



ELEVATE

# RainReady

Bryan Nelson

# Overview

- Introduction of Presenter
- Urban Flooding
  - What causes urban flooding?
  - What does flooding look like?
  - What can a homeowner do to about flooding at their homes?
- Green Infrastructure
- Urban Flooding and Well Being

# Meet Bryan Nelson



# What Is Urban Flooding?

## Sewer Back up:

Sewage backing up through basement plumbing and drains

## Seepage:

Water seeping through cracks in basement walls and floors

## Pooling/Ponding:

Excessive amounts of rain ponding in yards and streets

## Overland Flooding:

Rain flowing under basement doors and windows

# What Causes Urban Flooding?

- Sewer systems originally designed decades ago, can not handle the current demands on the system.
- Most urban areas have fewer natural areas where rain can soak into the soil, instead of running off into the sewer system.
- Urban neighborhoods are more likely to flood because of poor drainage systems, less absorbent soil types, or low- lying land.
- Over the past fifty years, storms have become more intense, producing more stormwater runoff which has increased the amount of urban flooding.

# Sewer Backup: What Does It Look Like?

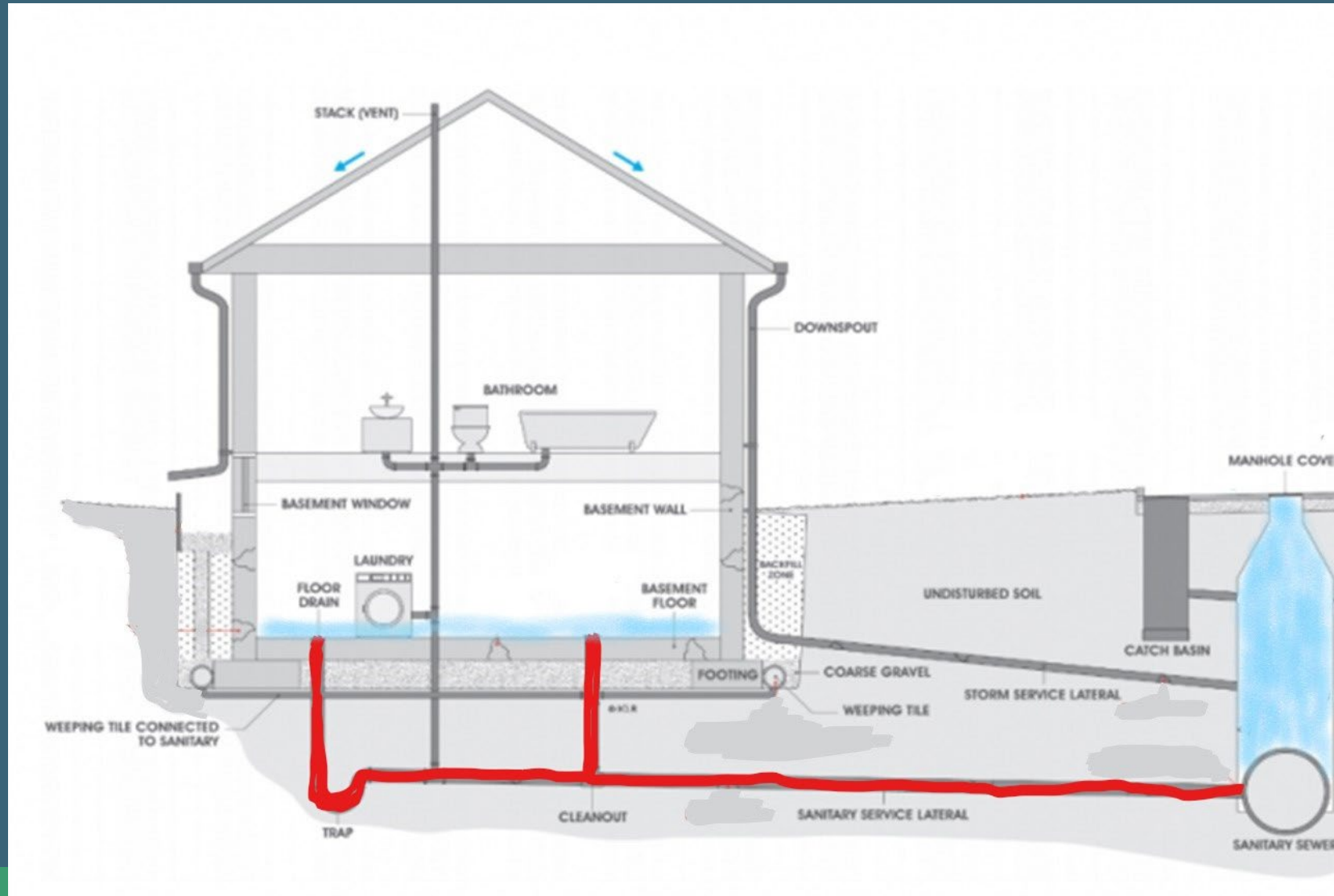




# Sewer Backup: What Does It Look Like?

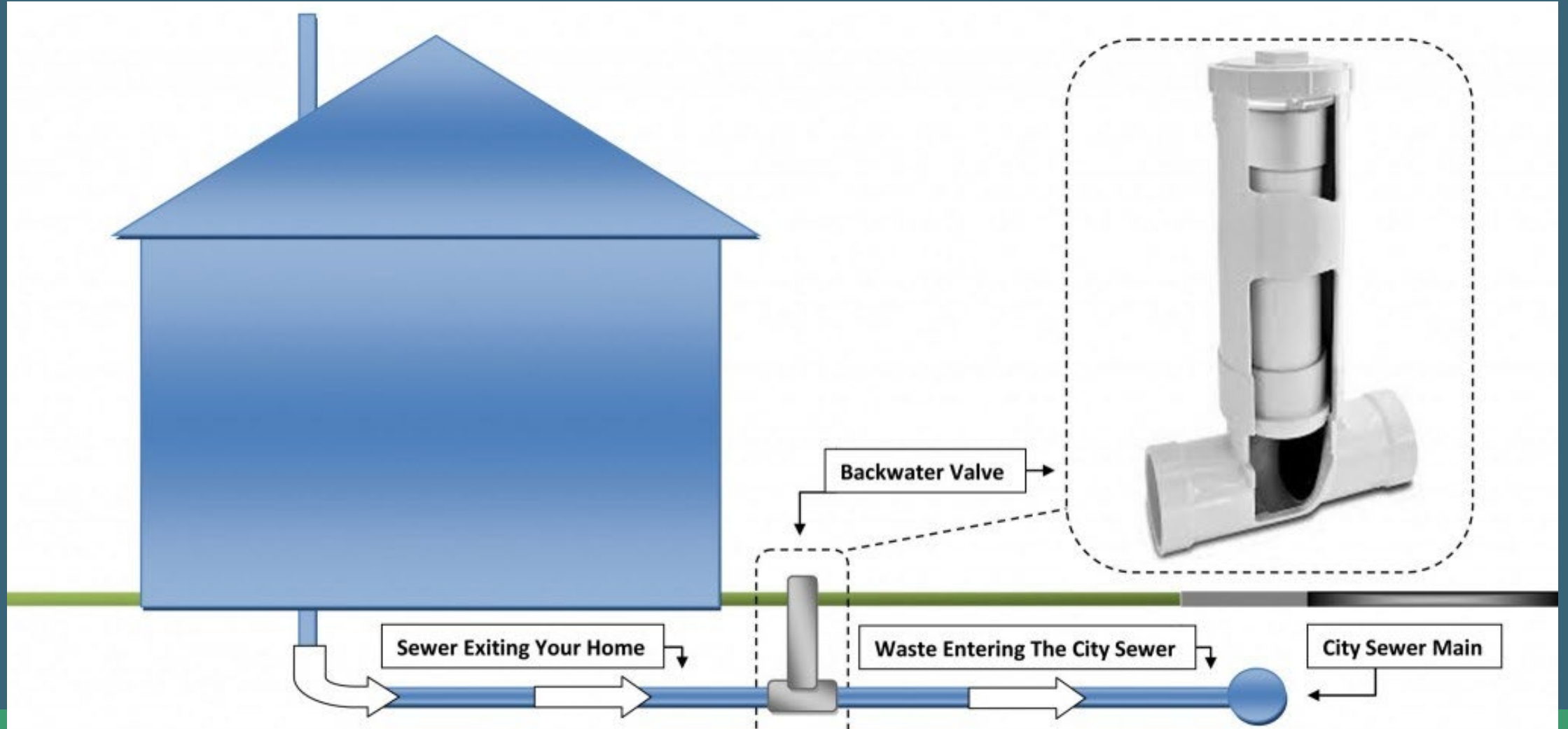


# Sewer Backup: Building Science





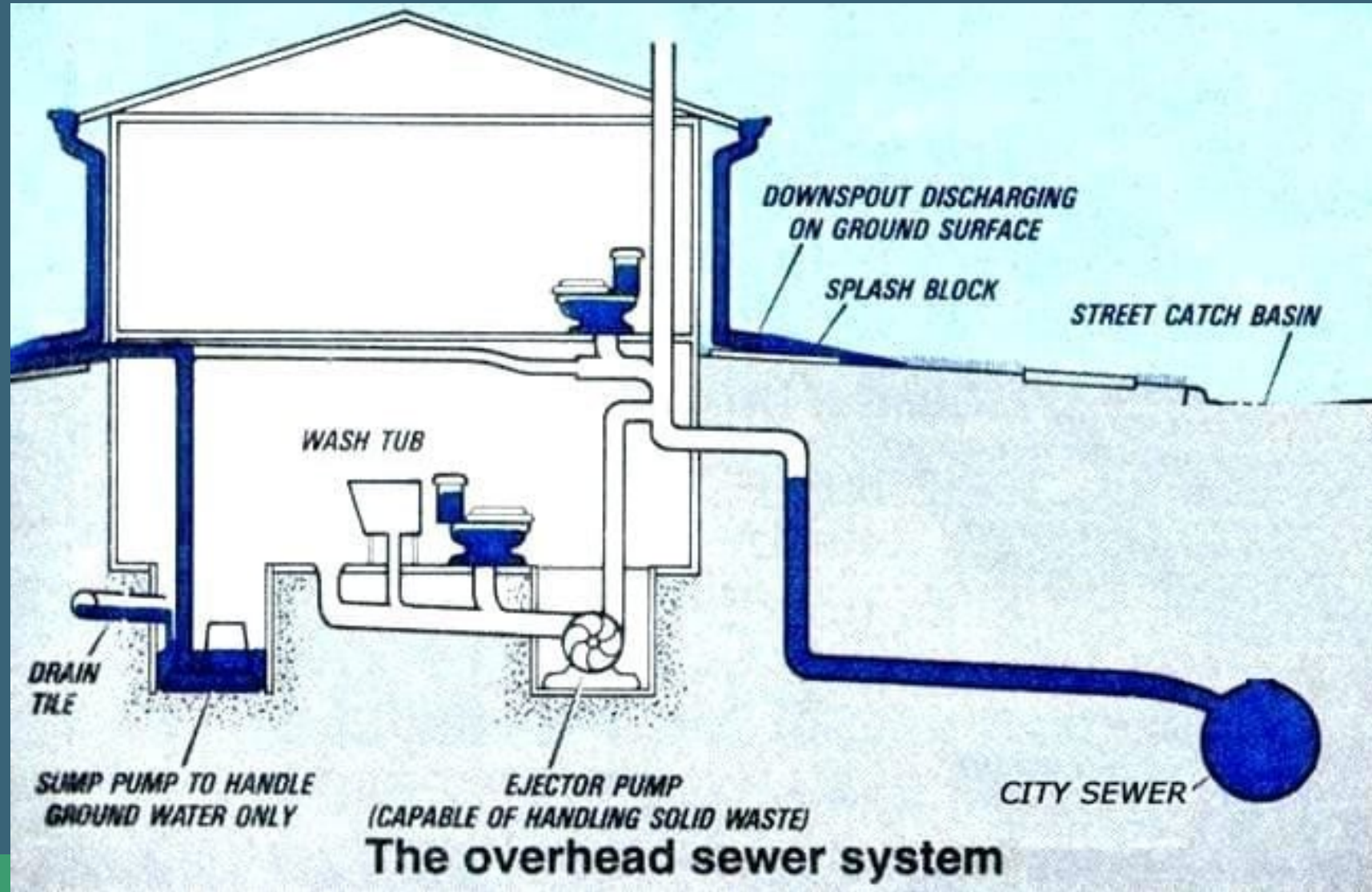
# Sewer Backup: Mitigation



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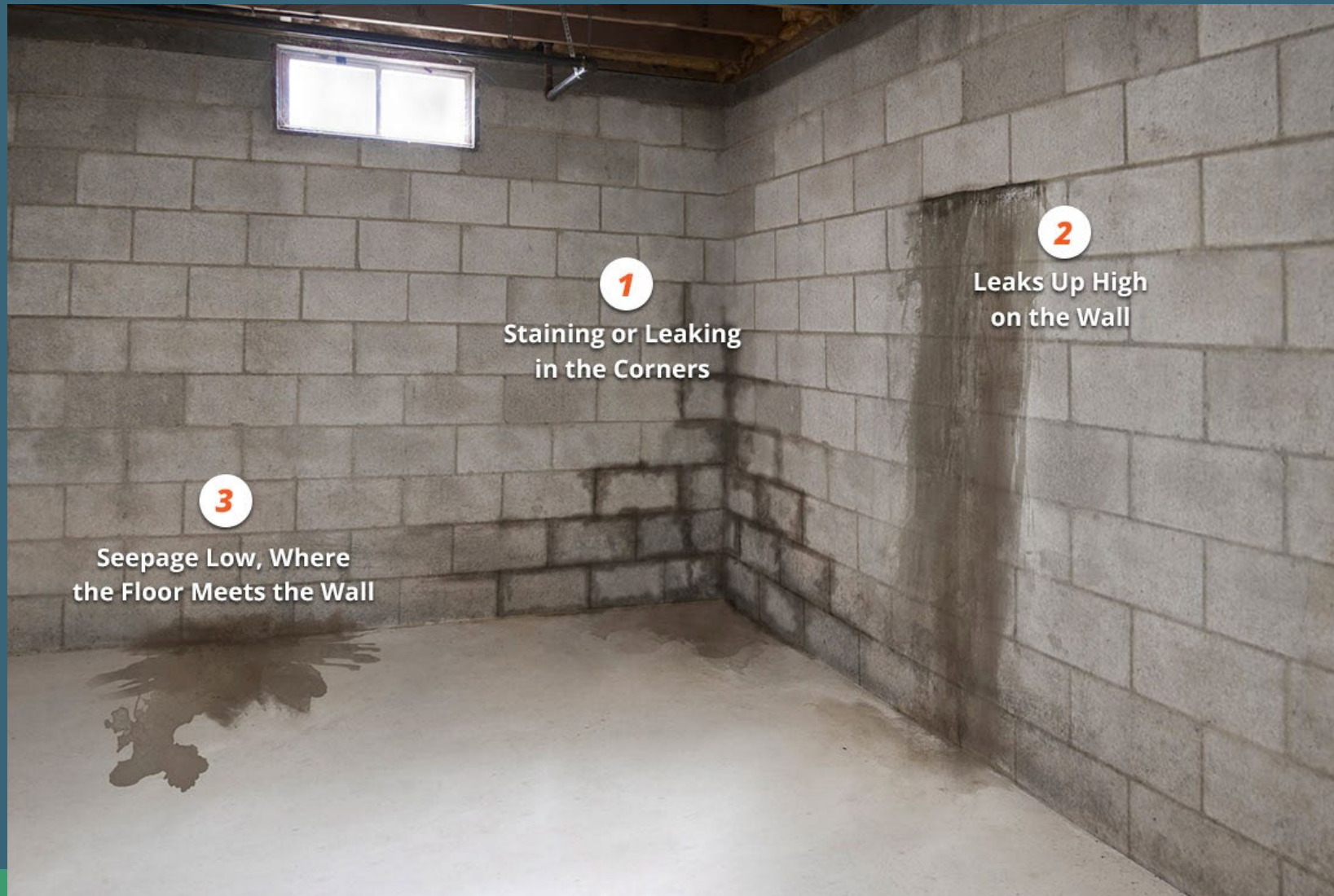


# Seepage: What Does Seepage Look Like?

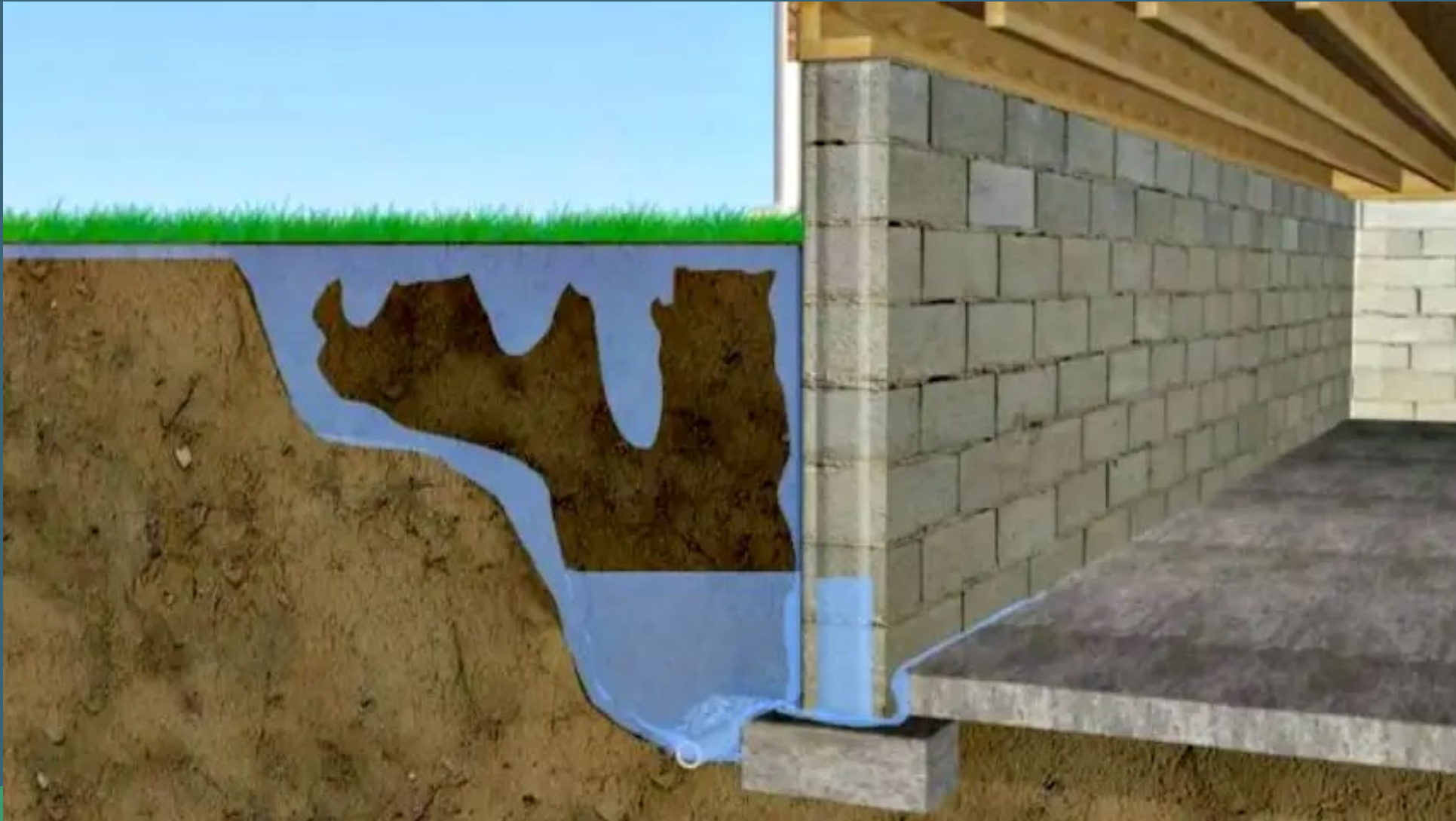




# Seepage: What Does Seepage Look Like?



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# Seepage: Sources of Seepage



# Seepage: Sources of Seepage





# Seepage: What Can You Do About Seepage?



# Seepage: What Can You Do About Seepage?





# Seepage: What Can You Do About Seepage?





# Seepage: Green Infrastructure

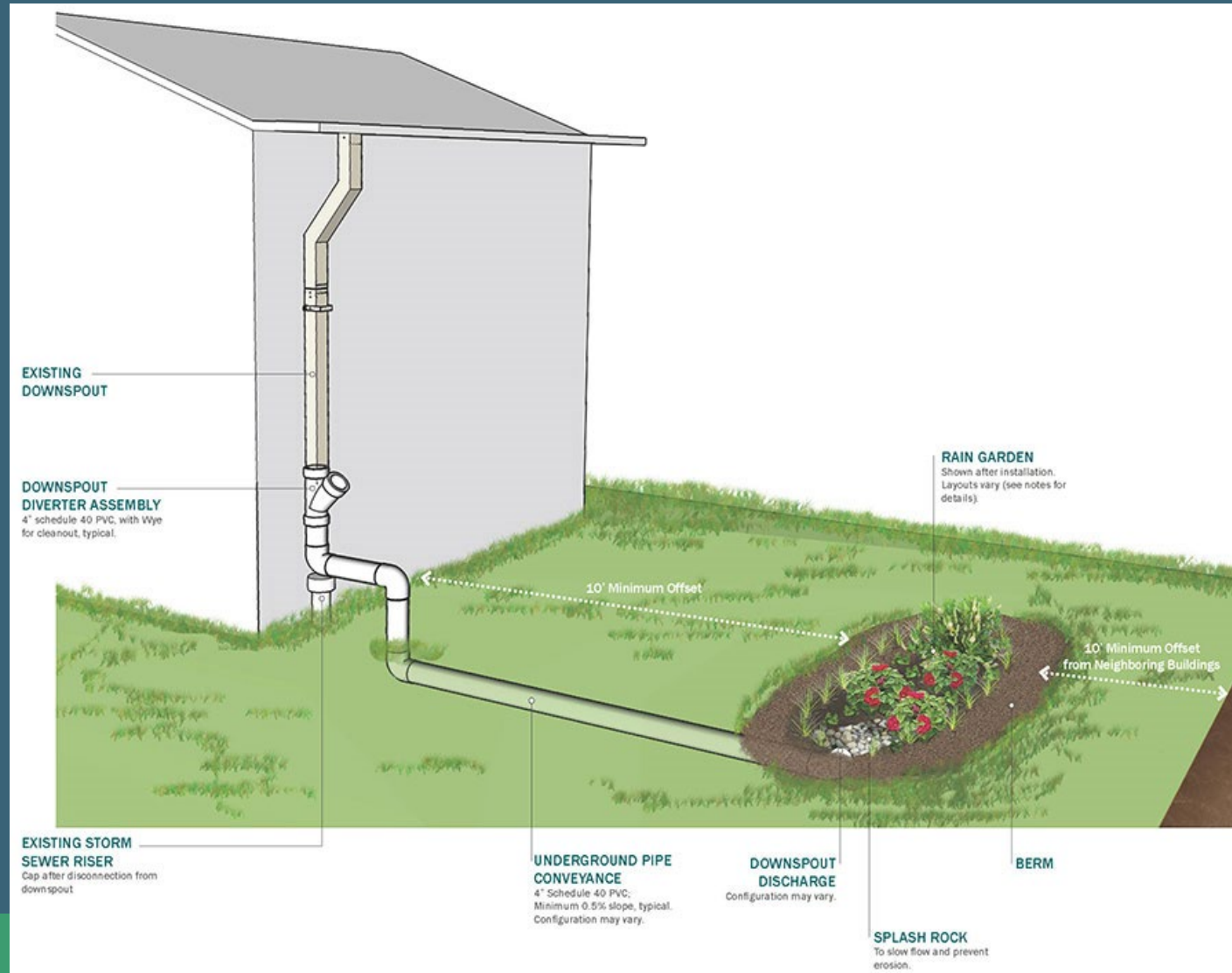




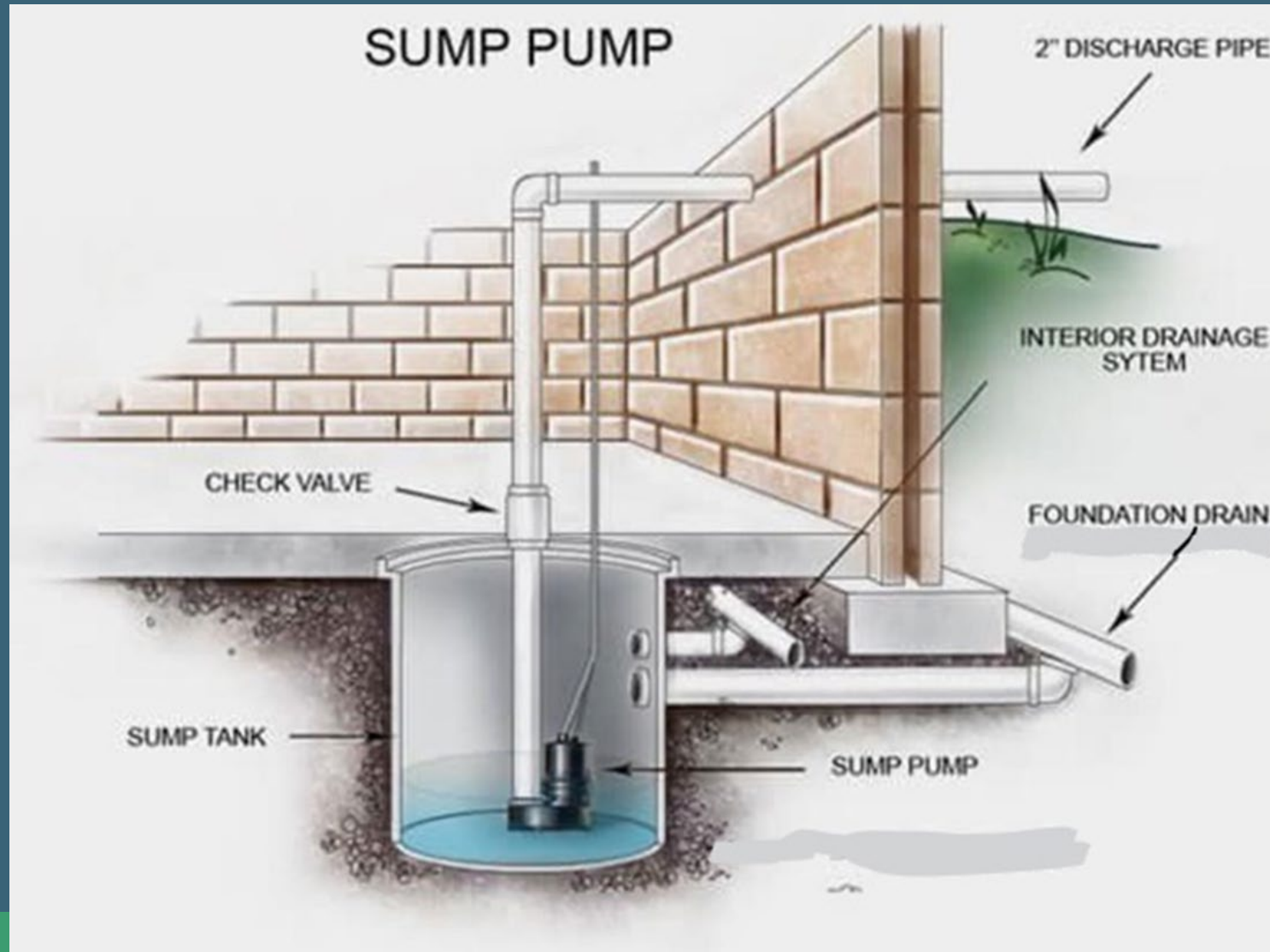
# Seepage: RainGarden



# Seepage: Green Infrastructure



# Seepage: Drain Tile System





# Pooling and Ponding: Sources





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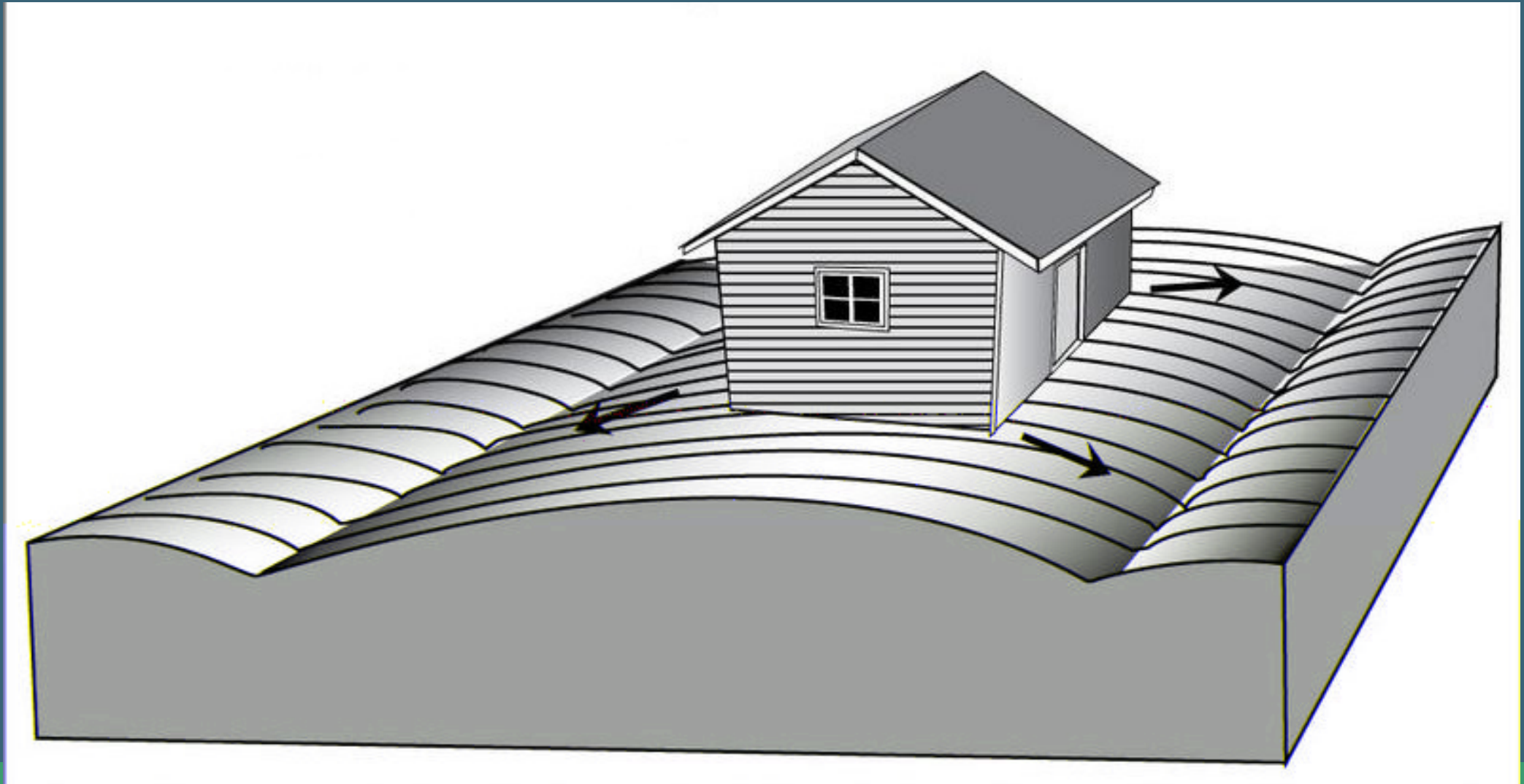




# Pooling and Ponding: Sources



# Pooling and Ponding: What Can Be Done?





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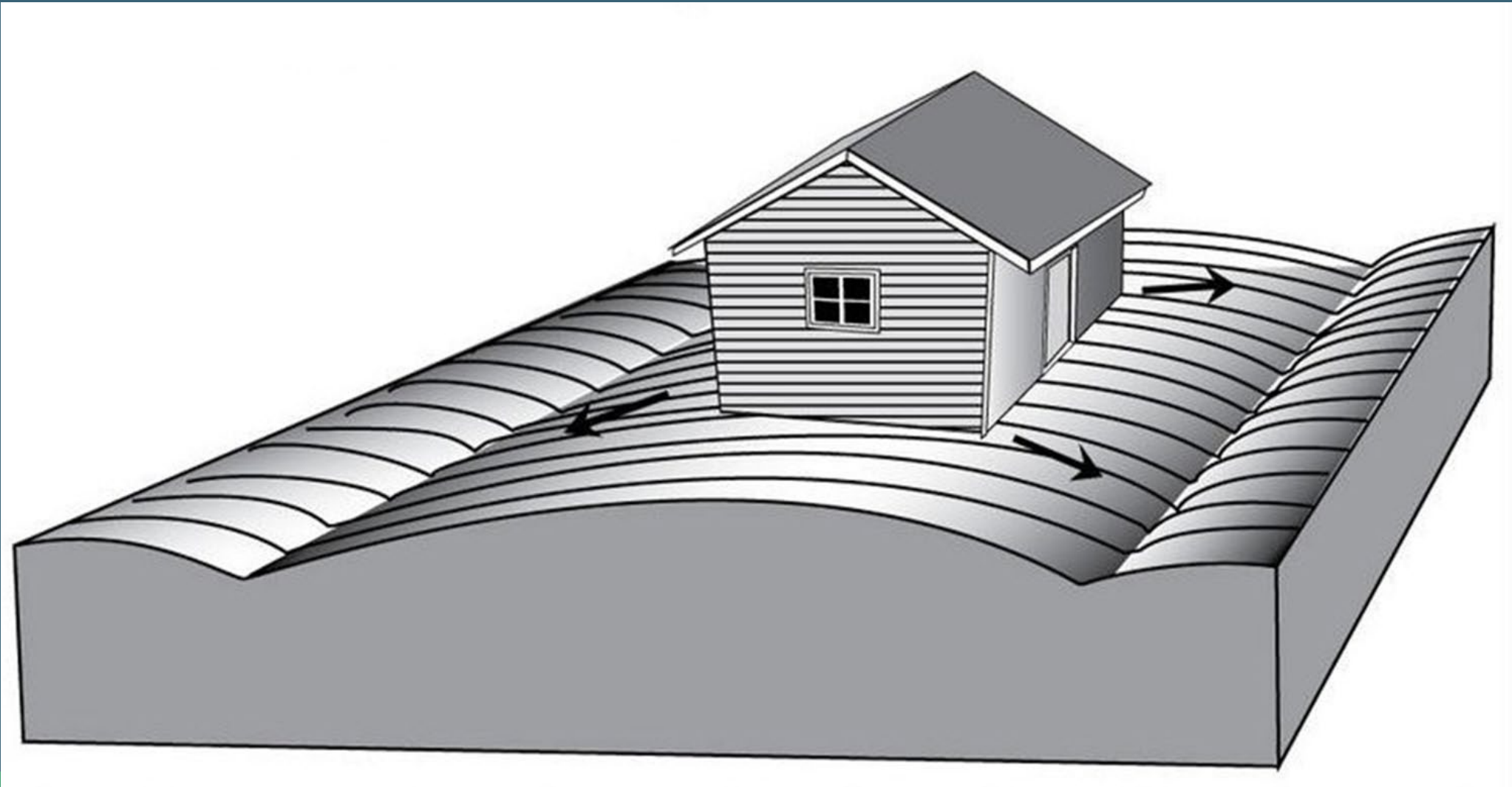




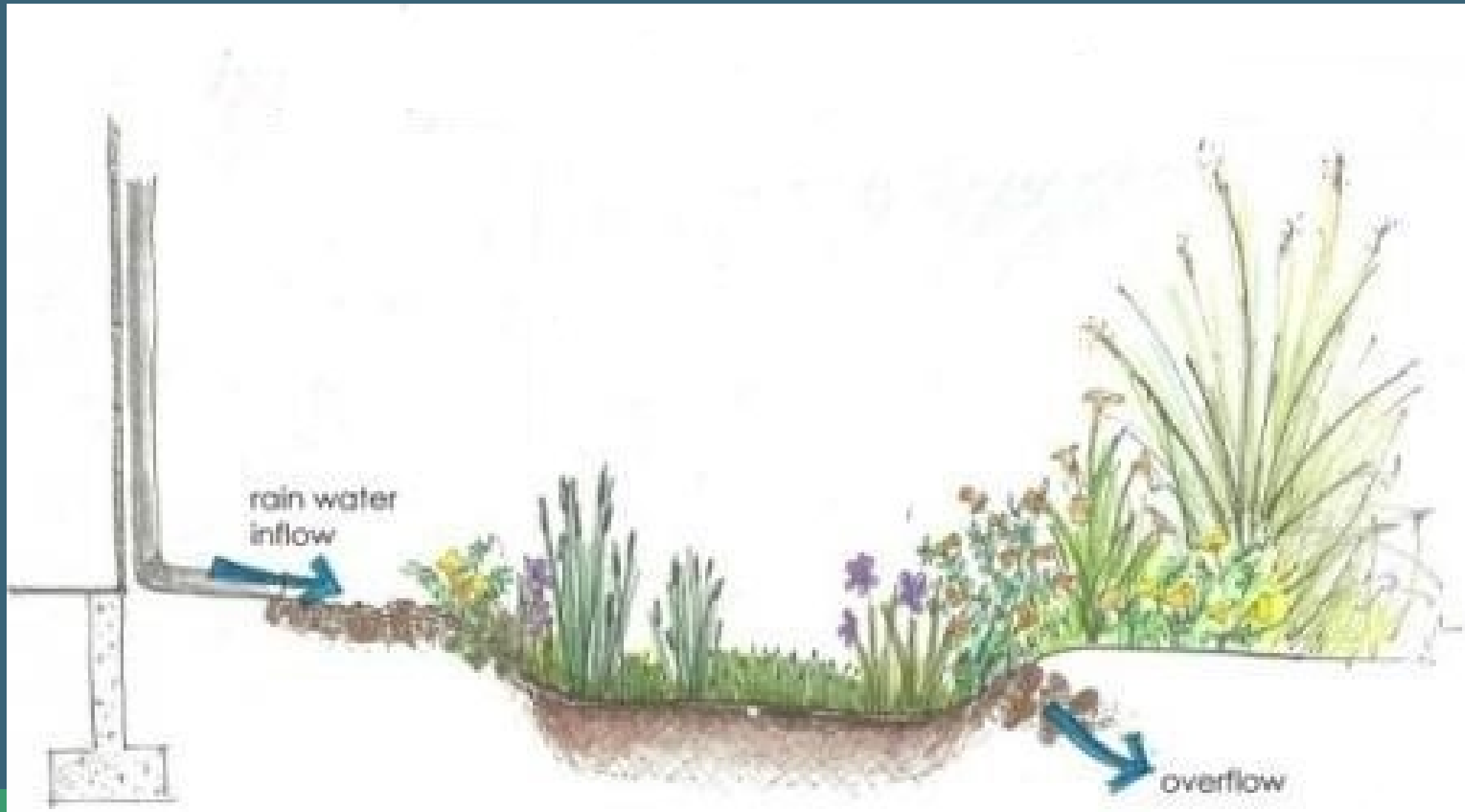
# Overland Flooding: What Does It Look Like?



# Overland Flooding: What Can Be Done?



# Overland Flooding: Grading



# Urban Flooding and Well Being

- Flooding can cause a variety of health and financial hardships
- In a survey of flood victims:
  - 84% reported stress
  - 13% reported ill health
  - 41% lost the use of part of their property
  - 63% lost valuables
  - 74% lost work hours in order to handle home repairs
- Flooding can also create air quality problems, such as mold, and is linked to respiratory problems, especially for the elderly and children



# Questions?



# Thank You!

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