



# Smaller Footprint, Better Performance: Using CMAC in the Kansas City Metropolitan Region

Opti's continuous monitoring and adaptive control (CMAC) technology transforms passive infrastructure into "smart" systems that optimize performance in real time to maximize both environmental outcomes and economic savings.



**Adding CMAC can decrease the size of a GSI practice by up to 40%**

GSI Practice	Runoff Reduction Factor (%) <sup>2</sup>	CMAC Approved?
Wetland	50%	✓
Wet Detention Basin	10%	✓
Dry Detention Basin <sup>1</sup>	60%	✓
Subsurface Storage	50%	✓

<sup>1</sup>Retention allowed below outlet control structure only  
<sup>2</sup>If continuous monitoring and adaptive controls (CMAC) technology is used, the CMAC controlled volume may be included in the provided retention storage volume calculation



- MARC-APWA Section 5600 provides the design and engineering standards for stormwater drainage facilities used by most jurisdictions within the region.
- The updated standards promote sustainable, cost-effective, and adaptive stormwater designs that simultaneously address water quality and water quantity objectives.
- When sizing GSI practices, the CMAC-controlled volume between the primary and secondary outlet control structure may be factored into the retention storage volume for wetlands, wet detention basins, dry detention basins, and subsurface storage systems, thereby decreasing the BMP footprint.

"The updates mark a monumental step toward more **sustainable, cost-effective and adaptive** stormwater designs that provide more functional value in mitigating downstream risks. The updated standards will improve water quality and create multiple-benefit, lower-maintenance solutions."

- TOM JACOBS, MARC ENVIRONMENT DIRECTOR



[View the Standards Here](#)

**More Questions?**  
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