



MS4



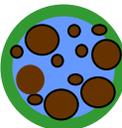
Applying LID Practices in Arizona's MS4 permit

Marie Light

LID Workshop

Pima County Regional Flood Control District

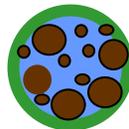
March 15, 2011 8:00a – 4:00p Tucson, AZ





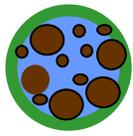
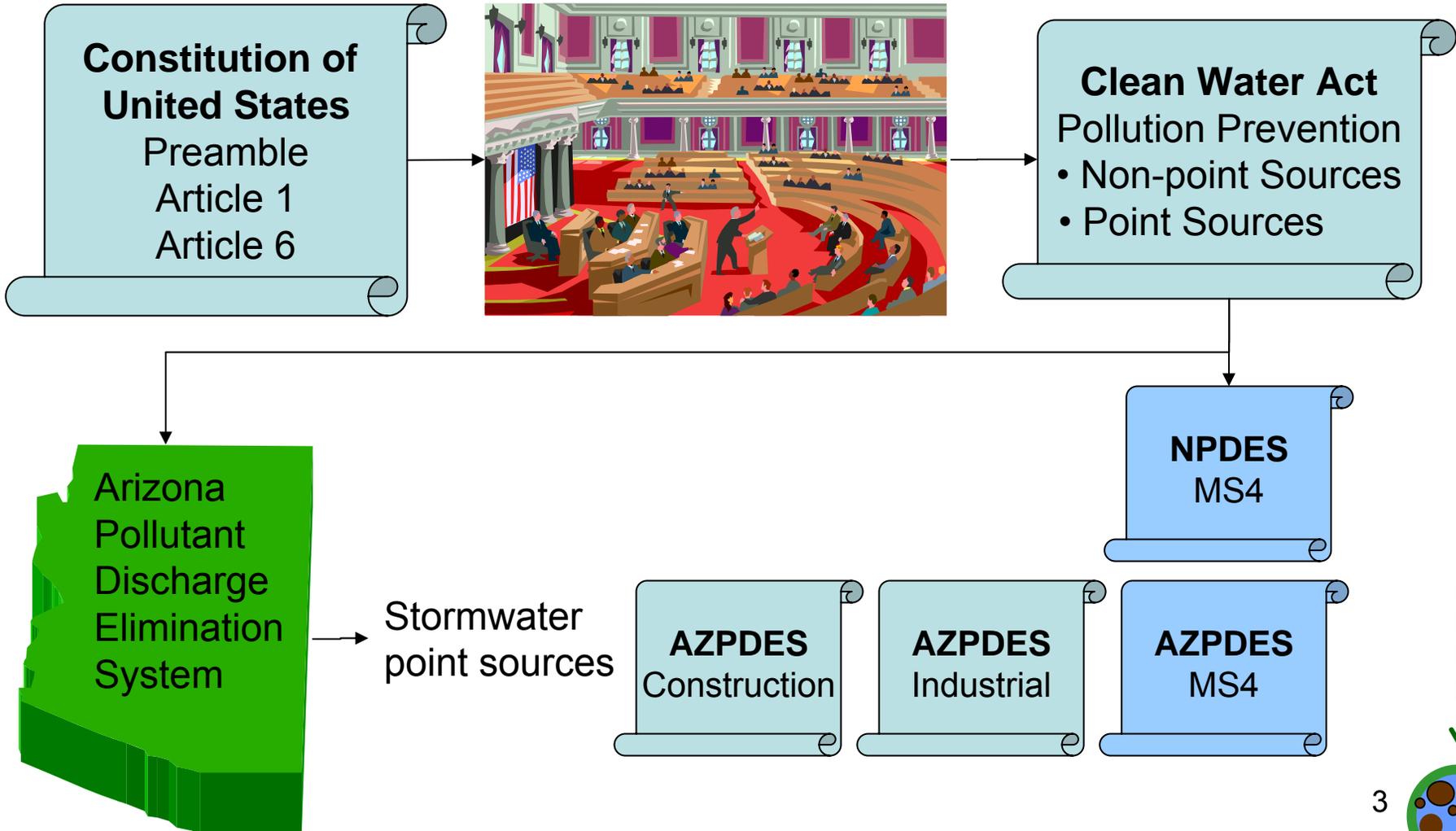
Applying LID in MS4 permits

- Regulatory environment
- Arizona's Municipal Separate Storm Sewer System (MS4) Permit
- Low Impact Development Practices
- Areas of benefit and limitation
- Next steps



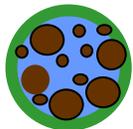
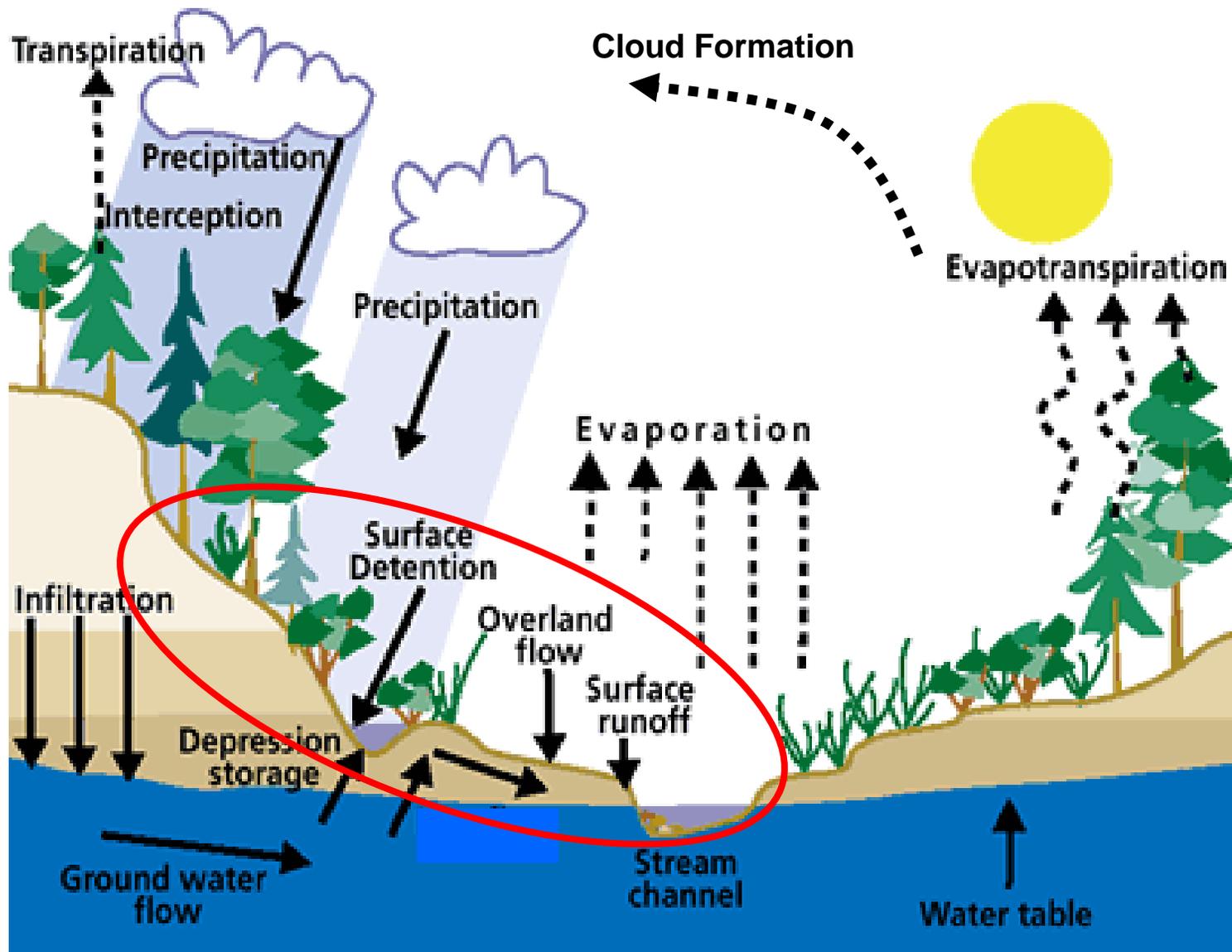


Protecting the Nation's Waters



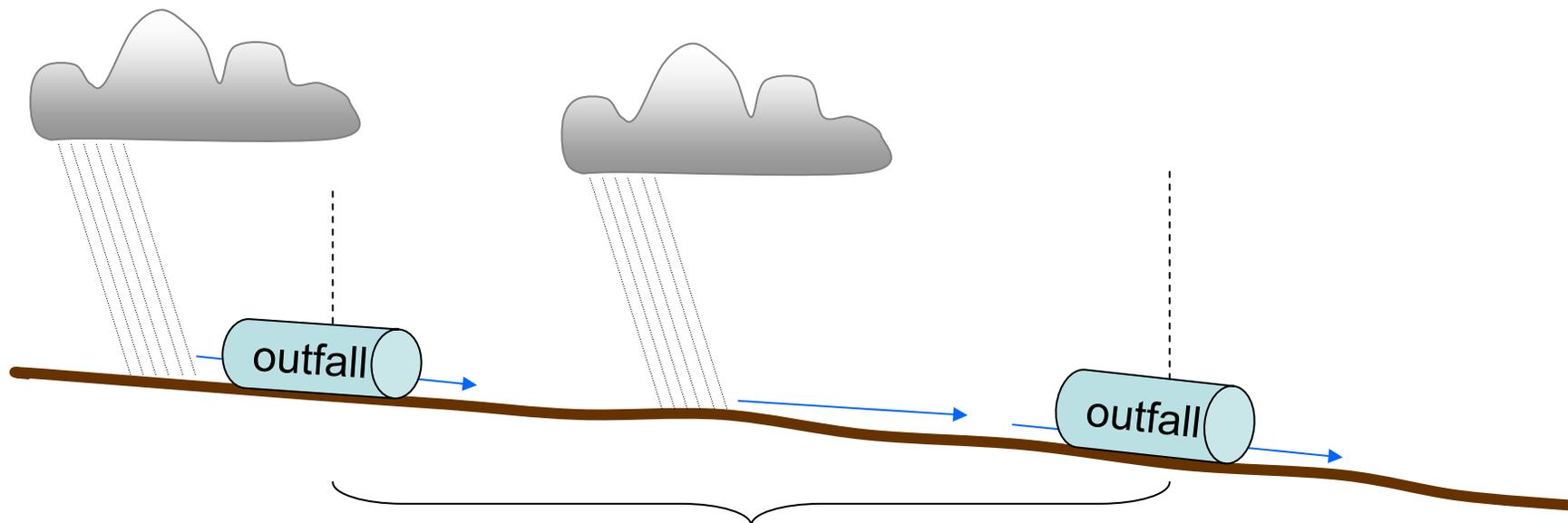


Portion of Hydrologic Cycle Regulated by MS4





Layout of an AZPDES MS4



Inflow

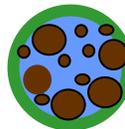
- Pipe ID > 12"
- Area > 2 acres

Municipal Separate Storm Sewer System

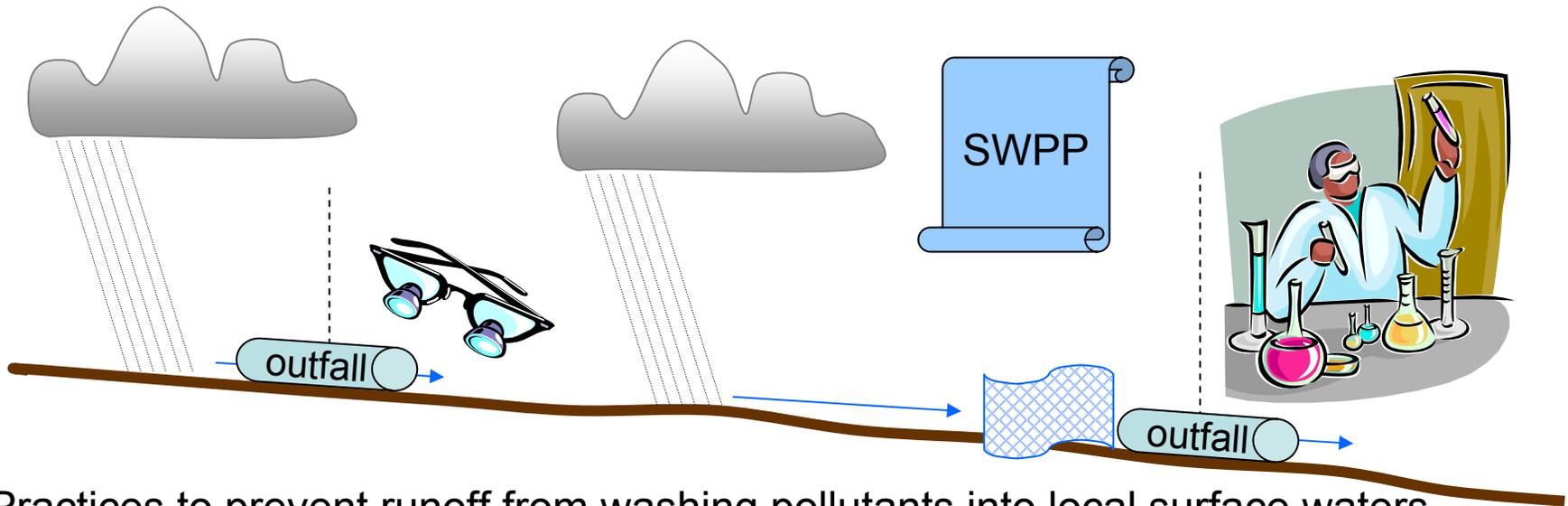
- System owned by State, County, or City that discharges to waters of the US
- Collects or convey storm water

Outflow

- Pipe ID > 36"
- Area > 50 acres
- Catchment land use is industrial



Contents of an AZPDES MS4



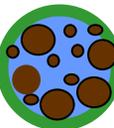
Practices to prevent runoff from washing pollutants into local surface waters

1. Define control measures in Stormwater Pollution Prevention Plan (SWPPP)
2. Implement control measures
 - Education and training
 - Inspect: Outfalls, Construction sites & Industrial facilities
 - Survey illicit discharges
 - Monitor Water quality monitoring
 - **Post-construction**
3. Evaluate control measures
4. Modify SWPPP
5. Report Annual Results



Strong support for LID

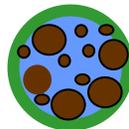
1. Federal level
 - Watershed approach
 - Sustainability programs
2. State level (requirement in MS4)
 - Evaluate how LID can reduce pollutants
 - New construction
 - Redevelopments
 - Retro-fits of commercial and residential areas
3. Local level





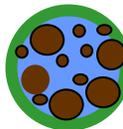
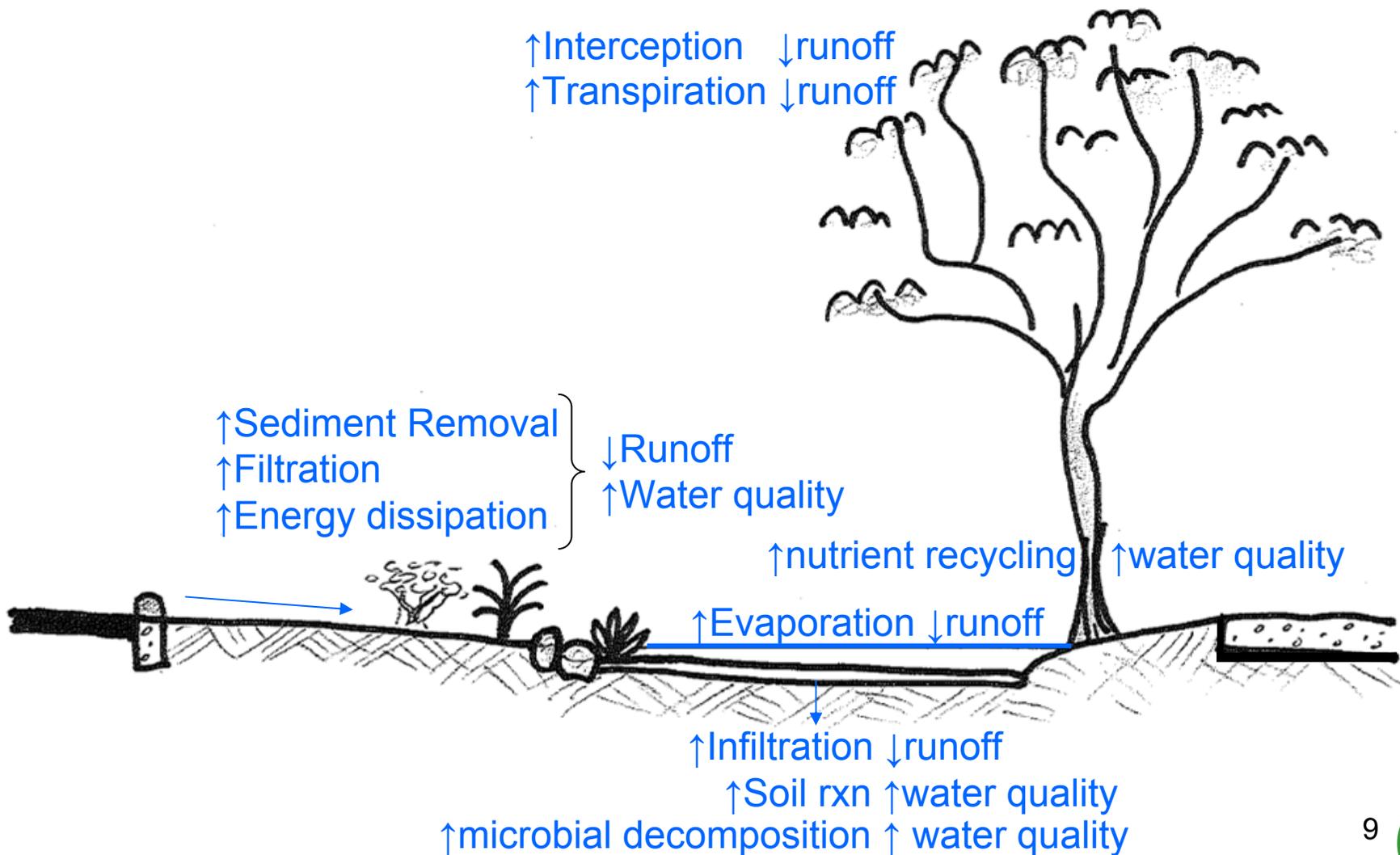
Principles of LID related to water

- Reduce volume of runoff:
 - Simulating natural runoff (& infiltration)
 - Reducing peak flows during storm events
 - Watering the ecosystem
- Improve surface water quality by:
 - Using natural chemical processes
 - Using natural biological processes



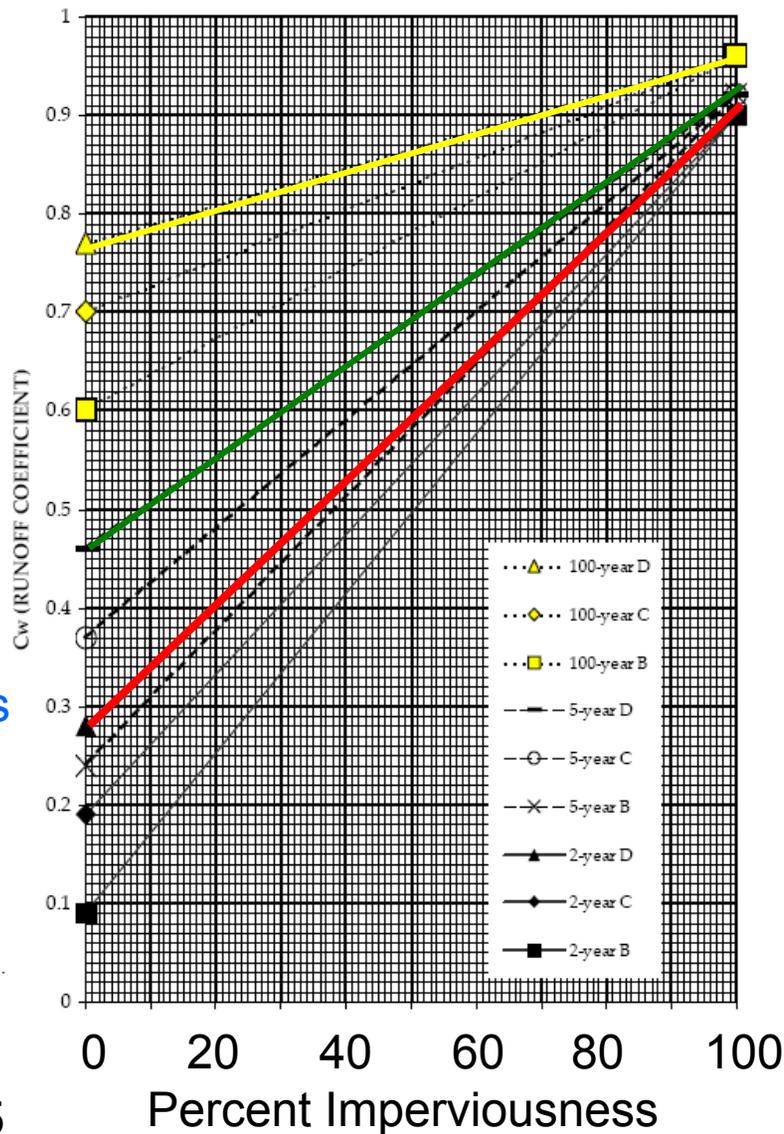


How LID benefits storm water management





LID Reduces Runoff Coefficient

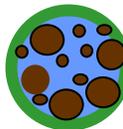


100 year flood event

5 year flood event

2 year flood event

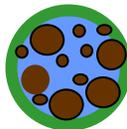
Greatest benefit at Short return intervals

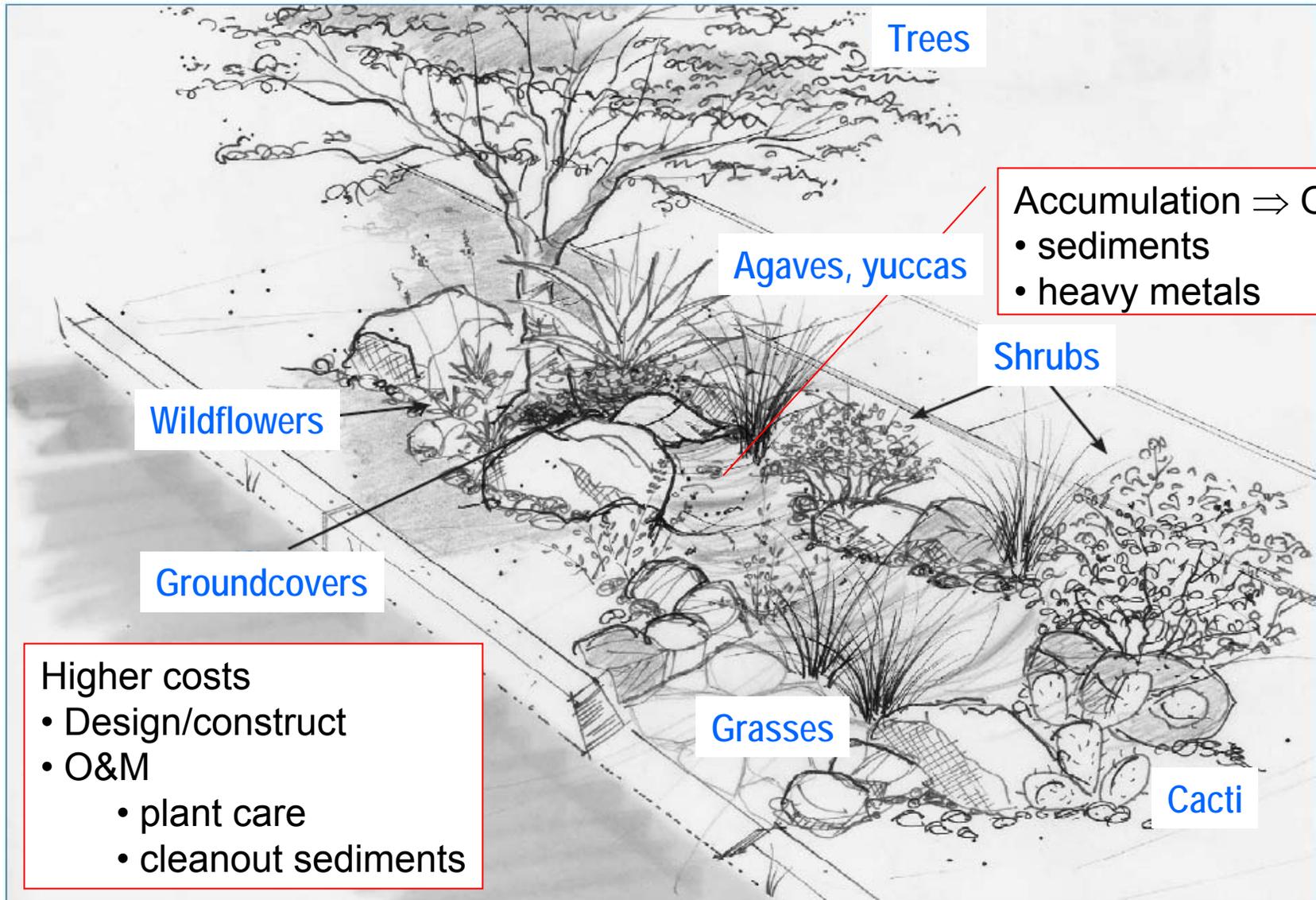




Areas Likely to see Benefits in MS4

- Roads with right-of-way available for LID
- Parking lots
- Roofs
- Landscaped areas



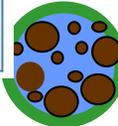


Accumulation => O&M

- sediments
- heavy metals

Higher costs

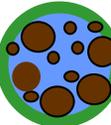
- Design/construct
- O&M
 - plant care
 - cleanout sediments





Next steps

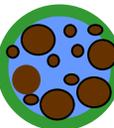
1. Research urban system
 - soil chemistry in energy dissipation areas
 - Water chemistry of storm water for land uses
 - Residential
 - Commercial
 - Industrial
2. Refine designs
3. Refine plan review process for new features/functions
4. Develop cost comparisons for LID in arid environments





Summary

1. LID endorsed at federal level
2. Evaluation of LID is required in Arizona's MS4
3. High capacity to improve
 - Flood control
 - Surface water quality
4. Next steps
 - Research
 - Refine designs and plan reviews
 - Develop support infrastructure





Contact Information

Marie Light

Pima County Stormwater Management Program

Office: 520-243-7457

E-mail: Marie.Light@deq.pima.gov

