SOLENO

MASTERING WATER SUSTAINABLY




CASE STUDY: OCTOBER 2024

# A REMARKABLE WASTEWATER RETENTION SYSTEM PROJECT AT ST-NOËL PARK IN THETFORD MINES

**High volume KUSTOMFLO Retention System, featuring over 200 pipes.**

With increasingly unpredictable weather conditions, cities and municipalities face growing challenges in managing stormwater and wastewater. Like many other urban and rural communities, the city of Thetford Mines frequently experiences overflows in its combined sewer systems during heavy rainfall. These overflows result in discharges into natural environments, posing significant risks to both infrastructure and the environment.

READ MORE

## THE CONTEXT

The city of Thetford Mines faced a major challenge in wastewater and stormwater management. During periods of heavy rainfall, the existing pipelines and treatment facilities quickly reached their maximum capacity, increasing the frequency of overflows. Commissioned by the city, Groupe Profectus collaborated with Soleno to develop a large-scale retention system that had to overcome several technical and environmental constraints to ensure an efficient and sustainable infrastructure.

The project site at St-Noël Park in Thetford Mines, near the Bécancour River, presented specific challenges. An exceptional retention volume of 8500 m3 (300,000 ft3) had to be stored to prevent discharges and comply with the region's strict environmental standards. The presence of a very high groundwater table required a structure capable of withstanding underground pressures while remaining stable and functional. Additionally, significant space constraints required an optimized design to maximize the available footprint while maintaining minimal backfill coverage.

## THE BENEFITS

The use of KUSTOMFLO pipes enabled the creation of a durable, high-performance infrastructure that meets environmental standards. With a lifespan exceeding 100 years, the system ensures long-term reliability. The underground retention system effectively stores excess volumes, preventing overflows, alleviating municipal infrastructure stress, and protecting receiving environments.

Compliant with international standards such as ASTM F894, DIN 16,961, EN 13,476, and BNQ 1809-300, these pipes are suitable for both gravity and pressure applications. The system also meets environmental requirements by minimizing contamination risks and protecting ecosystems. Additionally, the cost-effectiveness of this solution is enhanced by ease of transportation and installation, as well as pipe customization, reducing overall project costs.

The St-Noël Park retention system project in Thetford Mines perfectly demonstrates the efficiency and durability of HDPE solutions. By addressing complex wastewater and stormwater management challenges, this project highlights Soleno's ability to design robust, tailored, and future-oriented infrastructure.

With KUSTOMFLO, Soleno reaffirms its commitment to providing custom solutions that combine innovation and performance to tackle the growing challenges of aging infrastructure across North America.

## THE SOLUTION

To meet these challenges, Soleno recommended the use of KUSTOMFLO high-density polyethylene (HDPE) pipes with electrofusion joints. The proposed system featured a strategic arrangement of 2400 mm (96") and 3000 mm (120") diameter pipes. These pipes were manufactured at our facilities using Krah Pipes technology, a unique adaptive process that allows for the customization of each pipe, ensuring strict quality control and fabrication tailored to the project's specific requirements. Electrofusion provided seamless assembly, ensuring maximum joint watertightness. This connection technology enhanced mechanical strength and protection against infiltration, meeting the tight-sealing requirements. Additionally, all joints were rigorously tested to ensure compliance.

The KUSTOMFLO pipes maximized retention capacity by providing significant storage volume within a reduced footprint. With a length of 6.1 m (20') per pipe, the system minimized the number of joints, reducing the risk of leaks. Approximately 21 times lighter than concrete pipes of the same diameter, these pipes required no specialized equipment, simplifying handling and allowing a faster installation.

For this project, over 200 KUSTOMFLO pipes and more than 20 custom accessories, such as elbows, tees and reducing tees, were manufactured, illustrating one of the great advantages of HDPE products in optimizing project design. Additionally, 14 access chimneys were installed, including 900 mm (36") Solflo Max chimneys with a corrugated exterior wall and galvanized steel ladder, facilitating inspections and future maintenance

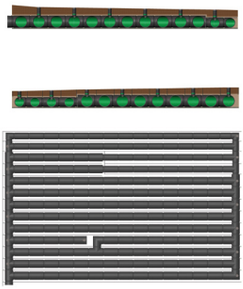
Soleno's technical expertise was a key asset throughout the project. In addition to supplying customized pipes, the team closely collaborated with the engineering firm Tetra Tech to design the plans, propose tailored accessories, and provide on-site assistance. Thanks to Soleno Service, both electrofusion and extrusion welding were performed with precision, ensuring compliance with technical requirements and optimizing system performance. The entire retention system was completed in just eight weeks, meeting deadlines and budget constraints while ensuring regulatory compliance.

# A REMARKABLE WASTEWATER RETENTION SYSTEM PROJECT AT ST-NOËL PARK IN THETFORD MINES

## PRODUCT USED

### KUSTOMFLO RETENTION SYSTEM

Design with KUSTOMFLO pipes, this solution should be favored when the basin requires installation of large or very large diameters from 1,500 mm (60 in) to more than 3,350 mm (132 in). KUSTOMFLO retention system is suitable for stormwater, sanitary and combined applications. KUSTOMFLO offer bell seals or electro-fused seals for watertightness up to 50 PSI.



### KUSTOMFLO PIPE AND ACCESSORIES

Our KUSTOMFLO pipe is made using world-renowned KRAH technology, resulting from an ADAPTIVE process that allows the optimization of the pipe profile to meet the specific needs of any project or applicable standard. This custom manufacturing approach, drawing on over 100 different profiles, lets you build to your unique specifications today to help connect communities for generations to come.



### SOLFLO MAX CHIMNEY ON KUSTOMFLO PIPE

The diameter of the chimney is equivalent to that of the main pipe, preventing oversizing, which reduces the scale of installation work and lowers the overall system cost. Used to collect surface runoff, for changes in direction, inspection and cleaning of storm sewer networks.



## DISCOVER OUR PRODUCT

KUSTOMFLO

Retention system KUSTOMFLO

Manhole chimney type

SOLENO

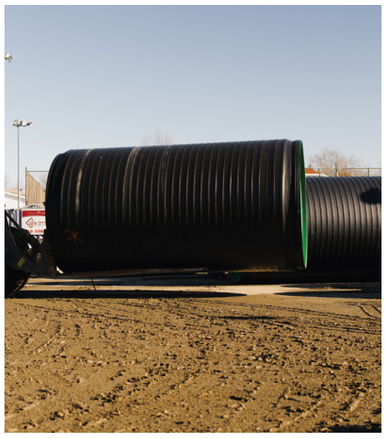
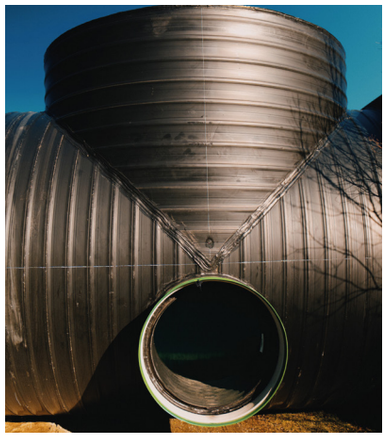
MASTERING WATER SUSTAINABLY

For further information and to learn more about our services and products, please visit: soleno.com.

# A REMARKABLE WASTEWATER RETENTION SYSTEM PROJECT AT ST-NOËL PARK IN THETFORD MINES








# A REMARKABLE WASTEWATER RETENTION SYSTEM PROJECT AT ST-NOËL PARK IN THETFORD MINES







