WESTMINSTER
COLORADO

INTEGRATING WATER AND LAND USE

Central Texas Water Conservation Symposium

February 13, 2020

Presented by Andrew Spurgin, AICP

WHO IS WESTMINSTER?

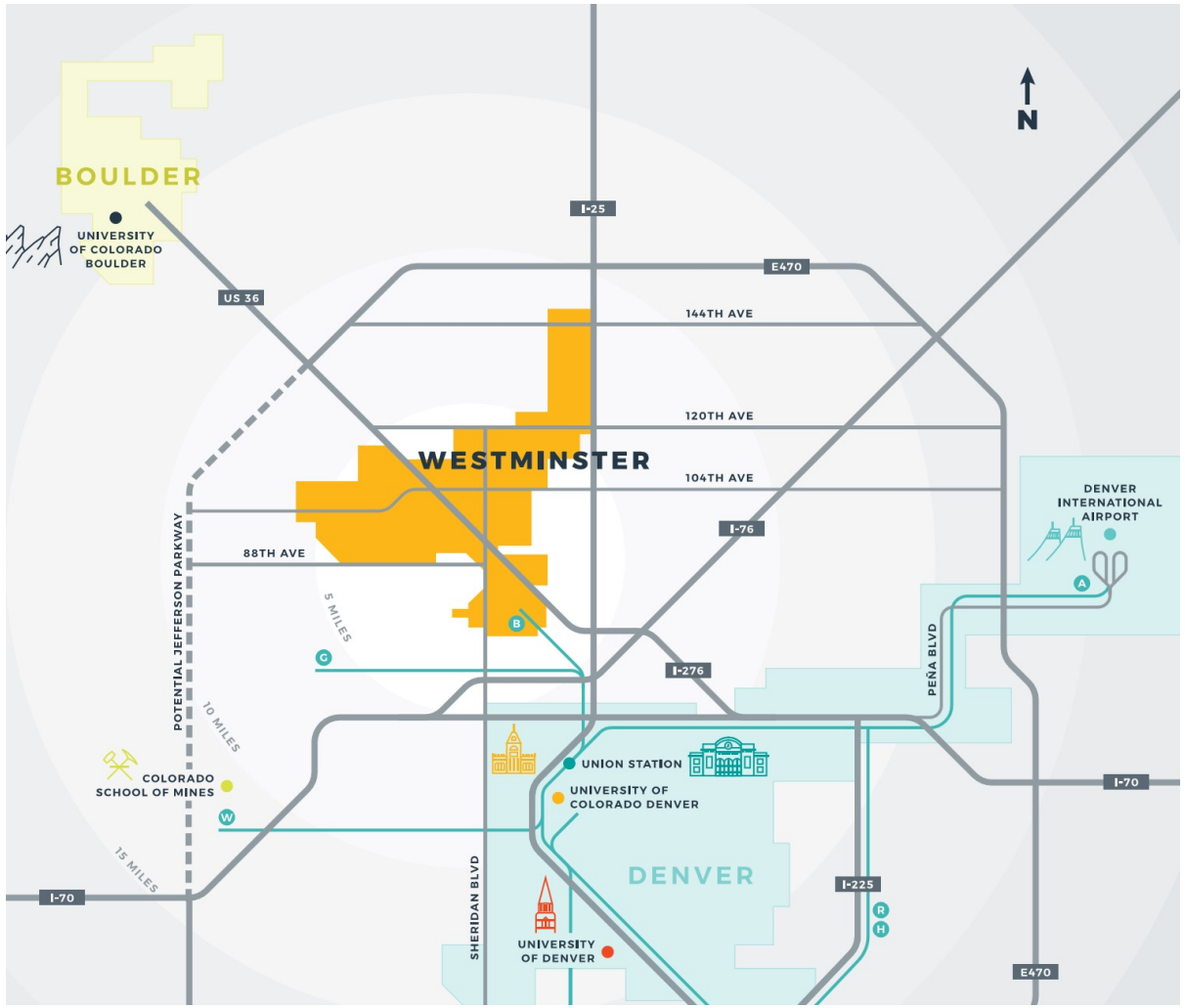
Midpoint of Denver-Boulder corridor

113,479 population (US Census PEP)

134,193 water service population

34 square miles

Accessible: US 36, I-25, RTD B Line



WHY MANAGE GROWTH?

Water is limited

Land is limited

Balanced growth is crucial

STATE WATER SUPPLY GAP

- Colorado Water Conservation Board has recently completed a state-wide analysis identifying the State's water gap by 2050
- 2.5 to 7.5 million acre-foot gap, depending on the modeling scenario
- For perspective, Westminster currently uses 20,000 and 23,000 acre-feet.
- **Colorado is water-short and does not yet have a means to meet growing water demands.**

BUILDING WATER CONCERNS INTO COMMUNITY CULTURE

- Community history fosters awareness of water supply issues
- Out of adversity and need collaboration is born

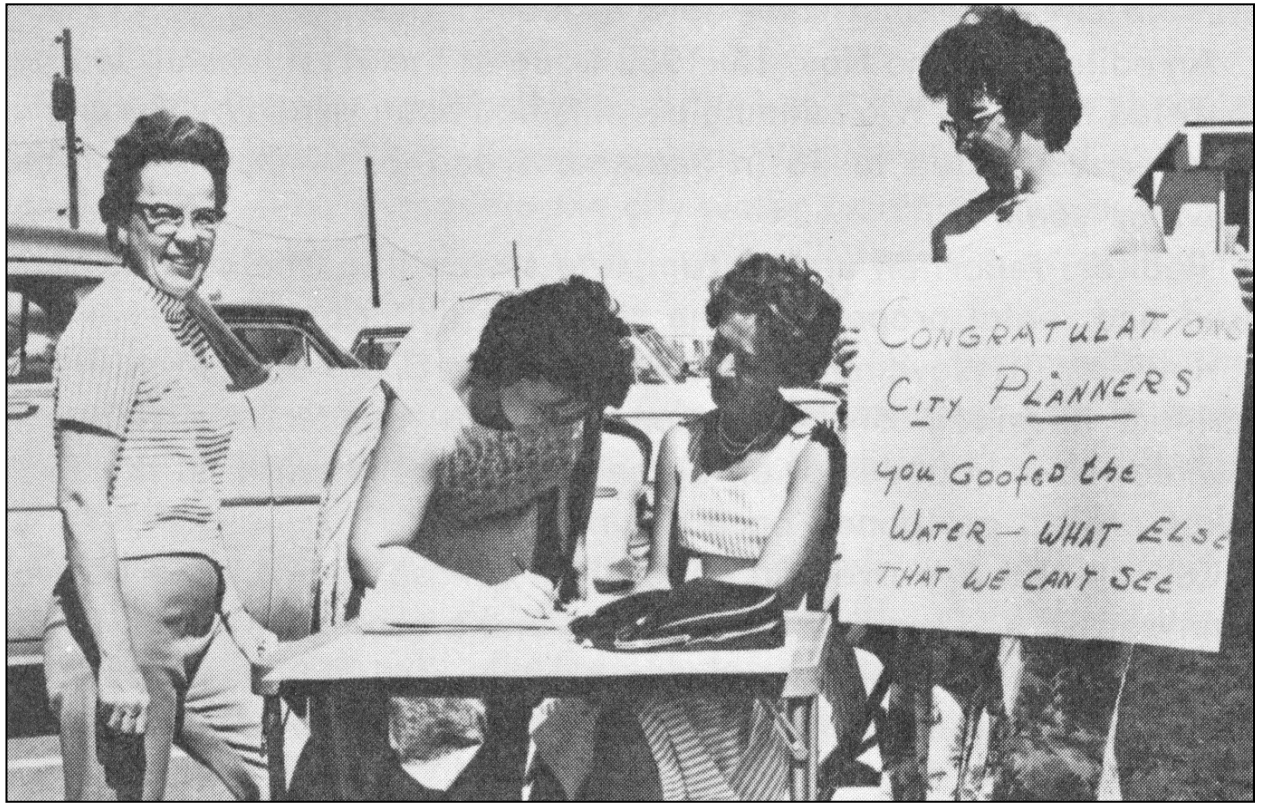
GROWTH 1911-1957

- Post-war growth
- First water restrictions implemented
- Move to home rule

Year	Population
1920	235
1930	436
1940	534
1950	1,686
1960	13,850

“LONG, HOT SUMMER” OF 1962

- Water shortages require City to use different water source
- Water quality water leads to “Mothers’ March”
- Citizens Committee on Water formed
- *COMMUNITY AWARENESS*



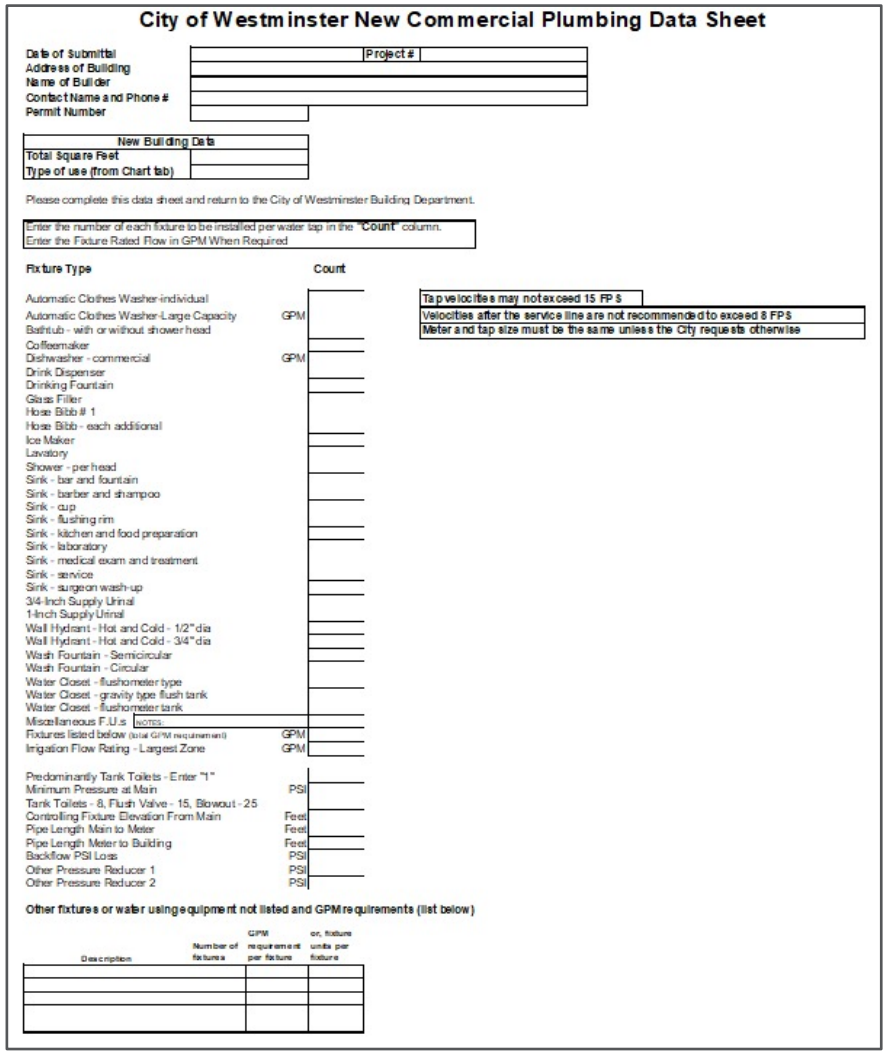
GROWTH SINCE 1970

- 1970-1971 annexations
- 1970 to 1980 = 157% population increase
- Growth outpaced available water supply
- Growth Management Program established in 1978
- *TEAMWORK*

Year	Population
1960	13,850
1970	19,512
1980	50,211
1990	74,625
2000	100,940
2010	106,144
2018	113,479

1990s – 2000s: INCREASED COORDINATION

- Updated tap fees and size determinations to ensure rates support long term infrastructure
- Correlation of tap sizes and water usage
- Excel calculator replicated for other Building Division related tools - *COORDINATION*



City of Westminster New Commercial Plumbing Data Sheet

Date of Submittal | Project #
Address of Building
Name of Builder
Contact Name and Phone #
Permit Number

New Building Data
Total Square Feet
Type of use (from Chart tab)

Please complete this data sheet and return to the City of Westminster Building Department.

Enter the number of each fixture to be installed per water tap in the "Count" column.
Enter the Fixture Rated Flow in GPM When Required

Fixture Type		Count
Automatic Clothes Washer-individual		
Automatic Clothes Washer-Large Capacity	GPM	
Bathtub - with or without shower head		
Coffeemaker		
Dishwasher - commercial	GPM	
Drink Dispenser		
Drinking Fountain		
Glass Filler		
Hose Bibb # 1		
Hose Bibb - each additional		
Ice Maker		
Lavatory		
Shower - per head		
Sink - bar and fountain		
Sink - barber and shampoo		
Sink - cup		
Sink - flushing rim		
Sink - kitchen and food preparation		
Sink - laboratory		
Sink - medical exam and treatment		
Sink - service		
Sink - surgeon wash-up		
3/4-Inch Supply Urinal		
1-Inch Supply Urinal		
Wall Hydrant - Hot and Cold - 1/2" dia		
Wall Hydrant - Hot and Cold - 3/4" dia		
Wash Fountain - Semicircular		
Wash Fountain - Circular		
Water Closet - flushometer type		
Water Closet - gravity type flush tank		
Water Closet - flushometer tank		
Miscellaneous F.U.s (NOTES:		
Fixtures listed below (total GPM requirement)	GPM	
Irrigation Flow Rating - Largest Zone	GPM	
Predominantly Tank Toilets - Enter "1"		
Minimum Pressure at Main	PSI	
Tank Toilets - 8, Flush Valve - 15, Blowout - 25		
Controlling Fixture Elevation From Main	Feet	
Pipe Length Main to Meter	Feet	
Pipe Length Meter to Building	Feet	
Backflow PSI Loss	PSI	
Other Pressure Reducer 1	PSI	
Other Pressure Reducer 2	PSI	

Tap velocities may not exceed 15 FPS
Velocities after the service line are not recommended to exceed 8 FPS
Meter and tap size must be the same unless the City requests otherwise

Other fixtures or water using equipment not listed and GPM requirements (list below)

Description	Number of fixtures	GPM requirement per fixture	or, fixture units per fixture

POST DROUGHT

- Revised landscape and irrigation standards
- Additional resources for development paid by PWU
  - Landscape architect position
  - Inspector position

POST DROUGHT (continued)

- Link parcels and water usage in GIS
- Planners identified future development patterns to help improve water demand models

RECENT ACTIONS

- Increased dialogue with City Council on the interrelatedness of the Comprehensive Plan and Water Supply Plan
  - Supply gap and costs to close gap
  - Demand projections

RECENT ACTIONS (continued)

- 2013 Comprehensive and Water Supply Plans
  - Water supply impact evaluation for new projects
  - Revised modeling to accommodate new types of development
  - Closing water supply gap determined achievable
- Pre-application review meetings to lay out tap free process and projected water use
- Adoption of WaterSense fixture requirements

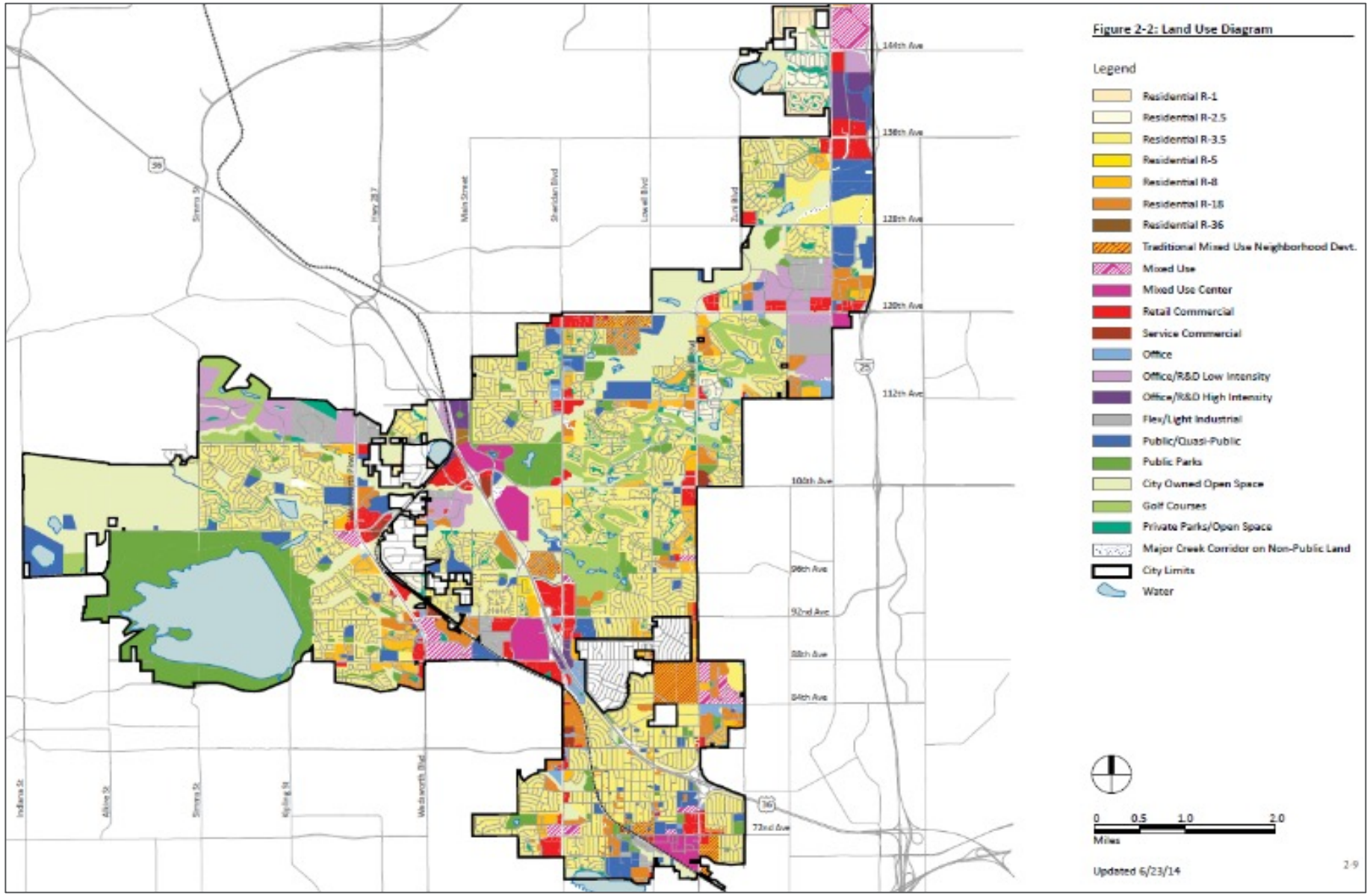
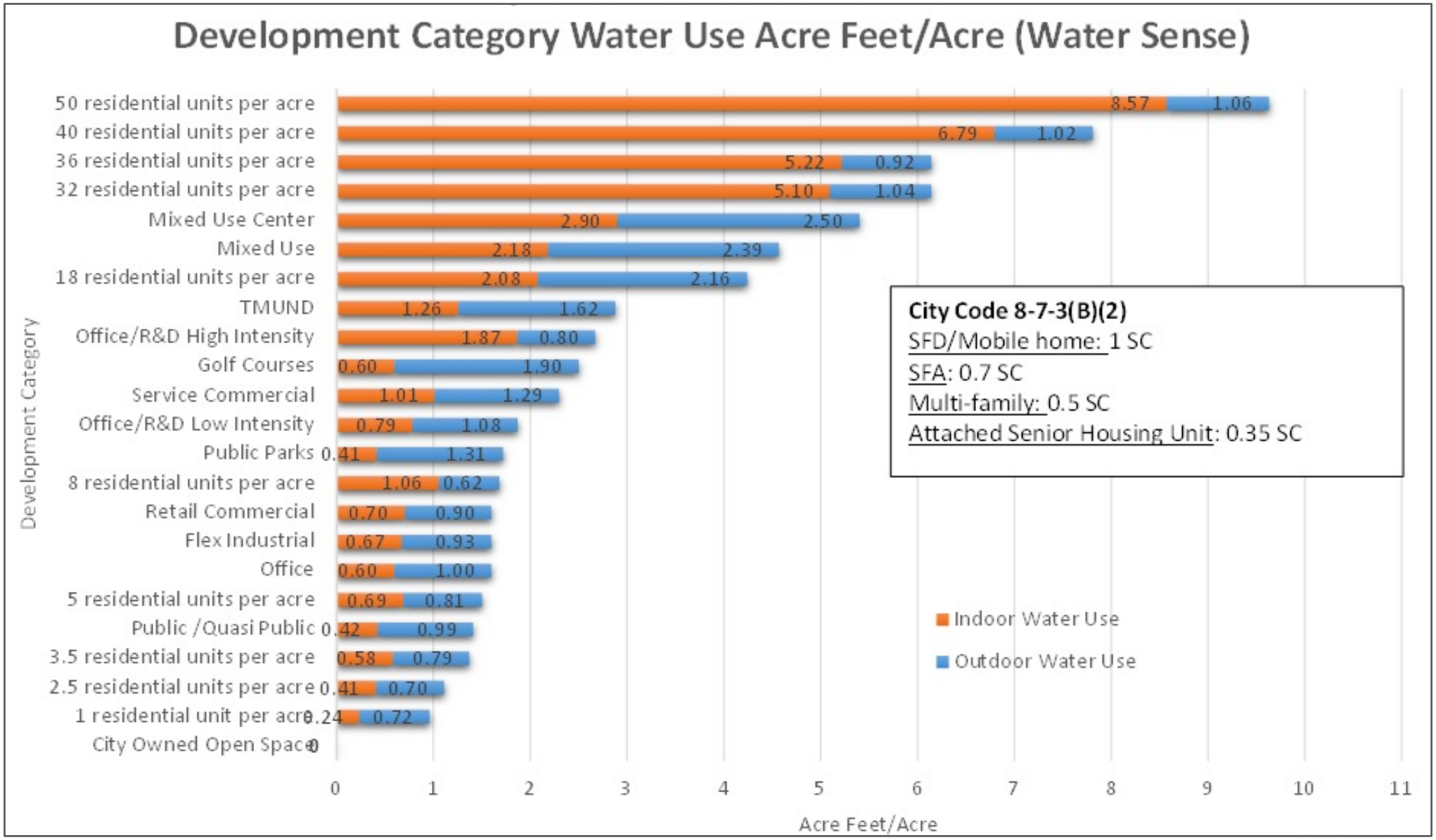


Figure 2-2: Land Use Diagram
Legend
Residential R-1
Residential R-2.5
Residential R-3.5
Residential R-5
Residential R-8
Residential R-18
Residential R-36
Traditional Mixed Use Neighborhood Devt.
Mixed Use
Mixed Use Center
Retail Commercial
Service Commercial
Office
Office/R&D Low Intensity
Office/R&D High Intensity
Flex/Light Industrial
Public/Quasi-Public
Public Parks
City Owned Open Space
Golf Courses
Private Parks/Open Space
Major Creek Corridor on Non-Public Land
City Limits
Water
144th Ave
138th Ave
128th Ave
120th Ave
112th Ave
104th Ave
96th Ave
92nd Ave
88th Ave
84th Ave
73rd Ave
Main Street
Sheridan Blvd
Lowell Blvd
Zuni Blvd
Hwy 287
Simms St
Indiana St
Alkire St
Kipling St
Wadsworth Blvd
0 0.5 1.0 2.0
Miles
Updated 6/23/14
2-9


Development Category Water Use Acre Feet/Acre (Water Sense)
50 residential units per acre 8.57 1.06
40 residential units per acre 6.79 1.02
36 residential units per acre 5.22 0.92
32 residential units per acre 5.10 1.04
Mixed Use Center 2.90 2.50
Mixed Use 2.18 2.39
18 residential units per acre 2.08 2.16
TMUND 1.26 1.62
Office/R&D High Intensity 1.87 0.80
Golf Courses 0.60 1.90
Service Commercial 1.01 1.29
Office/R&D Low Intensity 0.79 1.08
Public Parks 0.41 1.31
8 residential units per acre 1.06 0.62
Retail Commercial 0.70 0.90
Flex Industrial 0.67 0.93
Office 0.60 1.00
5 residential units per acre 0.69 0.81
Public /Quasi Public 0.42 0.99
3.5 residential units per acre 0.58 0.79
2.5 residential units per acre 0.41 0.70
1 residential unit per acre 0.24 0.72
City Owned Open Space 0
Development Category
0 1 2 3 4 5 6 7 8 9 10 11
Acre Feet/Acre
City Code 8-7-3(B)(2)
SFD/Mobile home: 1 SC
SFA: 0.7 SC
Multi-family: 0.5 SC
Attached Senior Housing Unit: 0.35 SC
Indoor Water Use
Outdoor Water Use

CURRENT WATER SUPPLY PLAN

NEW DEVELOPMENT -DENSITY

2.49 Acres

2.5 Units/Acre

5.5 AF

2.20 AF/A

2.53 Acres

11 Units/Acre

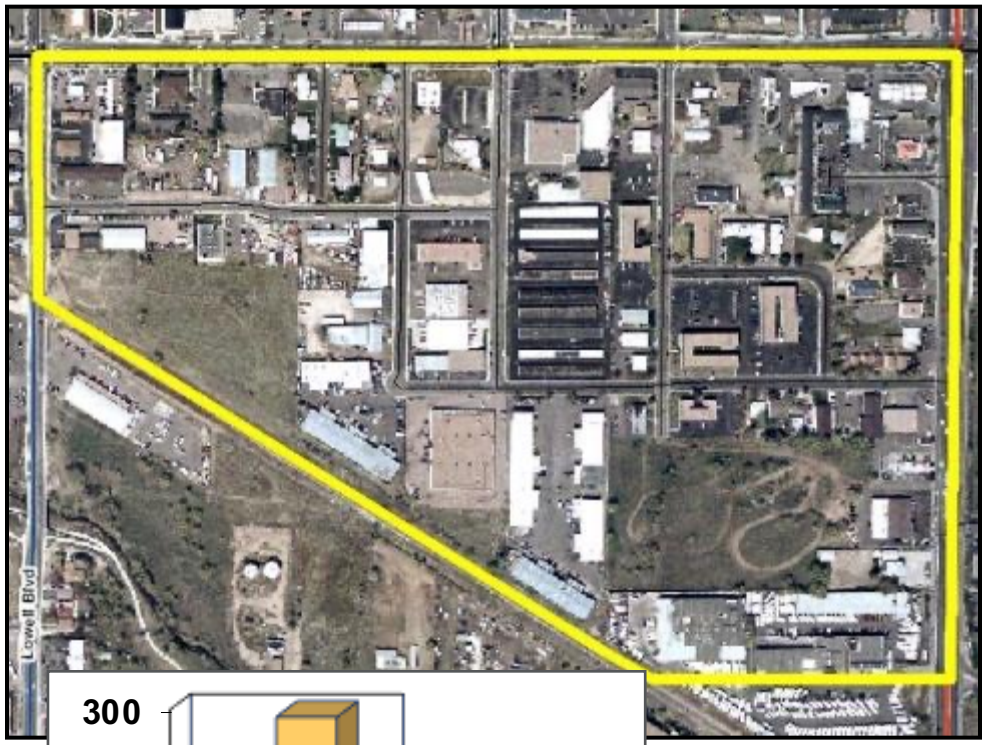
7.85 AF

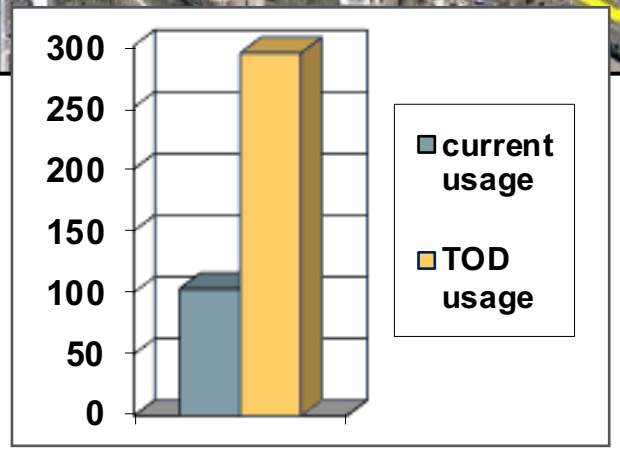
3.10 AF/A

+ *42%*

REDEVELOPMENT

Planned TOD – Westminster Station



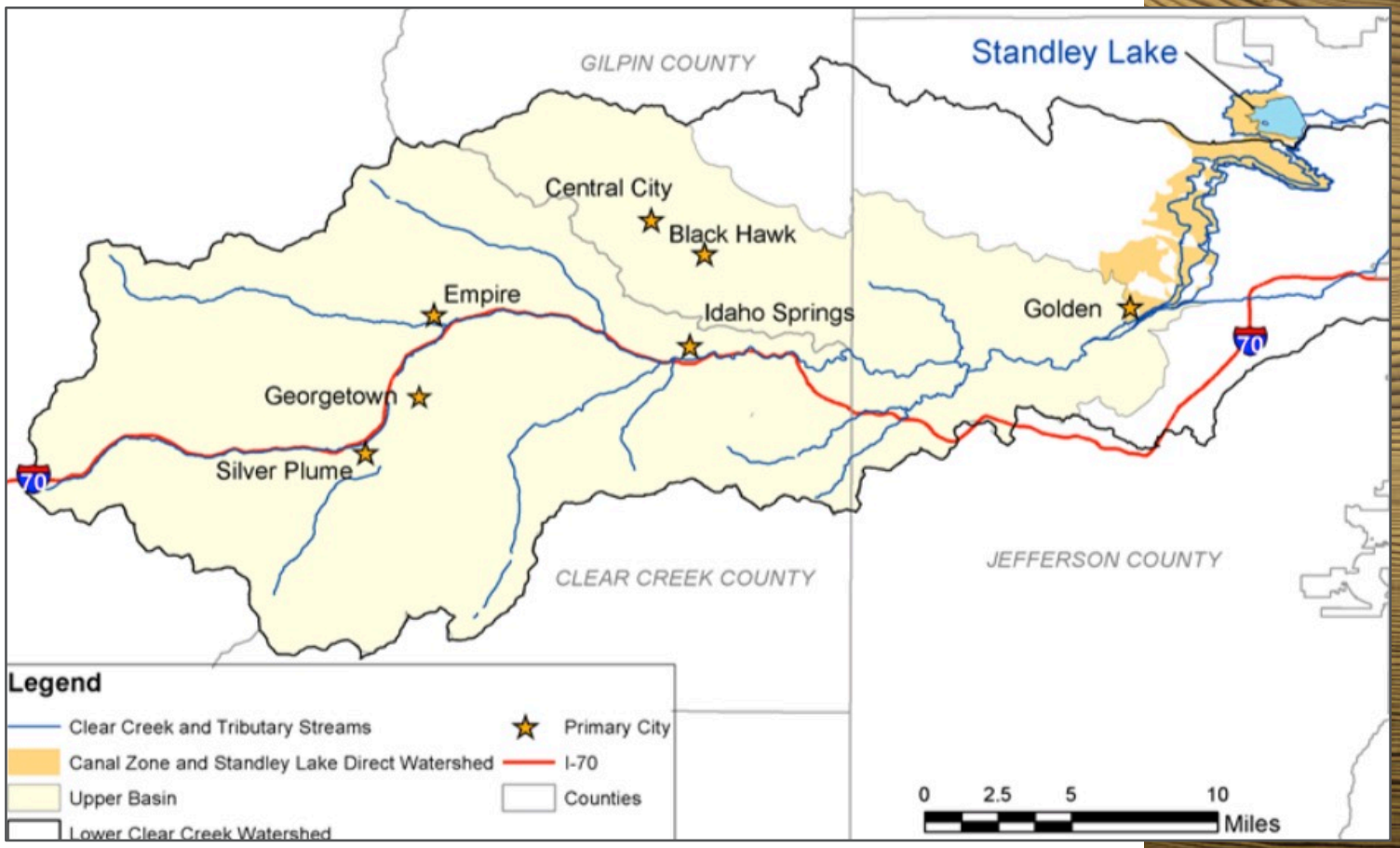


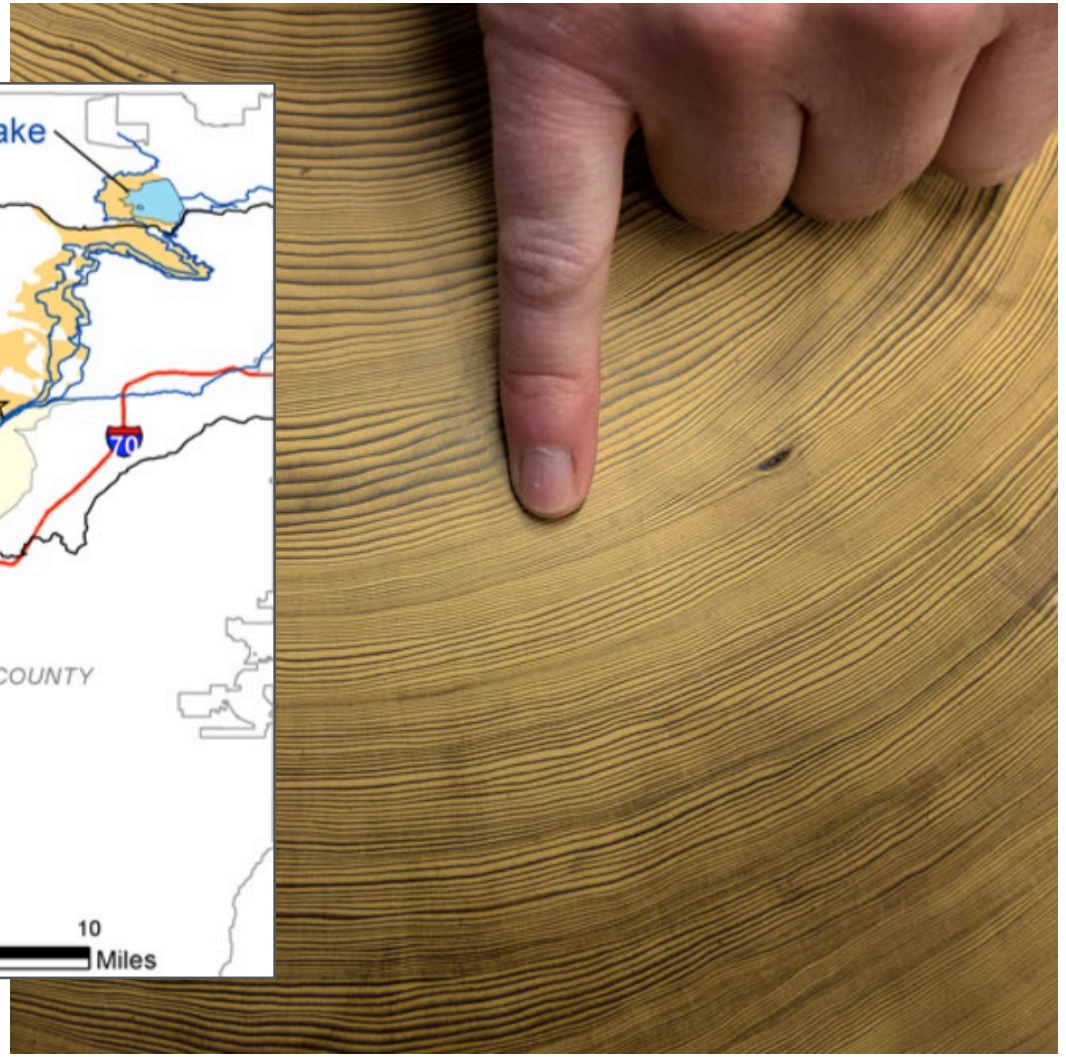
REVITALIZATION

CURRENT WORK

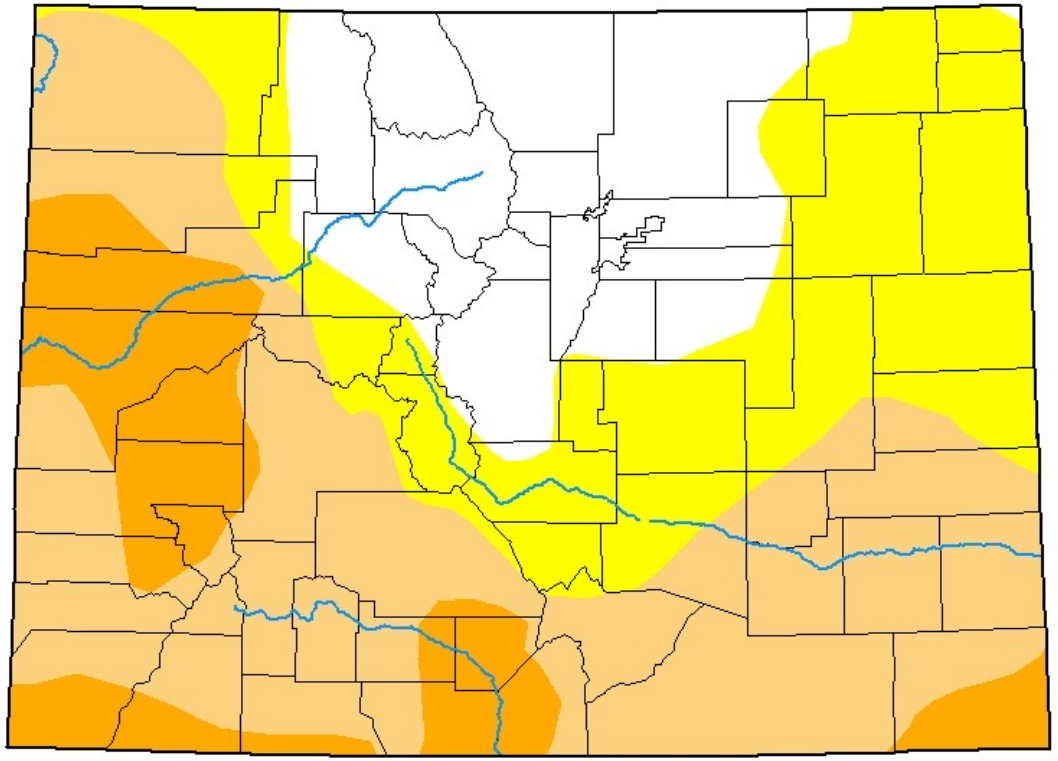
- Water supply update
- Drought management plan
- Resiliency

WATER SUPPLY PLANNING



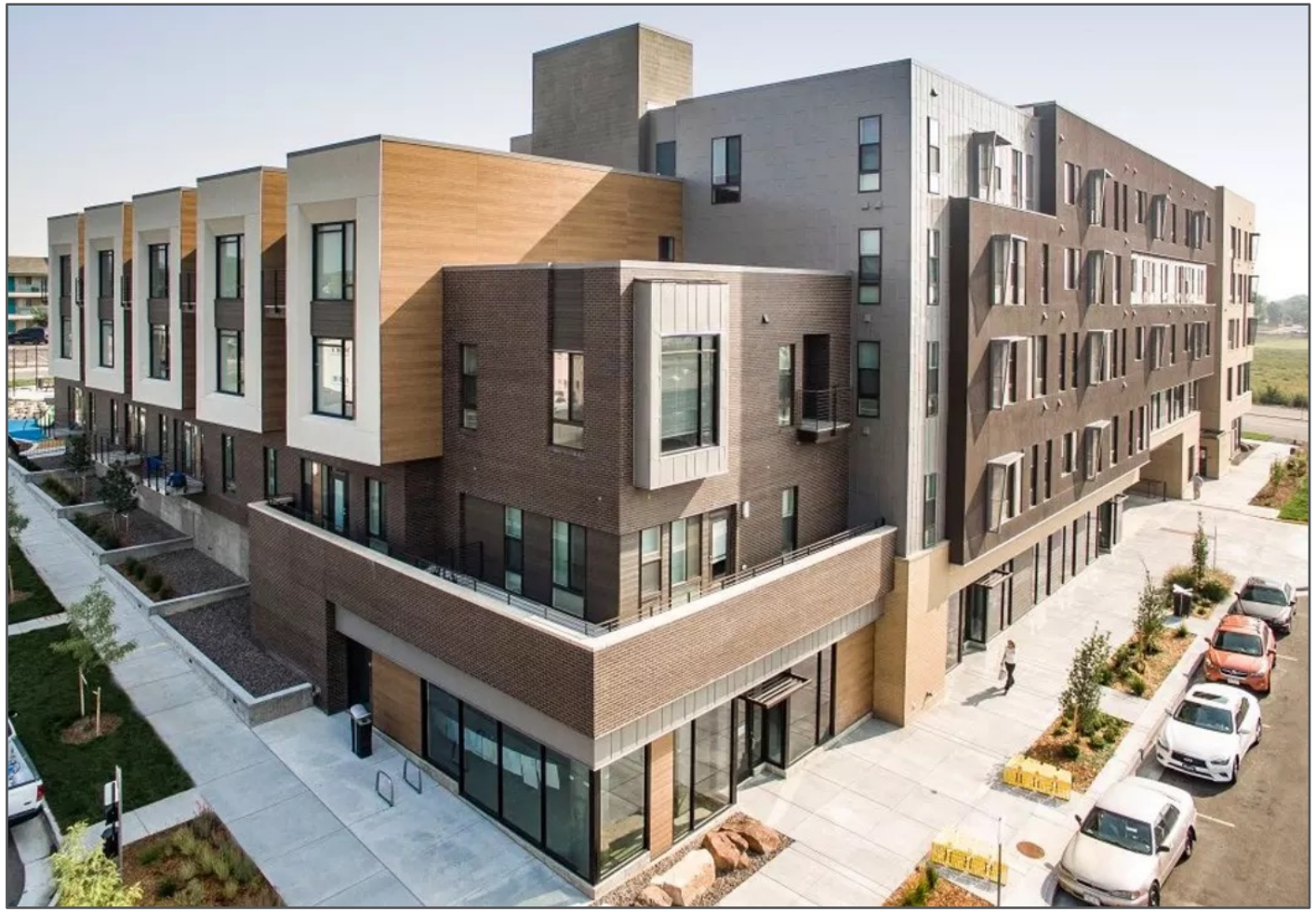


DROUGHT MANAGEMENT



January 23, 2020

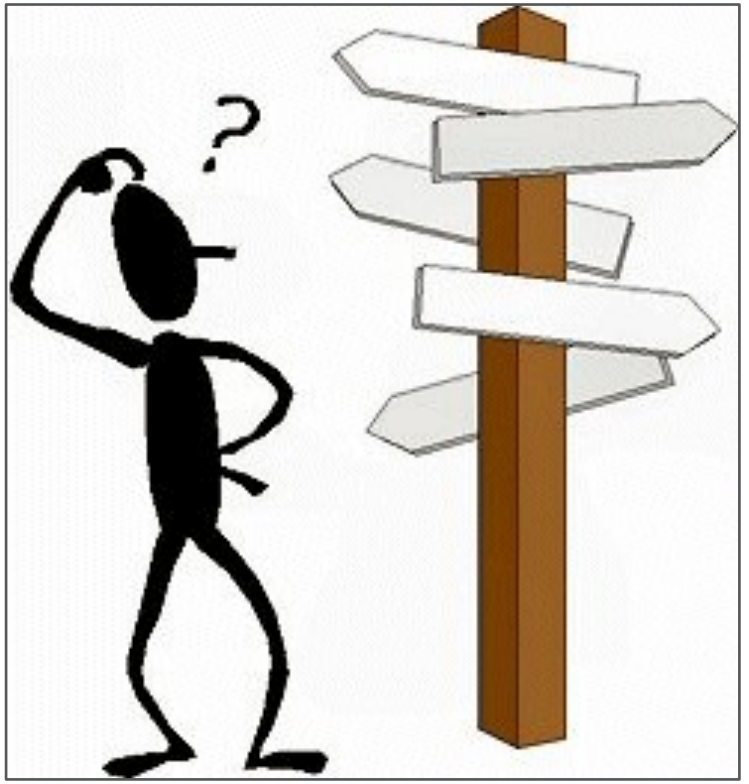
DROUGHT MANAGEMENT (continued)

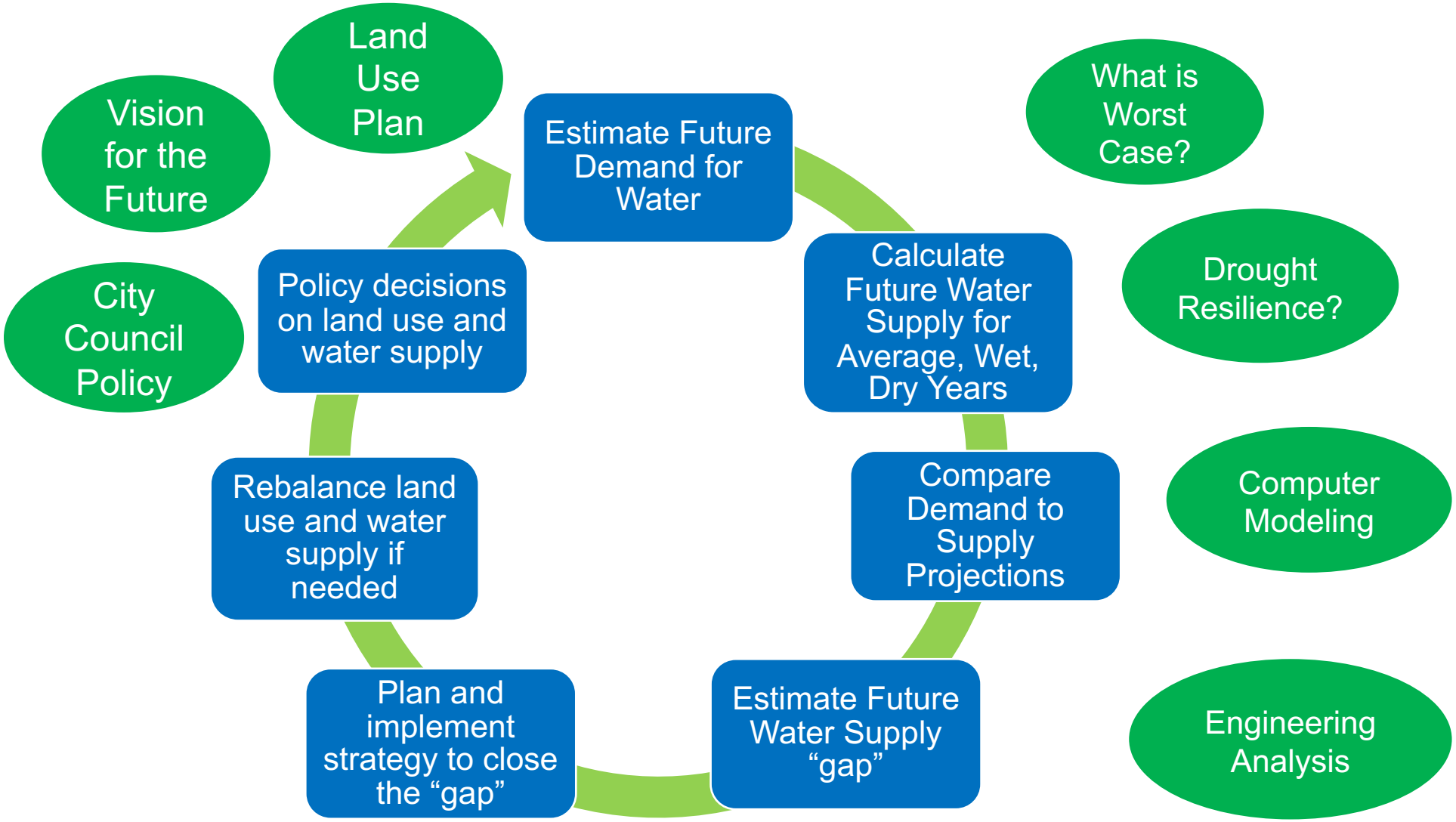


Alto
Westminster Station
https://www.livealtoapts.com/

UNCERTAINTY

- Goal of current effort is to test the resiliency of the water system through a variety of possible futures
- No amount of planning will 100% mitigate future uncertainty
- How do we plan for the greatest resiliency to multiple possible futures?




Land Use Plan
Vision for the Future
City Council Policy
Estimate Future Demand for Water
Policy decisions on land use and water supply
Rebalance land use and water supply if needed
Plan and implement strategy to close the “gap”
Estimate Future Water Supply “gap”
Compare Demand to Supply Projections
Calculate Future Water Supply for Average, Wet, Dry Years
What is Worst Case?
Drought Resilience?
Computer Modeling
Engineering Analysis

ACTION PLAN

1. Identify stakeholders
2. Establish a team
3. Educate the team
4. MEET REGULARLY
5. Develop cooperative projects
6. Integrate water into the Comprehensive Plan
7. Integrate infrastructure into the Comprehensive Plan

Questions? Comments?

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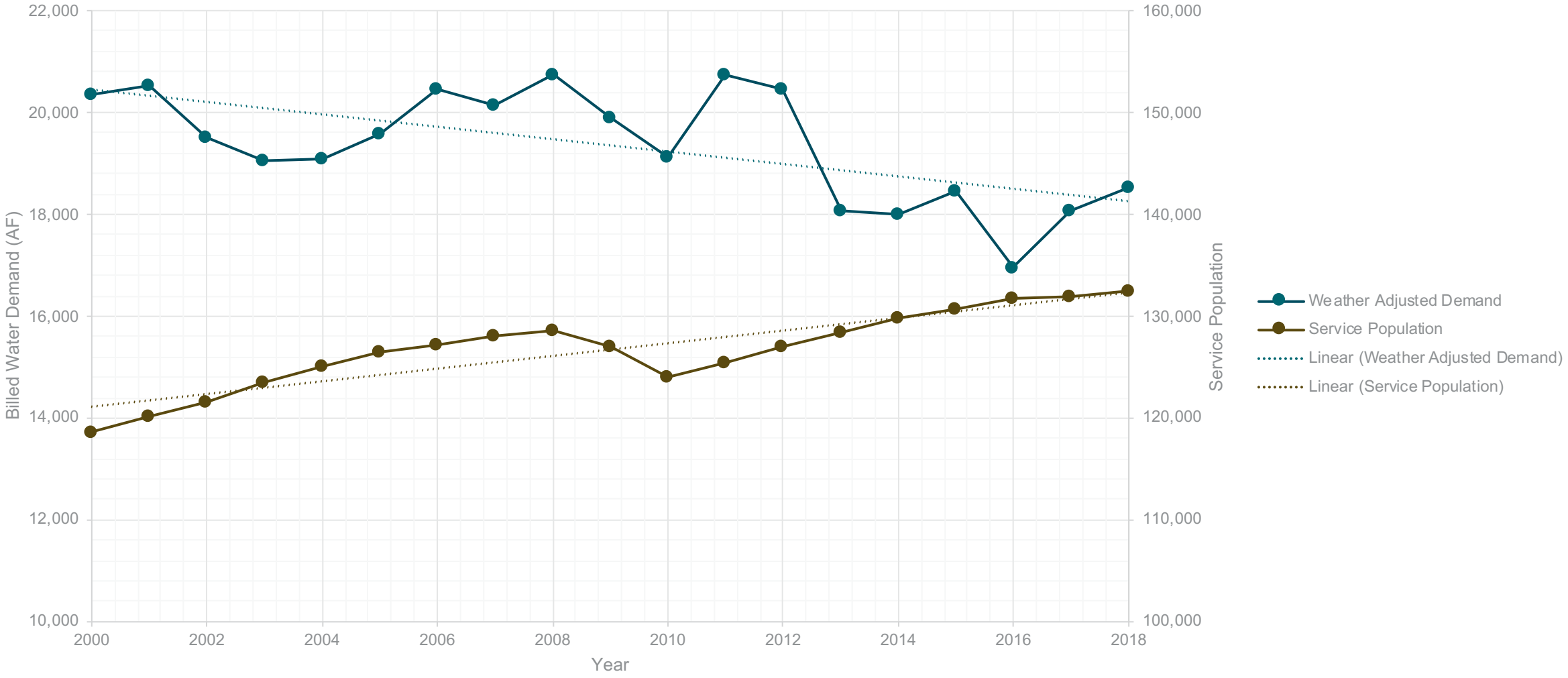
Does Conservation Make a Difference? Absolutely.



RATE & TAP FEES TO SUPPORT CONSERVATION

- Scalable residential tap fees
  - Based upon actual water use data to define water allocation
  - SFD = # of bathrooms
  - Multi-family = # of bedrooms
  - Irrigable area calculated for outdoor tap fee
- Commercial
  - Changing away from use based on meter size
  - Bills now based on purchased Service Commitments
- Sewer
  - Still based on Average Winter Consumption
  - Minimum charge of 2,000 – fixed fee for “readiness to serve”