



BOLIVIA

GUADALQUIVIR

WATER AND SEWERAGE PROGRAMME



Client	EMAGUA
Financing	KfW
Duration of Services	04/2013 – 12/2018
Value of Services	1,781,820 Euro
Project Costs	20.25 Mio Euro

Scope of Services

- Reformulation of the feasibility study
- Development of final design studies
- Preparation of specification and tender documents
- Support to the executing agency in the contracting process
- Supervision of the works
- Technical assistance in the implementation of systems
- Social/educative assistance to the communities (Desarrollo comunitario - DESCOM)
- Institutional strengthening

Brief Project Description

The Guadalquivir Drinking Water and Sanitation Program contains measures in the city of Tarija and in the municipalities of Padcaya, Uriondo and San Lorenzo all located in the department of Tarija. The measures, co-financed by the KfW Development Bank (Germany) include the improvement of water catchment, improvement of raw water treatment, improvement of distribution networks including sectoring and installation of flowmeters in order to reduce water losses. The measures in the waste water sector include the renewal of obsolete installations, sewer systems in particular as well as the construction of new waste water treatment plants in order to avoid future contamination of surface waters which serve also as drinking water resources. The project has suffered from the beginning considerable changes due to the non-availability of the new water sources which were supposed to be the main water sources of the four municipalities. Thus it was necessary to determine new sources or to improve the existent water sources.

The following measures are programmed:

Tarija:

- Construction of two water catchments of type “river bank filtration”, (150 l/s & 160 l/s)
- Construction of two pumping stations (150 l/s & 160 l/s, each one 110 kW) for raw water transfer including pressure mains (DN400/450, 3,5 km) to the respective destinations
- Expansion and rehabilitation of the water treatment plants of Tabladita (160 l/s → 320 l/s) and Alto Senac (25 l/s) including SCADA works connecting the two plants with each other as well as with two pumping stations. Expansion include new coagulation plant, 10 rapid sand filters for full capacity (320 l/s), new soda ash production and dosing plant, new chlorination system as well as a regulation tank.
- Construction of 10 water storage tanks of a total volume of 12,500 m³ in modules ranging from 500 m³ to 1500 m³
- Interconnection of the new storage tanks (DN 600 – DN200; 15 km) and connection of the southern part of the city with the northern area (DN300; 4,5 km)
- Supply and installations of 10,000 water meters for house connections and 16 macro flow meters
- Sectoring of the water distribution network of the city.

Uriondo/Concepción:

- Construction of new a water catchments of type “river bank filtration”, (20 l/s)
- Construction of a new transfer main to the existing treatment plant (Ø180mm, 700 m) including river crossing pipe below river bed (Ø250mm, 150 m)
- Hydraulic improvement of the water main (26 km) leading from the water treatment plant to the municipal capital “Valle de la Concepción” by construction of purge and ventilation chambers
- Construction of 6 new storage tanks (10 m³ - 15 m³) for improvement of water supply of small communities alongside of the water main
- Rehabilitation works of existing storage tanks (2 x 100 m³)
- Construction of a new transfer main to the community “La Higuera” (3,7 km; Ø 63 – 110 mm)
- Supply and installation of 500 water meters for house connections
- Supply and installation of 15 flow meters in order to reduce water losses

San Lorenzo:

- Improvement of the existing water intakes
- Renovation of a water main (2,4 km; DN100/150)
- Construction of complementary storage tanks (2 x 80 m³)
- Extension and partial renovation of distribution network (10 km, DN 50- DN100)
- Construction of a new water treatment plant (Multiple Sand Filtration) for 7 l/s
- Renovation of 825 house connections including supply and installation of water meters
- Extension and partial renovation of the sewer system (6,6 km; DN 150 – 250)
- Renovation of approx. 600 house connections
- Construction of a new waste water treatment plant consisting of UASB reactors and constructed wetlands for a total flow of 850 m³/day (374 kg DBO₅/d; 6233 P.E.)

Padcaya:

- Improvement of the existing water intakes
- Renovation of a water main (2,7 km; DN100)
- Construction of complementary storage tanks (100 m³; 10 m³)
- Construction of a new water treatment plant (Multiple Sand Filtration) for 3.2 l/s
- Supply and installation of 500 water meters
- Extension and renovation of the sewer system (8 km; DN 150 – 250)
- Construction of a new waste water pumping station (3 l/s)
- Renovation of approx. 360 house connections
- Construction of a new waste water treatment plant consisting of UASB reactors and constructed wetlands for a total flow of 246m³/day (129 kg DBO₅/d; 2150 P.E.)