

Planning Water-wise Communities in the West

Sustaining Colorado Watersheds Conference

Clark Anderson, Colorado Director
The Sonoran Institute

SONORAN INSTITUTE

Shaping the Future of the West

October 4, 2011

Shaping the Future of the West

The Sonoran Institute inspires and enables community decisions that respect the land and the people of the West.

healthy landscapes • vibrant economies • livable communities

Building Water-wise Communities

Past, Present and Future

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Third level
Fourth level
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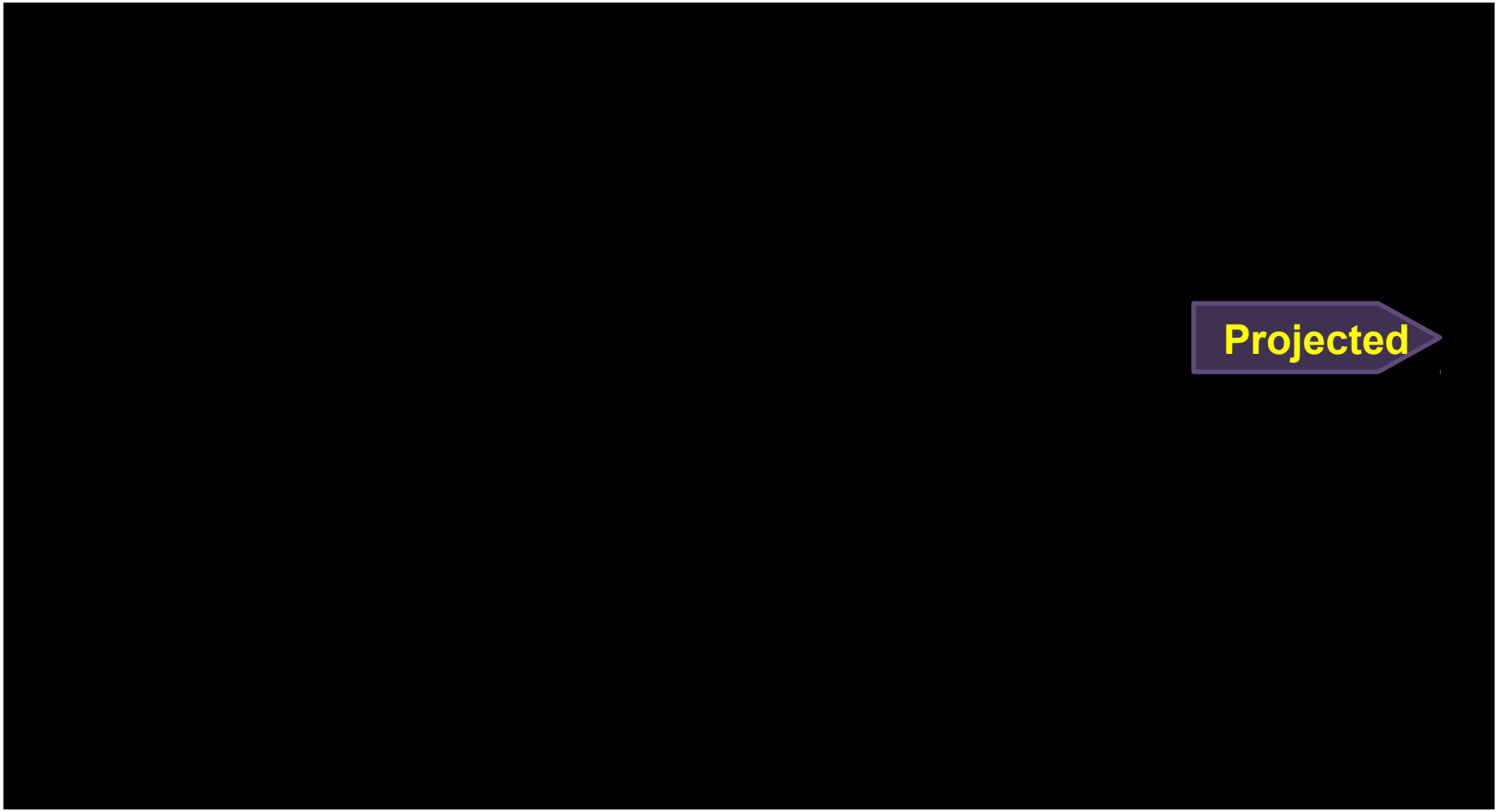
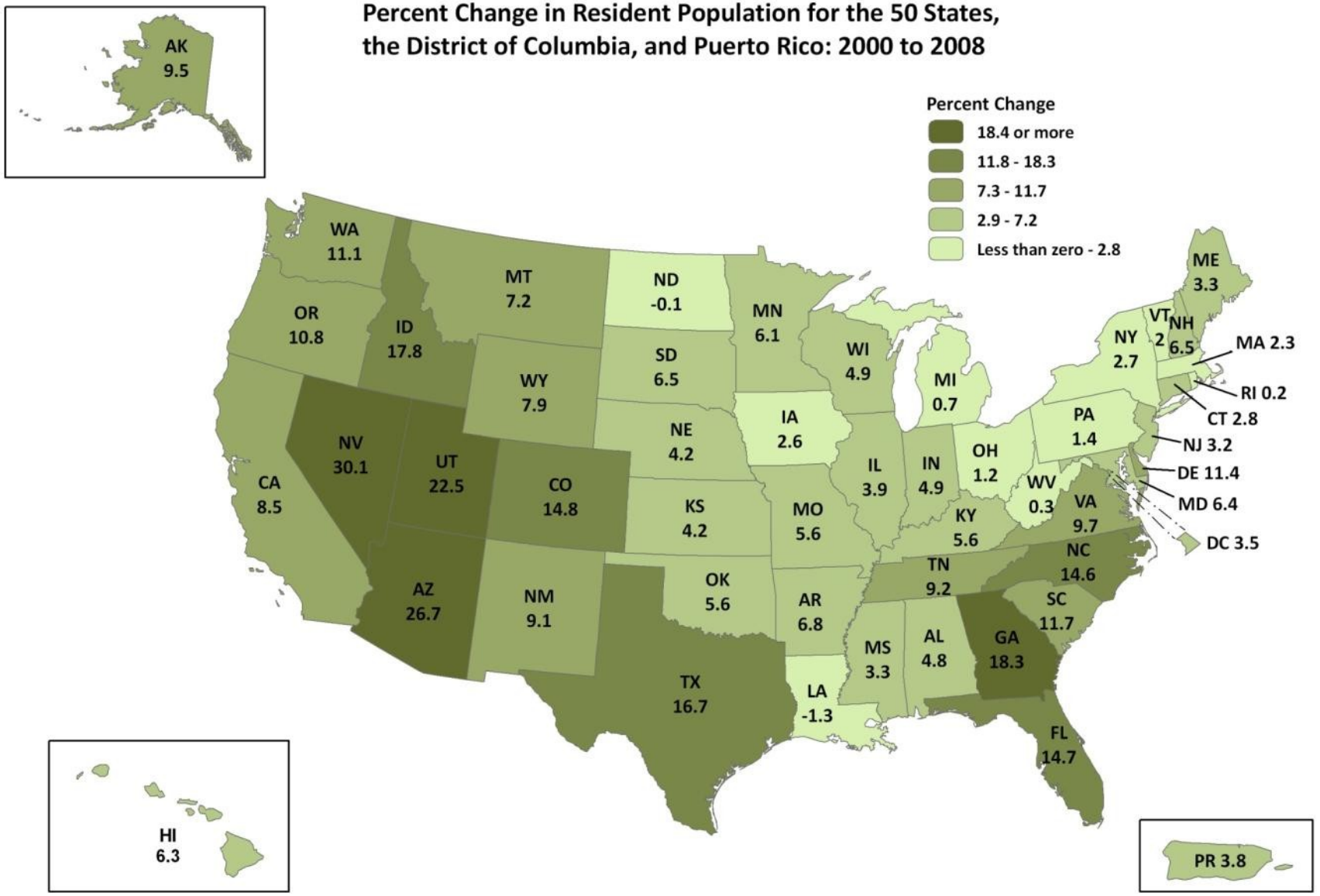
Western States Population Growth 1940 - 2025

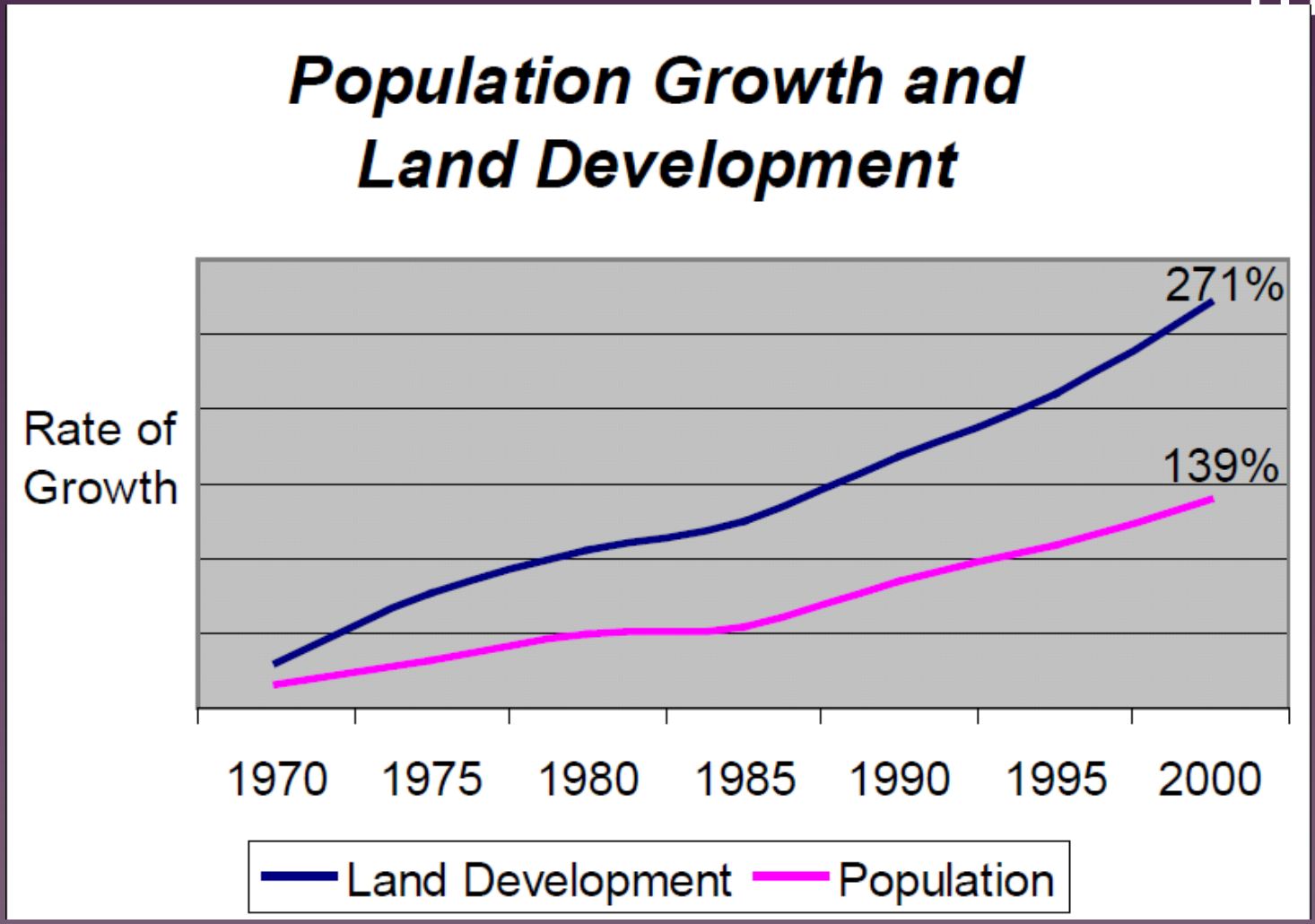


Western States - Fastest Growing Region in the US



Source: U.S. Census Bureau

How we've been growing matters most



Growth at the edge

Low density residential

Single use residential

Commercial strips

Big box commercial

Car habitat

Car habitat

Car Habitat

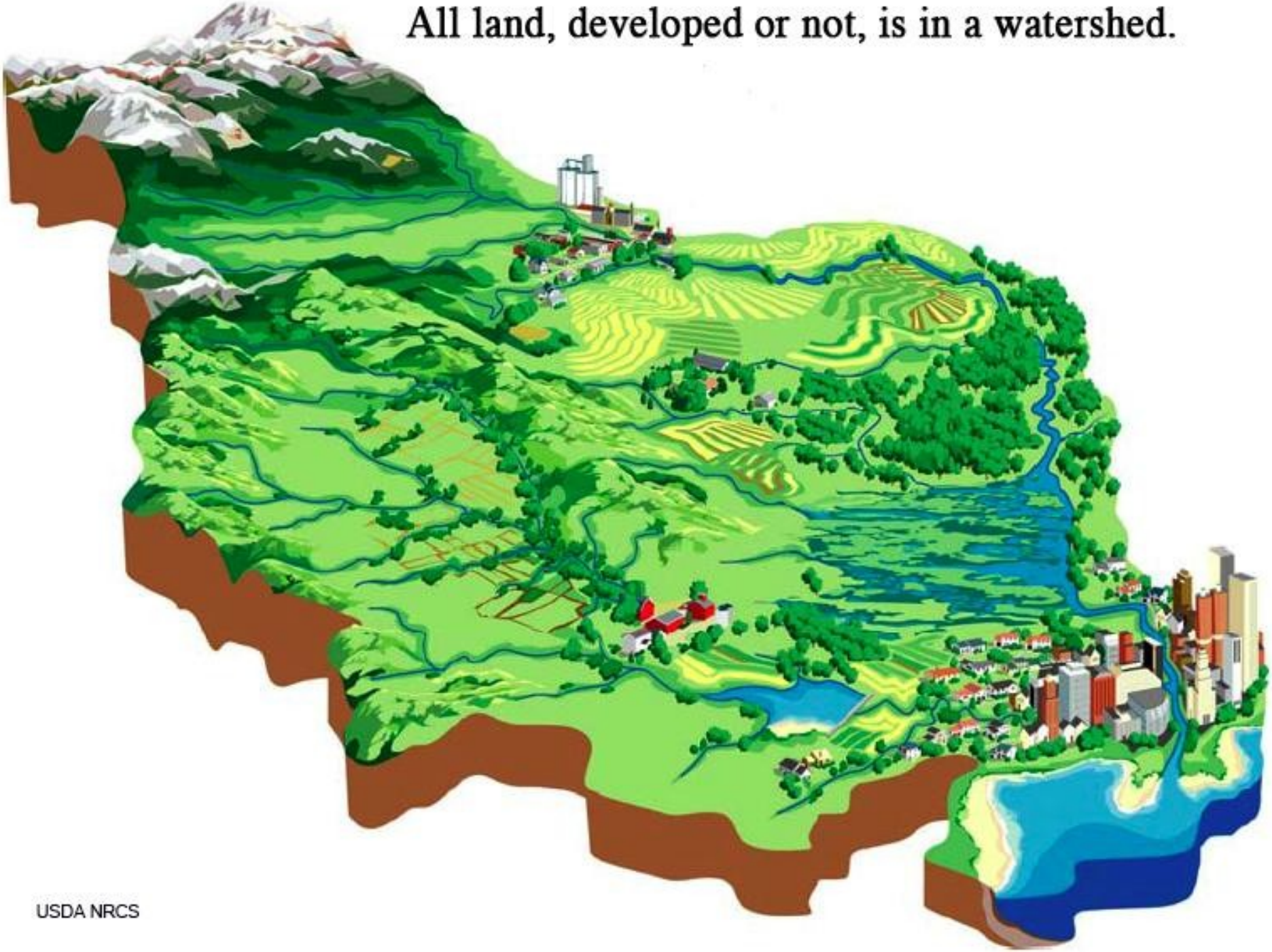
Development Patterns

Development Patterns

Development Patterns

So what?

All land, developed or not, is in a watershed.



USDA NRCS

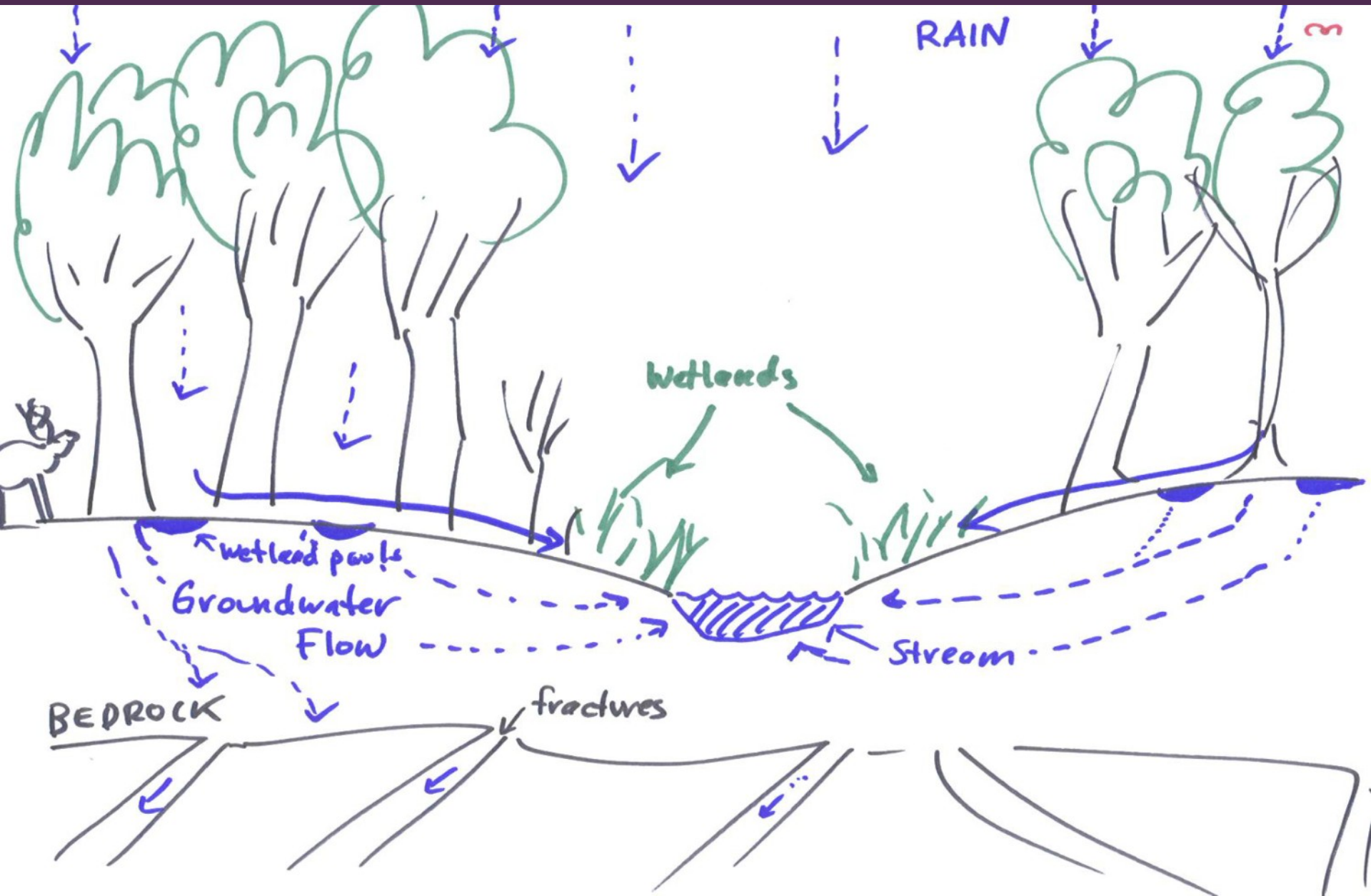
Natural Infrastructure

What happens….

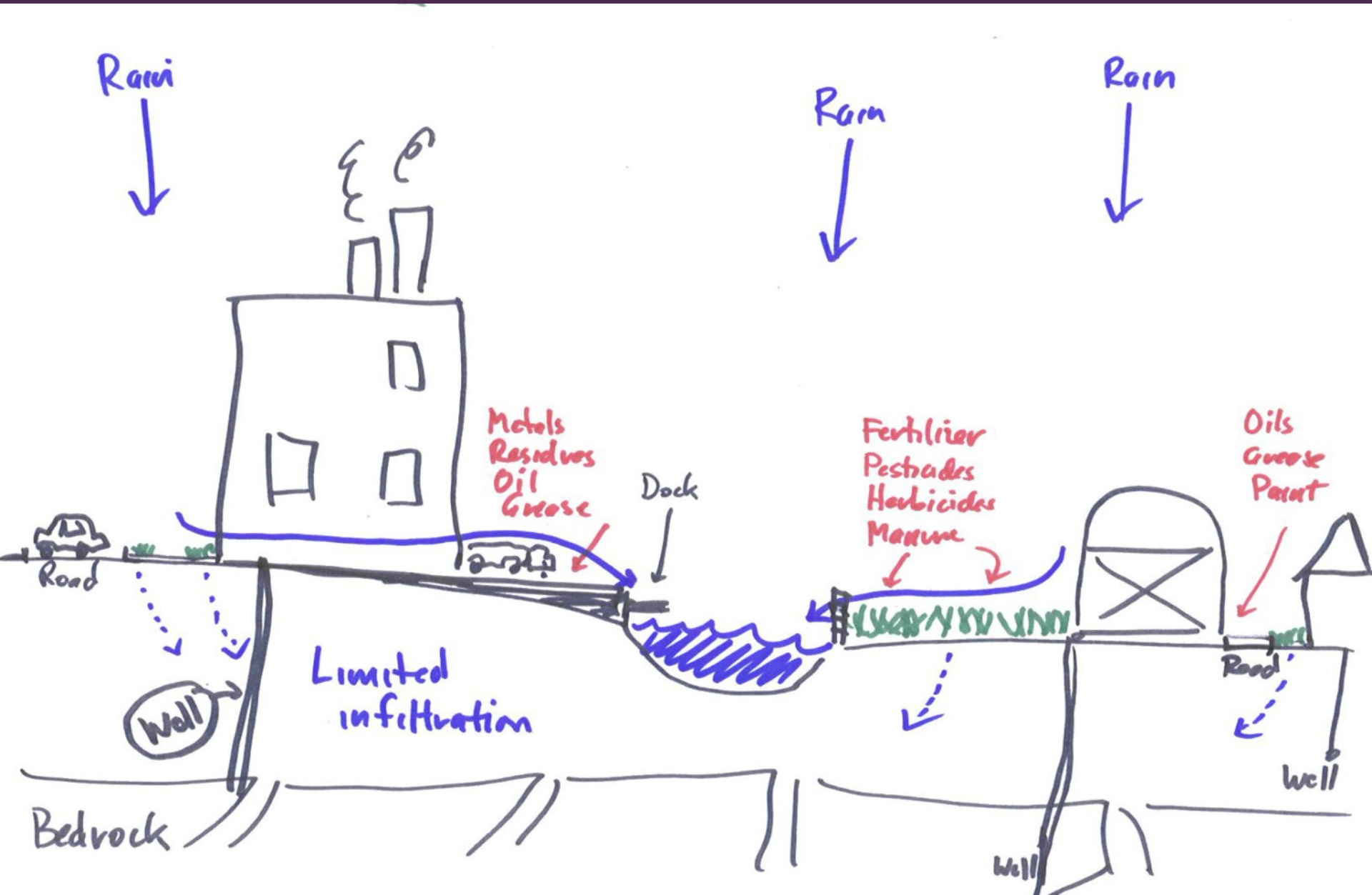
When we go from this…

To this?

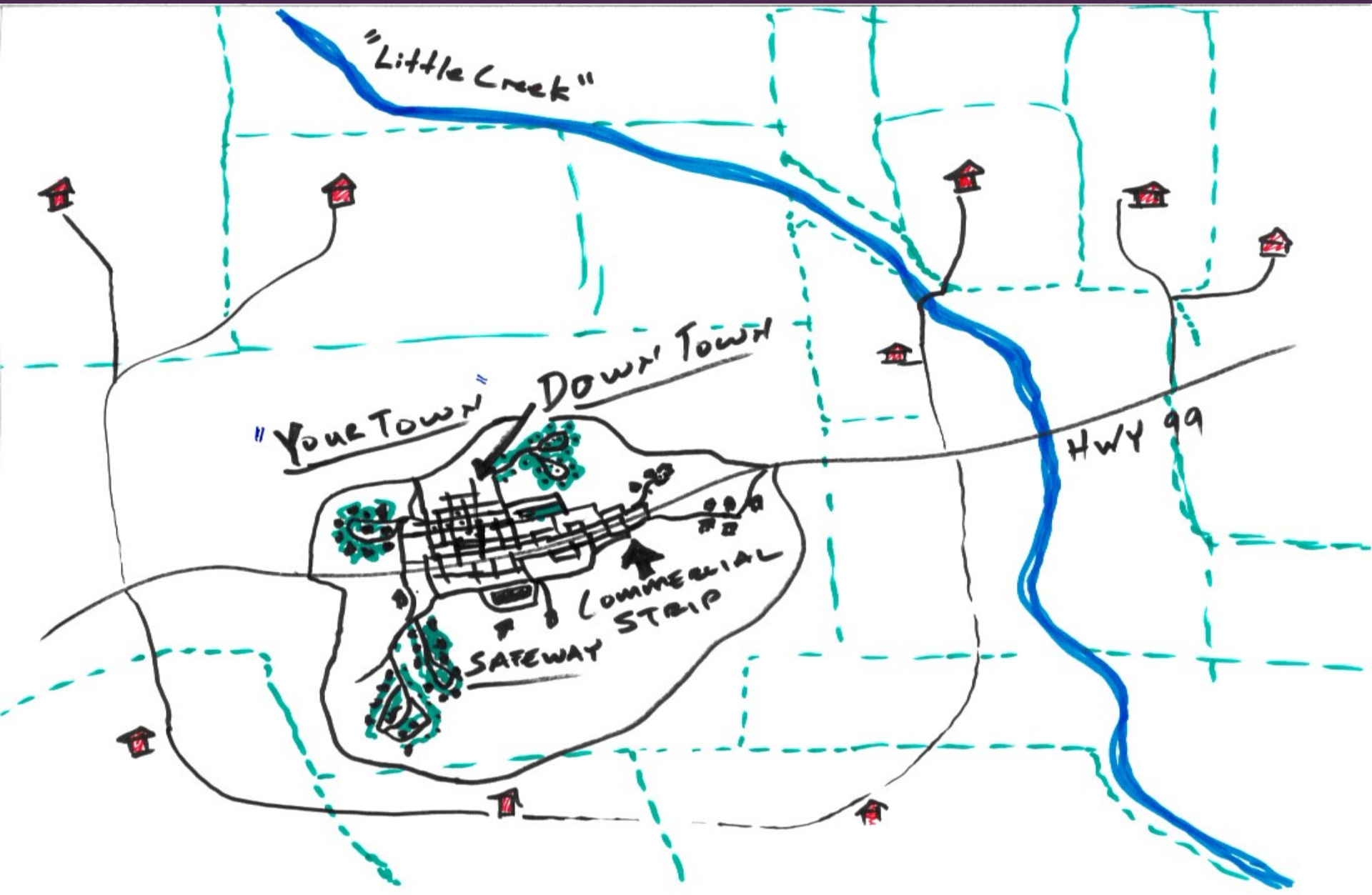
Before


RAIN
Wetlands
wetland pools
Groundwater
Flow
Stream
BEDROCK
fractures

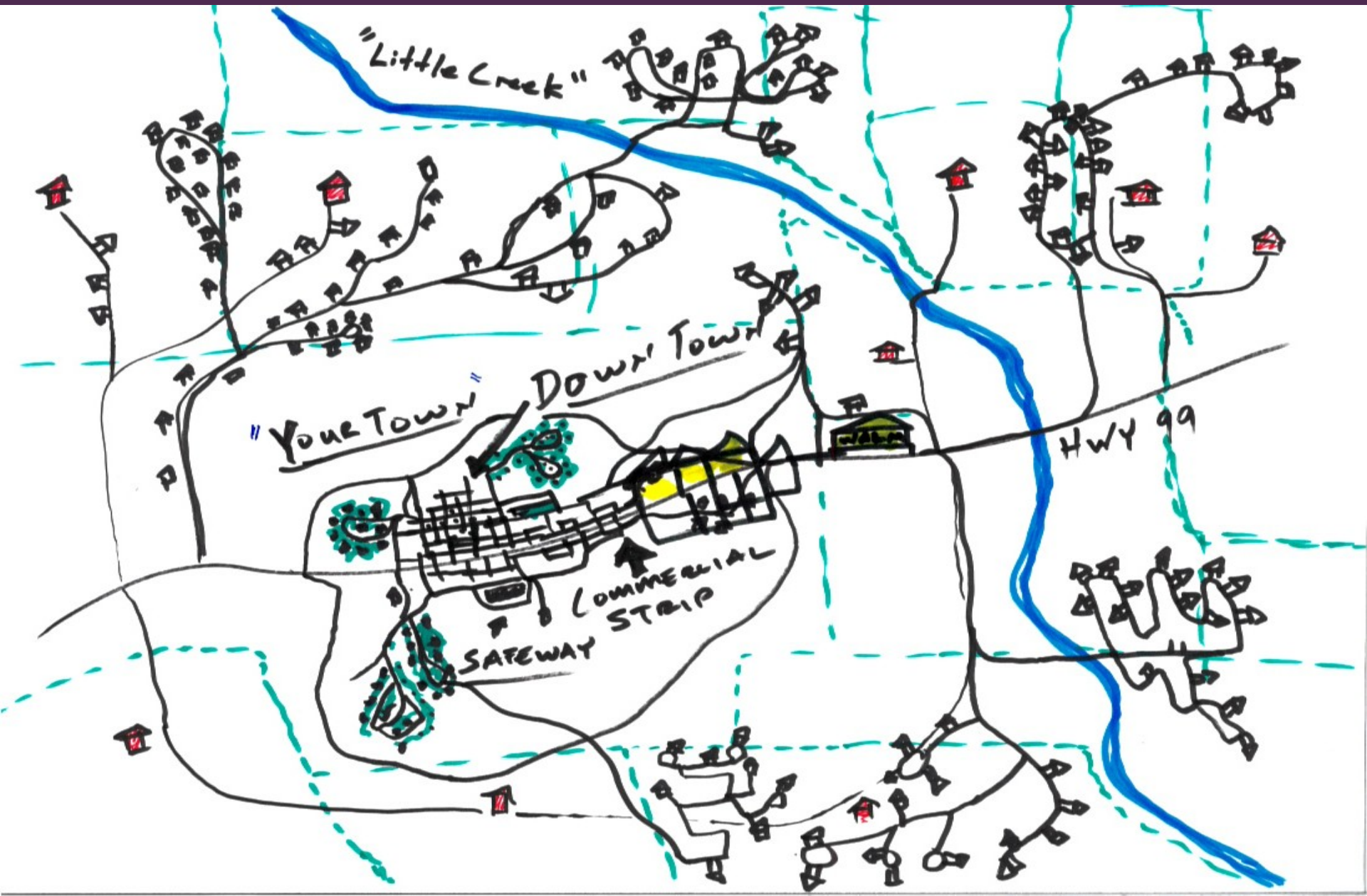
After


Rain
Rain
Rain
Metals
Residues
Oil
Grease
Dock
Fertilizer
Pesticides
Herbicides
Manure
Oils
Grease
Peant
Road
Well
Limited
infiltration
Road
Well
Bedrock
Well

Yourtown USA



Yourtown USA



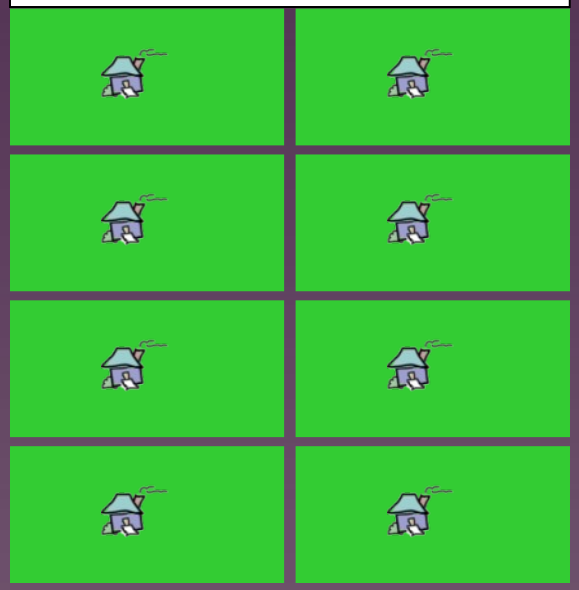

How we are growing
threatens the water we need

Water quality implications…

- More impervious cover
- Increased runoff and flooding
- Erosion, sedimentation
- Loss of habitat
- Non-point source pollution

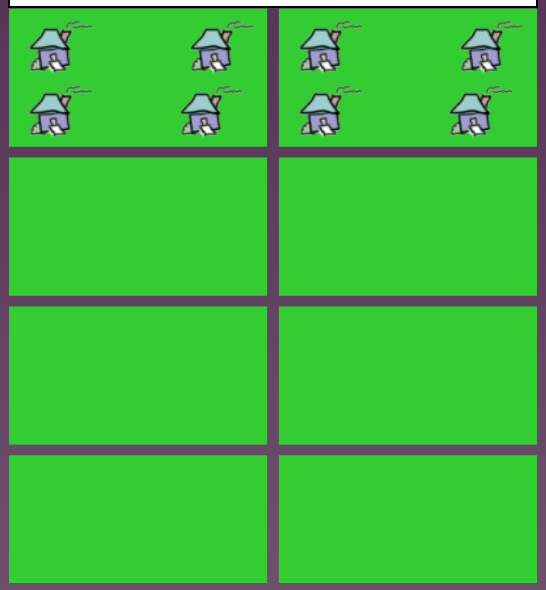
Water quality implications: Accommodating 8 units on 8 acres

Scenario A:
1 unit/acre



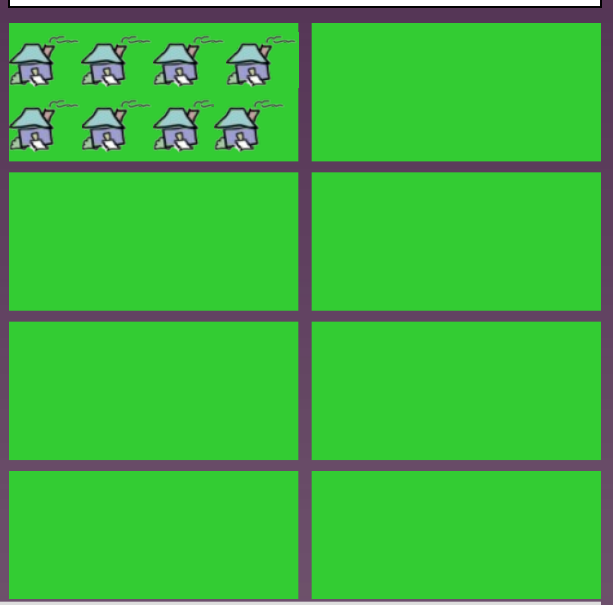
Impervious c = **20%**
Tot. runoff = **149,600 ft3/yr**
Runoff/house = 18,700 ft3/yr

Scenario B:
4 units/acre



Impervious cover = **38%**
Total runoff = **49,600 ft3/yr**
Runoff/house = **6,200 ft3/yr**

Scenario C:
8 units/acre

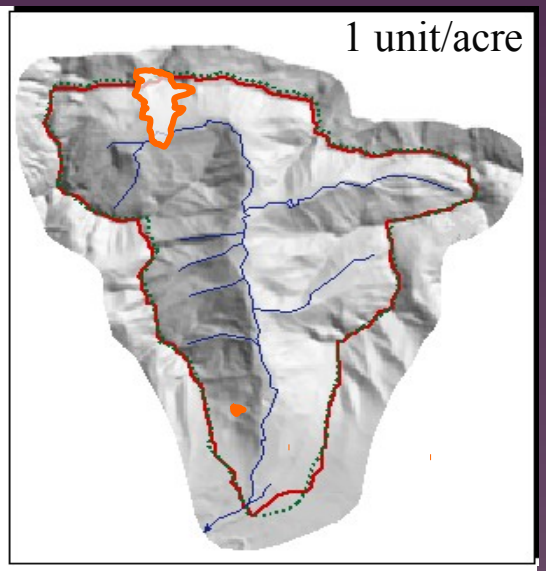


Impervious cover = **65%**
Total runoff = **39,600 ft3/yr**
Runoff/house = **4,950 ft3/yr**

The lower density scenario creates more run-off and consumes more land that the higher density scenario.

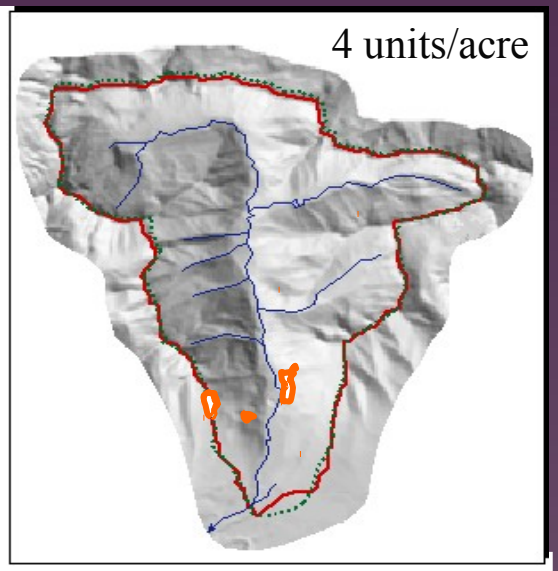
Watershed Impacts

Accommodating 10,000 units at different densities



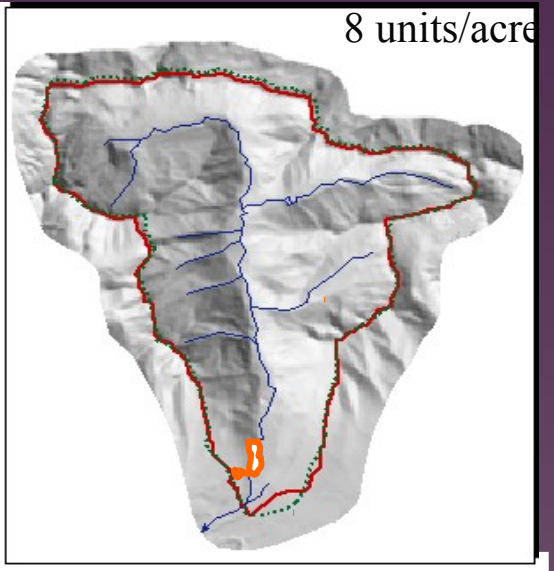
10,000 new houses on
10,000 acres produce
187 million ft3 /yr
stormwater runoff

Site: 20% impervious
Watershed: 20% impervious



10,000 new houses on
2,500 acres produce
62 million ft3 /yr
stormwater runoff

Site: 38% impervious
Watershed: 9.5% impervious



10,000 new houses on
1,250 acres produce
49.5 million ft3 /yr
stormwater runoff

Site: 65% impervious
Watershed: 8.1% impervious

The lower density scenario consumes 2/3 more land that the higher density scenario

Water supply implications:

Increased Demand on Supplies

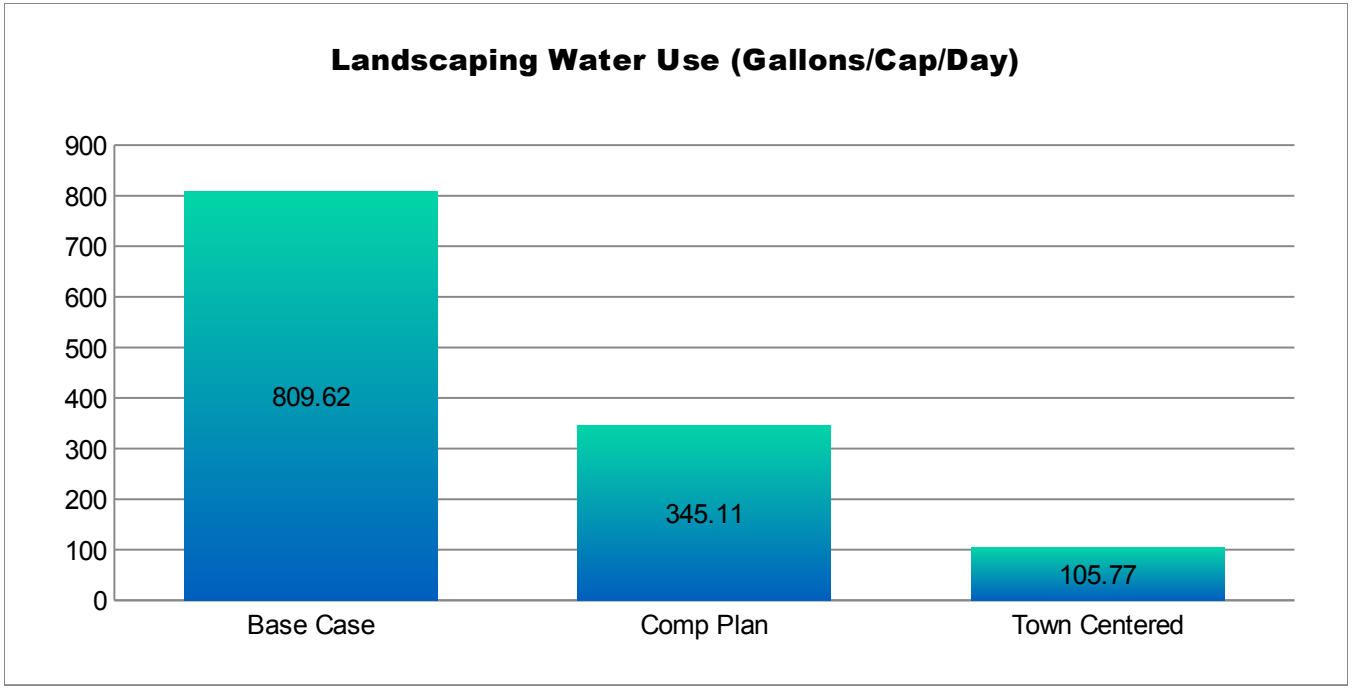
- Large lots increase water demand
- Bigger lawns use more water

Utah study: per capita use dropped 50% by going from 2 – 5 units / acre

Seattle study: 67% increase in density (from 4 – 12 units/acre) resulted in 60% decrease in water use

Landscaping Water Use

57% reduction from Base Case to Comp Plan
87% reduction from Base Case to Town Centered
Every square foot of green lawn needs 0.1 gallons of water per day – it's a huge water consumer

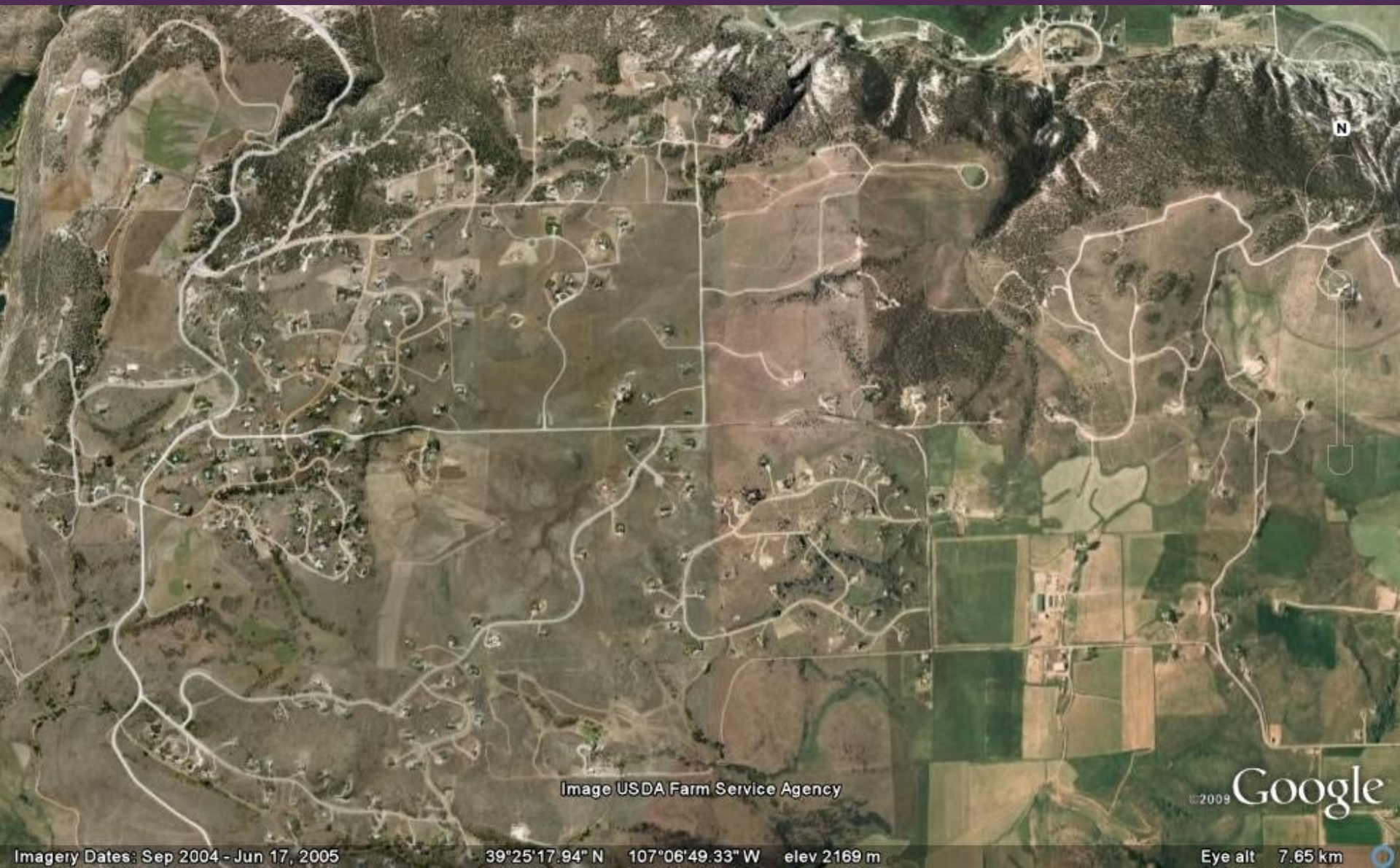


Water infrastructure implications:

- Longer transmission lines mean more leakage
- Costly to extend delivery / sewer systems
- Greater reliance on wells and septic systems
- Deferred investment/maintenance in existing systems

Paving over watersheds

Infrastructure Nightmare…

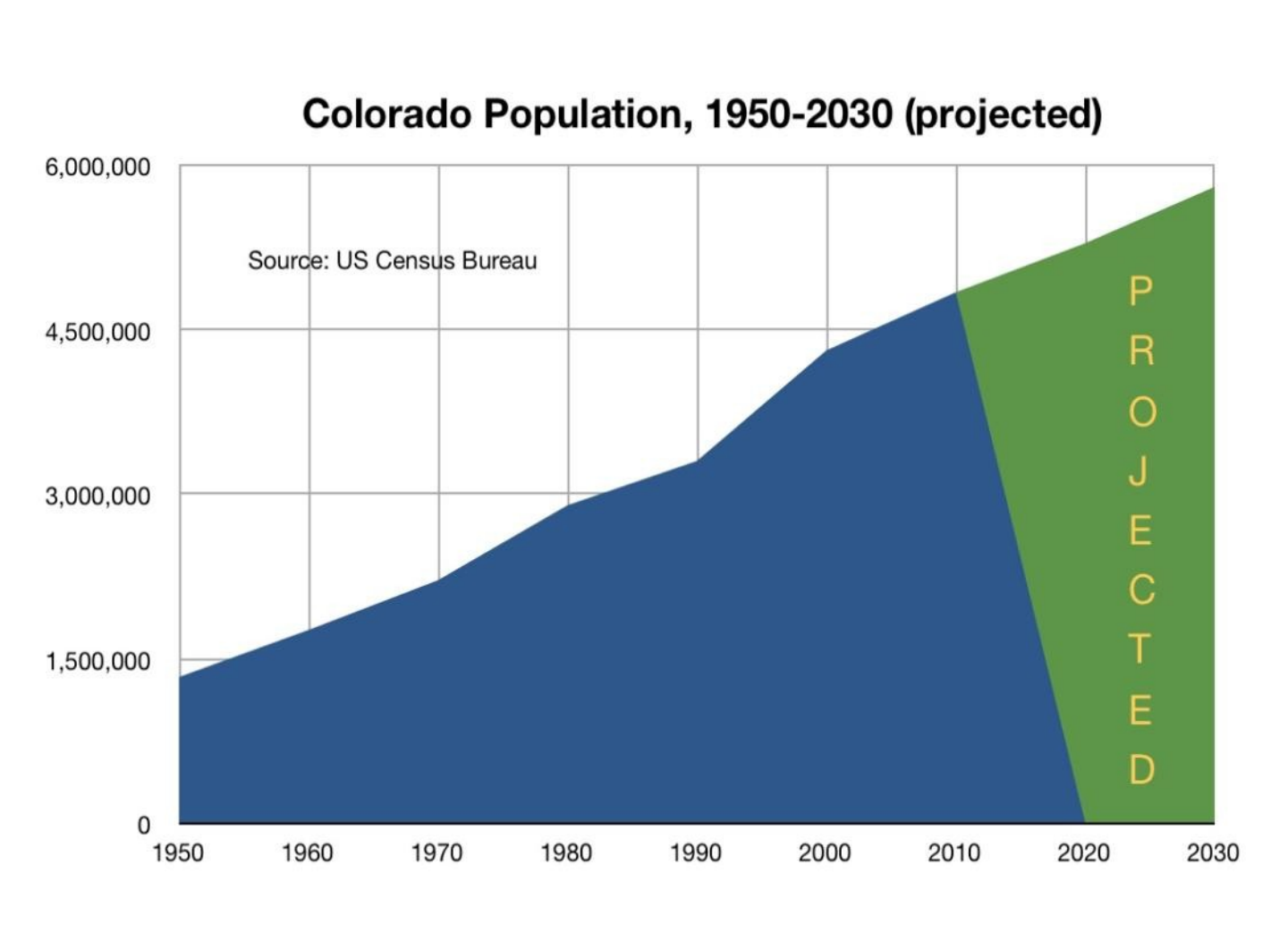


Using water inefficiently

…and losing the “Good Stuff”

Why are we growing like this?

SUSPECT: Growth



SUSPECT: Developers!

SUSPECT: The NIMBY's

SUSPECT:
Elected Leaders?

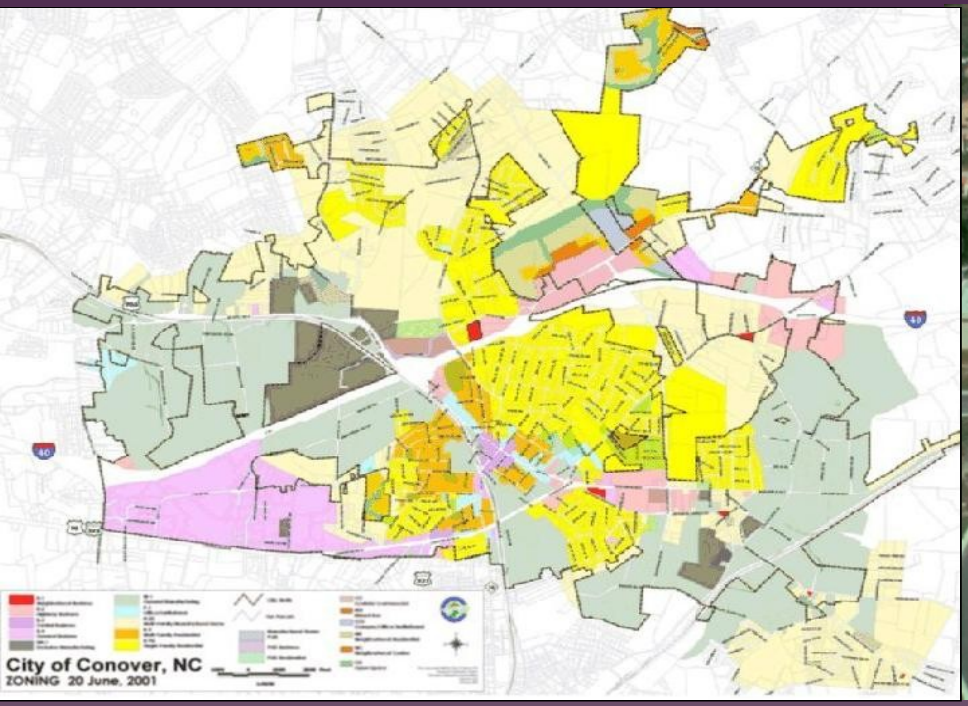
SUSPECT: Planners

SUSPECT: Engineers

SUSPECT: Environmentalists?

SUSPECT: Cars

We are getting what we plan for…



Outmoded zoning and transportation investments are fueling inefficient growth…

We have been planning for our cars

…not people

…nor water

What our zoning codes give us

Breaking the Code!

Retool policies to encourage what we want and discourage inefficient development patterns…

Market Forces

The game has changed…

Rapid growth in the West helped fuel a monumental “bust.”

Far-flung Sub-divisions are Faring Worse than In-town Development

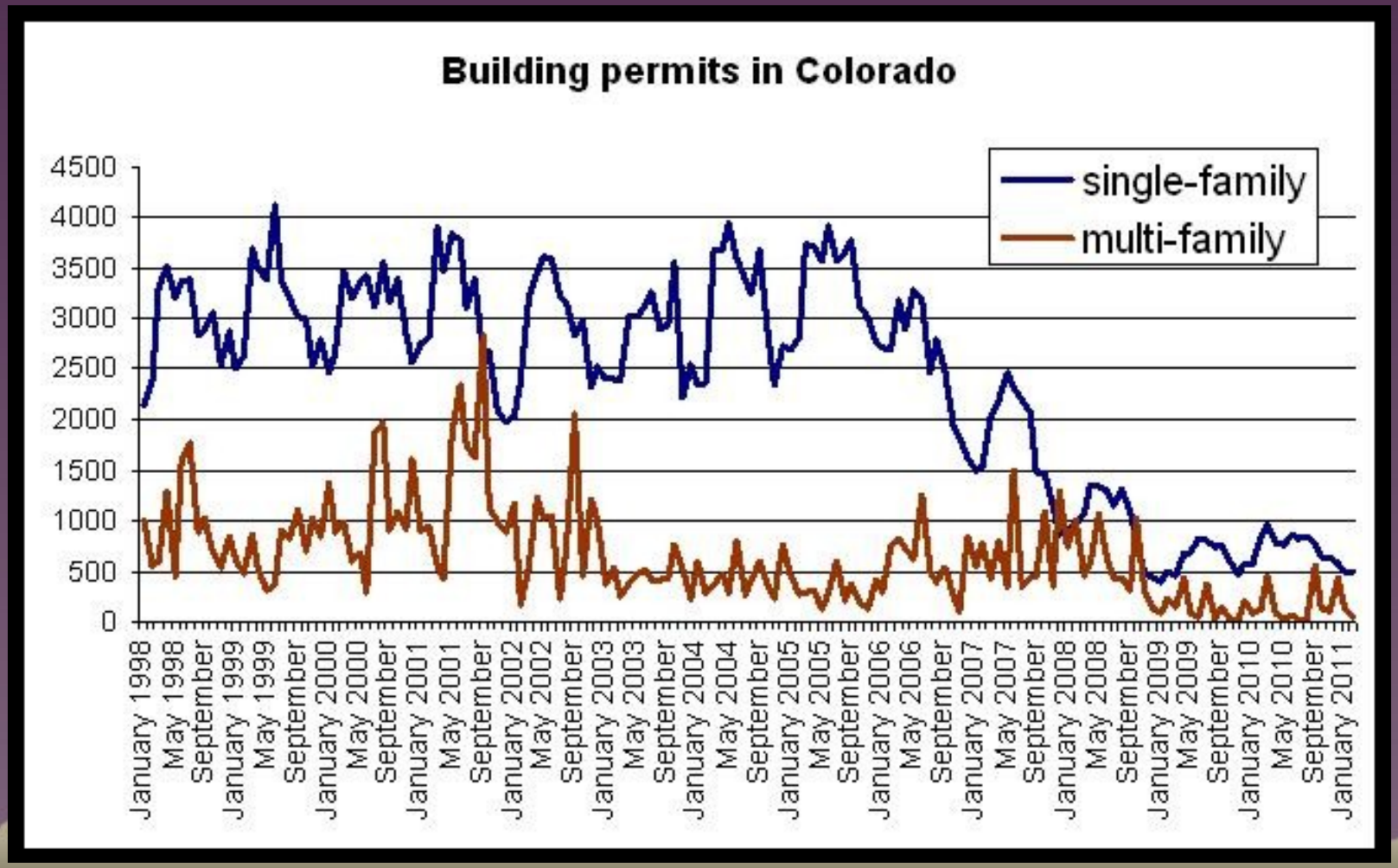
Foreclosures and Obsolete Subdivisions Clogging the Market

Teton County, ID: estimated 75% of approved home lots vacant, sufficient for 4X population, and almost $250 million in foreclosed real estate.
Arizona: Over a million approved - but vacant - housing lots

Changing Circumstances:

The worst housing market in 75 years
Need to be proactive to succeed

Changing Circumstances: Single Family Construction Decreases More Dramatically Than Multi-Family



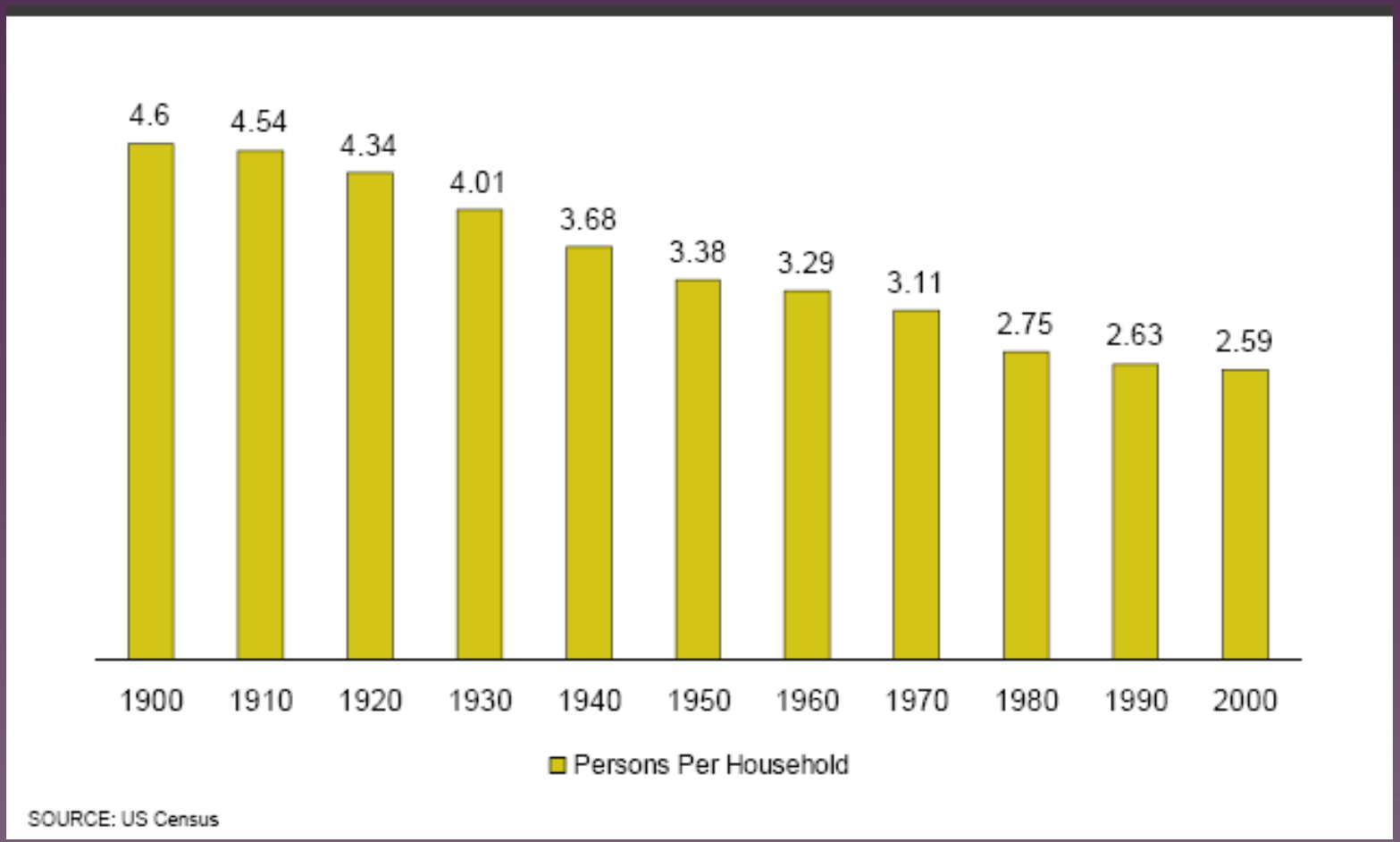
A Changed Housing Market is Emerging

People will seek to live in housing that they can afford; housing costs will be more directly tied to income.
Demand for traditional single family housing will fall and demand for townhomes and multi-family will rise.
Renting will be more appealing to many households – and these households will demand high quality rental options

Where are we headed?

- University of Utah
- National Association of Realtors
- National Association of Home Builders

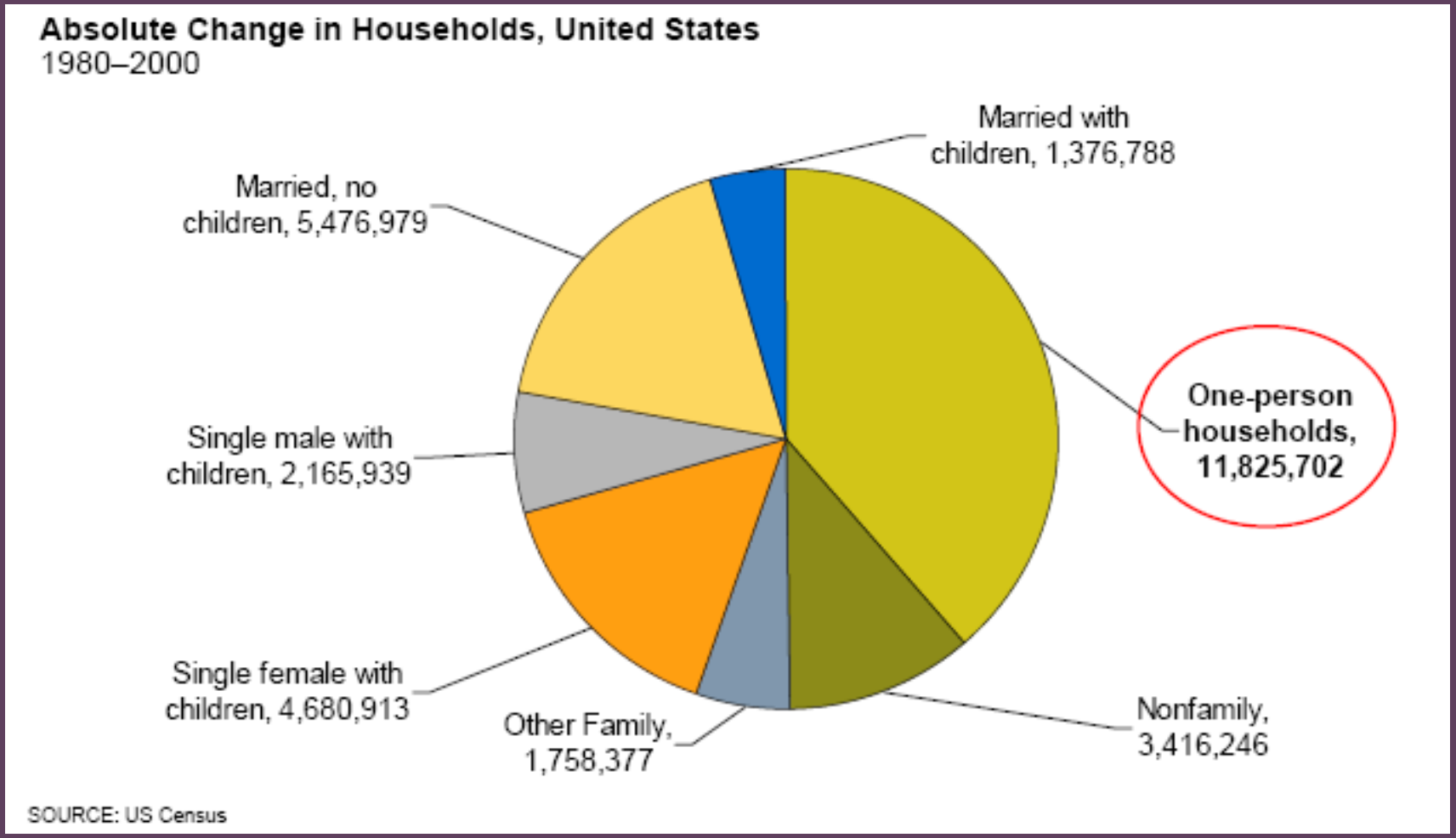
Smaller Households



Source: RCLCO

Single Person Households Leading the Way

85% growth in households w/o children



Who is the future market? (hint, its not just the boomers…)

GEN Y MAKES UP THE LARGEST SHARE OF U.S. POPULATION, FOLLOWED BY BOOMERS, & GEN X

Source: RCLOC

GENERATION	BORN	2009 AGE (year-end)	% OF NATION	EST. # OF PEOPLE
Eisenhowers	Before 1946	64+	17%	51M
Baby Boomers	1946 – 1964	45 – 63	27%	75M
Generation X	1965 – 1978	31 – 44	18%	52M
Gen Y	1979 – 1996	13 – 30	27%	80M
Gen Z?	1996 and After	0 – 12	10%	30M

SOURCE: Claritas, National Center for Health Statistics, RCLCO

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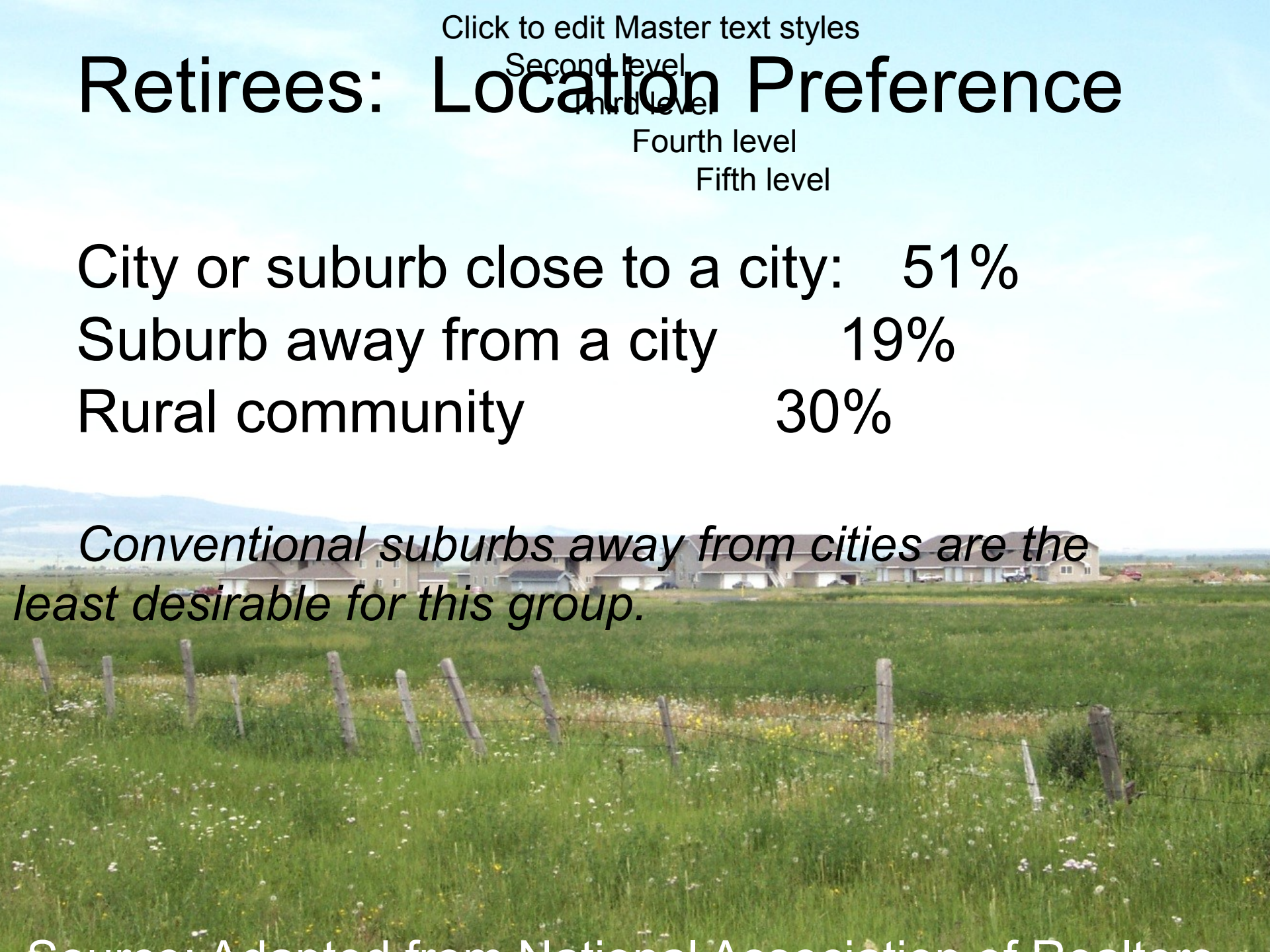
Second level
Third level
Fourth level
Fifth level

Retirees: Location Preference

City or suburb close to a city: 51%
Suburb away from a city 19%
Rural community 30%

Conventional suburbs away from cities are the least desirable for this group.



Source: Adapted from National Association of Realtors

Where do your kids want to live?

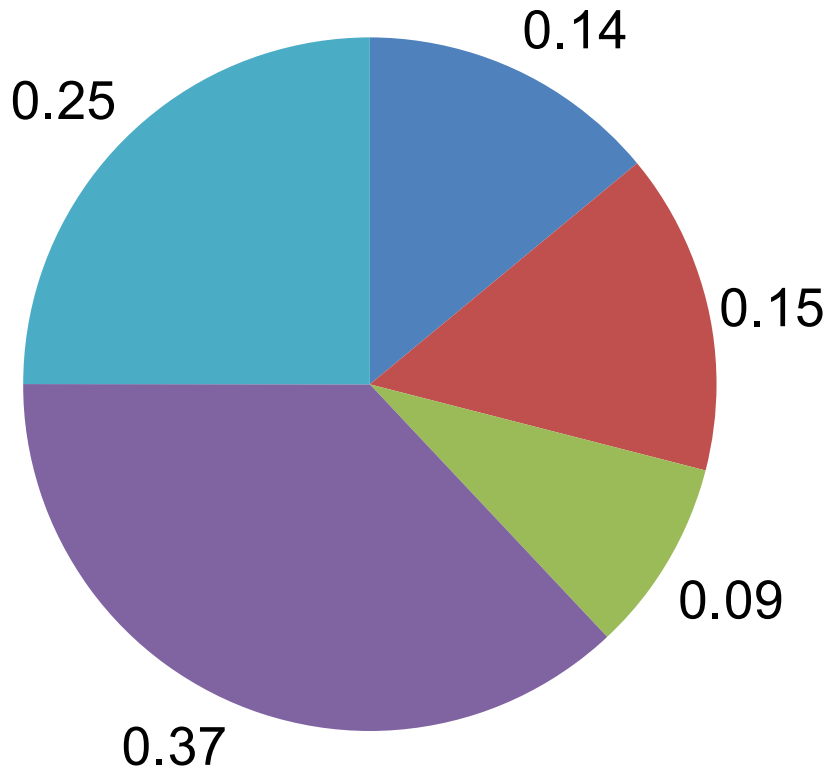
RCLCO Consumer Survey

Desire for convenience, connectivity, healthy work-life balance

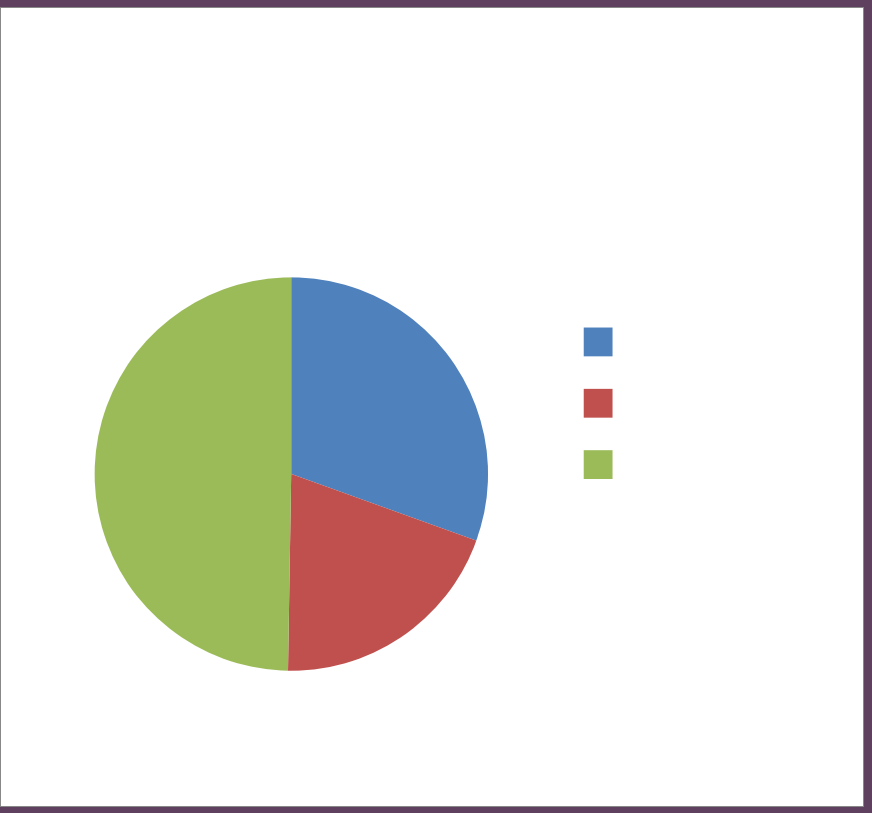
- **1/3 will pay more for housing walkable to** shops, work, and entertainment
- **2/3 say living in a walkable community** is very important to their location decision
- **1/2 would trade lot size for proximity to** shopping or to work
- **1/3 willing to** trade lot size and "ideal" homes for walkable, diverse communities

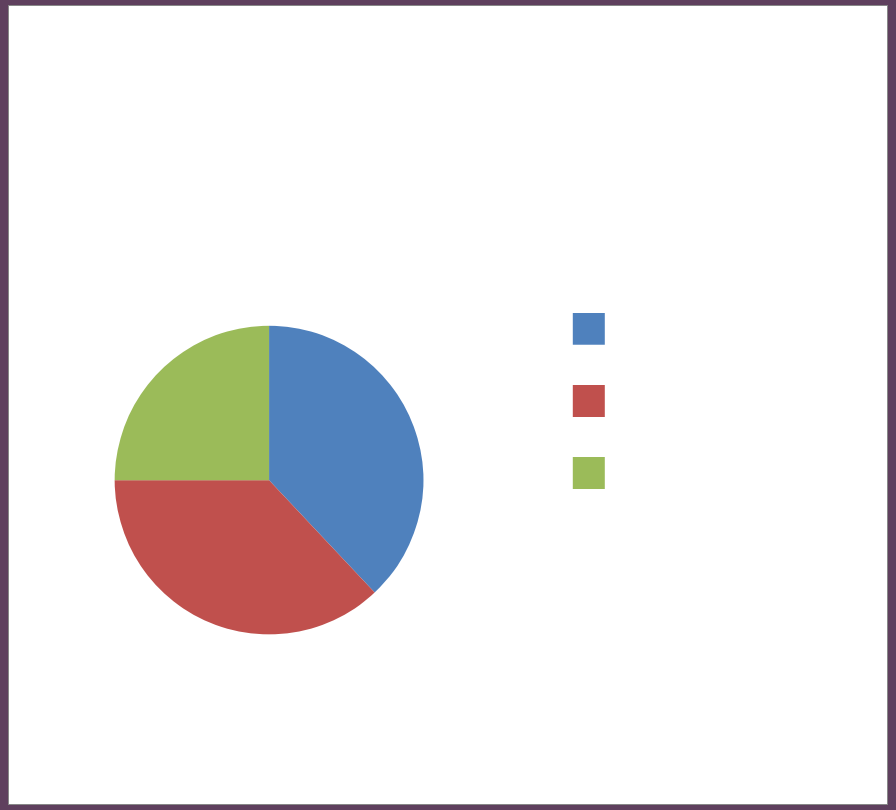
Source: RCLCO

Changing Consumer Preferences



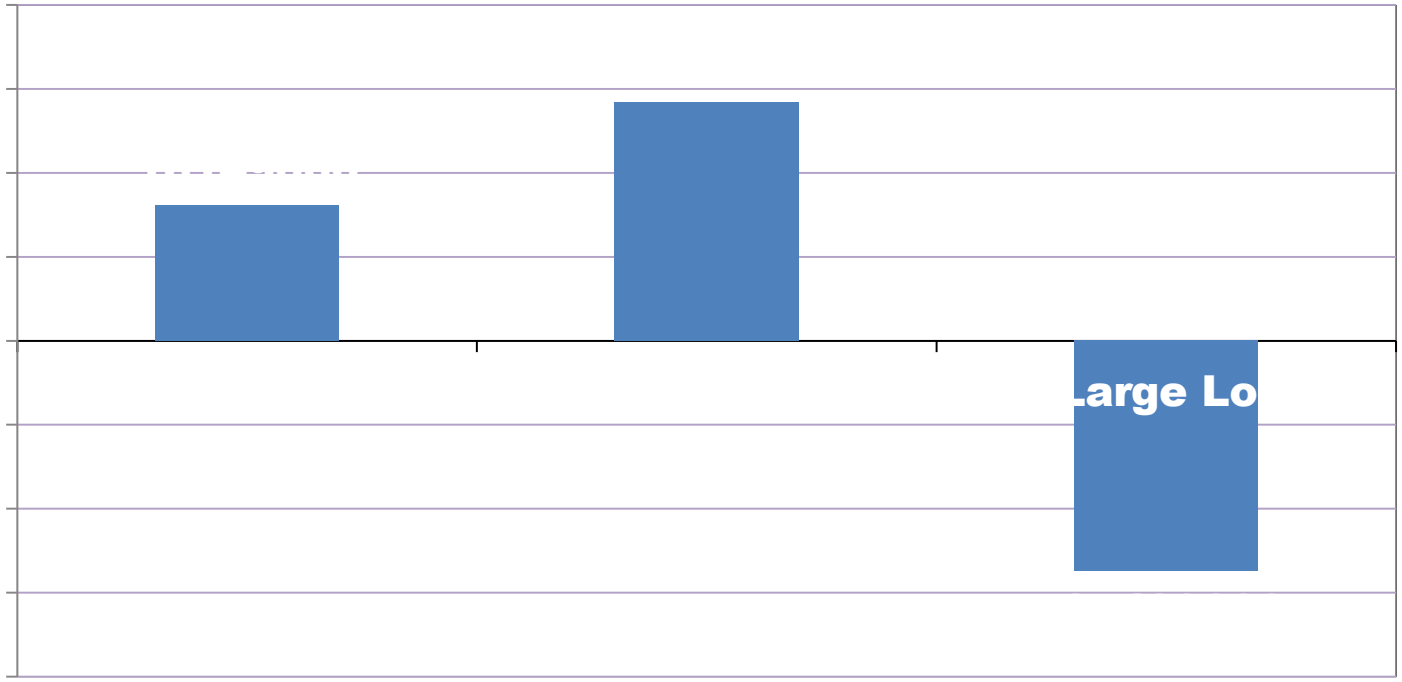
Changing Consumer Preferences





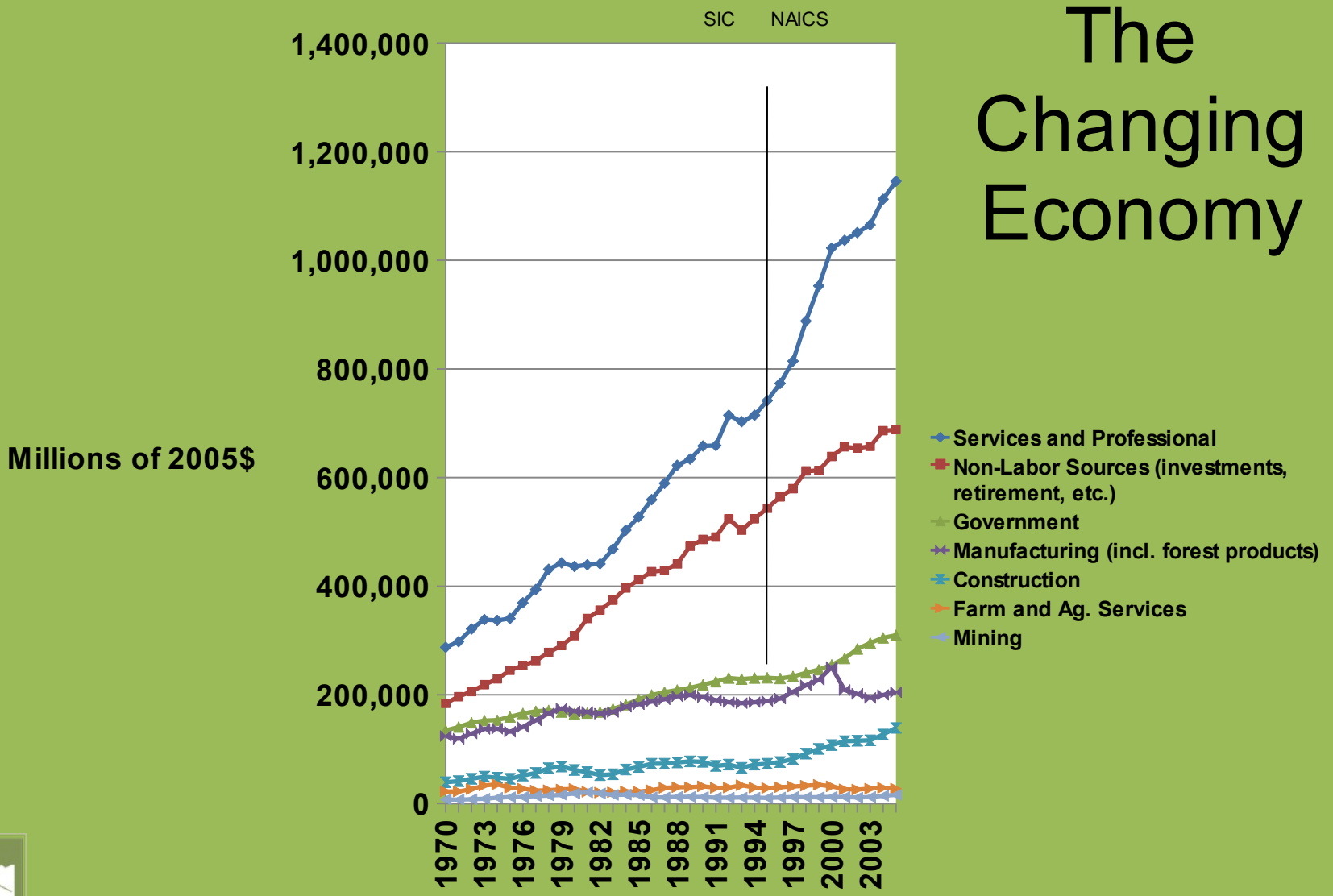
Dr. Arthur C. Nelson, University of Utah

Reality Check: Supply vs Demand



Dr. Arthur C. Nelson, University of Utah

The Changing Economy



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Economic Impacts of Tourism and Outdoor Recreation in Colorado

- Creates $10 billion in economic activity and 107,000 jobs
- Produces $7.6 billion in retail sales and services across Colorado.
- 65.7% of tourists in Colorado come for activities involving the natural environment.

http://www.nssf.org/07report/factsheets/Colorado.pdf
http://www.colorado.com/ai/CWC_Final_Report_4_22_09.pdf

So what does this all mean to watershed health?

- Entered a new normal, but don't know what it looks like yet
- 21st century real estate market will differ from what we've known
  - Greater demand for "in-town" development, mixed-uses, smaller footprints
  - Growth is slowed, but not stopped – it will return
  - How communities shape future development is essential

The future will not be like the past or the present.

Rethinking the Built Environment

In 2030, about half of the buildings in which Americans live, work, and shop will have been built after 2000.

Over the next 30 years, we will be responsible for re-creating half the volume of our built environment.

Analysis by Professor Author C Nelson

Principles for Water-wise Development

Improve Development Patterns

- *Strategic Location*
- *Compact Community Form*
- *Walkable Design*

Maintain Natural Infrastructure

- *Where not to grow*
- *Where to conserve*

Sustainable Site Design

- *Minimize stormwater runoff*
- *Reduce water demand*

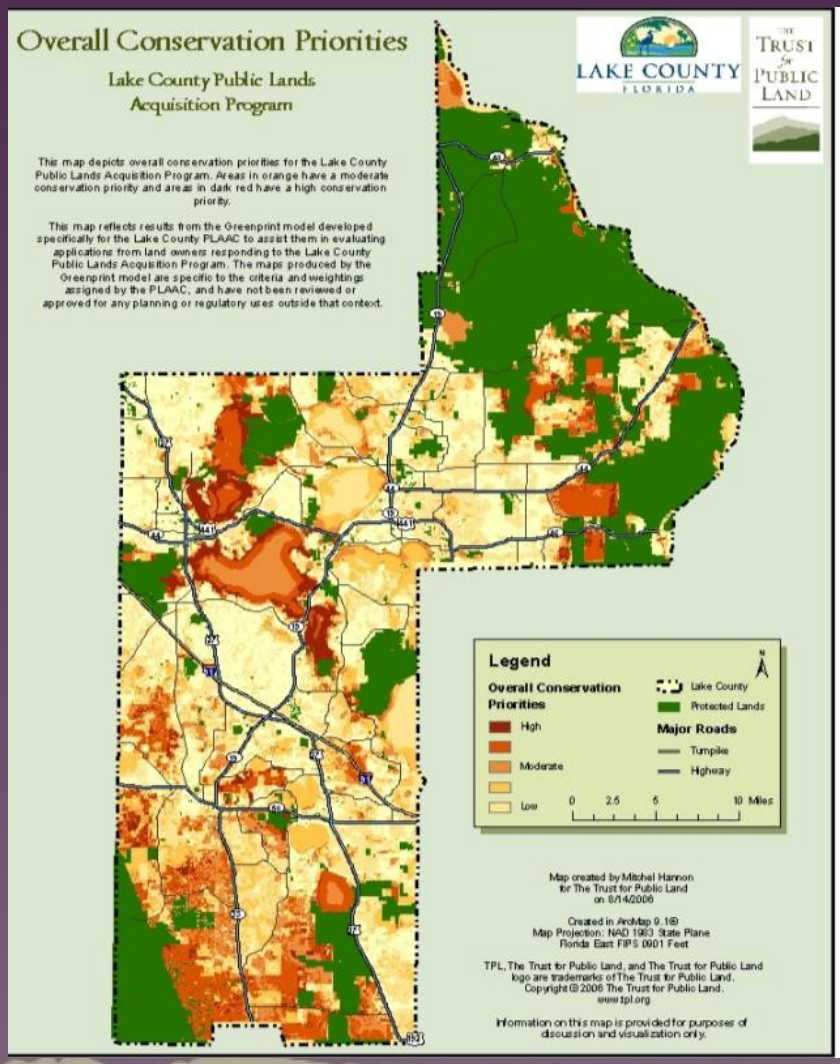
Conserve Natural Infrastructure

- Preserve large, continuous areas of open space
- Preserve or restore sensitive ecological areas

Where not to grow

ID areas not suited for growth:

- Floodplain / Riparian Areas
- Ecologically sensitive areas
- Steep slopes, fire hazard, etc.
- Areas without infrastructure
- Areas without water



Strategic Conservation

Resources & political will are limited: what exactly are you trying to protect?

1. Identify Conservation Priorities
   - Engage the community in setting priorities
   - Develop a plan or integrate into existing plans
2. Create appropriate tools and programs
   - Infrastructure planning
   - Acquisition: Easements, TDR, PDR programs
   - Policy: zoning, floodplain ordinances, riparian setbacks, clustering provisions, service area boundaries

Restore natural resource systems

Multi-functional parks & open space

~ floodplain + parks + habitat + open space + wetlands ~

Compact Development Patterns

Rethinking how we grow…

- Compact Community Form
- Smart location: Infill / Redevelopment
- Mixed Uses, Housing Types
- Walkablity, Transit

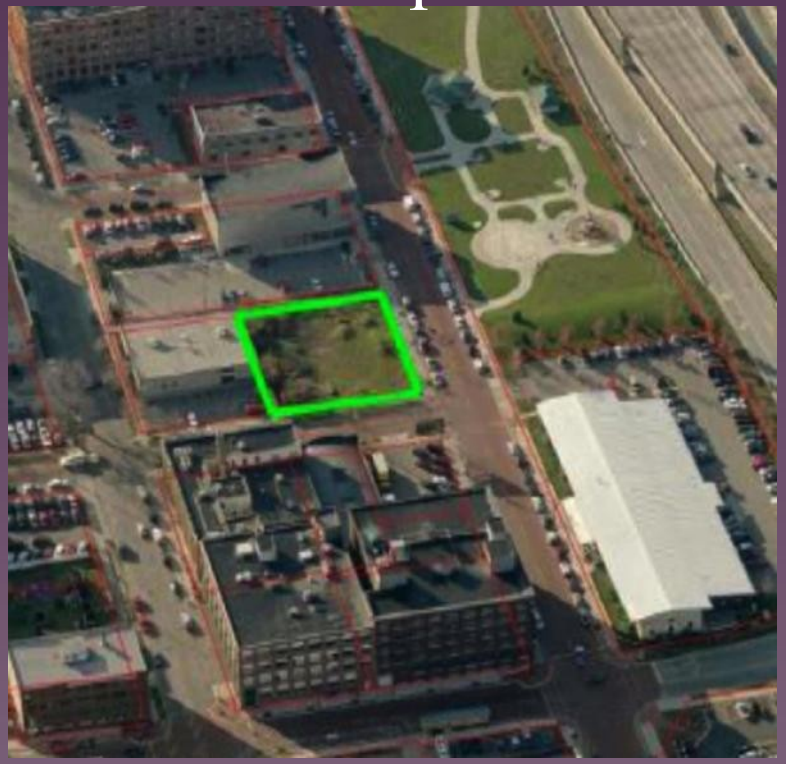
Strategic Location

Guide development to strategic locations and encourage infill and redevelopment

- Map areas poised for infill/redevelopment
- Create incentives / remove policy barriers
- Link with economic development efforts
- Coordinate local planning efforts (IGAs)
- Infrastructure planning/policies
- Service area boundaries

Which location is better for water?

Infill Development



or

Edge Development

Click to edit Master text styles

Second level

Third level

Fourth level

Fifth level

Which location is better for water?

Redevelopment Site or Greenfield Site

The Power of Infill and Redevelopment

The Power of Infill and Redevelopment

The Power of Infill and Redevelopment

The Power of Infill and Redevelopment

Compact Community Form

Apply community and neighborhood design principles to shrink the development footprint

- Enable density in appropriate locations
- Discourage low-density “sprawl”
- Eliminate policy barriers
- Ensure good design

Compact Community Form

Create transportation choices with trails, transit and walkable design

Which pattern is better for Water?

Lower density Development

Compact Development

Mixed Uses

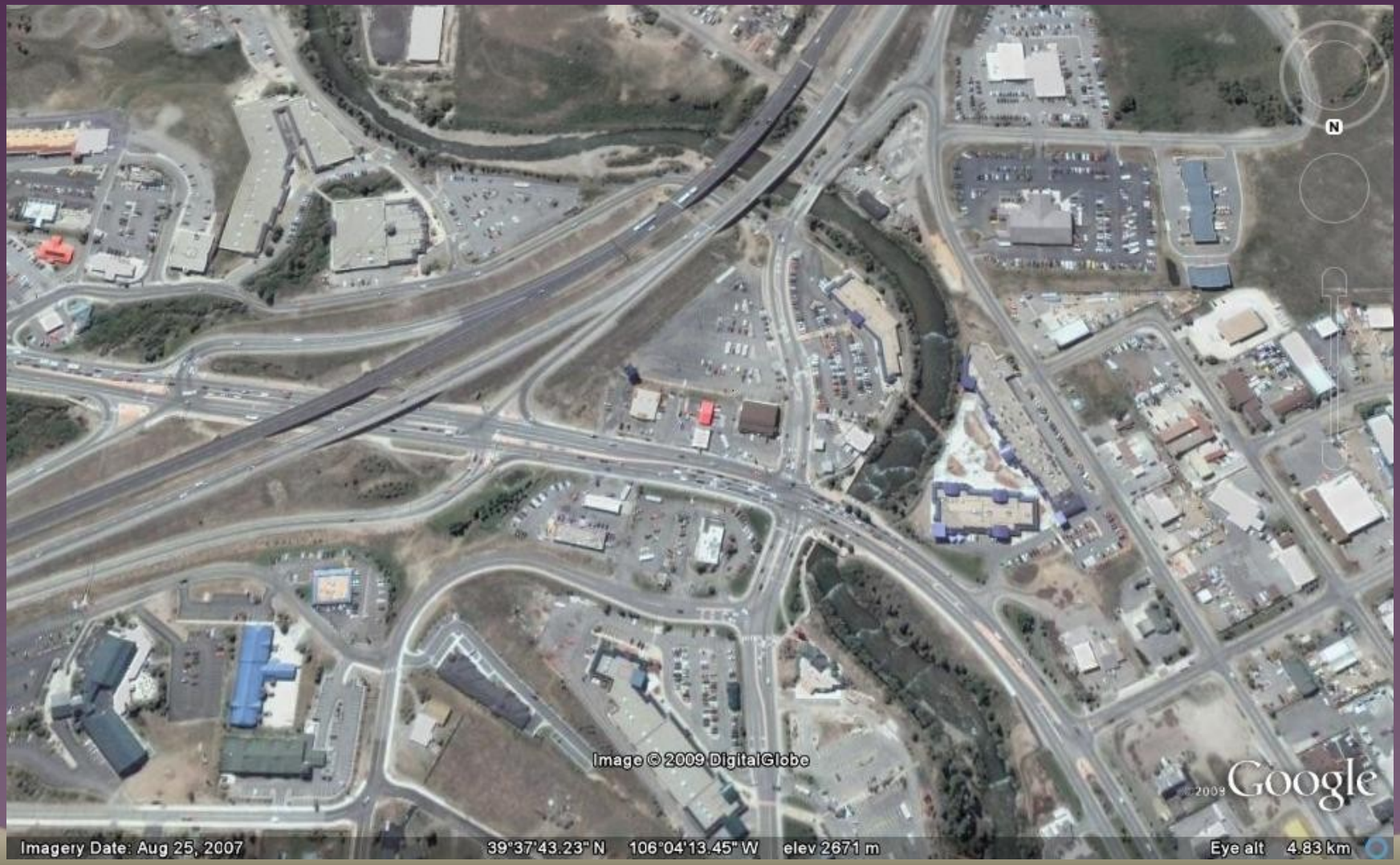
Encourage a mix of land uses & development types

- Remove policy barriers
- Assess market conditions
- Economic development programming
- Parking…

Mixed Uses

This type of housing is served by this type retail, roads, and parki

The Transportation Footprint



Mixed Use: The Watershed's Perspective

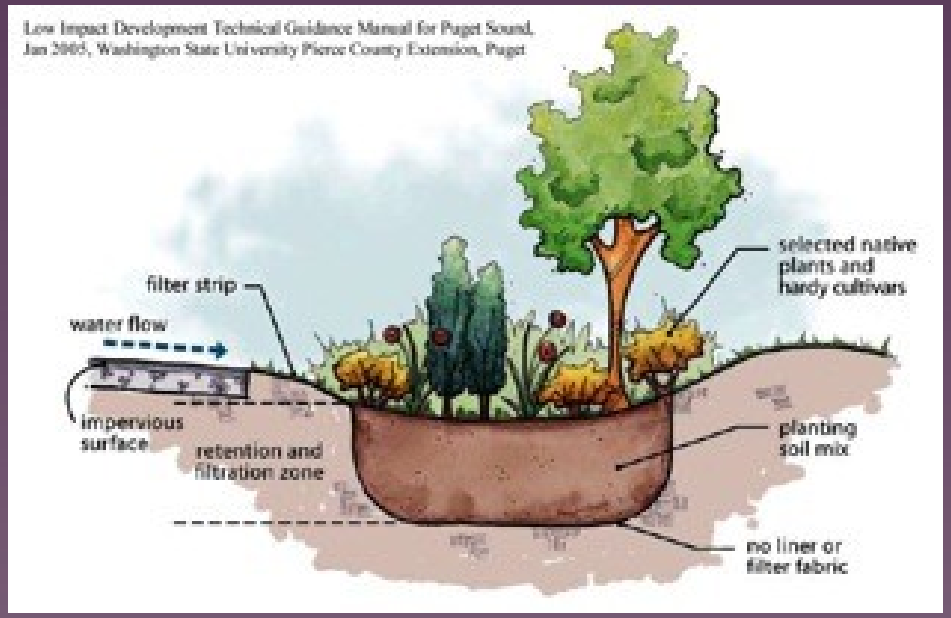
Livable Communities

III. Sustainable Site Design

Integrate efficiency and green design infrastructur

Green Infrastructure:

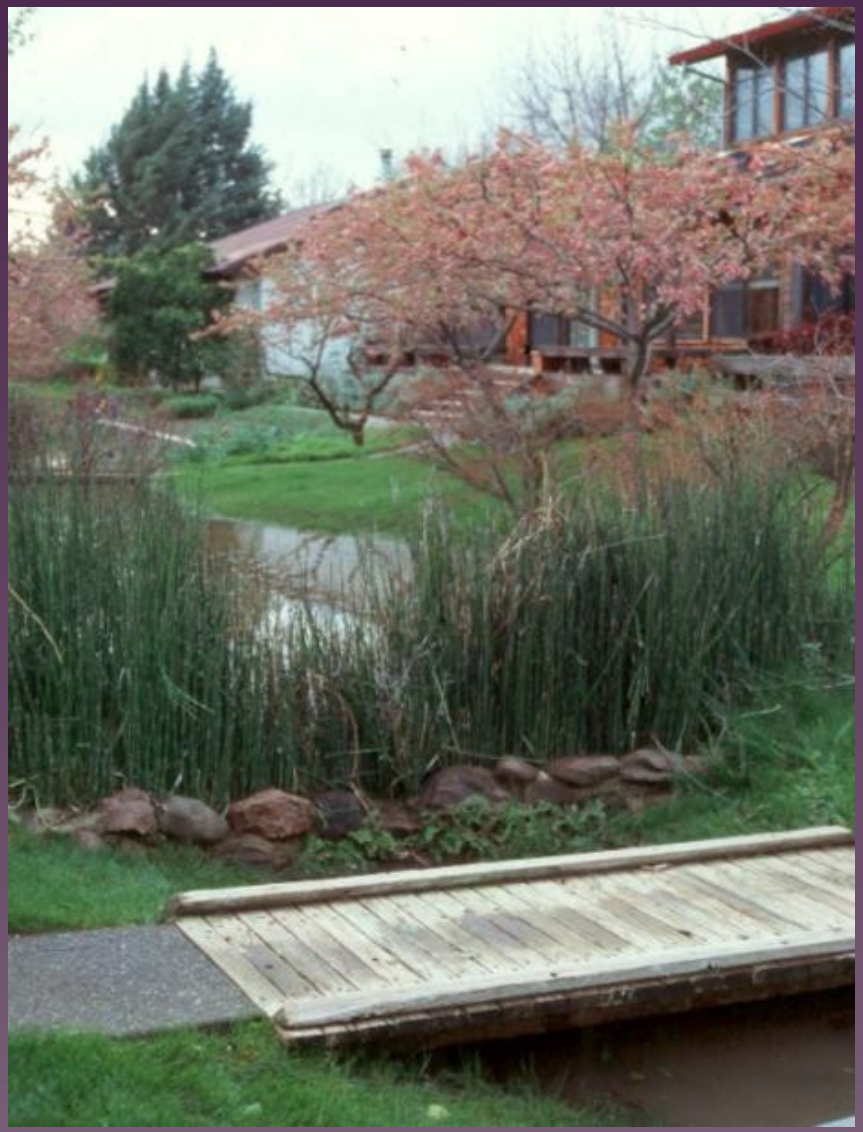
A suite of planning and design tools to reduce, capture, treat and reuse stormwater runoff

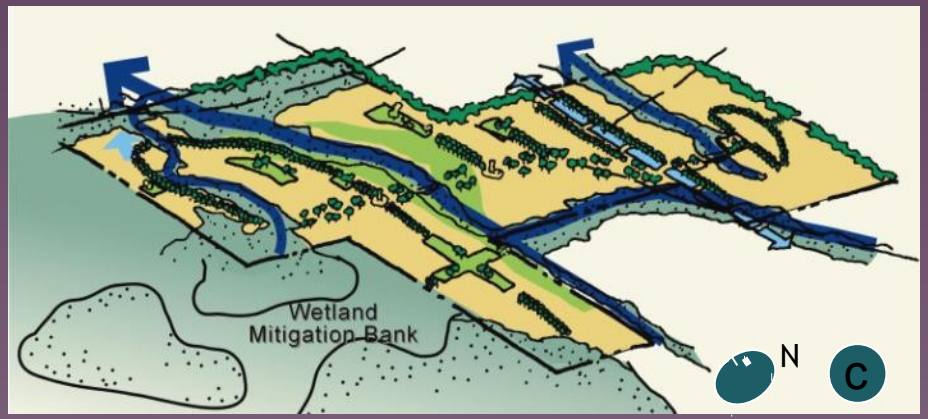


Minimize impervious cover

Narrower Streets
Efficient Parking
Permeable Pavement

Use drainage as a design element





“Green Streets”

Rethinking the Right of Way

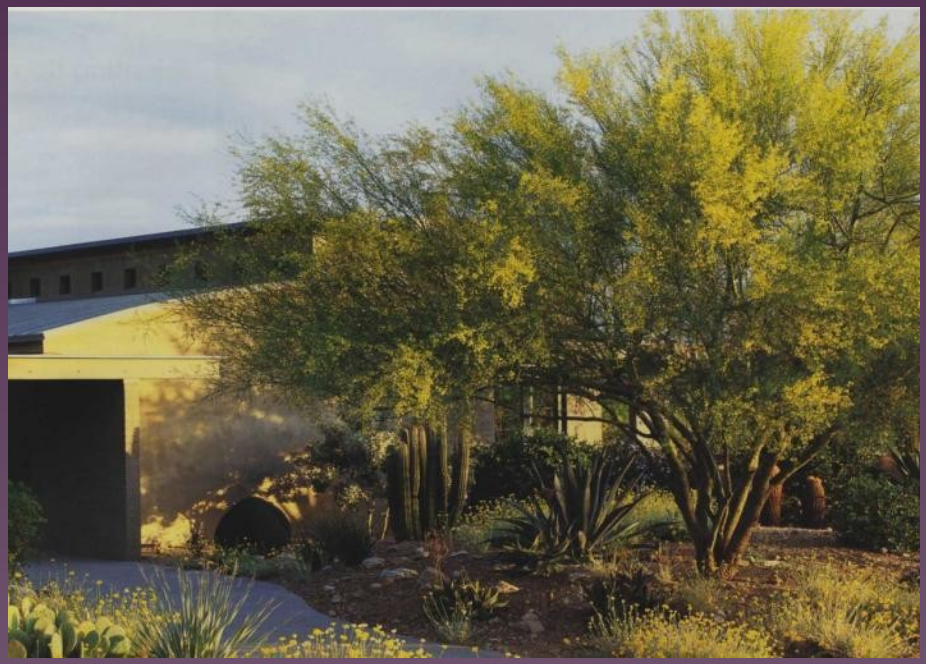
“Green Streets”

Covington, KY

Water Use Efficiency

Water-wise landscaping

- Smart irrigation
- Water-efficient appliances
- Graywater systems
- Stormwater Capture
- Purple pipe for reuse



"Our cheapest, most readily available supply is reduced demand."

Waste Not Want Not
Pacific Institute 2004


2nd FLOOR
CoCo Michele's


YOU'RE
ALL A
BUNCH OF
TREE-
HUGGING
HIPPIES!
SOUTH
PARK

Questions for Watershed Groups

1. What is your role in promoting water-wise development patterns?
2. How do you best engage with local officials, planners, developers and others in promoting the "good stuff" and avoiding the bad stuff?

"Integration is easy on paper, but a lot more important and more difficult in the field than any of us foresaw".

- Aldo Leopold, 1934 -

Thank You

Clark Anderson
canderson@sonoraninstitute.org

The Watershed Benefits of Use Mix
A tale of Two Development Patterns…

Mixed Use
- 27,000 sq.ft commercial
- 1,100 sq. ft retail
- 140 Loft Apartments
- Parking

Conventional zoning
- Single, separate uses
- big box stores
- Lots of parking
- Lots of roads

The Math:

Housing +

Commercial sq.ft +

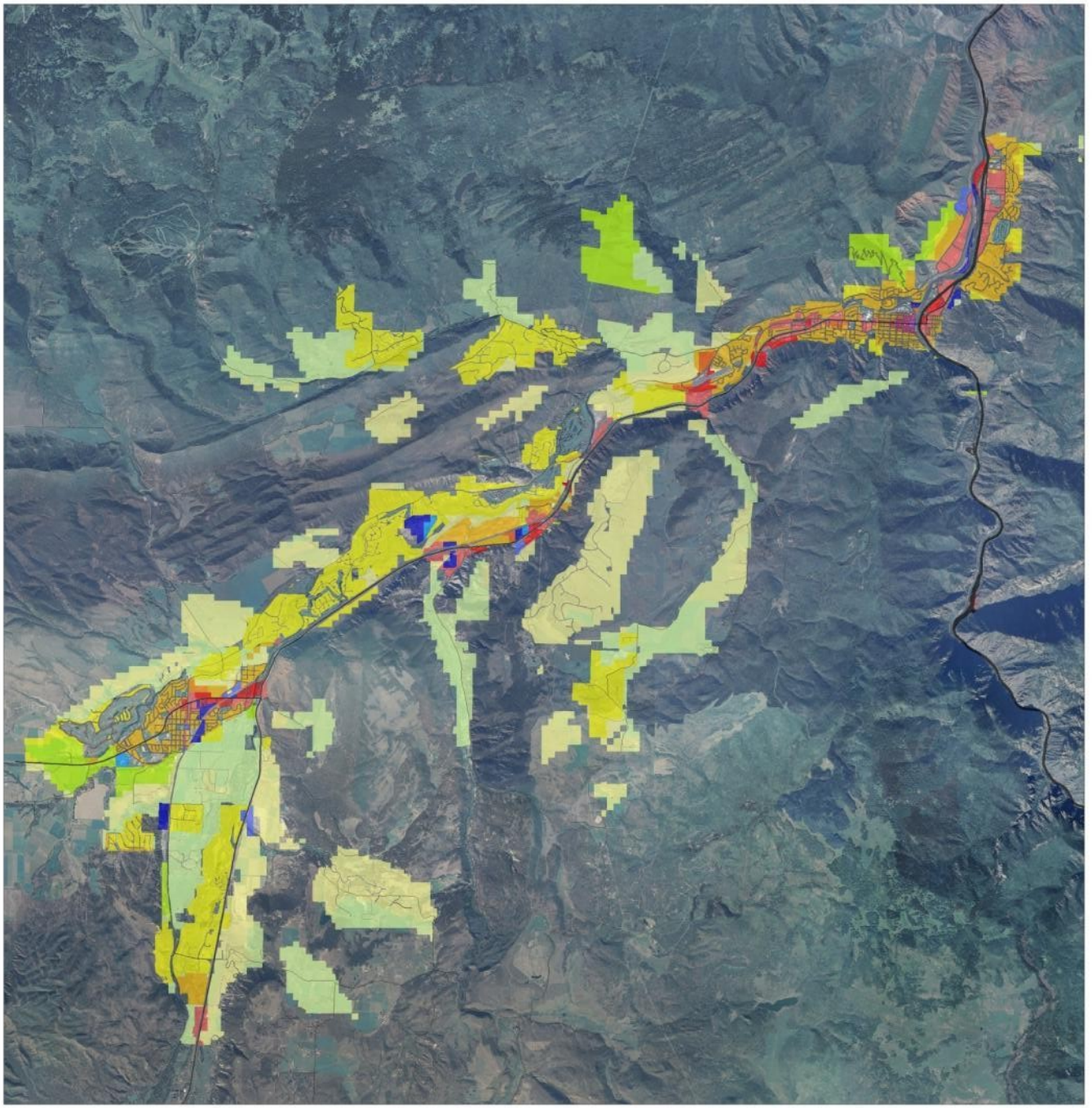
On site parking; loading +

Off-site streets/roads/parking =

( x140)

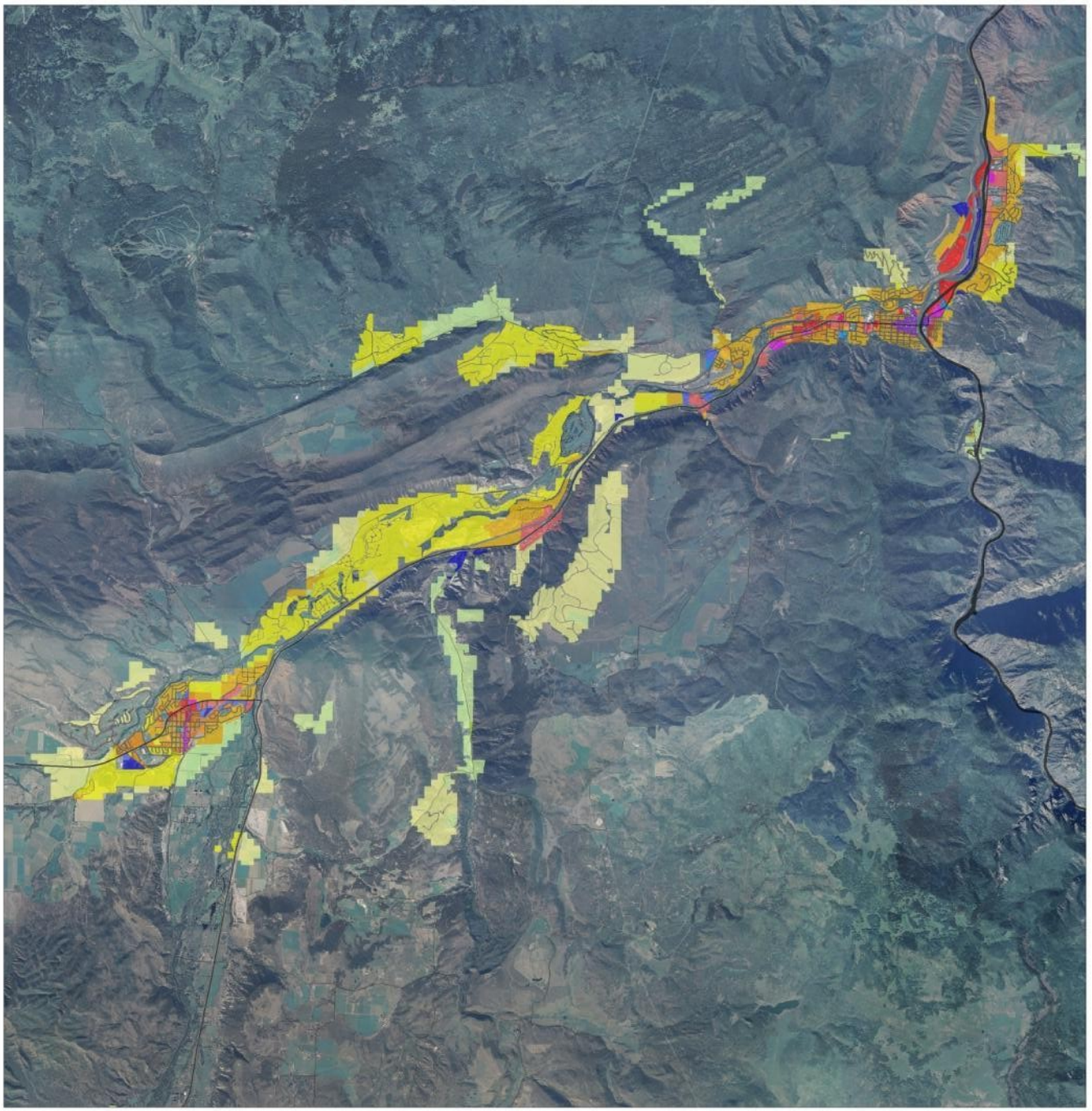
Business as Usual

Glenwood Springs and Carbondale



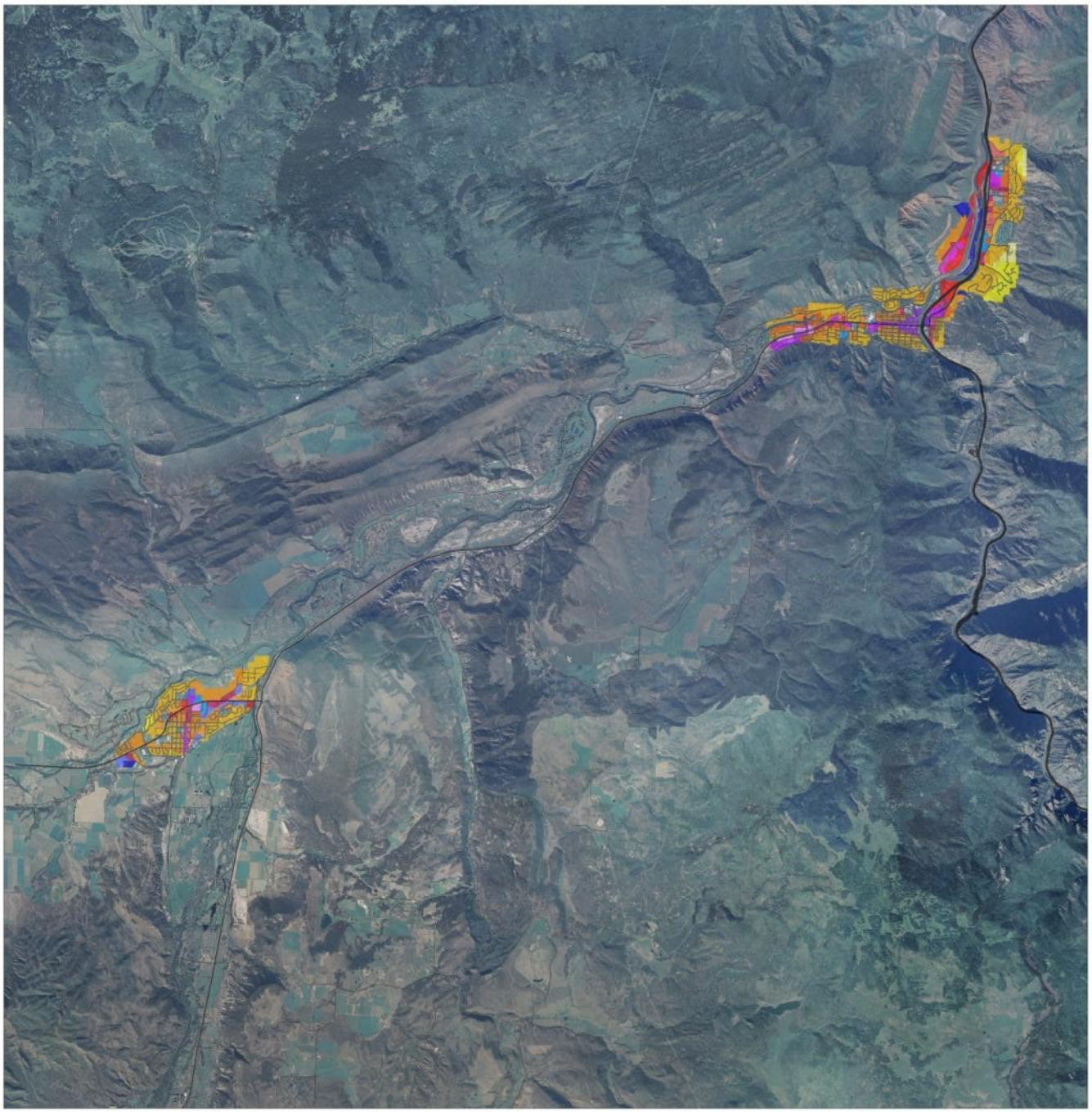
Comprehensive Plan

Glenwood Springs and Carbondale

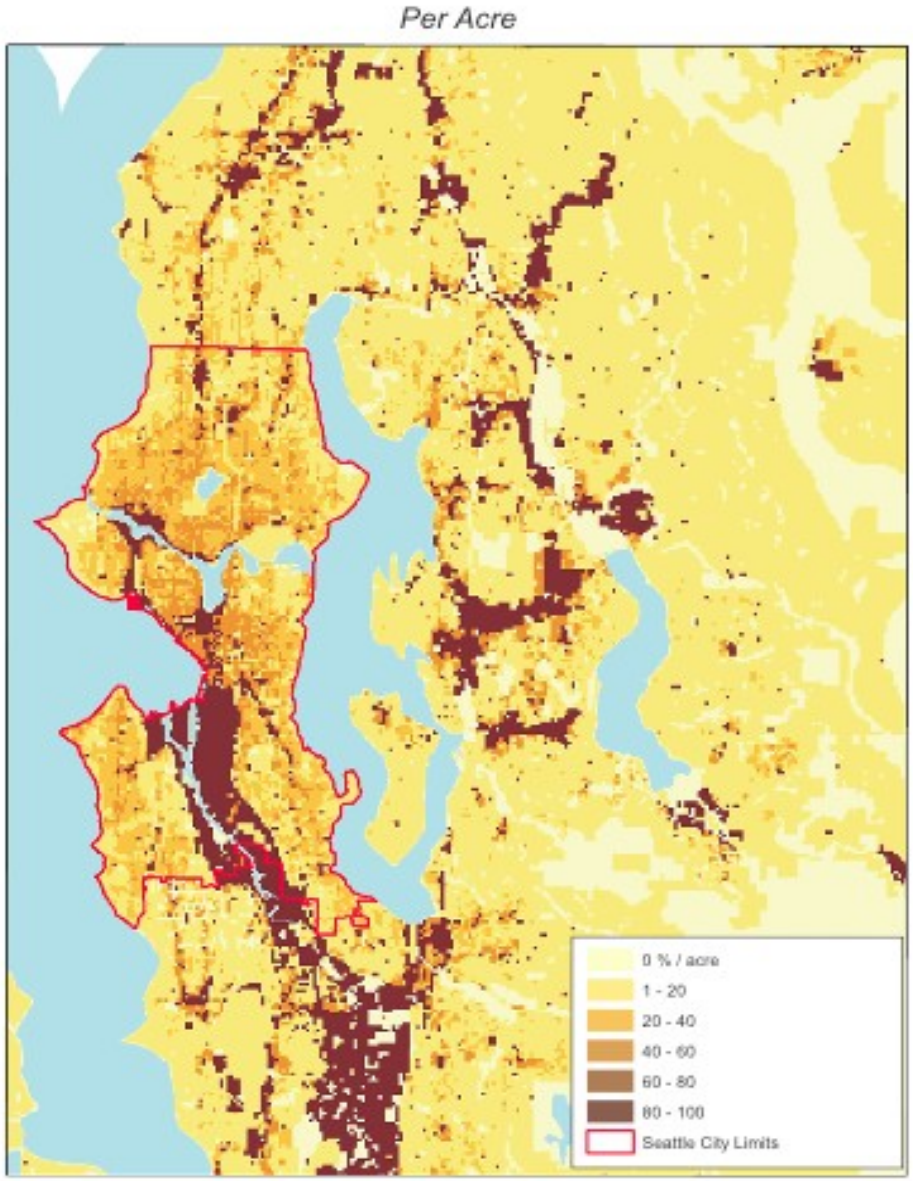


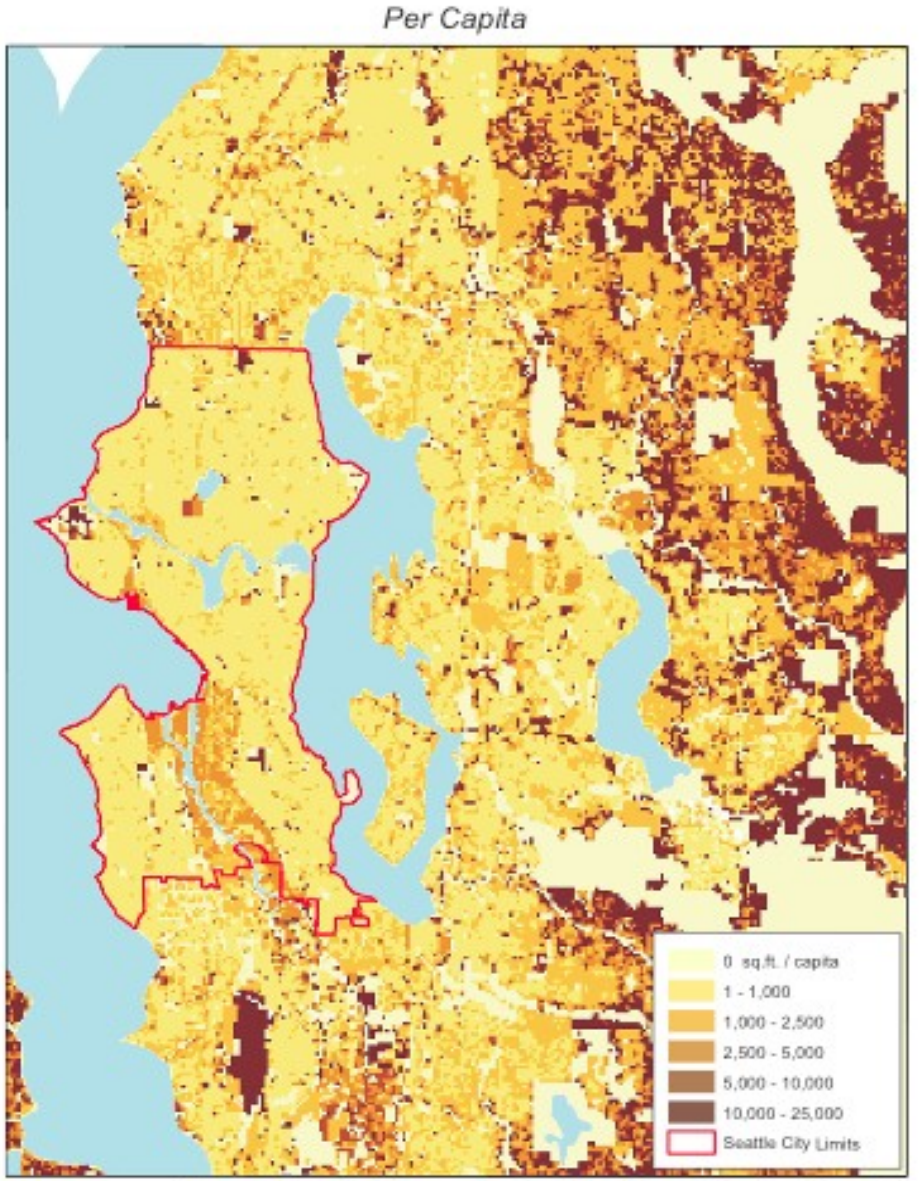
Town Centered

Glenwood Springs and Carbondale



Rethinking Impervious Cover





Source: Criterion Planners for the Puget Sound Regional Council