

Binghamton University

## The Open Repository @ Binghamton (The ORB)

---

Student-Created Sustainability Resources

Sustainability Hub

---

2021

### An analysis of Binghamton University's potential for green roofs

Tyler Linnehan  
tlinneh1@binghamton.edu

Follow this and additional works at: <https://orb.binghamton.edu/student-sustainability-resources>

---

#### Recommended Citation

Linnehan, Tyler, "An analysis of Binghamton University's potential for green roofs" (2021). *Student-Created Sustainability Resources*. 4.  
<https://orb.binghamton.edu/student-sustainability-resources/4>

This Poster is brought to you for free and open access by the Sustainability Hub at The Open Repository @ Binghamton (The ORB). It has been accepted for inclusion in Student-Created Sustainability Resources by an authorized administrator of The Open Repository @ Binghamton (The ORB). For more information, please contact [ORB@binghamton.edu](mailto:ORB@binghamton.edu).

# THE POTENTIAL FOR GREEN ROOFS AT BINGHAMTON UNIVERSITY

Presented by Tyler Linnehan

Source Project: People, Politics, and the Environment

## INTRODUCTION

Binghamton University places a strong emphasis on sustainability. Green roofs are specially engineered, vegetated roofs, that bring a number of environmental benefits. One of these benefits is the ability to retain stormwater, and with the University's proximity to the Suseuqhanna River, it is important that we understand our impacts on the local environment. As such, I wanted to know how influential green roofs could be on our watershed. Additionally, one of the barriers to their development is a lack of staff to maintain them. A student organization could overcome this, so I wanted to know how if there was enough interest from students to get involved with the green roof we already have on campus.

## METHODS

**-Water Retention Modeling:** I used Google Earth, in the absence of direct information being available, to estimate the area of impervious roofs within a section of the university's watershed called the Lake Lieberman Outlet (LLO). I specifically noted which buildings had flat roofs that could potentially house green roofs. Using rainfall data from last year, I calculated how much runoff came from the estimated combined roof areas within the LLO. Using values from a previous study, I estimated how much of that runoff could be retained (80-100%) if green roofs were to be installed, shown in Figure 1.

**-Survey:** asking students about their perception of green spaces on campus and their willingness to volunteer

## RESULTS

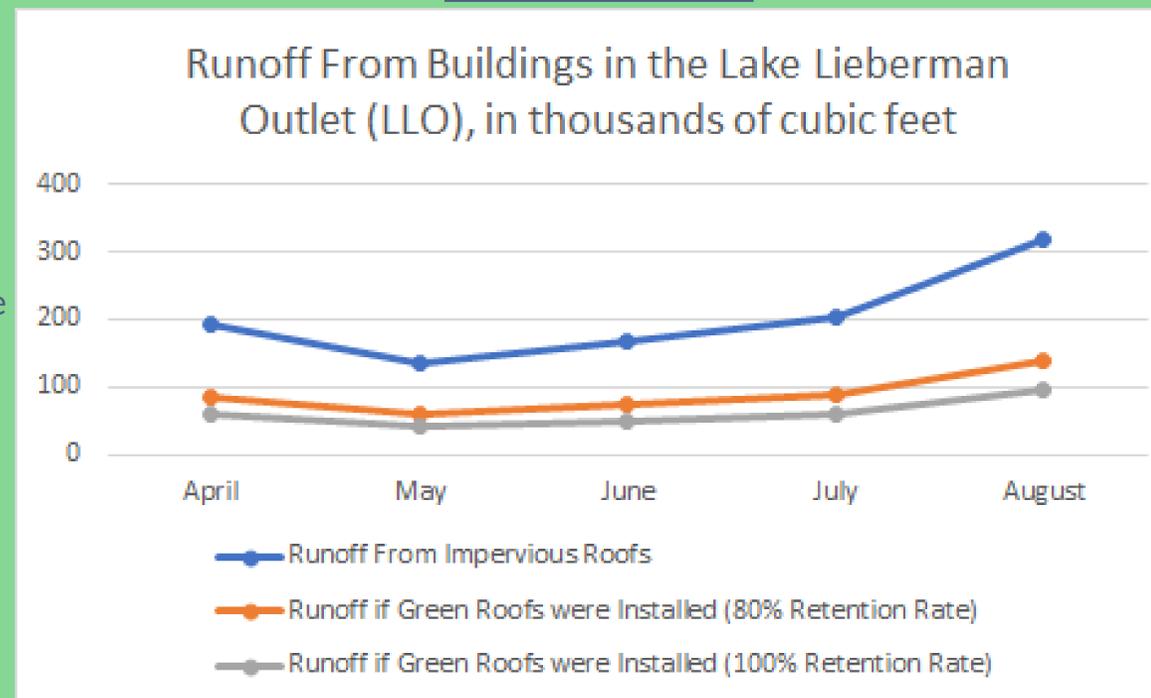


Figure 1 shows how much runoff could be retained in green roofs within the LLO if all buildings with flat roofs inside this portion of the watershed housed green roofs.

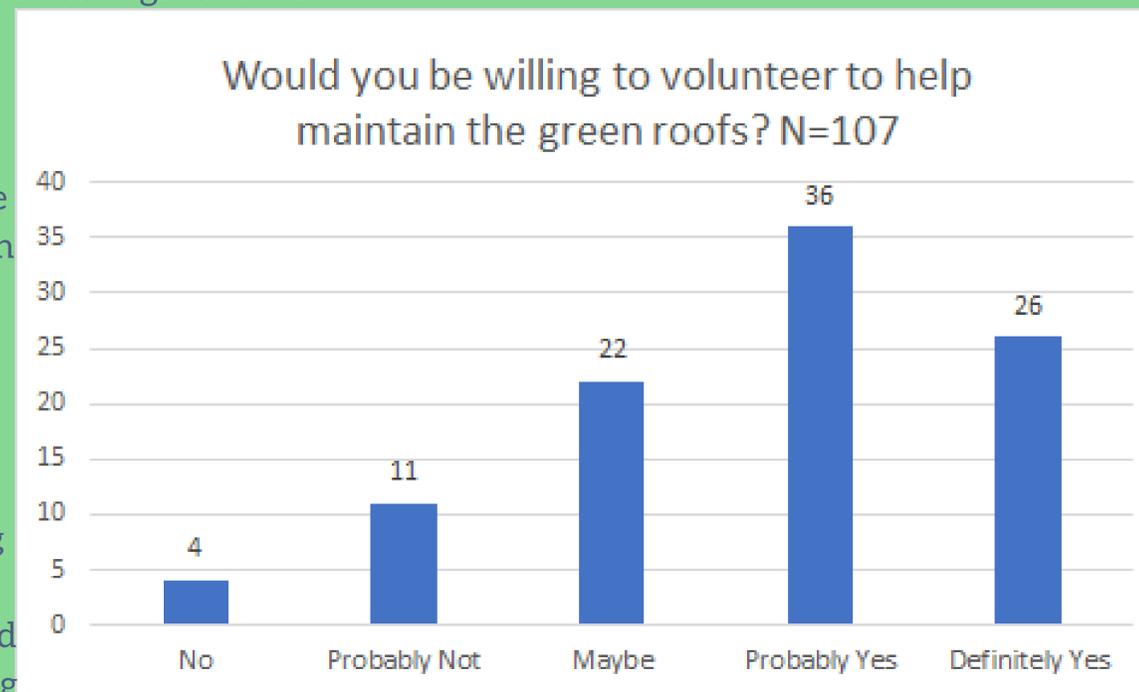


Figure 2 is a Likert Scale from the survey distributed to students, asking to what extent students would be interested in volunteering to maintain the green roofs. 60% of students indicated significant interest in volunteering, which has the potential to create a sizable student organization of 60 students.

## DISCUSSION AND CONCLUSIONS

The retention model shows that large volumes of runoff can be kept out of the environment and instead retained in green roofs. This keeps contaminated urban runoff out of local ecosystems. With retention in mind, green roofs can be a proactive solution in the face of rising precipitation levels due to climate change, especially in areas like Binghamton that are already prone to flooding. Surveys and interviews with students show a large pool of students are open to devoting their time to maintaining the green roofs, which overcomes one of the major barriers in their development. When asked about complaints or issues with green spaces, the most common response was only the desire for more green spaces, which is encouraging for the further development of green roofs.

In interviews, staff and faculty also showed interest in using the green roofs for research in areas like hydrology, which turns them into even more valuable assets.

## ACKNOWLEDGEMENTS

Special thanks to Professor Valerie Imbruce, Sandy DeJohn, Doctor Joseph Graney, and Doctor Peter Kneppfer for providing guidance throughout my research

## REFERENCES

Chen, L. (n.d.). Hamerschlag Hall Green Roof Storm Water Retention and Runoff Reduction Performance. 113.