

## DOC Leak Busters White Paper

Current showers use 2.5 Gallons per Minute (GPM). The new valves for the shower reduce water flow to 1 GPM.

Shower water flow measured by Jeremy Lynn, Robert Miller and Kelly Krieger.

### Water only:

412 showers X 180 minutes/day X 365 days/year X 2.5 GPM X .00387 (water) = \$261,886.77 per year

412 showers X 180 minutes/day x 365 days/year X 1.0 GPM X .00387 (water) = \$104,754.71 per year

### Water and sewer:

\$3.87 per 1000 gallons water. \$4.90 per 1000 gallons for sewer. A total of .00877 per gallon.

412 showers X 180 minutes/day x 365 days/year X 2.5 GPM X .00877 = \$585,354.15 per year

412 showers X 180 minutes/day X 365 days/year X 1.0 GPM X .00877 = \$234,141.66 per year

Water and sewer cost obtained via Bonne Terre MO. Home page<sup>1</sup>

Shower usage: Information from ERDCC officers

### SPARE PARTS:

New shower valves: \$16.99 per item various vendors<sup>2</sup>

New shower switches \$3.65 per item<sup>3</sup>

PLC modules for showers \$307 per system<sup>4</sup>

Toilet spares: TBD

Leak Calculation<sup>5</sup>

Toilet usage and contraband: Information from ERDCC officers

Outside Contractor's installation cost, per quote from Ian outside vendor, is \$53,405.28 per housing unit. For all 10 housing units it will cost \$534,052.80. (this is only for the toilets)

Our project cost for all housing units \$150,000 (for toilets and showers)

2015 Kansas City lost 9.15 Billion gallons of water due to leaks.<sup>6</sup>

Total Missouri savings was figured by 3,593 agencies with 20 showers, each running 120 minutes a day. We used Bonne Terre Missouri water and sewer charges to calculate total savings.

### *Citations:*

<sup>1</sup><https://bonneterre.net>

<sup>2</sup> <https://www.amazon.com/>

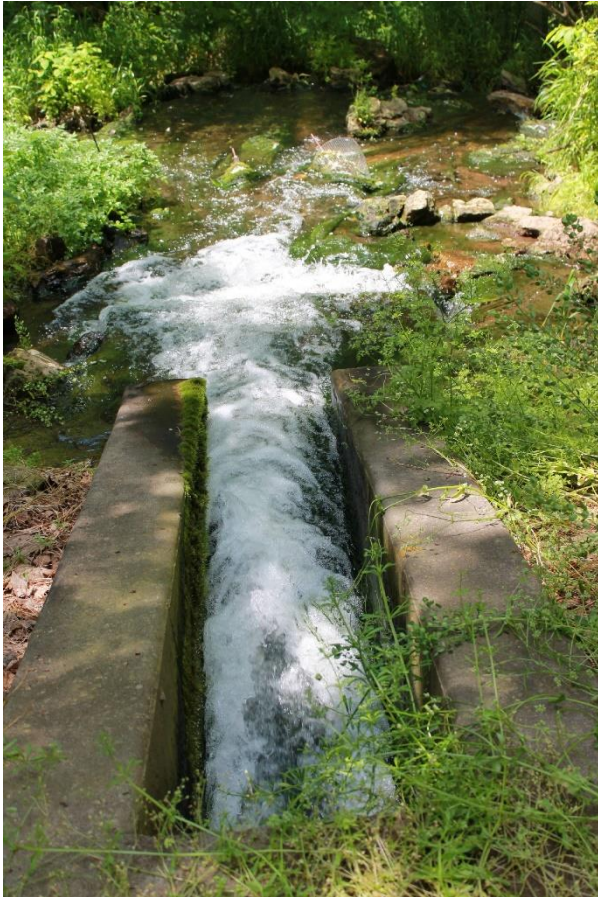
<sup>3</sup> <https://www.grainger.com/>

<sup>4</sup> <https://www.automationdirect.com/adc/home/home>

<sup>5</sup><https://water.usgs.gov/edu/activity-drip.html>

<sup>6</sup><http://www.kansascity.com/news/local/article134125879.html>

**Waste Water going back  
into the streams**



**Missouri's Beautiful Streams**

***Which  
Do  
YOU  
Want?***



# Missouri Taxpayers are Pouring Money Down the Drain



If we implemented our project across  
the State for all Law Enforcement  
Agencies, Mental Health  
Facilities/Veteran's Homes,  
Schools, State Parks, Prisons and  
State/Government Offices the

**Missouri Taxpayers would**

**save \$62,107,412.31**

***per year!***

# How Much Water Does a Shower Waste?



Shower heads 412  
Drips per day 71,193,600  
Gallons per day 4,700  
Gallons per year 1,716,354

**AT A COST OF  
\$6,642.29**

**\*Example  
only\***

**Low-flow shower  
versus  
High-flow shower**



**is a savings of  
\$157,132.06 per year**

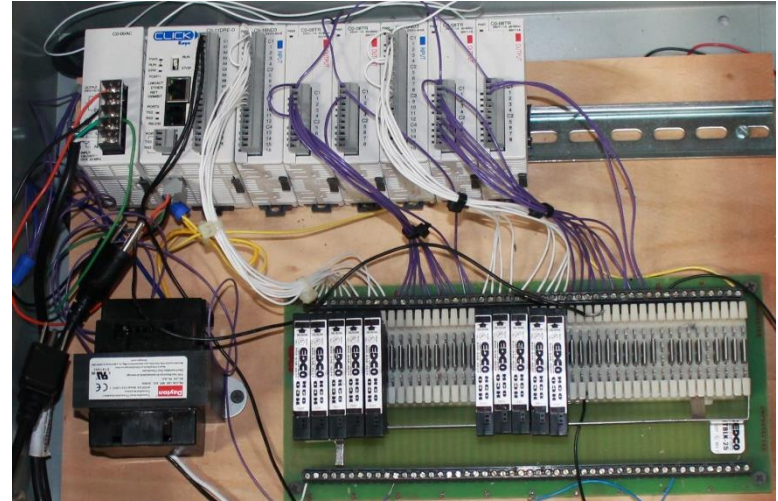


# Our Proposal

- Reduce water consumption at our facility.  
**A SAVINGS of 15%!**
- Reduce waste impact to the environment.  
**PRICELESS!**
- Cut the maintenance and repair cost of the facility's plumbing expenses.  
**A SAVINGS of 50%!**
- We are NOT using outside contractors.  
**A SAVINGS of \$402,458.08!**

**Note:** Base line water usage measurement taken from January 2018 through December 2018 via the water bill provided to us by the Office of Administration. This will be compared to data from January 2020 through December 2020.

# The Plan



- ▶ Create a Programmable Logic Controller (PLC) program that limits the number of flushes and shower time.
- ▶ Purchase modern and efficient water valves which cost less than the original valves.

# ERDCC Benefits

- Reduction in Maintenance Costs:  
**\$ 30,129.12**
- Reduction of Utility Costs per year will be:  
**\$157,132.06**
- Installation savings performed by ERDCC Maintenance: **\$402,458.08**
- Increase in **Safety and Security** of the Institution by Eliminating the Ability of Offender to Flush Contraband During Cell Searches:  
**PRICELESS!!**

## Redirection of Savings



- ★ Replace current Sink + Toilet System with new PLC System (**this will be an additional savings to our taxpayers!!**)
- ★ Update Camera Systems
- ★ Repair/Replace Fire Alarm System
- ★ Improve Schools, Parks & other State projects