5 The Division was responsible for the Collection of data regarding water storage in reservoirs of the G.W.W. and the follow up of the implementation of the irrigation supply restrictions. The Division was also responsible for operation and maintenance of the Southern Conveyor Project and the Kiti and Athienou irrigation projects.

12.6 The procedure for the collection of arrears for irrigation water consumption supplied by the G.W.W. was undertaken and coordinated by the Division in cooperation with the Public Prosecutor who was taking judicial measures against debtors.

Details on table 9 of the Appendix.

13. OPERATION AND MAINTENANCE OF DOMESTIC WATER SUPPLY WORKS DIVISION

13.1 The Government Domestic Water Supply Works of Nicosia, Larnaca-Famagusta, Limassol and Paphos include the Water Treatment Plants, the Desalination Plants, the Government Boreholes as well as the pumping and water storage facilities and the main conveyors that distribute water to the Water Boards and the municipal and community Water Authorities. The total cost for the operation and maintenance of the above systems for the year 2009 was € 750.171, compared to €634.391 in 2008.

13.2 The total drinking water treated and distributed by WDD in 2009 was 70,362 MCM as shown in the table below:

DOMESTIC WATER PRODUCTION

Water Source	Water Quantities for Drinking Water Supply	Borehole Recharge	TOTAL
	MCM	MCM	MCM
Reservoirs	7,569	3,424	10,993
Boreholes	11,347		6,883
Desalination	49,425		49,425
Imports	2,021	1,04	3,061
Total	70,362	4,464	70,362

The above quantities include 2,0 MCM abstracted from the Kouris Delta aquifer boreholes owned by the local communities and 1,37 MCM from Paphos Municipality boreholes that were not billed. A total of 65,918 MCM were provided to the Water Boards and the Municipal and Community Water

Authorities as presented in the table below and 1,0 MCM is non revenue water.

BILLED WATER

Government Domestic Water Supply System	CONSUMERS	PRICE (€ /CM.)	CONSUMPTION (MCM)
Nicosia	59	0,77	23,028
Larnaca- Famagusta	78	0,77	18,372
Limassol	20	0,77	17,023
Paphos	89	0,56	7,495
TOTAL	246		65,918

The total production of the Water Treatment Plants was 15,87 MCM. Production per plant is given in the following table:

WATER TREATMENT PLANTS

Treatment Plant	Water Source	Serviced Areas	Production 2009 m ³
Tersephanou	Kouris and Kalavastos Reservoirs	Nicosia and Larnaca-Famagusta Distribution Systems	2.406.260
Kornos	Lefkara, Dipotamos Kalavastos Reservoirs	Nicosia Distribution System	267.100
Limassol	Kouris Reservoir, Moni Mobile Desalination Plant	Limassol Distribution System	7.152.420
Paphos (Asprogremmos)	Asprogremmos and Kanaviou Reservoirs	Paphos Distribution System	6.045.010
Chirokitia	Standby	----	----
TOTAL			15.870.790

Following the discovery of high arsenic levels in the groundwater supply of Mammari community, the area distribution network was connected with the Nicosia Distribution System using the old existing groundwater supply network of Kokkinotrimithia area.

Modifications were also made on the Mobile Treatment Unit to enable the removal of arsenic from the groundwater. The unit is in standby mode ready to supplement supply in the area, if deemed necessary.

13.3 The management of the BOOT Contracts and the issue of payment Certificates for the two permanent Desalination Plants in Larnaca and Dekeleia and the two mobile units of Moni and Garyllis was executed smoothly during 2009. The production quantities of each unit and the corresponding payment for 2009 are summarised in the following table :

Desalination Plant	Production Quantities m³	Payments* €
Larnaca Desalination Plant	20.595.520	26.062.179,87
Dekeleia Desalination Plant	19.619.540	16.330.102,19
Moni Mobile Desalination Plant	6.489.408	6.225.004,66
Treatment Unit of the Garyllis Groundwater	2.720.474	746.613,96
TOTAL	49.424.942	49.363.900,68

* Payments are carried out per quarter. Water produced and delivered to WDD is invoiced at the end of each quarter. Payment for the last quarter of 2009 will be executed in 2010.

13.4 The water quantity supplied to the Water Authorities was recorded and corresponding bills were issued based on the fees applicable, through the computerised Bill System. Payment of the bills issued is monitored in accordance with the provisions of Law 57(I)99.

During 2009 an agreement was reached for the settlement of outstanding debts for water provided to Water Authorities. The most important case settled was the debt of the Water Board of Limassol which was outstanding for several years. The Limassol Water Board paid a total of 8,54 million euro and gave up rights for free water quantities starting on 1/1/2012, for the relief of the remaining debt.

13.5 To ensure the quality of water produced at the Water Treatment Plants, the Desalination Plants and throughout the distribution network, water samples were collected and analysed. Surface and groundwater quality conformance was also checked. Anionic analyses were performed on 4.154 samples and microbiological analyses were performed on 1.476 samples. A total of 1.808 samples of water produced from the Desalination Plants were tested for Boron and LSI levels.

13.6 Within the framework of encouraging a Drinking Water Conservation Culture the government subsidisation schemes for : borehole drilling for garden watering, connection of boreholes with lavatories, installation of a grey water recycling system and installation of a hot water circulator, continued throughout 2009.

A total of € 919.110 were granted to the beneficiaries compared to €1.284.022 given in 2008. The number of approved applications for the four schemes of

drinking water conservation subsidised in 2009 are summarised in the following table:

Subsidisation Scheme	Approved Applications	Total amount per subsidy (€)
Boreholes for watering gardens	789	549.900
Connection of boreholes with lavatories	317	242.890
Installation of Grey Water Recycling System	21	66.000
Hot water circulator	281	60.320
TOTAL		€ 919.110

In addition, the installation and maintenance of Grey Water Recycling Systems in schools was continued throughout the year 2009. Five new systems were installed and eighteen were serviced.

14. ELECTROMECHANICAL WORKS DIVISION

- 14.1** There was preparation of technical specifications, evaluation of tenders as well as acceptance of electrical and mechanical equipment to satisfy the needs of execution of governmental and community works as well as the needs of maintenance teams of the Department.
- 14.2** There was a study and an estimation of the cost for the supply and installation of the electrical and mechanical equipment to 30 small governmental and community projects of water supply and irrigation. Also, there was a study and estimation of the cost for the procurement and installation of chlorination systems at 15 community projects of water supply as well as at Units of the National Guard.
- 14.3** From the technical teams of the Service there was installation of electrical and mechanical equipment at 50 governmental and community projects of water supply and irrigation. Also, there were 30 installations of liquid type chlorination systems at community water supply projects 15 of which were powered with photovoltaic energy.
- 14.4** There was a study and estimation of the cost for the supply and installation of electromechanical equipment for the Anadiou and Kathikas pumping stations for the water supply system of 34 communities in Paphos from the Kannaviou Water Treatment Plant. There was also a study and estimation of the cost for the supply and installation of electromechanical equipment for the pumping stations of

the Dali, Ayios Sozomenos, Potamia and Yeri irrigation networks which will be supplied from the Vathia Gonia Sewage Treatment Plant's treated water, as well as for the Polemidhia pumping station for the transportation of treated water of the Moni Station to the Polemidhia dam.

- 14.5** Members of the Service participated in the team of tender preparation and evaluation for the contracts of operation, maintenance and reconstruction of biological sewage treatment stations at two camps of the National Guard and at one community. They also participated in the preparation of tenders' team for the sewage treatment station of the Astrometitis- Peristerona-Akaki area.
- 14.6** Members of the Service participated in the contract management teams and/or supervision of the construction works of the prefabricated Desalination unit at Kouklia, of the Limassol Desalination Unit and of the Kannaviou Water Treatment Plant.
- 14.7** Members of the Service participated in the Evaluation and Negotiation Committee for the Capacity Extension Project of the prefabricated Desalination unit at Kouklia and for the Kannaviou Water Treatment Plant.
- 14.8** Members of the Service participated in management teams for the demands of the Contractor and other issues originating from the Contract for the building of the mobile Desalination unit at Moni.
- 14.9** The Service participated in the negotiation teams for the Desalination unit of EAC at Vasiliko.
- 14.10** The Service gave an integrated proposal for changes and/or additions to the specifications of electromechanical equipment which concerns the Solea Dam.
- 14.11** The Service participated in the team of execution of works for the extension of the Limassol Water Treatment Plant which was undertaken by the Department and which is expected to be completed at the beginning of 2010.
- 14.12** There was continuation of the maintenance of electromechanical equipment of the Water Treatment Plants, of the projects of the Southern Conveyor, of the Government projects of water supply and irrigation and of the Telemetry system. There was also continuation of the technical assistance to Municipalities, Water Boards, Sewerage Boards, and Government departments on issues relating to the expertise of the service.

15. INTERNAL AUDIT UNIT

The Internal Audit Unit of the Department has carried out, on-site visits to 26 construction work projects of the WDD and to 3 Government Irrigation Projects, all over Cyprus. The audit findings were included in three reports that have been submitted to the Director of WDD. Further to the routine auditing the Internal Control focused on identifying the institutional and procedural problems and the preparation of proposals for solving the problems traced.

Some of the proposals refer to, changes in the procedures of preparing the documents of the contests for the execution of the Water Supply projects, the empowerment of the District offices concerning the laboratory testing, the new types of valves to be used, the preparation of new drawings for the construction of circular water tanks, and to the preparation of new technical specifications for designing the water supply networks.

16. HEALTH AND SAFETY UNIT

The Department operates Health and Safety Unit, which is staffed by two people, of which one is the Security Officer.

The Unit has got the following responsibilities:

- i. Implementing legislation for Safety and Health for WDD Personnel and third parties in accordance with the Safety and Health at Work Laws of 1996 to 2003.
- ii. Coordination of the Safety Committees.
- iii. Continuing education and training staff in health and safety
- iv. Monitoring, control of personnel and enforcement of the legislation in WDD premise and facilities, for achieving a healthy and safe working environment.
- v. Providing the staff with all necessary personal protective equipment (PPE).

17. GEOGRAPHICAL INFORMATION SYSTEMS (GIS) WORKING GROUP

In August of 2009, the WDD in cooperation with the Department of Information Technology Services (DITS) called for tenders for the development and implementation of the first phase of the Geographical Information System (GIS), in the same framework as that of the WFD. The evaluation of the tenders lasted until the end of the year and the contract is expected to be awarded to the successful bidder in March 2010.

In the meantime, the WDD Ad-Hoc Committee has simplified the procedures in relation to the data standardisation of the GIS applications, in order to ensure a smoother implementation of the system.