SUCCESS CASE

PROJECT IN SIERRA BOYERA WTP AND LA COLADA RESERVOIR

Córdoba, Spain

EMPROACSA

aganova

EXECUTIVE SUMMARY

In December 2023, Aganova was selected to conduct an audit on the water pipeline between the La Colada and Sierra Boyera reservoirs in Córdoba. This project is part of the emergency plan developed by EMPROACSA to address changes in the raw water quality that have affected the Sierra Boyera WTP's capacity to meet the regulations set by Royal Decree 3/2023. Operating since 1975, the WTP required updates to its infrastructure and processes to ensure water quality, thereby guaranteeing a safe and adequate supply for the population of Córdoba.

In March 2024, detailed inspections were carried out on sections B and C of the water pipeline, covering a total of 38.5 km (23.92 miles). The infrastructure was divided into three sections—C, B1, and B2—measuring 12.6 km (7.83 miles), 15.4 km (9.57 miles), and 10.3 km (6.4 miles) respectively. Using the advanced Nautilus technology, Aganova conducted a comprehensive audit to identify leaks and assess the condition of the pipelines. This audit was crucial in providing an accurate diagnosis, giving EMPROACSA the necessary information to make informed decisions and implement corrective actions, thus ensuring the efficiency and integrity of the water pipeline system.

Client

EMPROACSA

Sections

La Colada - Sierra Boyera B1, B2 and C

Location

Córdoba, Spain

Date

March 18, 2024, March 20, 2024, March 21, 2024

Diameter

DN500, DN700, DN800

Section	Speed (m/s)		Pressure (bar)		Distance (m)
	Min	Max	Min	Max	
B1	0.86 (2.82 ft/s)	1.13 (3.71 ft/s)	13 (188 psi)	22 (319 psi)	15,492 (50,850 ft)
B2	0.22 (0.72 ft/s)	0.55 (1.80 ft/s)	2 (29 psi)	13 (188 psi)	10,325 (33,869 ft)
C	0.49 (1.61 ft/s)	1.97 (6.46 ft/s)	2 (29 psi)	20 (290 psi)	12,674 (41,574 ft)

The implementation of the Nautilus technology allowed various issues in the water pipeline network to be identified, initiating immediate repair processes. This enabled EMPROACSA not only to comply with legal water quality requirements but also to ensure a continuous and reliable supply for the population that depends on this essential infrastructure. Through this collaboration, Aganova reaffirmed its commitment to optimizing and sustaining hydraulic infrastructures, ensuring that the system between the La Colada and Sierra Boyera reservoirs operates with maximum efficiency and meets the highest standards.

INTRODUCTION

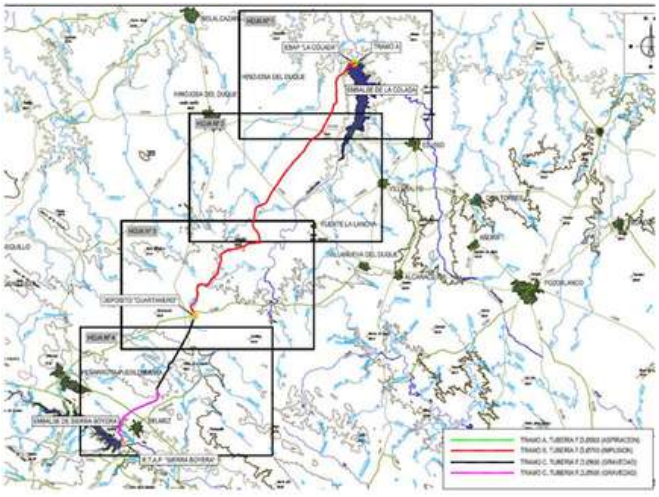
In December 2023, Aganova was selected to conduct a comprehensive audit on the water pipeline infrastructure between the La Colada and Sierra Boyera reservoirs in Córdoba. This audit was part of EMPROACSA's emergency plan, designed to address water quality issues that have impacted the capacity of the Sierra Boyera Water Treatment Plant (WTP) to meet the requirements of Royal Decree 3/2023. Since its inauguration in 1975, the WTP has required significant infrastructure upgrades to ensure a quality drinking water supply and secure water provision for the population of Córdoba.

PROBLEM

The main challenge was the alteration in raw water quality supplied to the Sierra Boyera WTP, which risked compliance with current regulations. The existing facilities were not equipped to handle new variations in water quality. Additionally, the pipeline network between the reservoirs had deficiencies, including possible leaks and structural issues affecting system performance and reliability. These issues compromised not only water quality but also the efficiency and safety of the supply.

SOLUTION AND IMPLEMENTATION

To resolve these issues, an exhaustive audit was conducted in March 2024 using the Nautilus System. The evaluation covered a total of 38.5 km (23.92 miles) of infrastructure, segmented into three sections: C, B1, and B2, with lengths of 12.6 km (7.83 miles), 15.4 km (9.57 miles), and 10.3 km (6.4 miles), respectively. Aganova's technology enabled a detailed inspection to identify leaks and assess pipeline conditions. The information obtained facilitated precise and timely repairs, aligned with the modernization and improvement needs of the WTP, ensuring regulatory compliance.



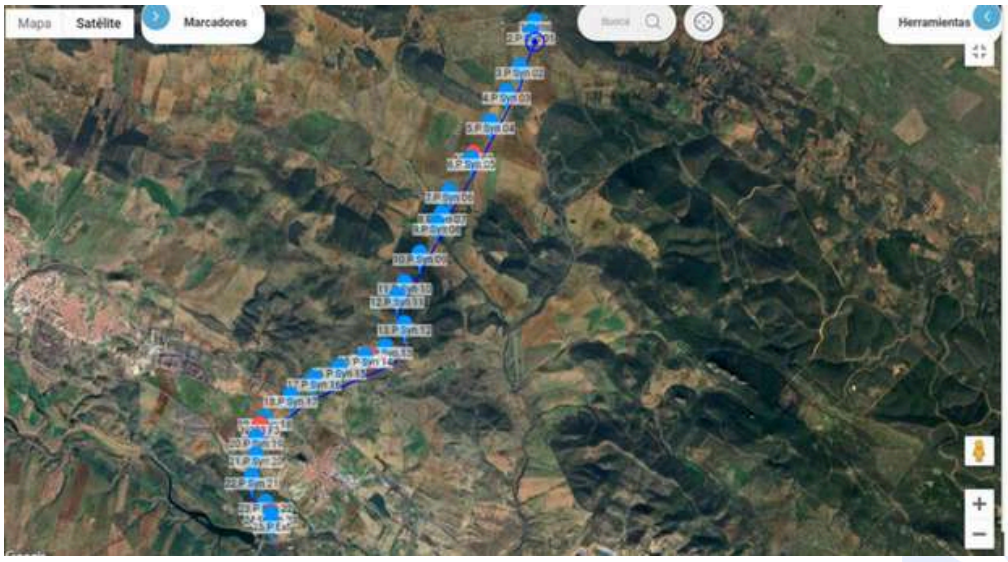
Section Map of Sections A, B, and C

RESULTS

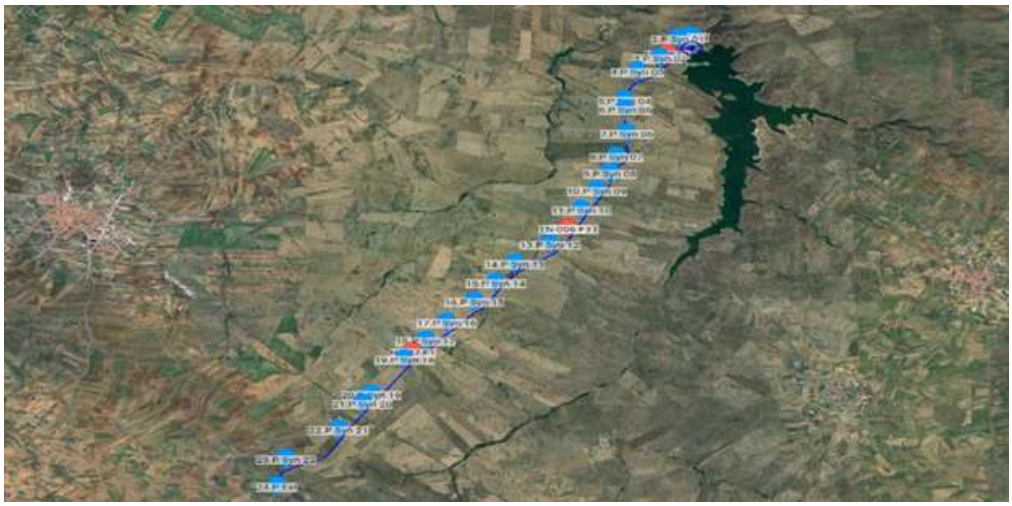
The characteristics of the inspected sections were as follows:

	Section C	Section B1	Section B2
Flow	310 l/s (122 gps)	315 l/s (83 gps)	400 l/s (99 gps)
Diameter	DN800 and DN500 (31.50 & 19.69 inches)	DN700 (27.56 inches)	DN700 (27.56 inches)
Water Speed	1.21 m/s (1.61 ft/s)	0.81 m/s (2.81 ft/s)	1.04 m/s (0.71 ft/s)
Length	12,733 m (7.88 miles)	15,492,02 m (9.63 miles)	10,325 m (6.41 miles)
Insertion Point	DN150 (5.91 inches) Gate Valve	DN150 (5.91 inches) Gate Valve	DN150 (5.91 inches) Gate Valve
Extraction Point	DN150 (5.91 inches) Gate Valve	DN150 (5.91 inches) Gate Valve	DN150 (5.91 inches) Gate Valve
Nautilus Navigation	4h 41min	4h 47min	2h 55min

The audit with the Nautilus System allowed for the detection and correction of multiple issues in the water pipeline network, as well as providing elevation and pressure profiles for each section. Repairs began immediately, enabling EMPROACSA to meet legal requirements regarding water quality and ensure a safe, continuous supply. The effective intervention not only resolved existing deficiencies but also optimized the performance of the pipeline system, providing a solid foundation for long-term maintenance and supply reliability for the population of Córdoba.



Aerial view of Section C inspected with detected incidents.



Aerial view of Section B1 inspected with detected incidents.

Aerial view of Section B2 inspected with detected incidents.

CONCLUSIONS

The audit process carried out by Aganova has been fundamental in resolving issues in water pipeline infrastructure and treated water quality. The Nautilus technology demonstrated high precision in identifying and correcting deficiencies. Thanks to this collaboration, EMPROACSA has not only complied with water quality regulations but has also ensured a continuous and safe supply. This project underscores Aganova's commitment to excellence in enhancing Andalusian hydraulic infrastructures, ensuring that the system between the La Colada and Sierra Boyera reservoirs operates with maximum efficiency and meets the most stringent standards.

aganova

www.aganova.com