

ENGINEERED SOLUTIONS

CASE STUDY

Saving Water and Money:

Transforming Landfill Seepage Water into
\$1M Resource in less than 10 Weeks



FAMILY OF COMPANIES





BACKGROUND

The project involved creating a pilot system to treat seepage water from a landfill site in the upper Midwest (Illinois) and make it suitable for reuse in multiple applications.

This case study highlights Relevant Industrial's successful collaboration with an industry leader in waste management solutions and environmental services, and Culligan, an industry leader in water management and filtration. The project involved creating a pilot system to treat seepage water from a landfill site in the upper Midwest (Illinois) and make it suitable for reuse in multiple applications. Our goal was to provide a customized solution within a tight schedule, enabling the waste management company to optimize their power generation and cooling processes while significantly reducing water disposal fees.

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CHALLENGES & OBJECTIVES

1

Limited clean
water supply

2

Time constraints

3

Scalability

4

Environmental
integration

01 LIMITED CLEAN WATER SUPPLY

The waste management company had an existing power generation and cooling system but lacked a sufficient supply of clean water. This restricted their operations, requiring them to purchase water or electricity to meet their needs.

02 TIME CONSTRAINTS

The project had a strict schedule, necessitating a quick turnaround. Our team had to design, fabricate, and install a custom water purification system in just 10 weeks, a process that typically takes 20-25 weeks.

01 SCALIBILITY

An important objective was to create a scalable solution using standard Conex boxes that could be replicated across multiple landfill sites nationwide.

02 ENVIRONMENTAL INTEGRATION

The client desired a solution that seamlessly blended into the natural surroundings, requiring careful consideration of the container aesthetics.



Collaborative Approach and Solution

1

Water analysis

2

Customized
container solution

3

Optimized location

To address these challenges, Relevant formed a collaboration team with Culligan, a trusted water treatment supplier, leveraging their expertise in water purification. Our approach included the following steps:

01 WATER ANALYSIS

The client collected water samples at different times of the day and sent them to our lab for comprehensive analysis. This allowed us to identify the impurities present and determine the most appropriate reverse osmosis (RO) system to meet the client's needs.

02 CUSTOMIZED CONTAINER SOLUTION

After obtaining necessary approvals and ensuring the system design aligned with the waste management company's requirements, we assembled the water purification system inside a shipping container. This container included storage tanks for clean water and a testing center, ensuring a self-contained and efficient solution.

03 OPTIMIZED LOCATION

To reduce shipping times, we conducted the container assembly at Culligan's facility in Illinois, saving over 3 weeks in delivery time. Once complete, we transported the container a short distance of 40 miles to the landfill site.





RESULTS

1

Enhanced operational
efficiency

2

Cost savings

3

Scalable solution

Relevant, working in collaboration with their client, developed a solution yielding remarkable results:

01 ENHANCED OPERATIONAL EFFICIENCY

By gaining access to a reliable source of clean water, the waste management company's power generation and cooling processes increased from 60% to 100% capacity, maximizing operational efficiency.

02 COST SAVINGS

The new water purification system eliminated the need to transport untreated water to a treatment facility, resulting in savings of \$22,000 per week in water disposal fees. Over time, this translated into a substantial \$1 million in cost savings with a 90-day payback period.

03 SCALABLE SOLUTION

The successful deployment of the standardized Conex box design enabled the potential replication of the system across other landfill sites, providing the company with a scalable solution for future projects.



CONCLUSION

This case study demonstrates the value of our engineered solutions team in addressing complex challenges within the industrial process manufacturing sector. By collaborating with industry experts, leveraging customized container solutions, and prioritizing operational efficiency, we delivered a highly successful project that improved resource usage, reduced costs, and promoted sustainable water management practices.



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