



La Reguera WWTP

The integrated water cycle • Sanitation

La Reguera WWTP

Located in the Guadarrama River basin in the municipality of Móstoles, the La Reguera wastewater treatment plant (WWTP) serves the municipalities of Móstoles, Fuenlabrada and Alcorcón.

The facility, which began operating in 2009, is designed to treat a flow of 80,353 m³ per day and currently purifies water for about 100,000 households in the aforementioned municipalities.

 [Watch a video about La Reguera WWTP](#)

In this installation the waste water passes through different processes that allow its subsequent use in the irrigation of green areas, in industrial uses or for street washing, depending on the criteria established by the applicable legislation regarding reclaimed water.

 [See images of the La Reguera WWTP](#)



Water line

- **Pretreatment**

On arrival, the wastewater is subject to a skimming process in order to separate large solid waste that could alter the subsequent treatment processes, and fats and sands in the degritting channels.

The sands are deposited on the bottom by gravity and pumped to a sand separator. Low-density suspended particles, especially oils and fats, are concentrated on the surface. The resulting waste is taken to a controlled landfill in the Region of Madrid.

- **Primary treatment**

Later the content of suspended solids and other contaminants is reduced by making the higher density particles settle on the bottom by gravity. The now clarified water stays on the surface, from where it overflows to the external perimeter channel.

- **Secondary treatment**

Biological treatment

The clarified water flows into reservoirs, where it is subjected to the action of microorganisms that feed on the organic substances remaining in solution, for which the microorganisms require a supply of oxygen, thus eliminating pollution from dissolved organic matter. Additionally, this WWTP can remove nitrogen and phosphorus biologically by means of anaerobic and anoxic chambers, prior to the aeration zone, from which sludge is recirculated to the anoxic zone.

Secondary subsidence

The secondary sludge formed during the biological treatment are deposited on the bottom of the clarifier and removed by suction. The clarified and purified water flows over the edge of the clarifier.

The cleaning of foams and floating matter is performed by scrapers which move over the water surface to sweep them into the sludge line flotation thickeners.

- **Tertiary treatment**

In this third phase, the water is subjected to a treatment consisting of:

- Filtration in a sand filter.
- Filtration by mesh filter.
- UV and sodium hypochlorite disinfection, so that the residual chlorine can continue working during transport to the place of destination.

Sludge line

The sludge resulting from the process is sent to the sludge line, where it is subjected to the following processes:

- Thickening. Increasing the concentration of sludge by dewatering to reduce volume.
- Stabilization. Removal of part or all of the organic matter.
- Conditioning of the sludge for subsequent dewatering.
- Dewatering or removal of the remaining water to transform it into an easily manageable solid.
- Storage for subsequent use in agriculture or electricity cogeneration.

The gas generated in the process is used as an energy source for heating and stirring the digester.

This plant has a deodorizing system to extract and clean the air in pretreatment, dewatering, sieving and sludge thickening rooms. In this way, odours are eliminated and harm to workers and residents of nearby towns is avoided.

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