



Board of Managers & Citizen Advisory Committee Workshop

March 11, 2024

Ecosystem Health Action Plan






HISTORICAL VEGETATION MODEL

Historical Vegetation Potential Classes

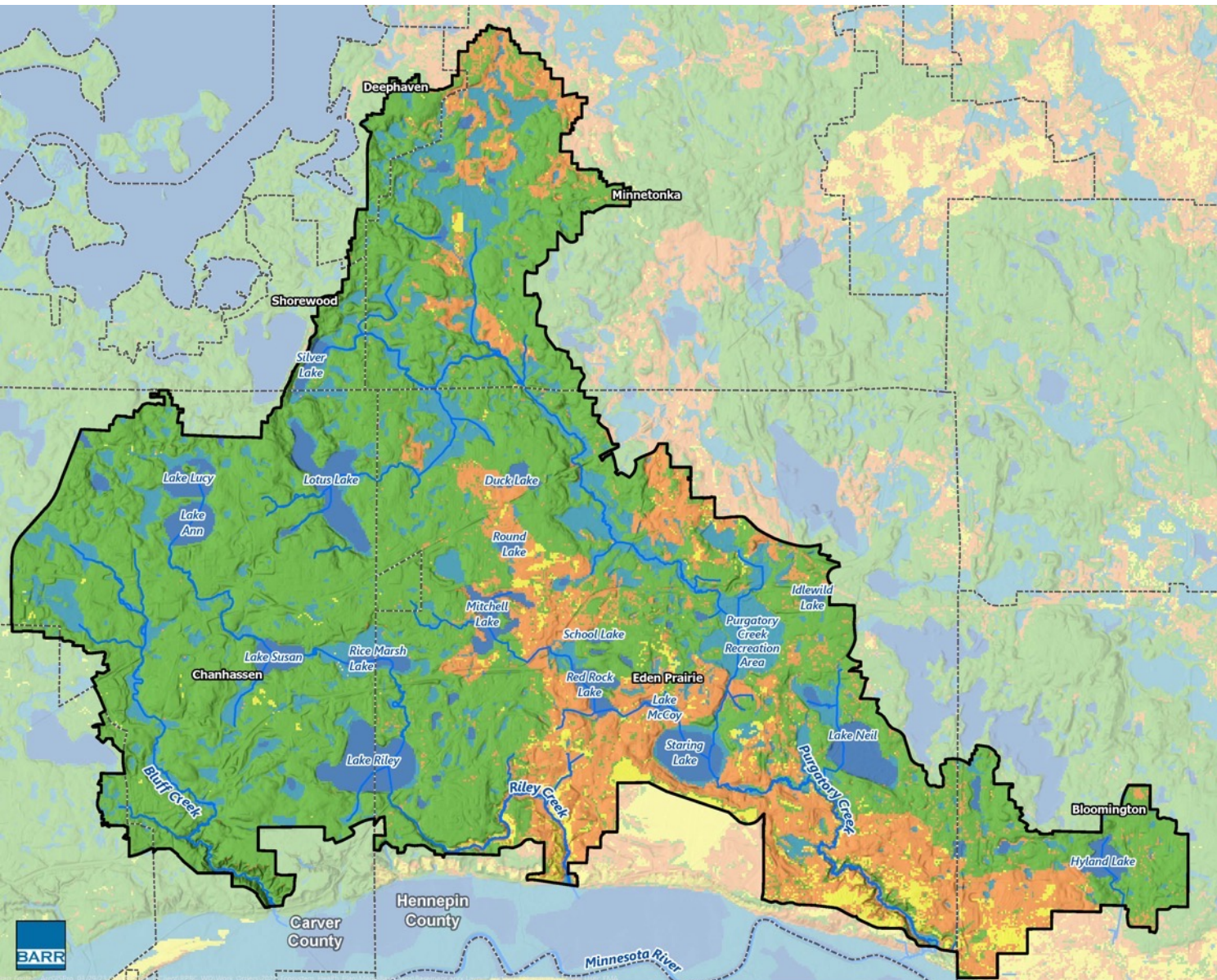
- Deciduous Forest
- Deciduous Savanna
- Surface Water
- Historic Wetlands
- Prairie

 District Legal Boundary






 Municipal Boundary

 Streams/Creeks

Data Source: MnModel Historical Vegetation Model, MnDOT, 2018



IMPERVIOUSNESS

-  Impervious Surface
-  District Legal Boundary
-  Municipal Boundary
-  Lake/Pond
-  Streams/Creeks

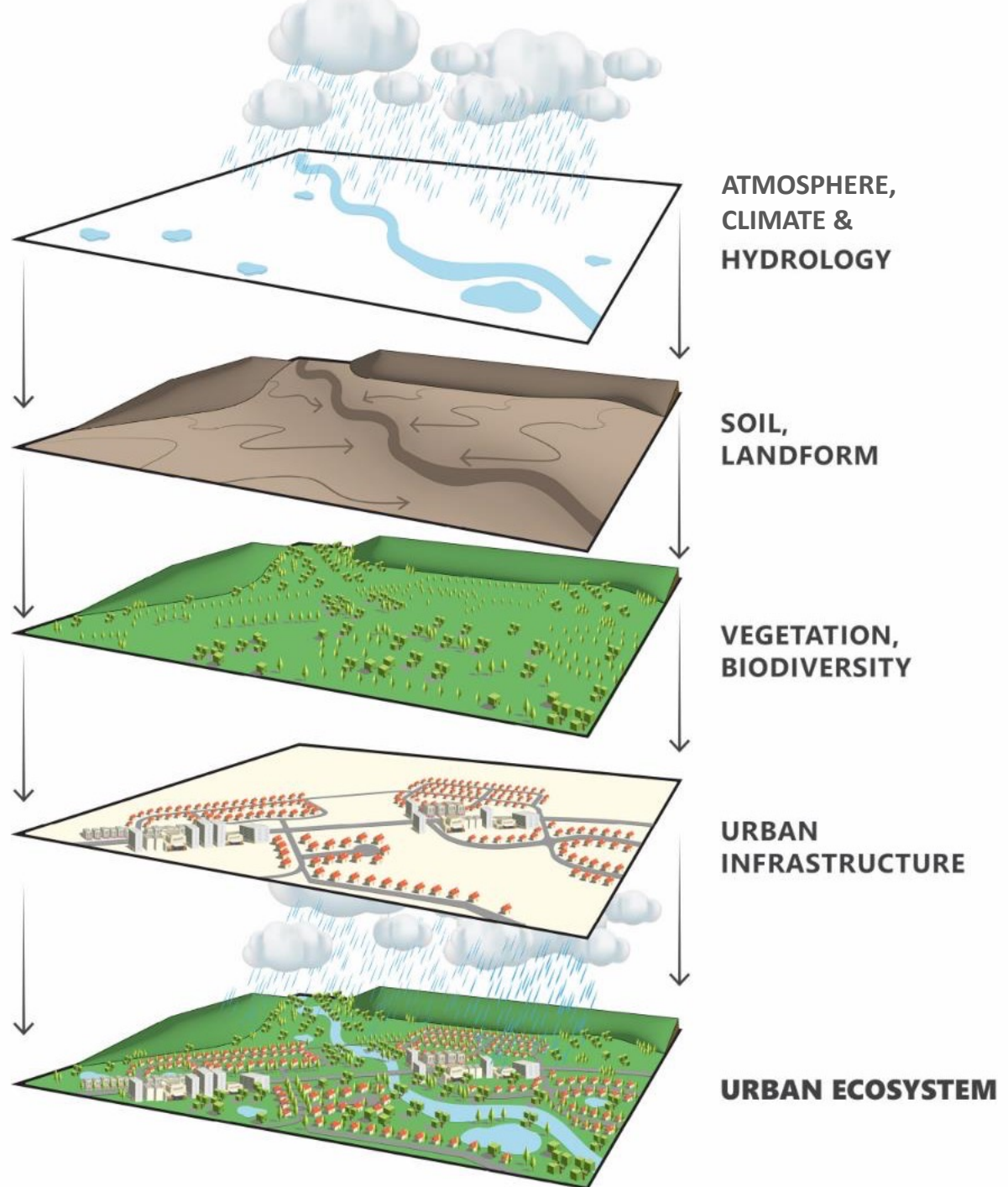
Data Source: University of MN, 2015



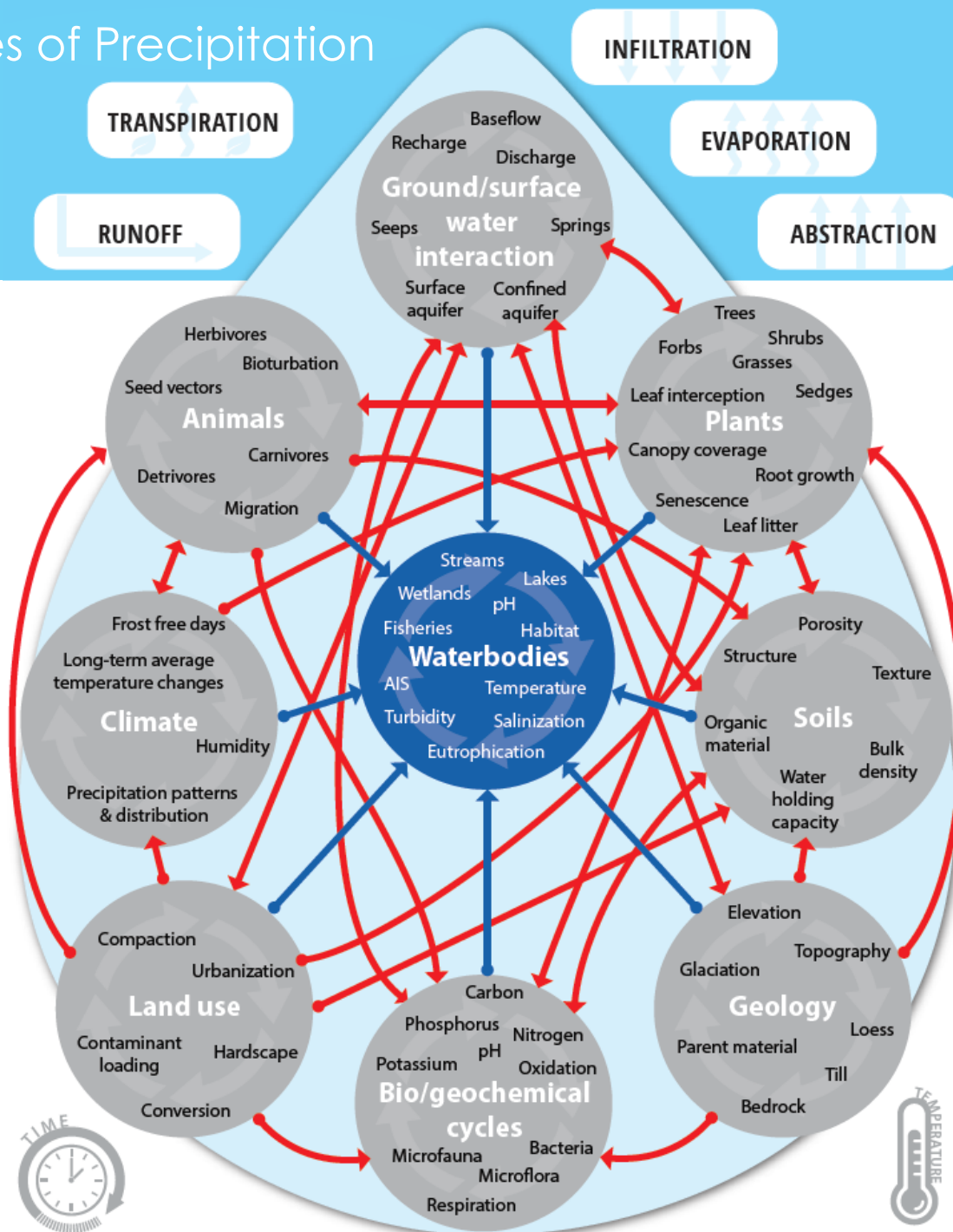
Riley Purgatory Bluff Creek Watershed District - Ecosystem Health Action Plan



Urban Ecosystem Components



The Five Fates of Precipitation



Landcover in the District can be categorized into:

Green

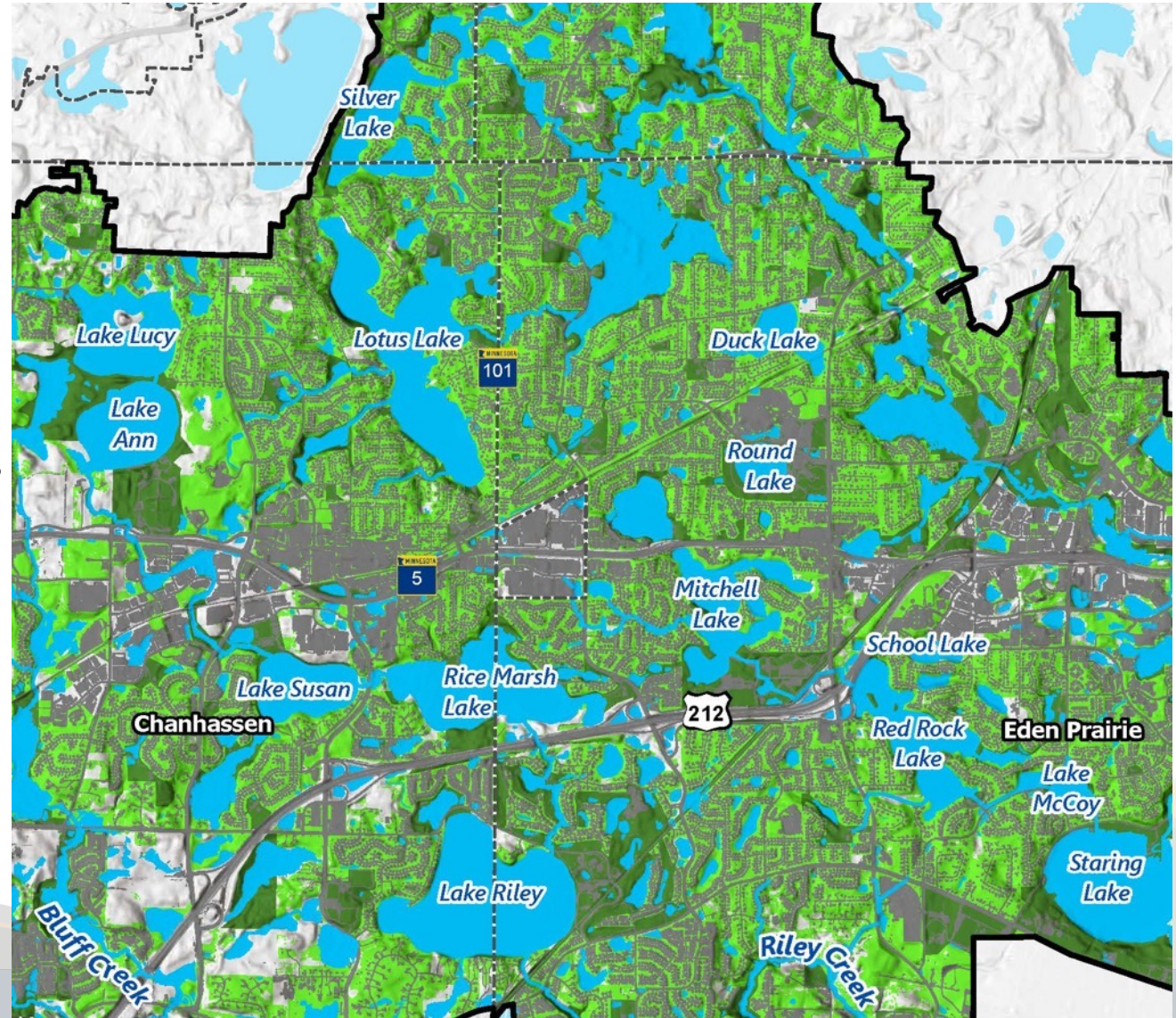
- Lawn
- Woodlands
- Old field vegetation
- Agriculture

Gray

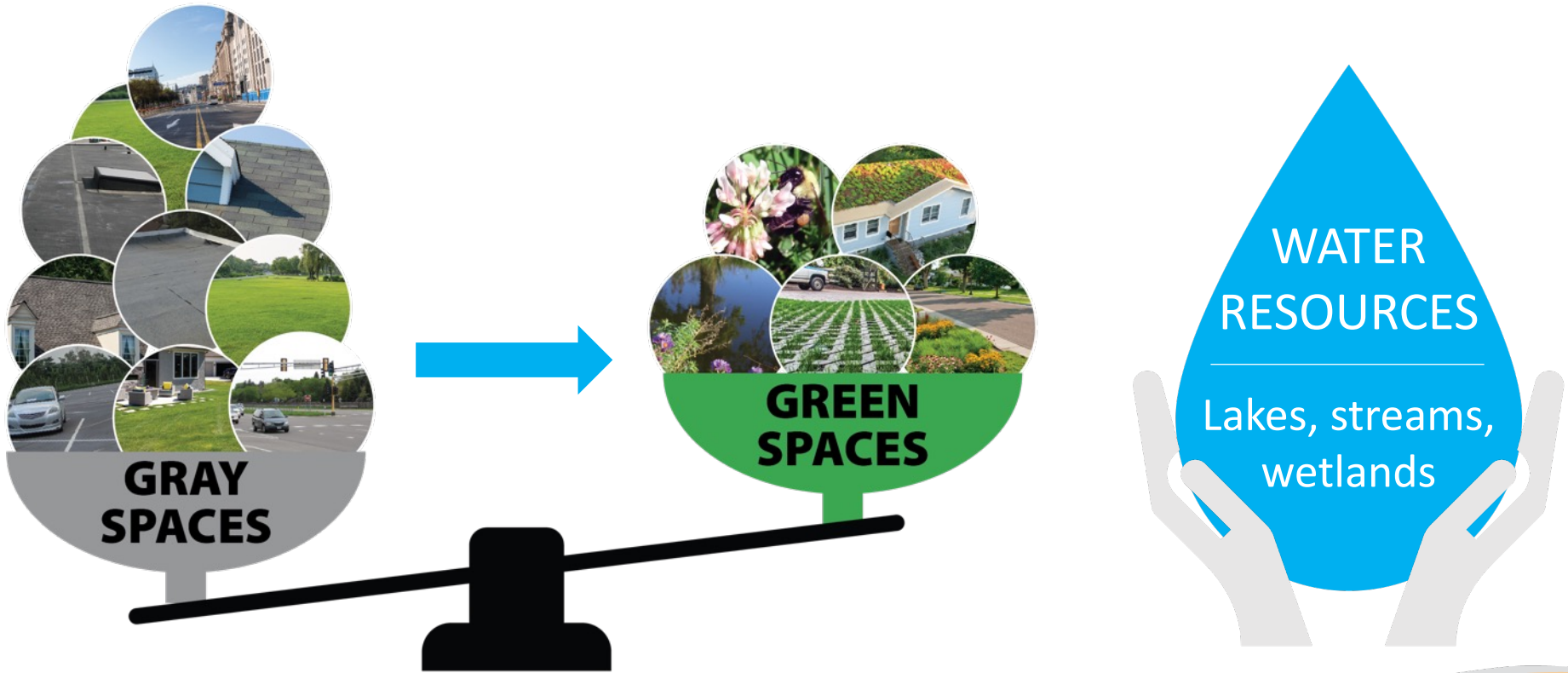
- Streets, highways
- Parking lots, driveways
- Buildings, homes

Blue

- Streams
- Lakes
- Wetlands



Goal: Expand the green and cover/shrink the gray to protect the blue.



How do we meet this goal?

Cover/shrink the gray

- Implementing low impact development
- Implementing conservation design practices
- Building walkable communities
- Transitioning to green roofs
- Reducing impervious surfaces
 - Smaller parking lots
 - Narrow streets
 - Taller, not wider buildings

Expand the green

- Preserving existing open space
- Transforming lawns to prairies
- Restoring degraded natural areas



Tools at our disposal. Are there others?

Policy and Regulation

- Development regulations
- Landscape ordinances
- Runoff treatment requirements and permits
- Soil protection rules


Planning

- City Comprehensive Plans
- Watershed District Ten Year Plan
- State agencies
- Federal agencies

Publicly Funded Projects

- City facilities, streets, and park projects
- Watershed District stormwater management

Education and Outreach

- Classes and trainings
 - Grants
 - Cost share
- 

Technical Advisory Panel

Cities

City of Chanhassen
City of Chaska
City of Eden Prairie
City of Minnetonka
City of Bloomington
City of Shorewood

State

MN Board of Water and Soil Resources
MN Department of Natural Resources

Districts

Carver Soil & Water Conservation District
Nine Mile Creek Watershed District
RPBCWD Citizen Advisory Committee
RPBCWD manager (Jill Crafton)
RPBCWD staff

Federal

Natural Resources Conservation Service
US Fish and Wildlife Service

Counties

Hennepin County
Carver County

Consultants

EntoVentures (Dr. Ann Journey)
BARR Engineering consultants



Workshop Series



Workshop 1

- Defined a healthy urban ecosystem as a balance of natural and developed spaces.
- Identified barriers

Workshop 2

- Identified gaps in how we address ecosystem management

Workshop 3

- Identified solutions

Workshop 4

- Identified plausible action for the Watershed District to take

Ecosystem Function Impairment & Potential Recovery

- **Altered hydrology of green space**
- **Degraded soil**
- **Loss of Biodiversity and Habitat**
- Wetland degradation
- Lake degradation
- Stream degradation
- **Surface water/groundwater interaction**
- **Human perception of urban ecology**
- **Urban heat island**
- **Climate change**

Ecosystem Malfunction – Soil Degradation/Sealing of Land Surface



Historic land uses degraded soil



Land surface sealing through soil compaction

Strategies for Recovery

- Enforce existing District soil regeneration rule
- Teach about soil food web
- Offer technical assistance on soil improvement
- Work with cities to influence urban development design prior to permit application
- Require low impact development & preservation of green space

Ecosystem Malfunction – Altered Hydrology of Green Space



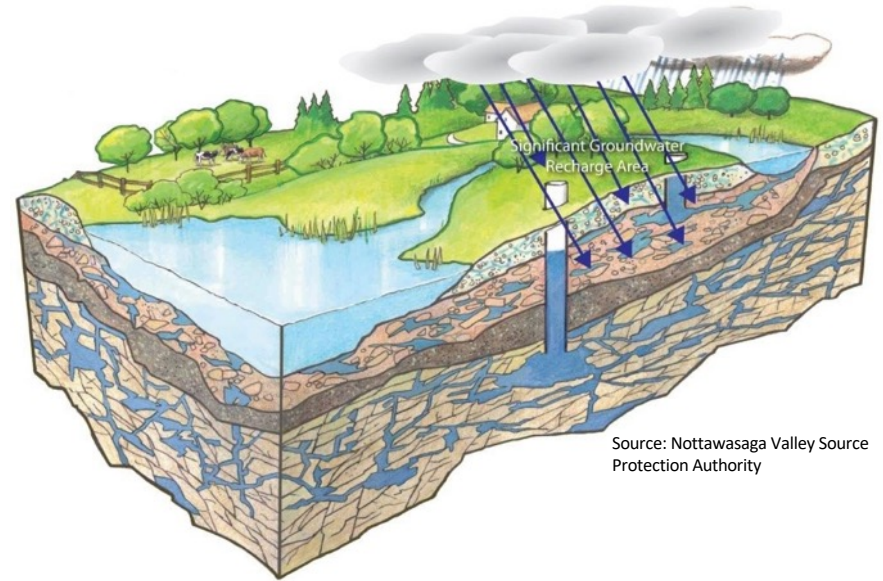
Strategies for Recovery

- Restore native plant communities
- Provide regular maintenance to natural areas
- Continue managing deer populations
- Develop a volunteer Pest Detector Program
- Provide incentives for invasive species control
- Provide cost-share program for native plantings
- Continue building education programs

Ecosystem Malfunction – Surface Water/Groundwater Interaction



Source: Blue Ridge Corridor Alliance



Source: Nottawasaga Valley Source Protection Authority

Sealing the land surface limits surface aquifer recharge.

Strategies for Recovery

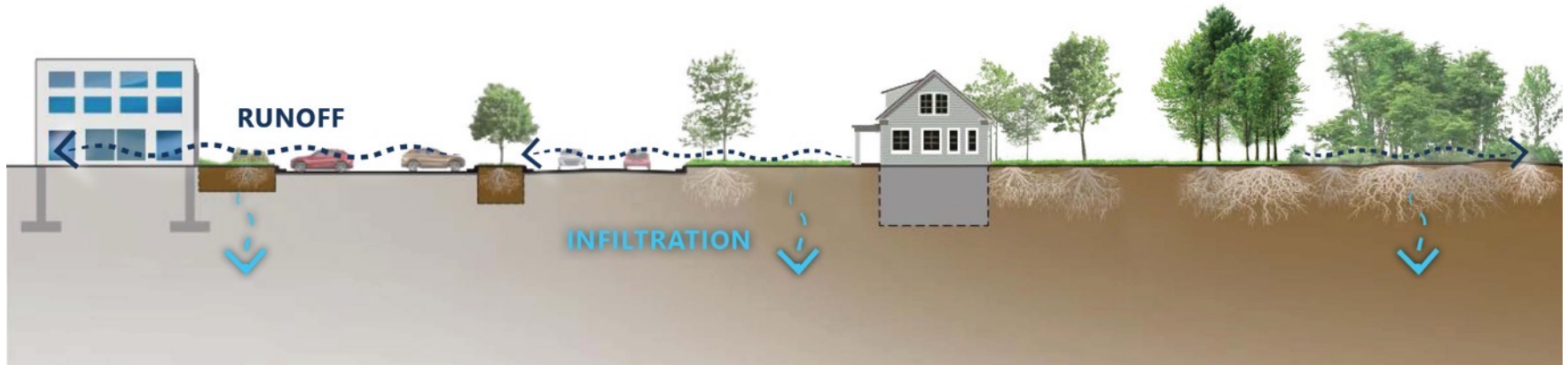
- Establish a monitoring well network and monitoring program to understand changes
- Develop a groundwater-surface water model
- Establish baseflow thresholds for creeks, wetlands, and lakes
- Implement surficial groundwater conservation and recharge measures

Land alterations to improve ecosystem function

LIMITED BIODIVERSITY

LIMITED BIODIVERSITY

BEFORE



IMPROVED BIODIVERSITY

IMPROVED BIODIVERSITY

AFTER



Green roof

Reduction of unnecessary parking, implement BMPs

Expanded tree rooting areas under pavement, plant street trees, and plant pollinator species

Reduction of lawn by planting of pollinator species

Remove buckthorn in woodlands

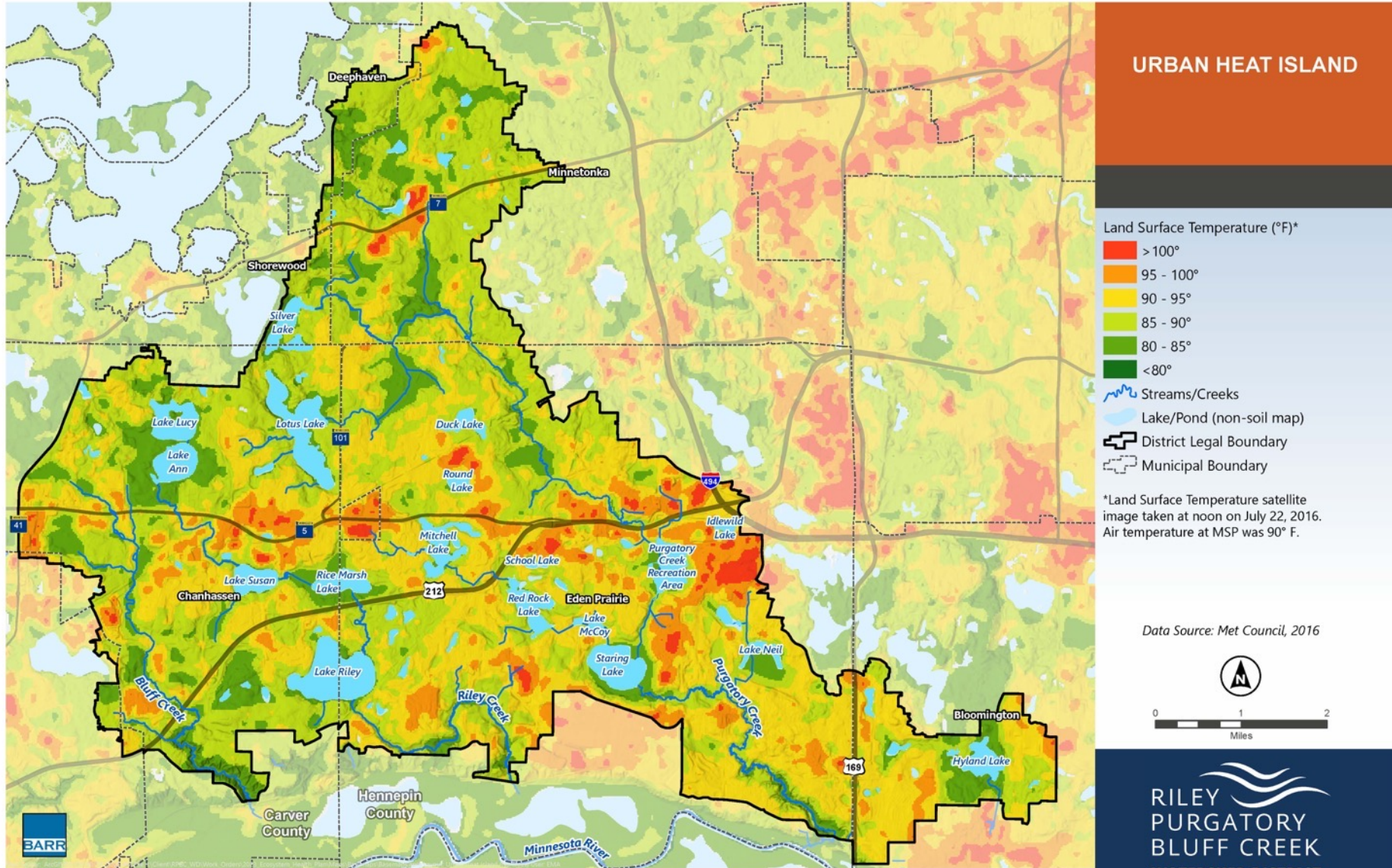
Ecosystem Malfunction – Human Perception



Strategies for Recovery

- Demonstrate good stewardship in District projects
- Further engage and partner with City leadership in programs that benefit the ecosystem, e.g. preserve open space
- Expand current education efforts
- Encourage residents to participate in activities that allow them to learn about the environment

Ecosystem Malfunction – Urban Heat Island Effect



Ecosystem Malfunction – Urban Heat Island Effect



Strategies for Recovery

- Preserve green space
- Implement low impact development
- Require stormwater features to lower discharge temperatures to that of ambient soil.
- Work with cities to require less impervious surfaces in parking lots, developments, and streets.
- Promote the implementation of green roofs as a viable BMP
- Promote soil health to extend the life of tree in the urban environment.

Ecosystem Malfunction – Loss of Biodiversity and Habitat



Strategies for Recovery

- Restore native plant communities
- Provide regular maintenance to natural areas
- Continue managing deer populations
- Develop a volunteer Pest Detector Program
- Provide incentives for invasive species control
- Provide cost-share program for native plantings
- Continue building education programs

Ecosystem Malfunction – Climate Change



Strategies for Recovery

- Complete vulnerability & risk assessment for District
- Develop a climate adaptation plan with cities within the District
- Use Atlas 14 & predicted climate data to design stormwater features
- Require (not encourage) green infrastructure BMPs
- Identify critical infrastructure & flood mitigation measures
- Preserve flood storage and require greater than 1:1 compensatory flood storage replacement

Breakout Sessions

Review District's **DRAFT** Mission Statement

1. Review red-lined mission statement
2. Small group discussion
 - Are these revisions going in the right direction? Yes, no
 - What changes would you make?
 - What's missing/unclear?
3. Report back to large group

Prioritization Exercise

1. Visit the seven stations around the room
2. Reflection –
 - 1. What do you notice/themes?**
 - 2. What surprises you?**
 - 3. What's missing?**
3. Large group report back
4. Prioritize actions through dot exercise
6. Report back - What new actions will the District take?

What's Next

We will explore:

- How can we address gaps in ecosystem protection/improvement?
- Where can we be most effective?



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