In an effort to meet Auburn University’s goal of reducing water usage 5% by 2020 compared to the 2010 usage, the Office of Sustainability has expressed an interest in the renovation of the Hill Dorms to collect and reuse rainwater. The purpose of this project is to provide the Hill with a rainwater catchment system that will be used for irrigating approximately 1.7 acres of proposed green space. This system will capture, convey, and filter rainwater from the roofs of nine Hill dormitories, which account for 1.8 acres of rainfall area, and store it in an underground storage tank. The environmental impact the project will have on Parkerson Mill Creek and Town Creek was analyzed. A public display was designed in order to promote the ecological benefits of rainwater reuse for further sustainability education and promotion. All costs were weighed against the potential savings in water usage to determine a payback period of approximately thirteen years for the project.

This design includes:
- A system to irrigate 1.7 acres of proposed green space
- A 60,000 gallon tank to store rainwater
- Gravity-fed PVC pipelines to convey rainwater to the tank
- A 3’x3’ filter box with a 75 micron screen
- An educational plaque to display the ecological benefits

A potential runoff reduction of 600,000 gal/yr will positively impact the watersheds of Parkerson Mill Creek and Town Creek by:
- Delaying runoff
- Reducing runoff volume
- Reducing peak flow
- Protecting water quality
All of these ecological benefits will be displayed using an information sign in the central green space of the Hill to promote sustainability education and outreach to students and the general public at Auburn University. This location can also be used as a talking point on future sustainability tours to further advertise the environmental benefits of capturing and reusing rainwater.

The cylindrical concrete tank will store 60,000 gallons. It’s dimensions are:
- Diameter = 34’
- Height = 12’
- Filter depth = 7’
The concrete is 1’ thick on all sides.

The location of the Hill Dormitories with respect to Auburn University’s campus

The cylindrical concrete tank will store 60,000 gallons. It’s dimensions are:
- Diameter = 34’
- Height = 12’
- Filter depth = 7’
The concrete is 1’ thick on all sides.

60,000 Gallon Concrete Tank

Project Scope and Outline

LOCATION MAP

CONCLUSION

This system will provide 40% of the irrigation needs for green spaces in the Hill Dorm area, saving over $2,200 per year. This will prevent Auburn University from wasting treated water for nonpotable uses. The ecological benefits along with the 13 year payback period make our project feasible.

ENVIRONMENTAL BENEFITS

COST AND SAVINGS ANALYSIS

<table>
<thead>
<tr>
<th>Description</th>
<th>Cost</th>
<th>Savings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concrete</td>
<td>$11,354</td>
<td>Cost of water per gallon $0.0039</td>
</tr>
<tr>
<td>Rebar and wire mesh</td>
<td>$2,400</td>
<td>Water saved per gal/yr 600,000</td>
</tr>
<tr>
<td>360’ of gravity-fed PVC pipe</td>
<td>$5,946</td>
<td>Annual water savings $2,263</td>
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<tr>
<td>Filter</td>
<td>$200</td>
<td>Sustainability worth/yr $2,000</td>
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<tr>
<td>Installation</td>
<td>$19,901</td>
<td>System value/yr $4,268</td>
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<tr>
<td>10% Contingency</td>
<td>$1,194</td>
<td>10% Engineering fee $3,983</td>
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<tr>
<td>Total</td>
<td>$55,724</td>
<td>Payback period (yrs) 13.1</td>
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