

• The astounding  
*Journey*  
of the

# Segura River

and its  
tributaries



GOBIERNO  
DE ESPAÑA

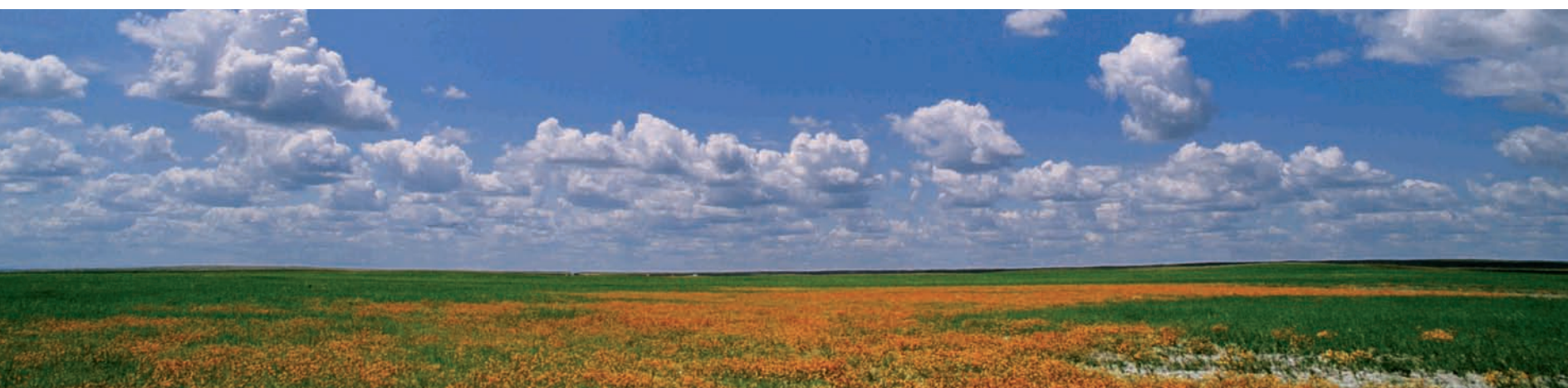
MINISTERIO  
DE MEDIO AMBIENTE  
Y MEDIO RURAL  
Y MARINO

CONFEDERACIÓN  
HIDROGRÁFICA  
DEL SEGURA

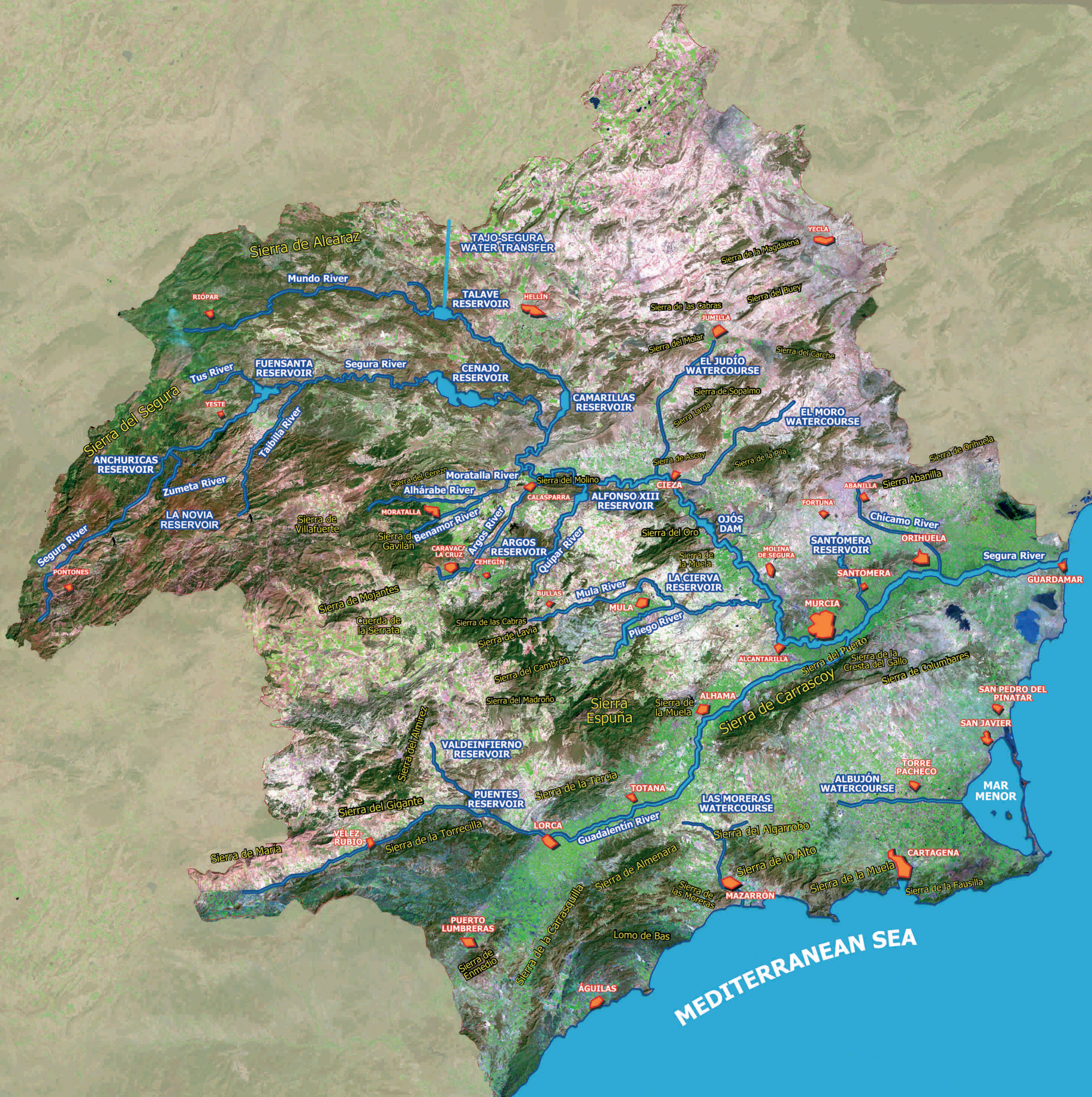


# *What is the* **Segura River Basin Authority** *and what it does*

- It is the organisation responsible for the planning, management and distribution of the water resources in the Segura basin.
- Like other River Authorities, it depends on the **Ministry of the Environment and the Rural and Marine Environments**. It dates back to the year 1903 and the creation of the **División Hidráulica del Segura**, which assumed all the responsibilities for public water and the corresponding civil engineering work.
- It was the second river authority to come into service after that of the Ebro river. It was created on 23 August 1926 under the name of **Confederación Sindical Hidrográfica del Segura**.
- The current name **Confederación Hidrográfica del Segura (CHS)** was assumed in 1934 by virtue of Decree dated 21 May.
- As part of its work, the **CHS** has to manage the available water resources and demands for different purposes (farming, industry, human consumption, tourist developments, etc.) in accordance with the principles of sustainable environmental management and the participation of all citizens.
- These principles are provided in the **Water Framework Directive (WFD)**, which was adopted by the European Parliament on 22 December 2000. The WFD provides the legal framework and general principles for the protection and sustainable use of water in every country of the European Union and its aim is to achieve the appropriate status of every water body by 2015.







The source of the river lies in **Sierra de Segura**, in the province of Jaén, at a height of 1,413 m above sea level, approximately 5 km from the town of **Pontones**. The Segura flows through land that is generally mountainous and often above the height of 1,000 m. These peaks alternate with valleys, depressions and plains. Along the course of the river, there are three giant mountains of more than 2,000 m: **Sierra de las Cabras** (2,081 m), in the province of Albacete; **Cerro Poyo** (2,045 m) in **Sierra de María**, to the north of the province of Almería; and **Revolcadores** (2,014 m), located in **Sierra Seca** in the municipal district of Moratalla (Region of Murcia). On the border between the provinces of Murcia and Albacete, it collects water from the **Mundo river** and, at Calasparra, it joins up with its tributaries the **Moratalla river** and the **Argos river**. This area is also home to the natural location of the **Almadenes Gorge**, one of the



La Cierva Reservoir

In **Abarán**, there are four waterwheels, including the wheel with the largest diameter in Europe, which is currently in operation and known in Spanish as the **Noria Grande** (the Large Waterwheel). When the river crosses **Blanca**, it comes to the **Azud de Ojós**. The word *azud* comes from Arabic and means *dam*. The Azud de Ojós was built in the Strait of Solvente in 1978 to reroute the water of the Tajo-Segura Transfer: on the left towards Alicante and Cartagena and on the right towards Lorca and Almería. It is surrounded by an area of great beauty and environmental interest, which also marks the location for the towns of **Ulea** and **Archena**. The river then crosses the towns of **Ceuti**, **Lorquí**, **Alguazas** and **Molina de Segura**, collecting water from the **Mula river** before coming up against another *azud*: **La Contraparada**. This dam dates from the 10<sup>th</sup> century. It is located in Javalí Nuevo (Murcia) and is the starting point

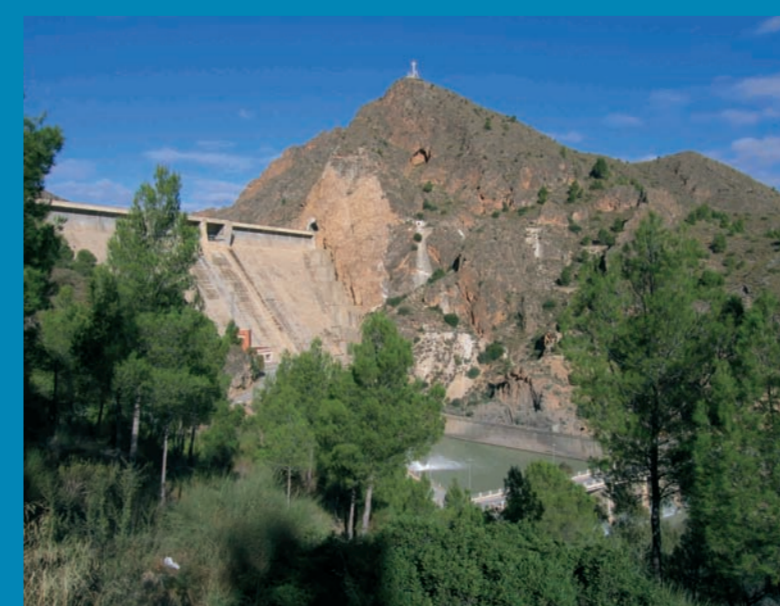


Water House



Luchena river

most beautiful areas in the river basin and divided into two sections. The first section of the gorge, with its riverbank forests and abundant animal and plant life, is well known to river-descent enthusiasts, who prefer either canoes or Zodiacs, and welcomes all ages. It is also the location for the Cave of Los Monigotes or Abrigo del Pozo, with cave paintings that date back to the Eneolithic Age. The section ends at the Mulata dam after collecting water from the **Quipar river**. The second section of the gorge, of karst origin, has a length of approximately 4 km, along which the Segura flows between walls that stand above 100 m in height. This is also the location of the Cave of La Sima de la Serreta, which has paintings and remains from the Bronze Age and the Iber-Romans. After it crosses this area, the river comes to the town of **Cieza**. Here, the Moorish set up a large network of channels that carried the water to all the farmland in the Segura basin, filling the river's course with bridges, mills and water wheels.



El Cenajo dam

for the major irrigation channels of Aljufia, or **Mayor** (in the north), and **Alquibla**, or **Barreras** (in the south), which take irrigation water to most of the farming region of Murcia. Later, the 16<sup>th</sup> century saw the construction of the **Churra la Nueva** irrigation channel, also to the north of the city of Murcia. Today, it is still possible to see even more waterwheels in **Alcantarilla** and **La Nora**. The river then crosses the city of **Murcia**, collects water from the **Guadalentín river**, channelled by El Reguerón, and then flows through the farming towns of **Beniel** and **Orihuela**. In an area dominated by salt flats, it flows through **Rojales** before forming the **Dunes of Guardamar** at its mouth. This is an area of dunes that stretches along 11 km. Next to it, there is a forest of pine trees and date palms, originally planted to stop the advance of the sand. According to recent archaeological finds, the sand in this area covers the remains of one of the most important Phoenician towns of the Mediterranean and several Moorish mosques.



Vega Alta Waterwheel

➤ **SEGURA RIVER BASIN AUTHORITY**

Plaza Fontes, 1 Murcia - <http://www.chsegura.es>

- **Telephone:** +34 968 358 890. **Fax:** 968 211 845
- **Citizen suggestion box and service for the general public:** [segura@chs.mma.es](mailto:segura@chs.mma.es)
- **Public participation and Water Framework Directive:** [participacion.publica@chs.mma.es](mailto:participacion.publica@chs.mma.es)

➤ **WATER FRAMEWORK DIRECTIVE**

<http://europe.eu.int/comm/environment/water>

➤ **WATER HOUSE**

<http://www.casaagua.com>

**Photographs:** Archive of the Segura River Basin Authority, Mariano Pelegrín Garrido and José Antonio Vera Gomis.



Almadenes Gorge on the Segura river

CONTRAPLANO



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Almadenes Gorge on the Mundo river

# The water we have

In spite of the droughts that affect the river basin, its inhabitants can continue to enjoy the water they need for their various purposes thanks to the work carried out by the Segura River Basin Authority. In accordance with the other users of the river basin and governmental departments, these organisations of the Ministry of the Environment distribute the few resources that are available to cover demand.



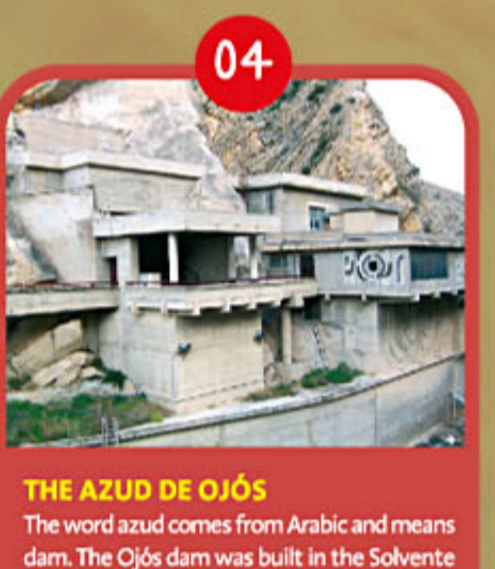
**01 THE SEGURA AND ITS TRIBUTARIES**  
The most important tributary is the Mundo river, which begins in Riópar (Albacete) in a beautiful protected natural area known as Los Chorros del Río Mundo. The river's other tributaries include the Tabilla, the Moratalla, the Argos, the Quipar, the Mula and the Guadaleñín.



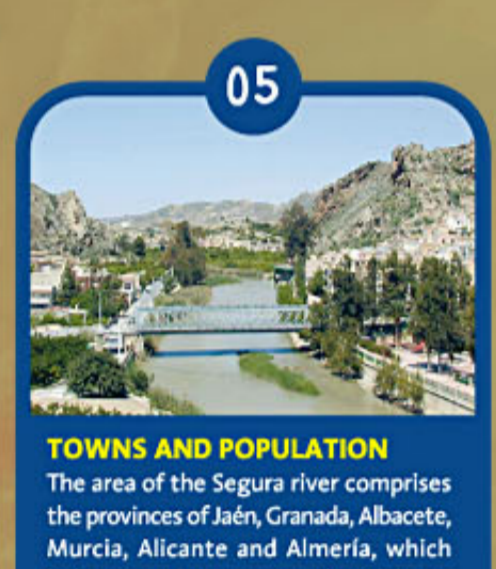
**02 SURROUNDED BY GIANTS**  
The Segura flows through land that is generally mountainous and often above the height of 1,000 m. These peaks alternate with valleys, depressions and plains. Along the course of the river, there are three giant mountains of more than 2,000 m: Sierra de las Cabras (2,081 m), in the province of Albacete; Cerro Poyo (2,045 m) in Sierra de María, to the north of the province of Almería; and Revoladores (2,014 m), located in Sierra Seca in the municipal district of Moratalla (Region of Murcia).



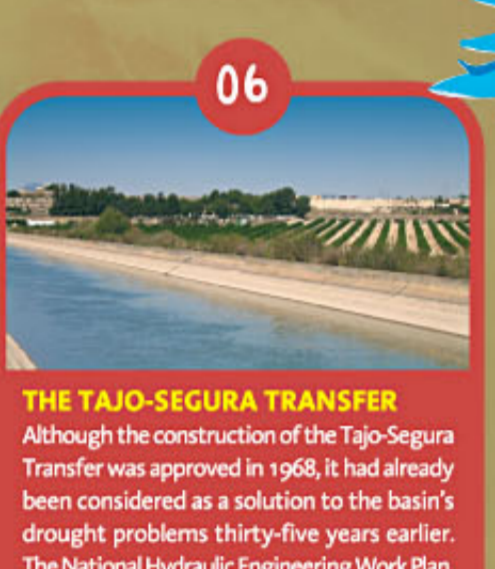
**03 THE STORAGE AREAS OF THE SEGURA**  
Across the Segura basin there are thirty reservoirs that store the water resources and, in some cases, provide protection from flooding. The total storage capacity is 1,229,35 hm<sup>3</sup>. The reservoirs with the largest capacities are El Cenajo, Fuensanta, La Pedrera, Algeciras, Puentes, Talave, Camarillas and Santomera.



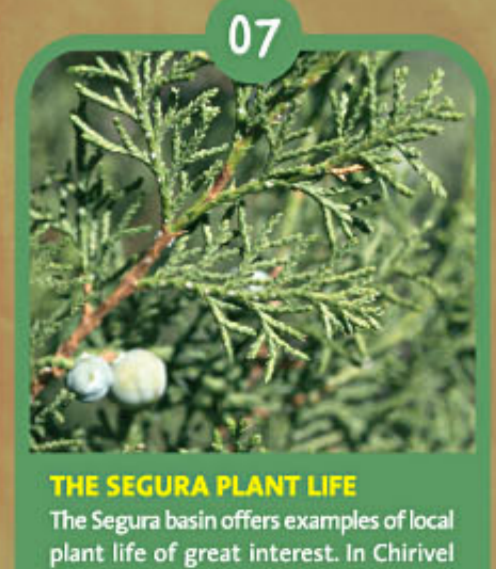
**04 THE AZUD DE OJÓS**  
The word azud comes from Arabic and means dam. The Ojós dam was built in the Solvente Strait in 1978 to reroute the water of the Tajo-Segura Transfer on the left towards Alicante and Cartagena and on the right towards Lorca and Almería. It is surrounded by a natural area of great beauty and environmental interest thanks to its animal and plant life. The Mansion of la Favorita (19<sup>th</sup> century) is located nearby.



**05 TOWNS AND POPULATION**  
The area of the Segura river comprises the provinces of Jaén, Granada, Albacete, Murcia, Alicante and Almería, which belong to the regions of Andalucía, Castilla-La Mancha, Murcia and Comunidad Valenciana. They are home to approximately 1,900,000 inhabitants living in 132 municipal districts, all of whom benefit from its water resources.



**06 THE TAJO-SEGURA TRANSFER**  
Although the construction of the Tajo-Segura Transfer was approved in 1968, it had already been considered as a solution to the basin's drought problems thirty-five years earlier. The National Hydraulic Engineering Work Plan, drawn up by Lorenzo Pardo in 1933, when the post of Minister of Public Works was held by Indalecio Prieto, considered the use of water from the Tajo river as one of the options for dealing with the droughts of the regions in the east and southeast.



**07 THE SEGURA PLANT LIFE**  
The Segura basin offers examples of local plant life of great interest. In Chirivel (Almería), there is the Spanish Juniper, which has been designated a Natural Monument. In El Calar del Río Mundo (Albacete), there are magnificent examples of yew and oak trees and the watercourses of the Region of Murcia are laden with the Chinese Jujube, a species endemic to semi-arid areas.



**08 LA CONTRAPARADA**  
This dam dates from the 10<sup>th</sup> century. It is located in Javalí Nuevo (Murcia) and is the starting point for the major irrigation channels of Alfajá, or Mayor (in the north), and Alquibla, or Barrera (in the south), which take irrigation water to most of the farming region of Murcia. Later, the 16<sup>th</sup> century saw the construction of the Churra la Nueva irrigation channel, also to the north of the city of Murcia.



**1,413 m**

**18,315 km<sup>2</sup>**  
**The Segura Basin**

**EXTENSION OF THE BASIN**  
The Segura basin has a total surface area of 18,815 km<sup>2</sup> spread across the provinces of Albacete, Alicante, Almería, Granada, Jaén and Murcia. It is recognised as the largest regulated river basin in Europe.

**THE ALMADENES GORGE**  
This natural beauty spot, which is one of the prehistoric in the basin, is separated into two sections. The first section of the gorge, with its riverbank forests and abundance of animal and plant life, is well known to river-descent enthusiasts, who prefer either 'corcos' or 'Zadacos', and welcomes all ages. It is also the location for the Cave of Las Monigotes or Abrigo del Pozo, with cave paintings that date back to the Neolithic Age. The second section of the gorge, of karst origin, has a length of approximately 4 km, along which the Segura flows between walls that stand above 100 m in height. This is also the location of the Cave of La Sima de la Serreta, which has paintings and the remains of a Roman workshop. These sites were designated World Heritage Sites by the UNESCO in 1999.

**PROTECTED NATURAL AREAS**  
Across the basin, there are many protected areas, including 13 regional/natural parks, 8 protected landscape areas, 2 natural monuments and 6 areas of wetland, included in the Ramsar Convention.

**DROUGHT: A PROBLEM THAT GOES BACK A LONG WAY**  
In recent decades, demand in the Segura basin has been greater than the resources that are available. The mountain systems around the basin and the direction of the winds mean that rainfall is very scarce (around 365 mm per year on average).

**AN AGE-OLD RIVER**  
There is evidence of the Segura from very ancient times. The Iberians were the first people to settle on its banks. The Greeks called it the Sthaber and the Carthaginians called it the Mabeo. The Romans knew it by the name of Wad-Al-Ayed, which means white river.

**OTTERS IN THE SEGURA**  
Yes, these friendly animals can be found in the rivers of the Segura basin. And if you prefer a bird, a trip to let you see the majestic bearded variety of age-old birds that fly over the Alfoz del Segura reservoir in Calasparra (Murcia).

**WATER HOUSE**  
This is the information centre for the river basin and is located next to the Santomera reservoir. Besides its book and newspaper libraries, it offers a programme of guided tours with interesting multimedia material and models. Telephone: 968 853 065 and information at <http://www.csaoguas.com>

**DUNES OF GUARDAMAR**  
This is an area of dunes that runs along a stretch of 11 km through the town of Guardamar, near to the mouth of the Segura river. It stands near a forest of pine trees and date palms, the sand in this area covers the remains of one of the most important Phoenician towns of the Mediterranean and several Moorish mosques.

**A HIGH SOURCE**  
The Segura river begins in Sierra de Segura, at a place in the province of Jaén known as Pinar del Riaco or Pinar Negro. It is situated at a height of 1,413 m above sea level, approximately 5 km from the town of Pontones.

**WHAT DO WE USE THE WATER FOR?**  
Besides drinking and washing, the water in the Segura basin has been traditionally used for farming, which has always been an important part of the region's economy. It is also used for industrial consumption and, recently, the development of tourist-residential complexes.

**THE SEGURA WATERWHEELS**  
The Moorish set up a large network of channels that carried the water to all the farmland in the Segura basin, filling the river's course with bridges, mills and waterwheels. Today, we can still see some of them in Alcantarillas, La Flea, Almería and other towns. In Almería, there are four waterwheels, including the wheel with the largest diameter in Europe, which is currently in operation and known in Spanish as the Noria Grande (the Large Waterwheel).

**FRIGHTENING RAIN**  
When the rain falls in torrents as a result of the cold-drip phenomenon, the Segura and its tributaries swell, giving rise to the floods that are so widely feared by all. Some floods are remembered thanks to their size and the number of deaths they caused. In 1661, the flood of San Gabriel killed 1,500 people in Murcia and, in 1879, the famous flood of Santa Teresa exceeded 1,800 mm, causing 800 victims and important material damage in Murcia and Orihuela. In the 20<sup>th</sup> century, the most important and were those of 1919, 1946, 1947, 1973, 1987 and 1989, and they finally gave rise to the Flood Defence Plan, which has managed to reduce the effects of the floods.

The astounding journey of the **Segura River** and its tributaries