



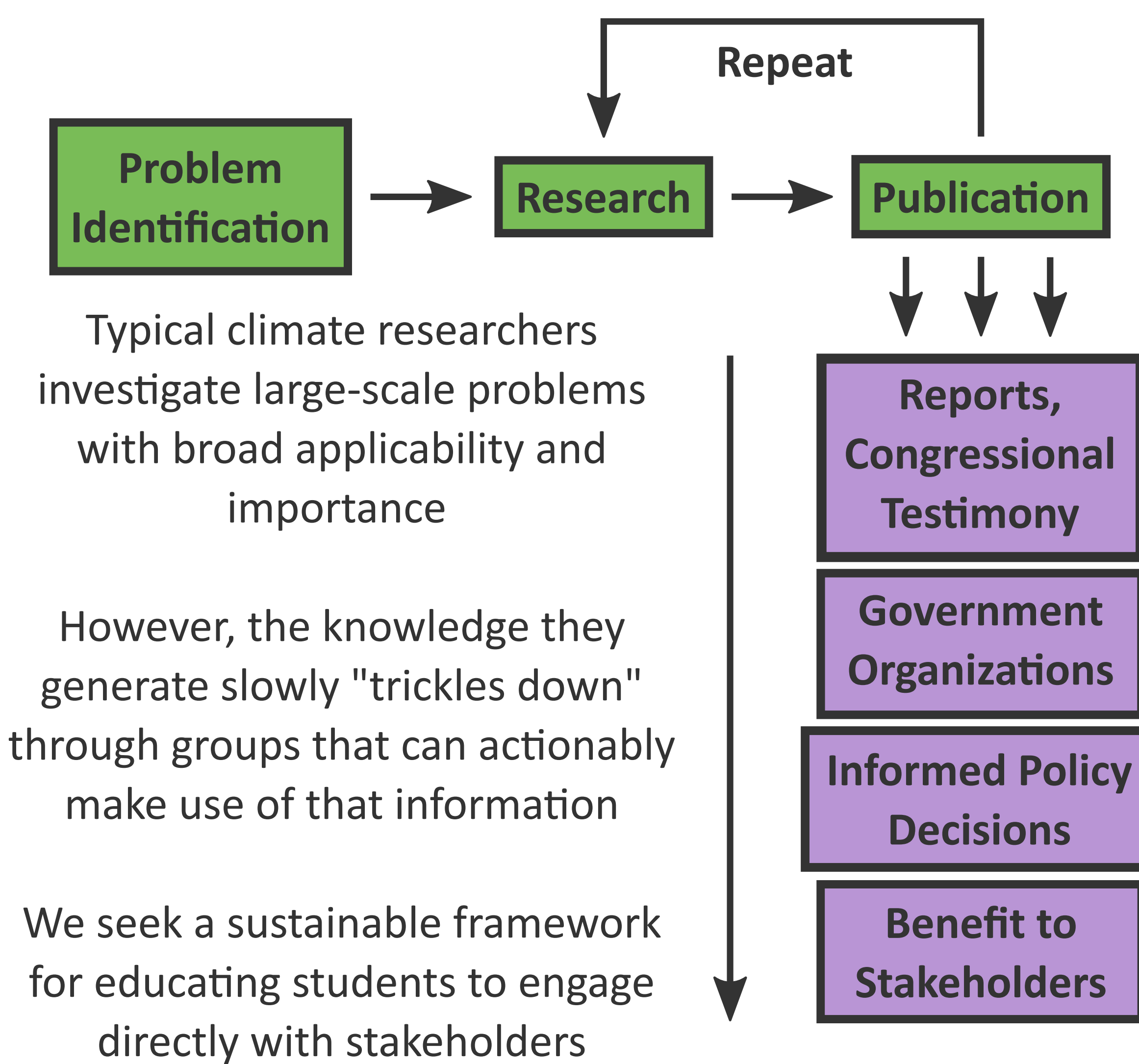
Collaborating with Local Government to Assist in Rain Garden Development

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Physical science engagement is often slow to work and difficult to apply at small scales

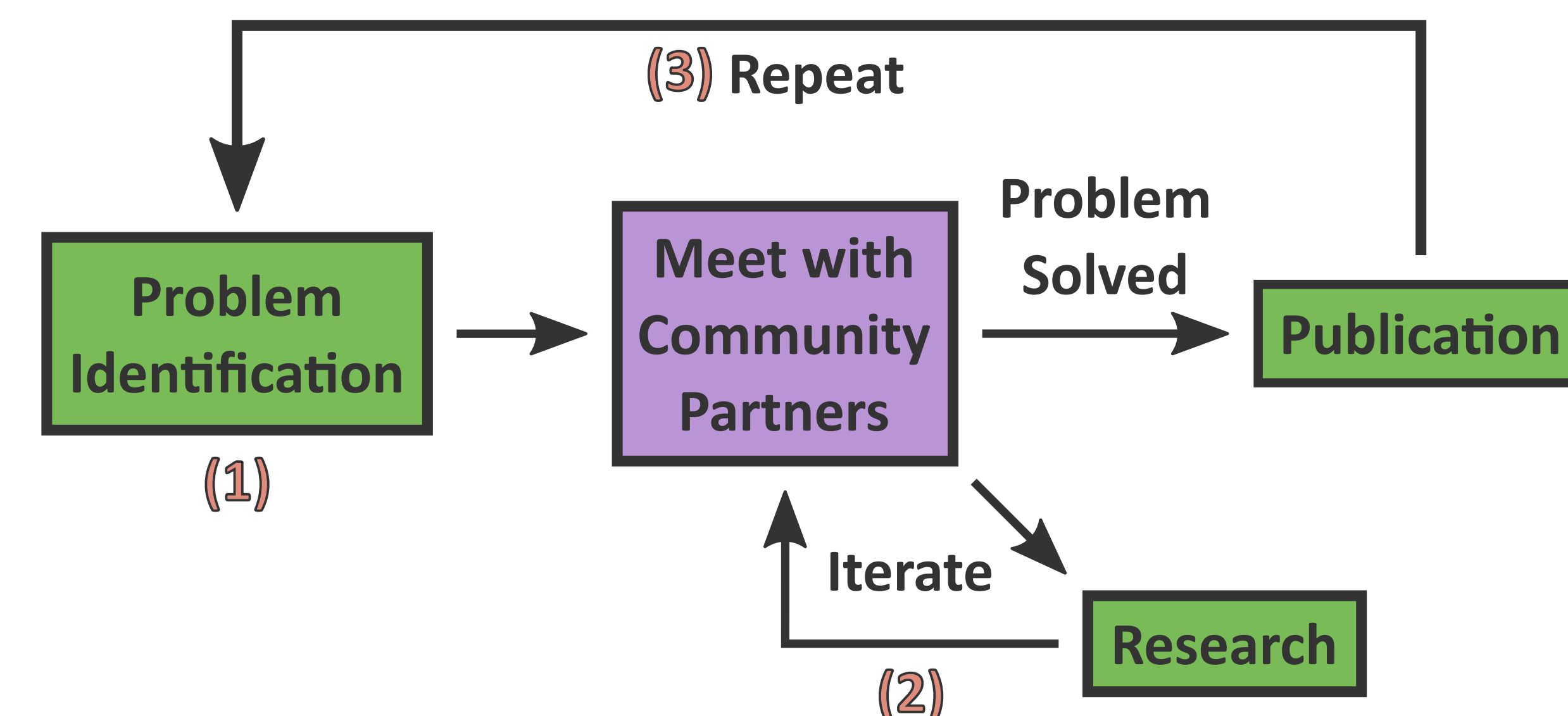


How can a climate-focused graduate program incorporate collaborative community engagement?

- We established a course in the Climate and Space Sciences and Engineering Department at the University of Michigan for training graduate students in societal engagement
- For the pilot project, we partnered with the Washtenaw County Water Resources Commission
- They provided us with a project involving flexibility in finding and analyzing Geospatial Information Systems (GIS) datasets
- We:
 - Met with them twice informally during the course of the project
 - Submitted a mid-project report
 - Formally presented the deliverables of the project to the Water Resources Commission and other interested
- *Currently:* Preparing an article for submission to AGU's new Community Science journal



Science is directly actionable when knowledge is co-produced



(1) Problem Identification

Where are the best locations to place rain gardens from a stormwater, equity, and wildlife perspective?

(2) Research Iteration

In theory: Progress towards problem resolution occurs in many steps, with regular communication between scientists and community partners

In practice: Due to the short length of the project and the unpaid nature of the work, it was challenging to establish a truly collaborative workflow

(3) Repeating the Process

In theory: Building an ongoing, personal relationship with community partners provides a natural basis for consulting on future projects

Rain gardens are a local form of climate adaptation with many benefits

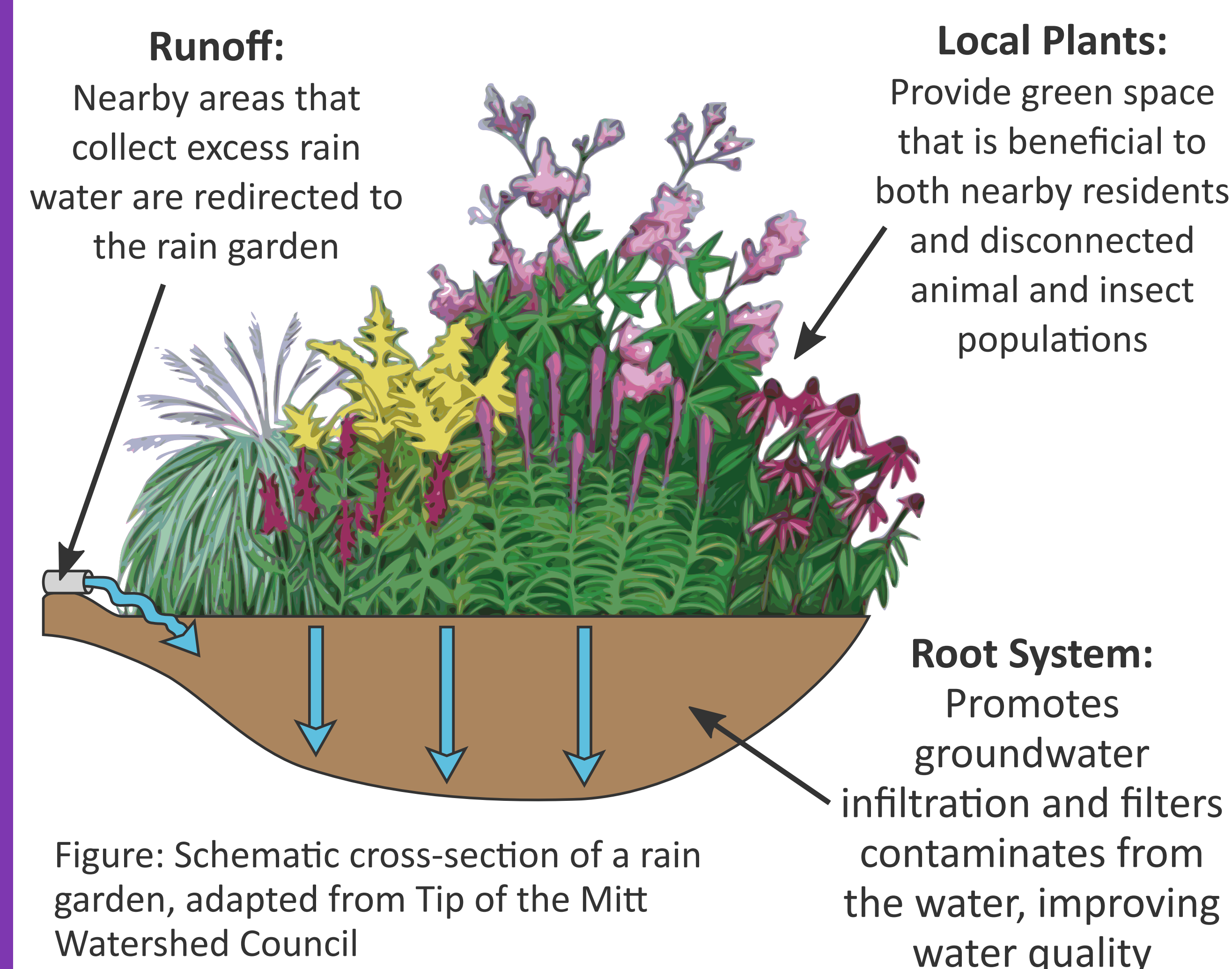


Figure: Schematic cross-section of a rain garden, adapted from Tip of the Mitt Watershed Council

Planning ideal rain garden locations allowed us to develop skills in...
... applying our climate knowledge to a concrete, small-scale problem

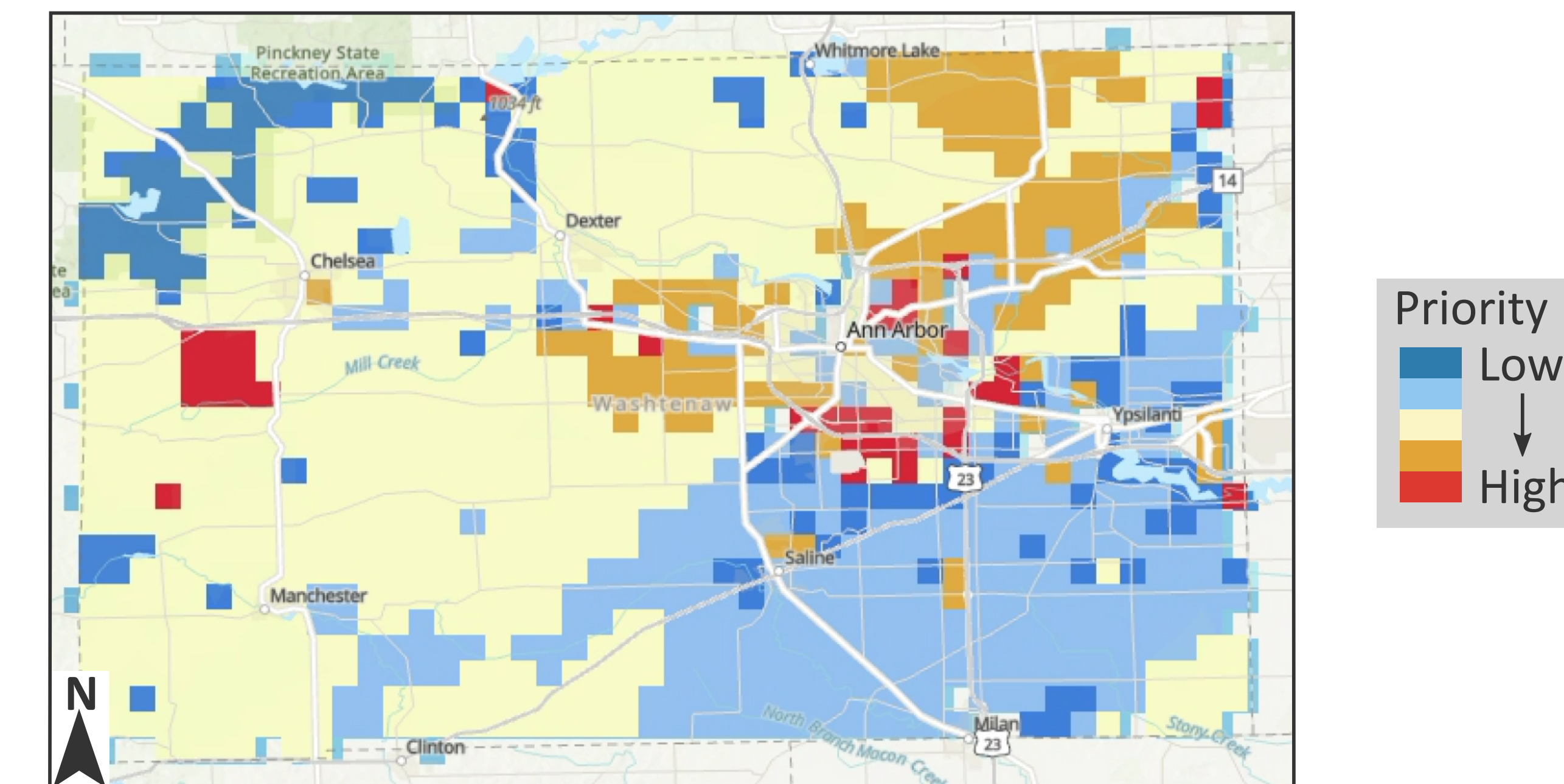


Figure: Priority values for rain garden placement across Washtenaw County based on areas of high stormwater runoff and degraded creeksheds

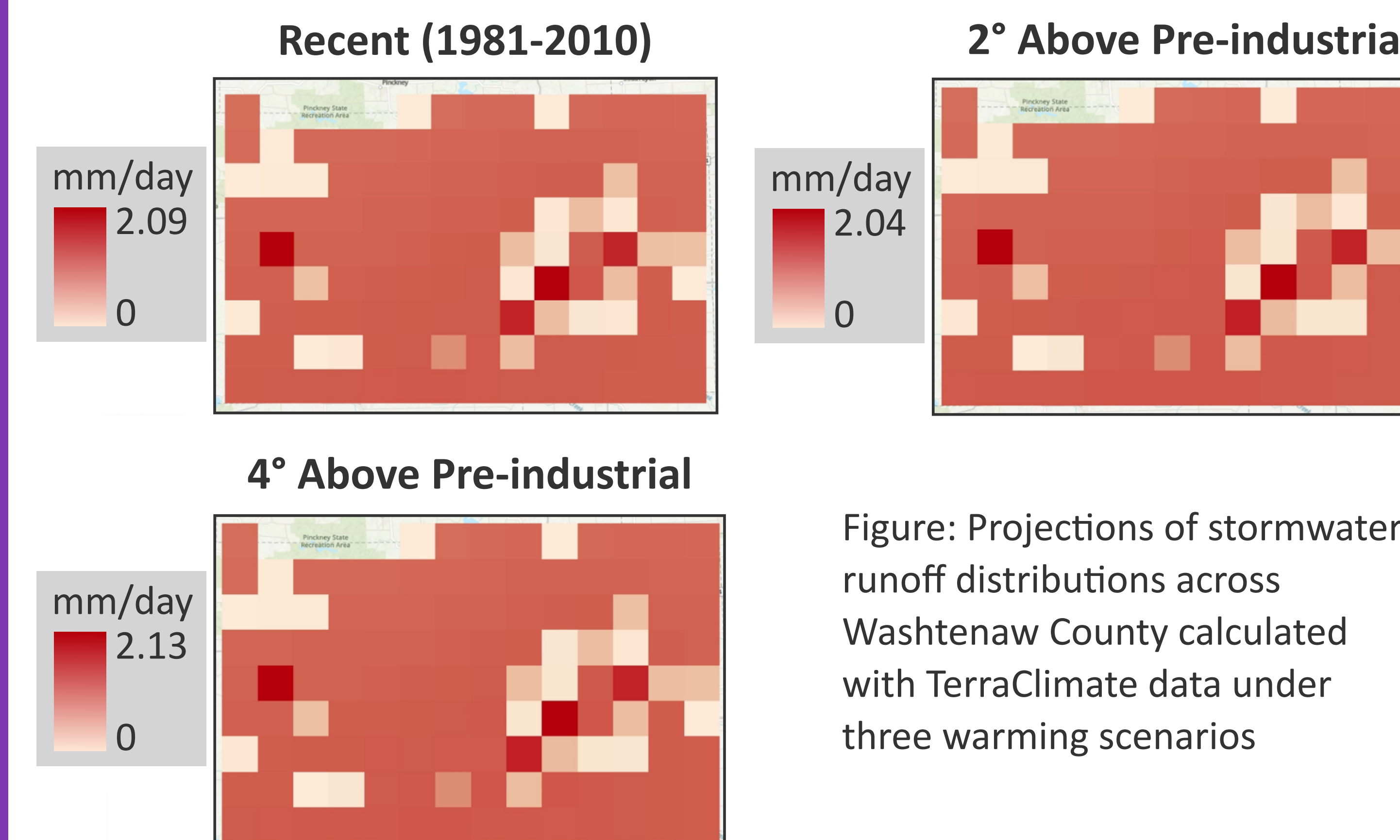


Figure: Projections of stormwater runoff distributions across Washtenaw County calculated with TerraClimate data under three warming scenarios

... considering the impact to wildlife populations

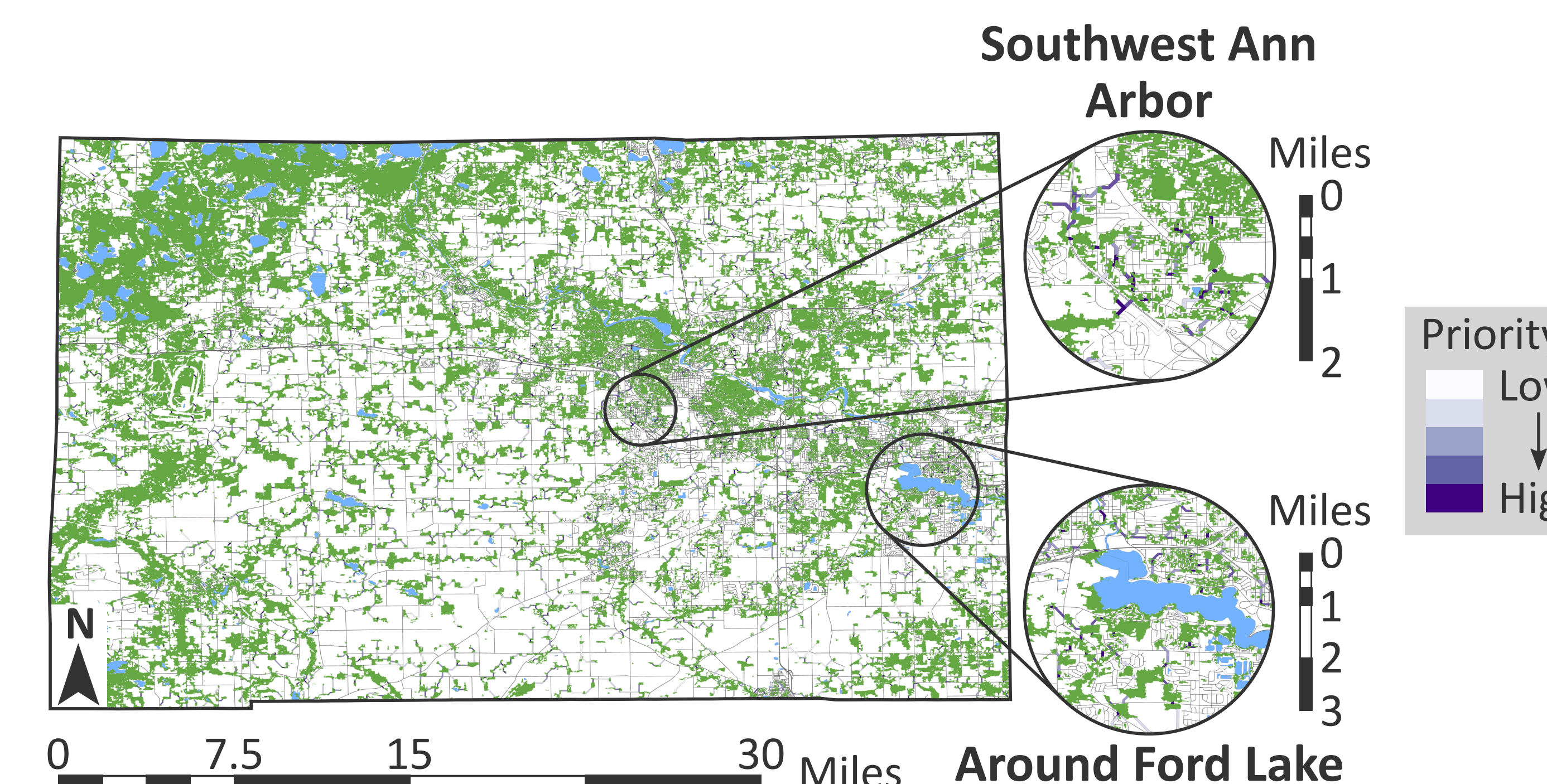


Figure: Priority values for rain garden placement across Washtenaw County to serve as wildlife corridors between isolated ecosystems

... incorporating explicit social inequality criteria into our methodology

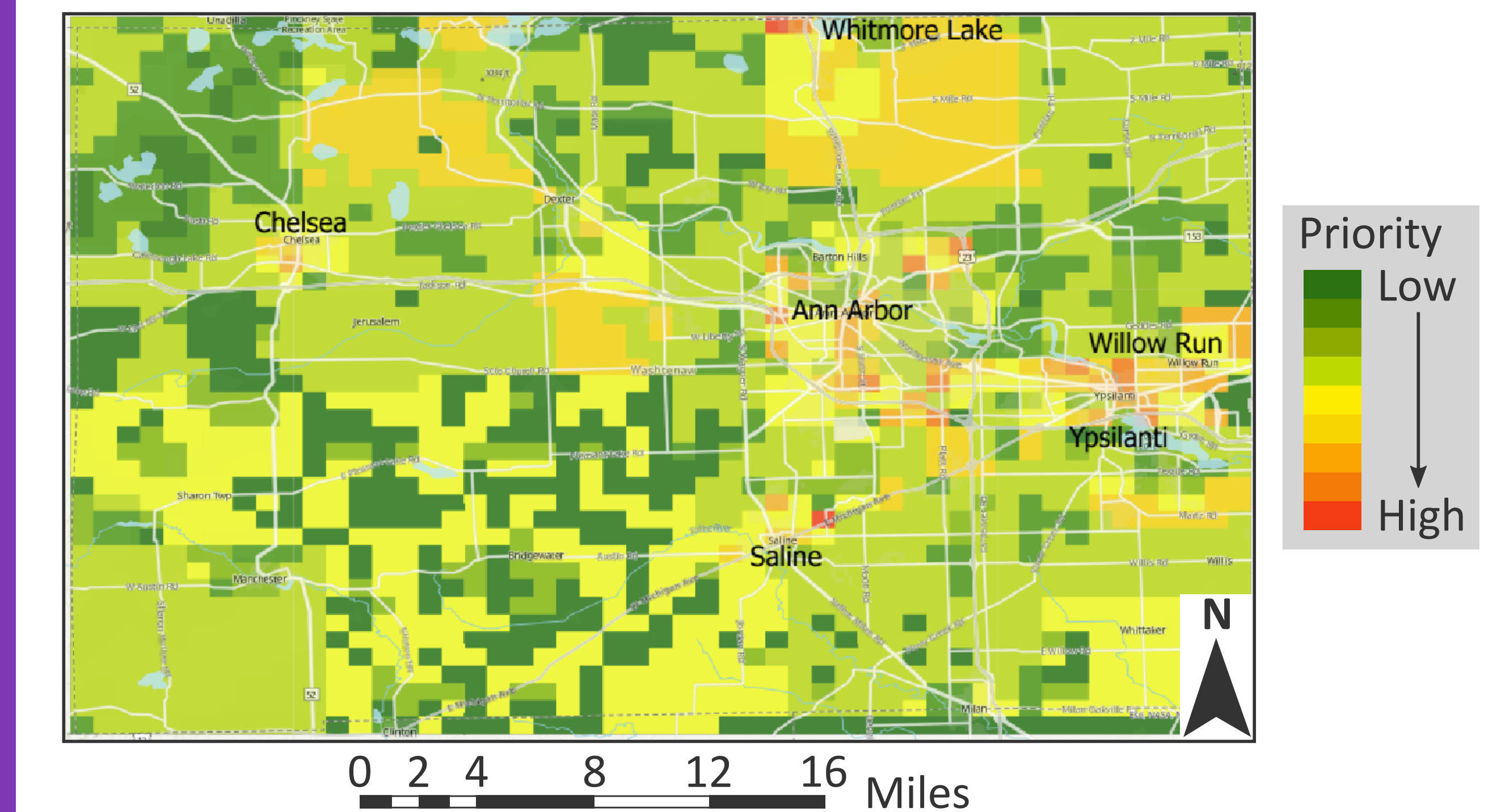


Figure: Priority values for rain garden placement across Washtenaw County based on regional poverty, proximity to green space, and the urban heat island effect

Urban Heat Island Effect:

Human-made surfaces in cities absorb solar radiation more effectively than natural land, creating warm pockets that increase air pollution and can be detrimental to physical health

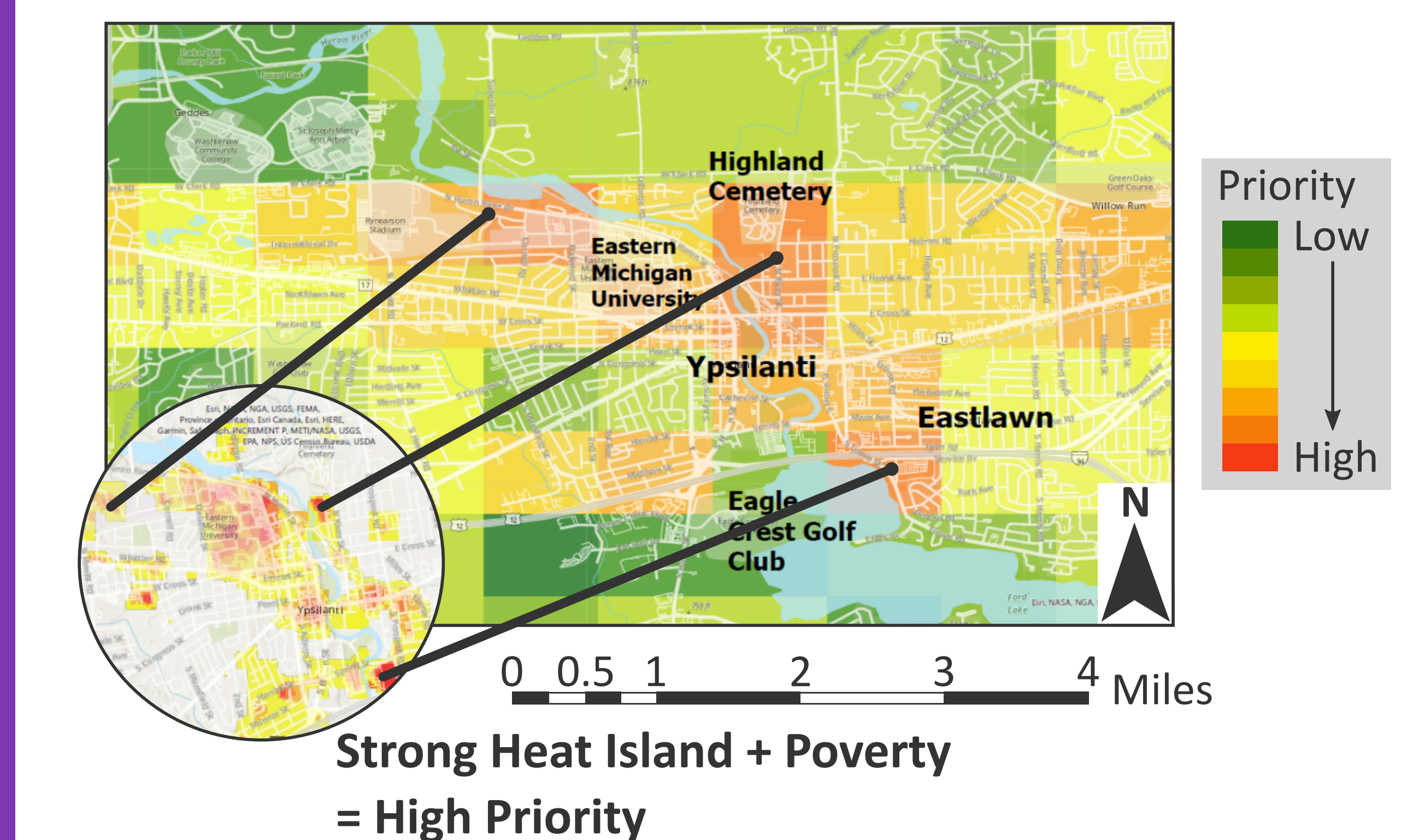


Figure: Zoomed-in view of the full-county map with areas of high priority rain garden placement highlighted around the city of Ypsilanti

Knowledge co-production with stakeholders is challenging, but valuable and can be done!

Acknowledgements

- Catherine Wytychak and Lisa Denys with Washtenaw County Water Resources
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