Rain as a Resource - Green Infrastructure as a Storm Water Management Technique

Introduction

The primary impact of urbanization to water resources is the increase in impervious surfaces from buildings, parking lots, and transportation corridors. This hardening of an urban watershed can dramatically increase runoff, creating more extreme and more frequent flood events, as well as reducing recharge to groundwater and summer base flows. Urbanization also results in an increase in the types and severity of pollutants. Green Infrastructure (G.I.) can mitigate against these impacts. Green infrastructure includes landscape features such as infiltration basins, green roofs, vegetated filter strips, etc. This research explores various G.I. and how they can positively impact and increase the campus master plan.

Methods

A design was developed by a multi disciplinary team in coordination with facilities to produce a design to compliment the campus master plan. Geographical Information System programing, EPA storm water modeling, behavioral analysis, and other site analysis techniques were used before and after to verify the effectiveness of the plan.

Results

- Reduction in impervious area by 22% or 74 acres
- Reduction in runoff rate from existing conditions by 41% in 2-year, 24 hour design
- Significant improvement in stormwater pollutant load.
- Reduction of high water use vegetation by 25%
- Increase native plant communities by 24.28 acres
- Increase green roof area by 28.52 acres

Conclusion

G.I. is effective in reducing run off rates, improving stormwater water quality, and with the incorporation of native plant use can reduce landscape water requirement and increase urban habitat.

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