

Downspout Disconnection Program Potential to Mitigate Hydromodification

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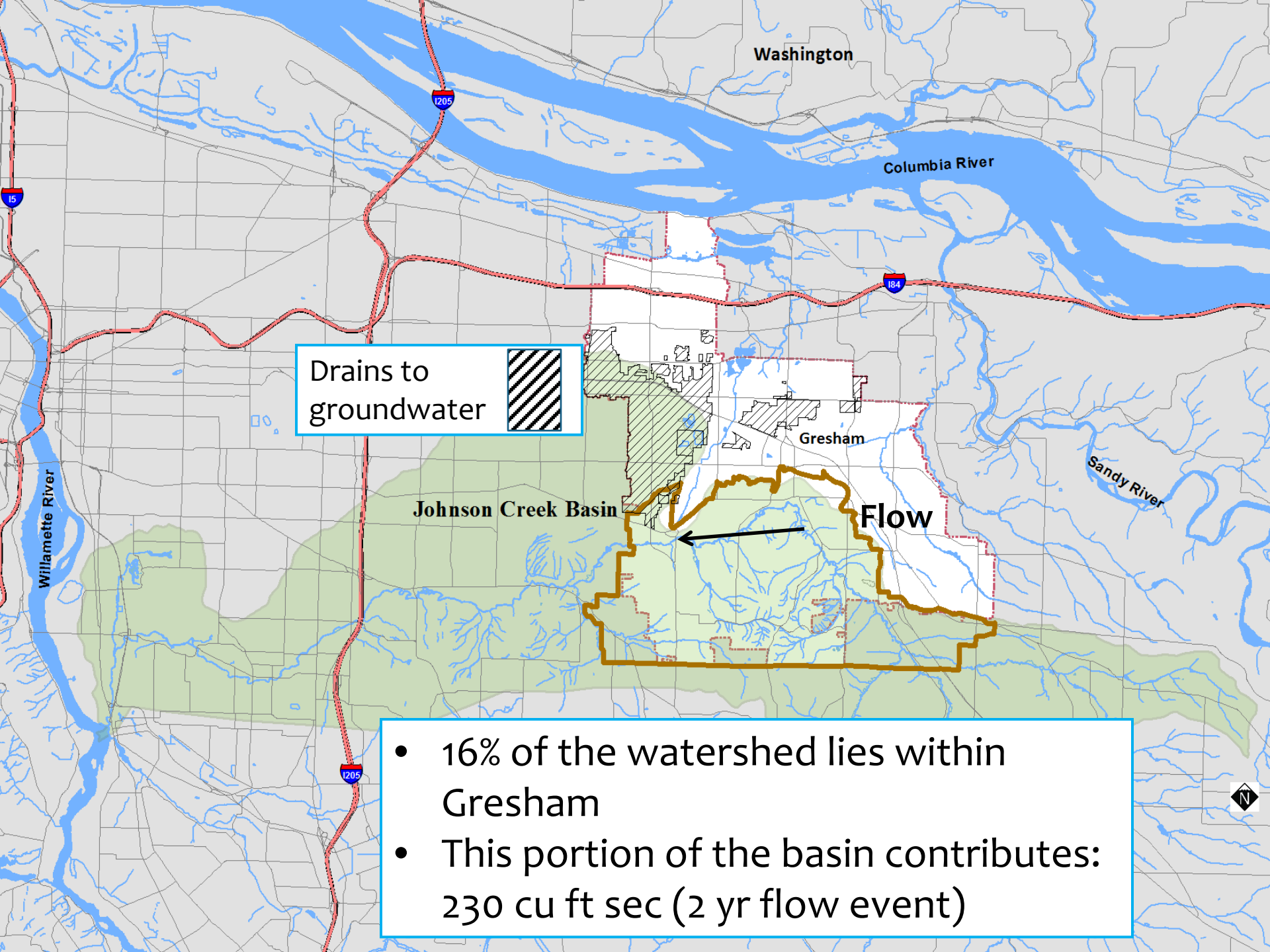
CITY OF
GRESHAM

What is Hydromodification:

When land uses change the natural hydrograph and influence flows in ways that impact channel formation and function



Butler Creek below Marpol pond ?
tributary to Johnson Creek



Drains to
groundwater

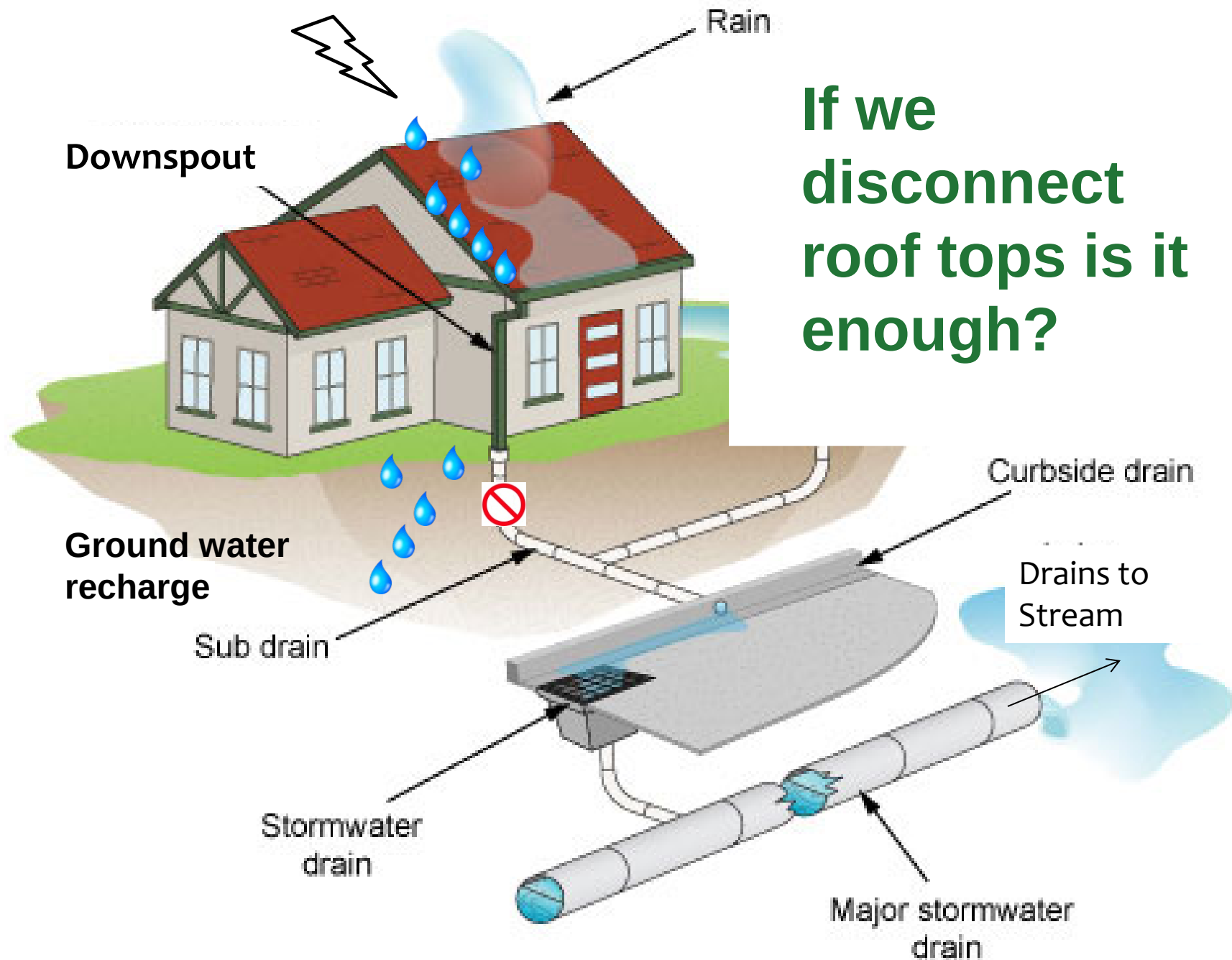


Johnson Creek Basin

Gresham

Flow

- 16% of the watershed lies within Gresham
- This portion of the basin contributes:
230 cu ft sec (2 yr flow event)



If we
disconnect
roof tops is it
enough?







2,000/7,500 Homes in the Downspout Area within JC Basin (27%)
79 acres of potential roof tops*
39.5/376 acres of SFR roofs are [?]feasible[?] (11% of entire basin)

East HB Subbasin-Outfall #3451

- 200/700 Homes-17 Participants
- 9 acres of roof top (27% of HB)
- ~1 acre/9 currently disconnected

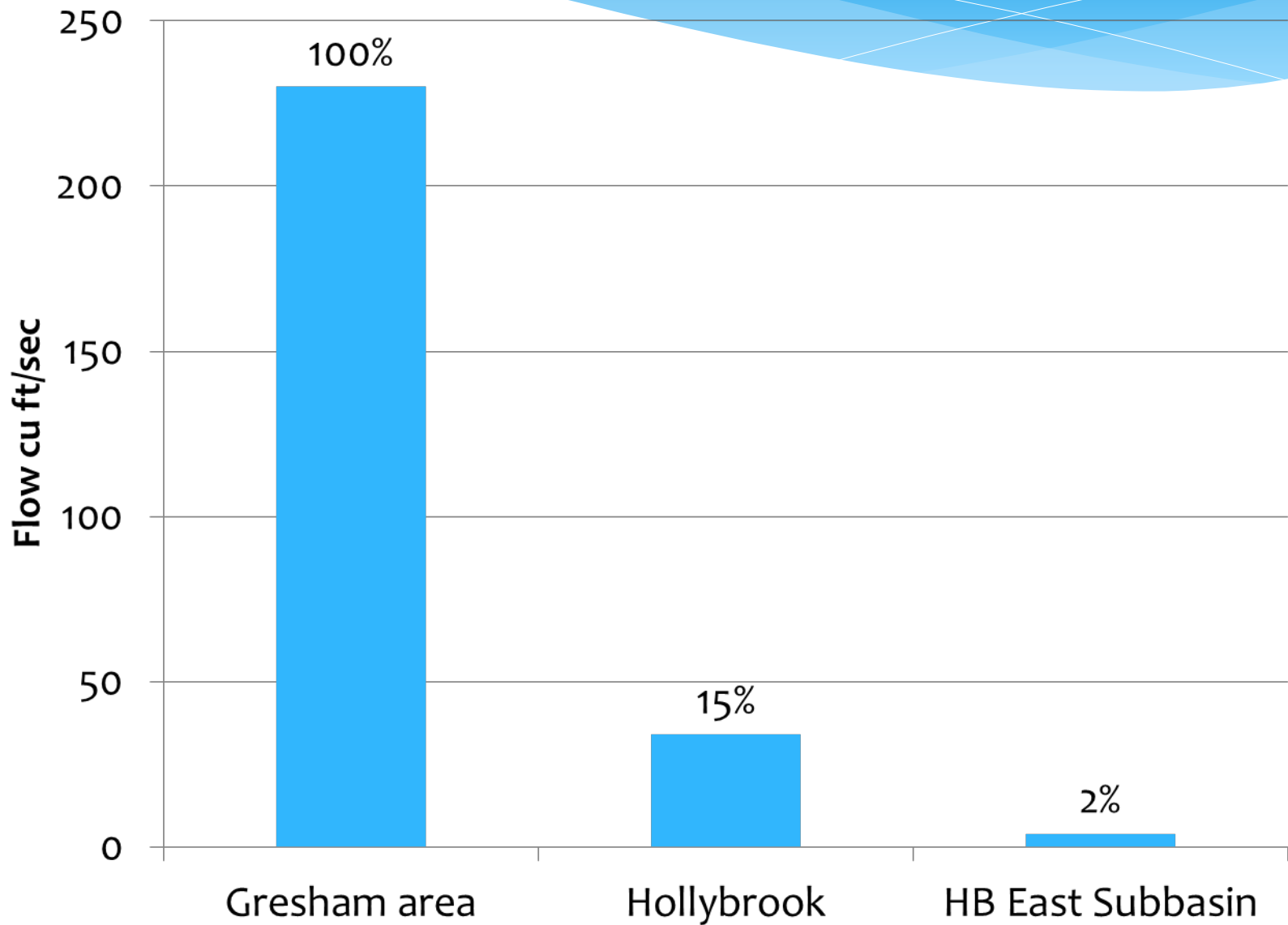
Hollybrook
Neighborhood

Hollydale
Elementary

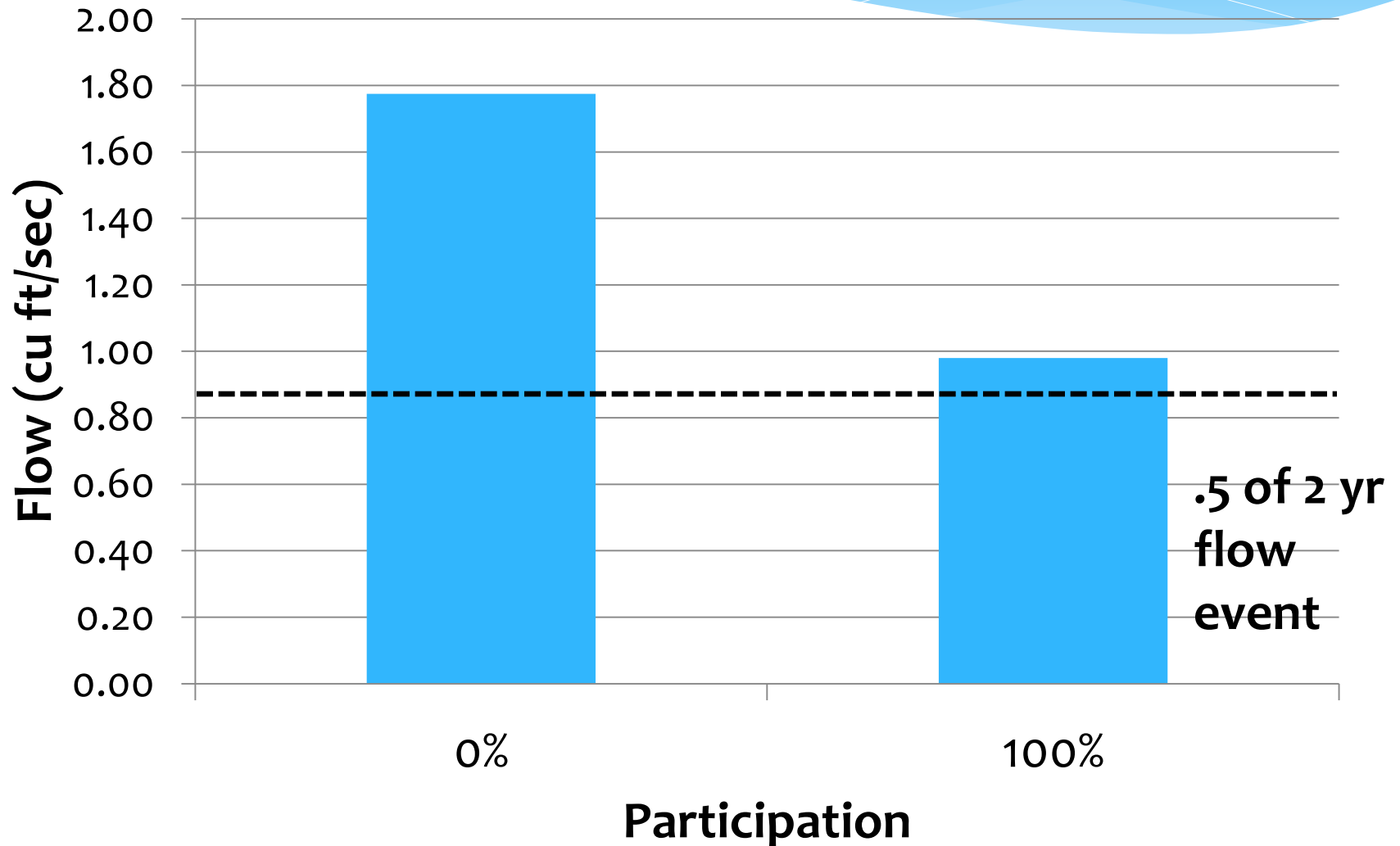
Roof area
disconnected

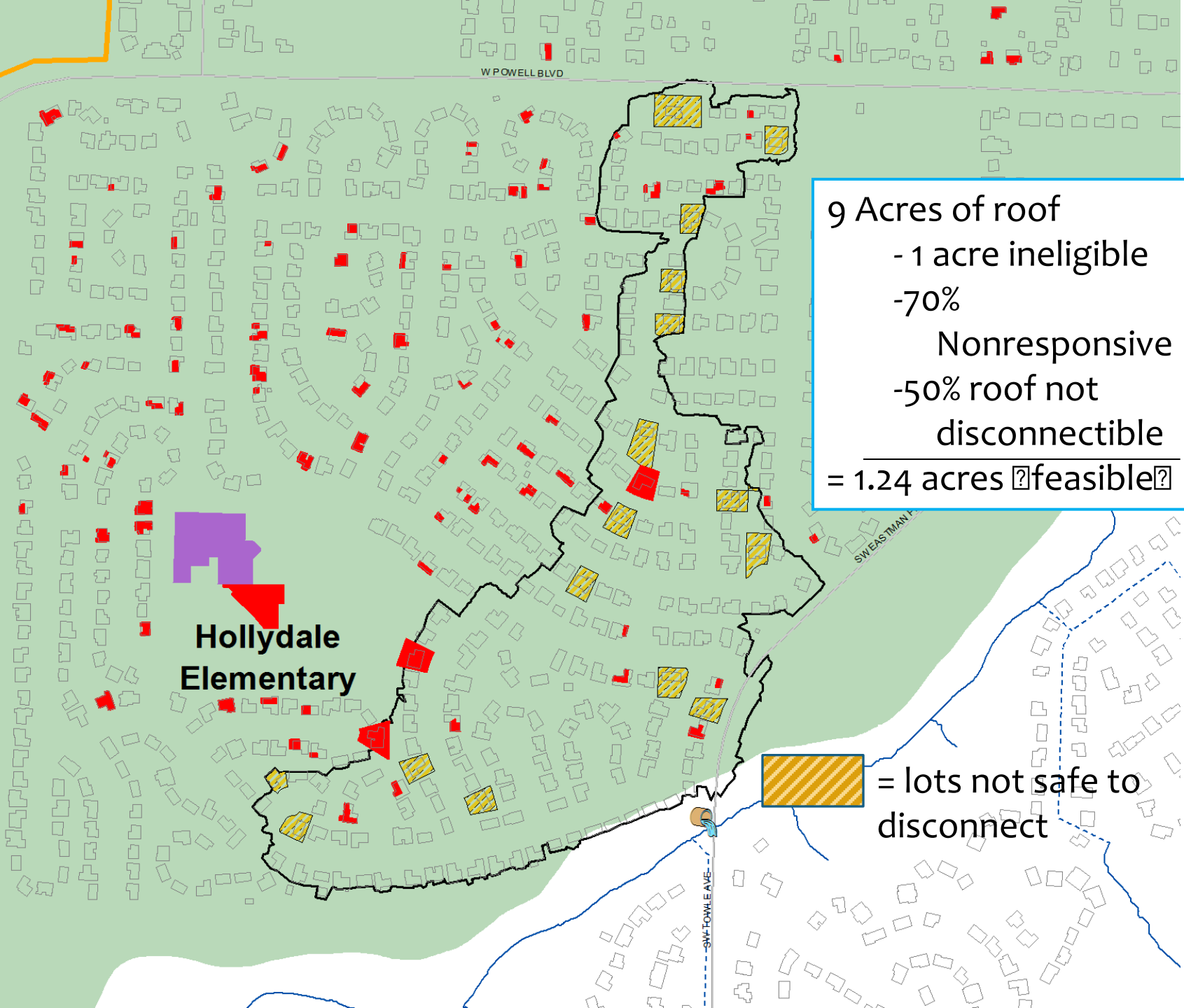


Contributing Flow (2 yr event)



Modeled Flow Reductions in East HB Subbasin from Downspout Disconnection

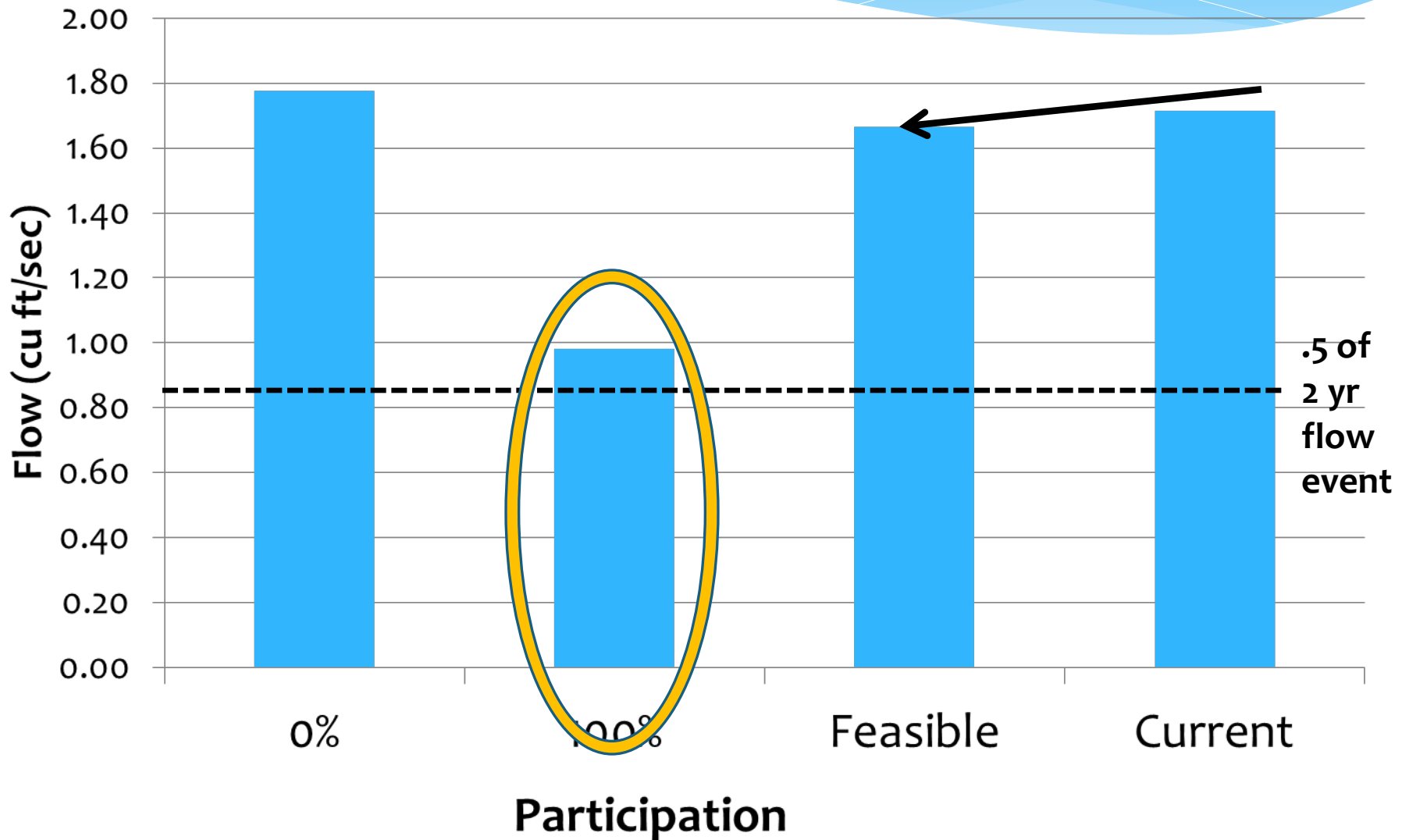




9 Acres of roof
- 1 acre ineligible
- 70% Nonresponsive
- 50% roof not disconnectible
= 1.24 acres [?]feasible[?]

 = lots not safe to disconnect

Modeled Flow Reductions in East HB Subbasin from Downspout Disconnection



Conclusions

- 15% of roofs are managed after safety and participation factors are applied
- Extremely cost *effective* retrofit (\$.56/sq ft managed v. \$6.67/ sq ft for a street rain garden)
- Facilitates high quality public interaction
- Subbasin analysis enables prioritization of high priority areas for other types of retrofits