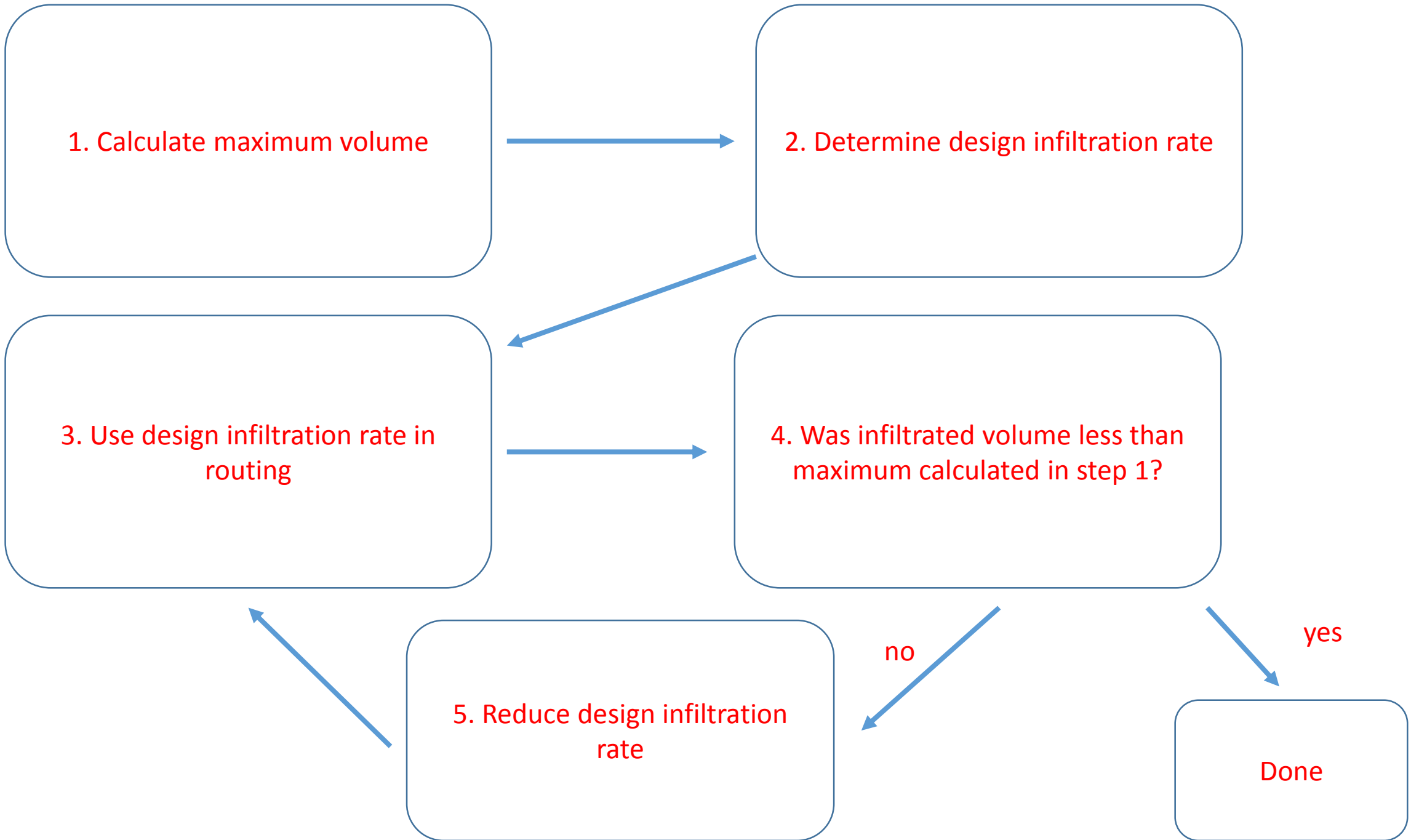


Infiltration Stakeholder 2

Gabriel Mahon
Environmental Engineer 4
Stormwater Management Unit
Bureau of Nonpoint Pollution Control
Division of Water Quality
New Jersey Department of Environmental Protection
(609) 633-7021

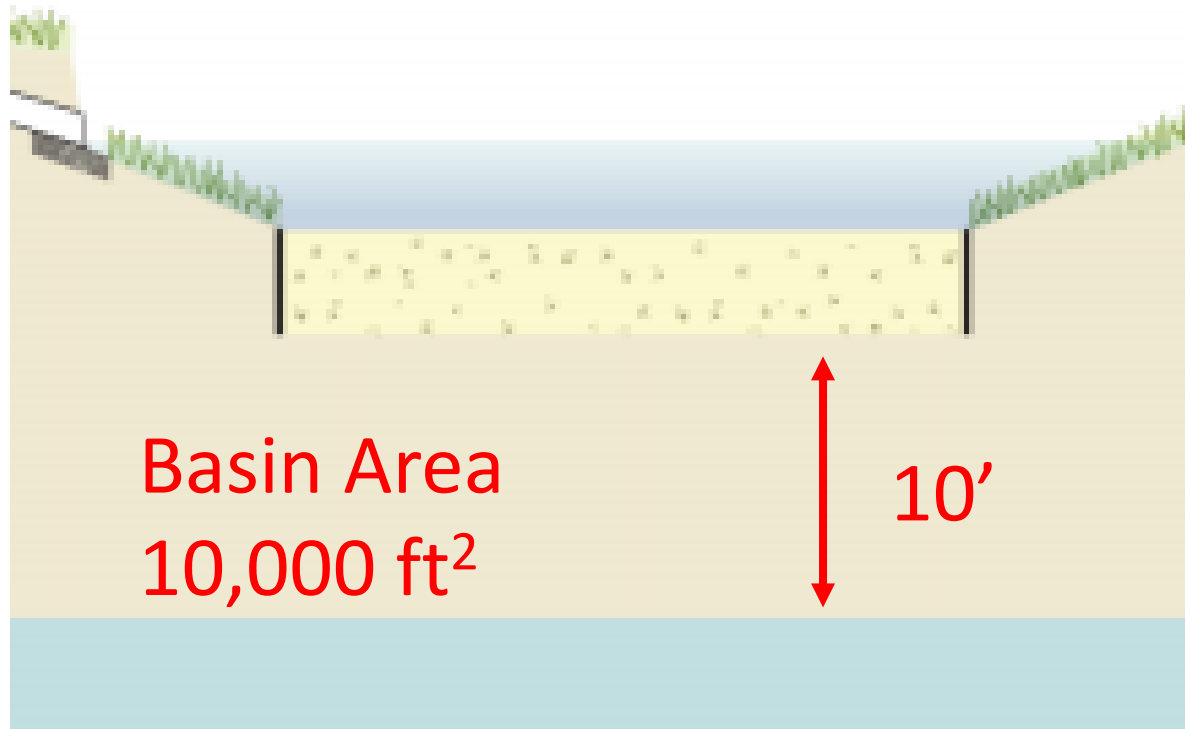
Maximum infiltration

- The lower of:
 - Maximum Volume
 - 15% of the volume of the unsaturated zone
 - WQDS volume?
 - Other volume?
 - Infiltration Rate
 - Design rate = Field tested rate X factor of safety
 - Use design rate in routing calculation



15% of the volume of the unsaturated zone

- 15% = specific yield
- groundwater mound does not reach basin bottom



Infiltration volume =

$$10' \times 10,000 \text{ ft}^2 \times 0.15 =$$

$$15,000 \text{ ft}^3$$

Water Quality Design Storm Volume (WQDS)?

- Currently assumed to infiltrate for water quality
 - Different risk associated with water quality storm vs. 100-year storm
 - Allow for 72 hours to infiltrate WQDS
 - Is time a factor?
- Is often greater than 15% of the unsaturated zone
 - Provide a model to prove it “works”?
 - What model?
 - Hantush?
 - Modflow?
 - Something else?
 - What variables?
 - How will reviewer verify?

No maximum?

- Will be greater than 15% of the unsaturated zone
- Prove maximum using a model
 - Provide a model to prove it “works”?
 - What model?
 - Hantush?
 - Modflow?
 - Something else?
 - What variables?
 - How will reviewer verify?

Infiltration Rate

- Determine field rate using approved method
- Apply factor of safety to determine design rate (current factor of safety is infinite)
- Should factor of safety be different for WQDS vs. 100-year storm?
- What does current WQDS factor of safety of 2 account for?
 - Variability in soil testing results
- What else does the factor of safety need to account for?

Factors affecting infiltration

A

- ~~Groundwater mounding~~
- ~~Maximum volume that can be infiltrated~~
- Infiltration rates change with seasons
- Infiltration rates may vary depending on [chemical] makeup of runoff
- Factors work together
- Acceptable level of risk

B

- Poor designs receiving approval
- Poor construction techniques
- Inadequate soil testing
- System not built as designed
- System not maintained