Stormwater Runoff and Rain Gardens

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Topic #4

- How changes in precipitation will affect the water resources of the Chesapeake Bay watershed.
    - More flooding, more concentrated precipitation events and subsequent effects on drinking water, etc.

Affecting Water Resources

- More stormwater runoff which then leads to an increase in contaminated waters.
- Has a large effect on a large number of people.
- Both small and large scale efforts can make a difference.
- **Targeting an audience which is affected by this directly and can make adjustments at little cost in order to mitigate the effects of increased precipitation and stormwater runoff.**

Rain Gardens

- Defined as “a depressed area in the landscape that collects rainwater from a roof, driveway or street and allows it to soak in the ground.”
- Benefits include increasing biodiversity, reintroducing native species back into the area, and helping to filter out pollutants in runoff.
- Also reduce the volume of stormwater that enters the stormwater management system.

“The scientists found that the gardens do a great job catching metal pollutants and oil and grease- in some cases ***trapping more than 90% of the pollutants.*** *” -Stiffler*

Research Done on Rain Gardens and Waste

- Polycyclic aromatic hydrocarbons (PAH'S) are environmentally hazardous chemicals that are found in oil and grease from leaking cars, vehicle exhaust, and the burning of coal and wood.
- One PAH- naphthalene- was discharged into water where it was then run through a simulated rain garden and scientists found that the contaminant was absorbed by the soil and taken up by the plants.
- "Biodegradation typically destroys the contaminant, rather than simply retaining or transforming the contaminant."

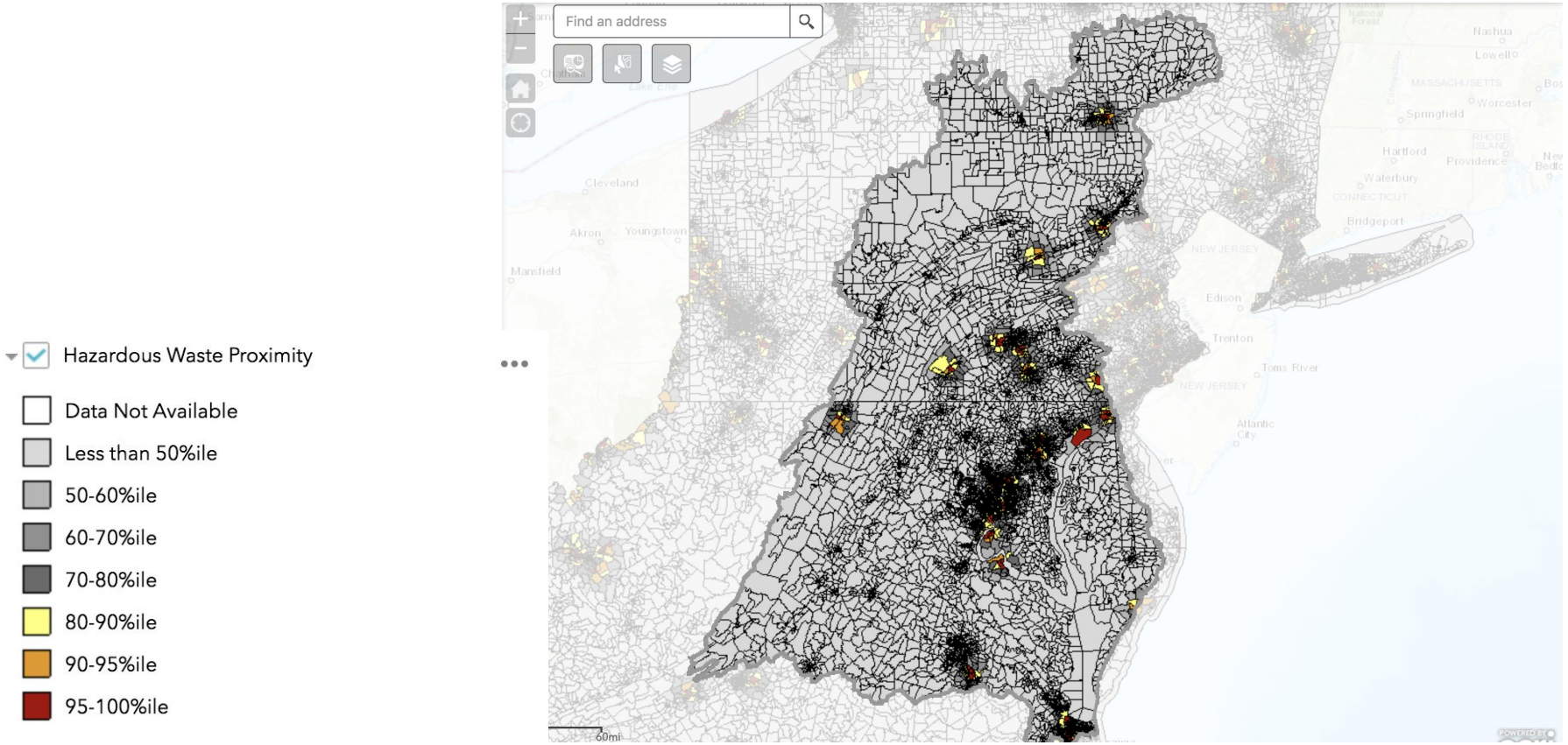
What Can Happen to Pollutants in a Rain Garden?

- Volatilization: pollutants evaporate
- Sedimentation: heavier particles settle into the soil below
- Adsorption: certain dissolved pollutants stick to particles floating in the stormwater or settled into the soil
- Microbial action: bacteria and other microorganisms break down pollutants in the water or soil, often into forms that are less environmentally harmful

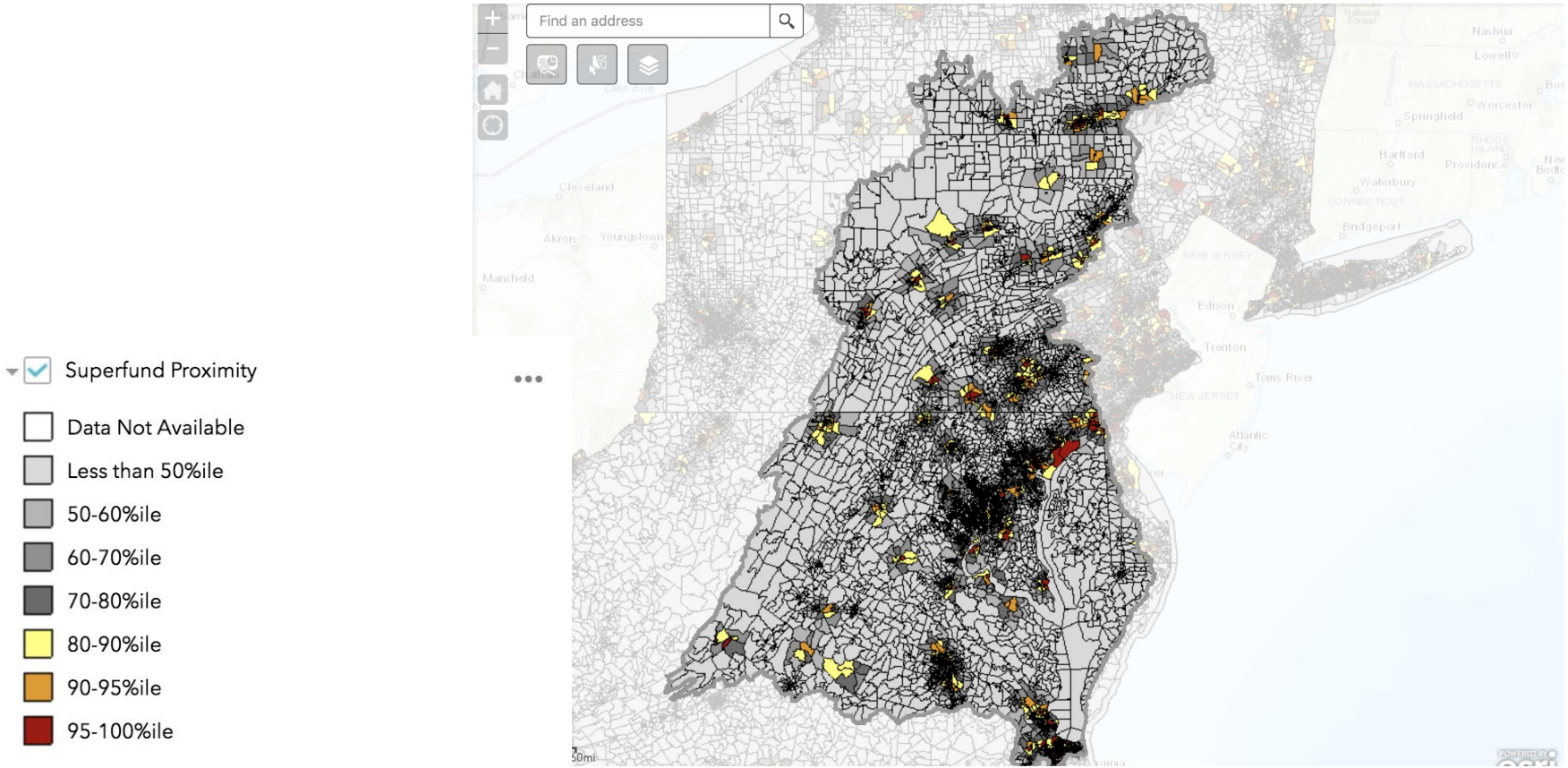
Possible Targets

- Hazardous Waste Sites: sites that have waste with properties that make it dangerous or capable of having a harmful effect on human health or the environment
- Superfund Sites: any land in the US that has been contaminated by hazardous waste and identified by the EPA as a candidate for cleanup because it poses a risk to human health and/or the environment
- General Public

Map of Hazardous Waste Sites



Map of Superfund Sites



Conclusion

- Targeting populations living in either a site in close proximity to a large amount of hazardous waste or those living near a Superfund site.
- Could also target the general public.
- Rain gardens provide populations with a relatively inexpensive way to reduce the impact of stormwater runoff within their community.
- This poster would provide populations with information on the dangers of increased precipitation, the impacts of stormwater runoff and steps that they can take to mitigate these effects.

Any questions?