

City Of Greeley – Water Resources

“Nothing is more useful than water,
but it will purchase scarce anything;
scarce anything can be had in exchange for it.”

Adam Smith, *The Wealth of Nations*, 1776



**When the well is dry, we know
the worth of water."**

BENJAMIN FRANKLIN



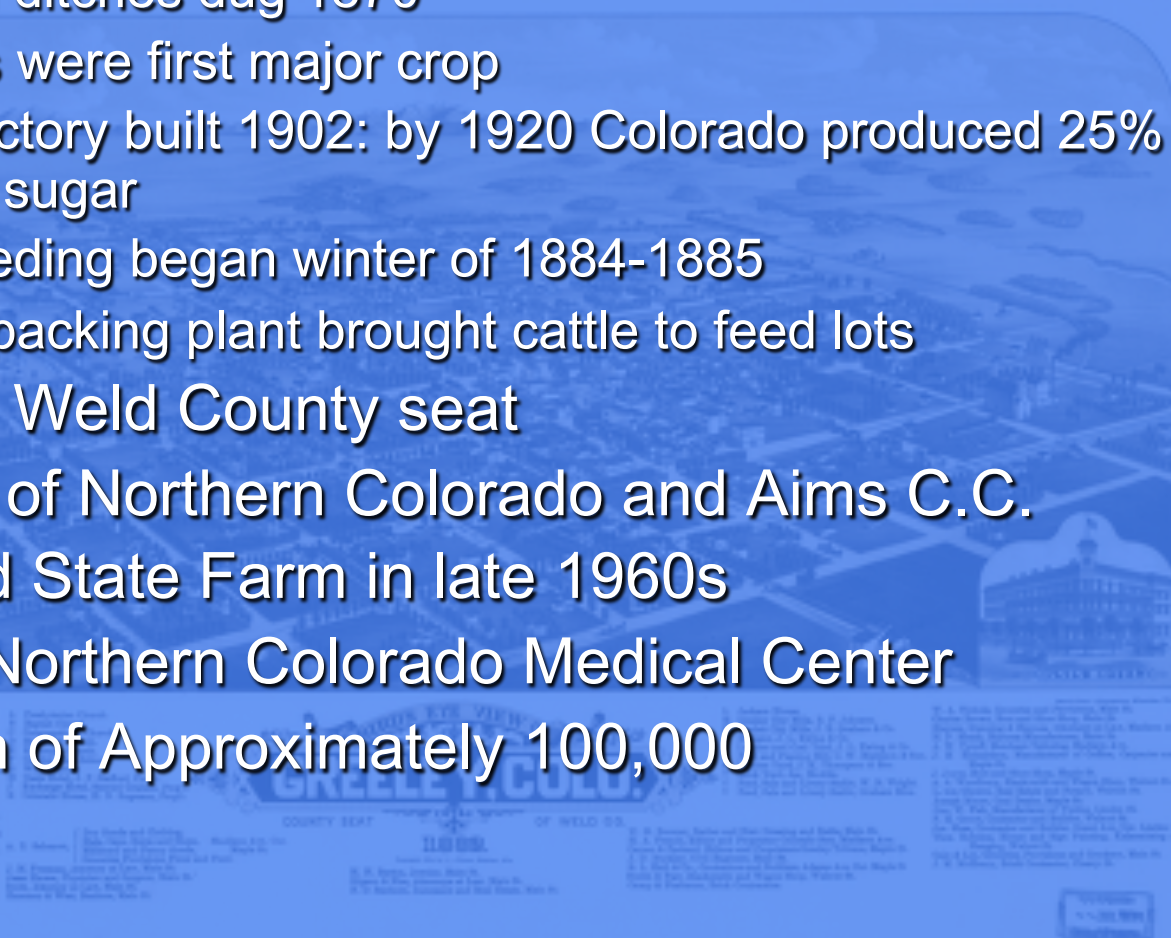
Discussing Water Rights, A Western Pastime

Scope of Presentation

- Background
- Operations – Raw Water
- Future Planning – Supply/Demand

Greeley's Economic History

- Union Colony founded 1870 as agricultural utopia
 - Irrigation ditches dug 1870
 - Potatoes were first major crop
 - Sugar factory built 1902: by 1920 Colorado produced 25% of nation's sugar
 - Lamb feeding began winter of 1884-1885
 - Monfort packing plant brought cattle to feed lots
- Greeley is Weld County seat
- University of Northern Colorado and Aims C.C.
- Kodak and State Farm in late 1960s
- Regional Northern Colorado Medical Center
- Population of Approximately 100,000



Greeley's Economy:

- **Agricultural/ Energy related businesses**
 - Direct farm production of corn, hay, beets, wheat, and high value crops such as onions
 - Weld County #8 in country,
 - #1 in CO in 2007, and 25% of Colorado total
 - Leprino cheese plant 800,000 lb/day of mozzarella cheese for pizza!
 - »Takes a lot of dairy cows, feed, vets, equipment
 - Corporate HQ for JBS-Swift
 - Energy Sector

Greeley's Water Supply Today and Tomorrow

- Four river basins
- Two Filter Plants
- Two transmission systems

Water from Four Basins

■ Poudre River Basin

- Direct flow river rights (1860's)
- Ditch Number 3 (1870) $\frac{3}{8}$ + 20% of $\frac{5}{8}$ GIC
- Six high mountain reservoirs (1947)

■ Upper Colorado River Basin

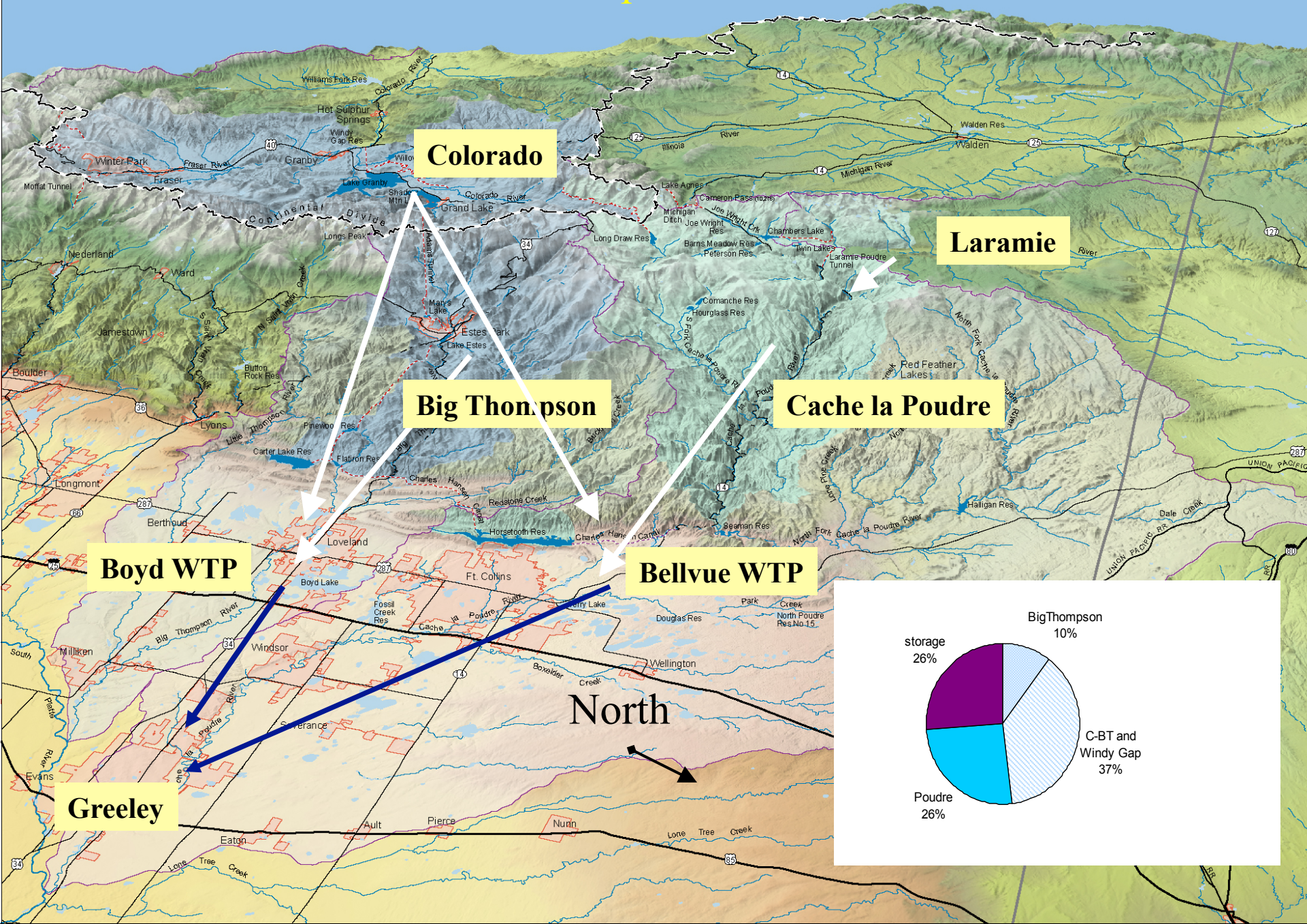
- Colorado-Big Thompson Project (22,000 units) (C-BT)
- Windy Gap Project (44 units, 10% of project)

■ Big Thompson River Basin

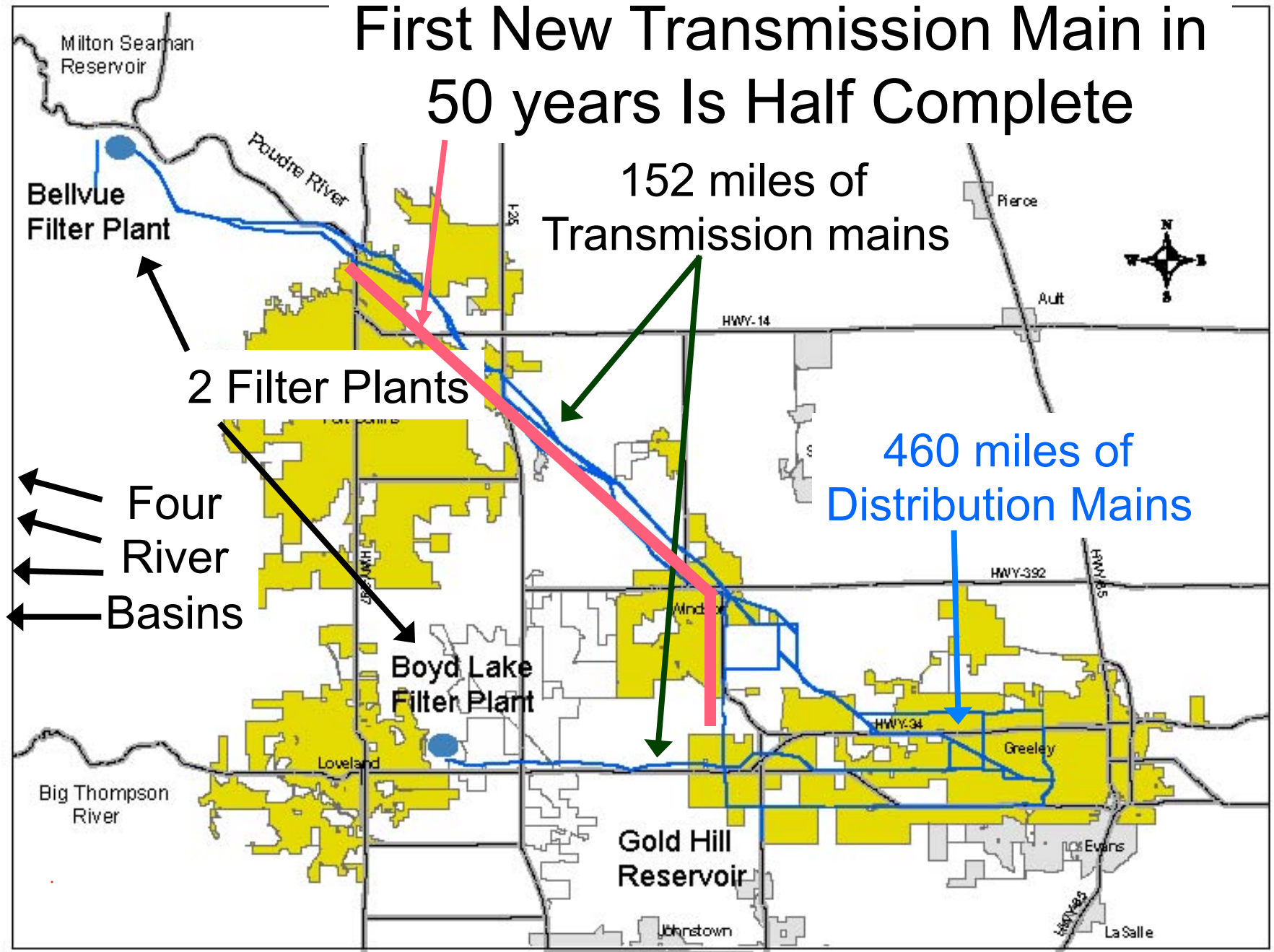
- Greeley Loveland Irrigation System (50% of company)
 - » Boyd Lake, Lake Loveland, Seven Lakes

■ Laramie River Basin

- Laramie-Poudre Tunnel (Windsor Reservoir & Canal Co)
- Bob Creek



First New Transmission Main in 50 years Is Half Complete





Water Treatment

Bellvue Filter Plant

Original 1907

Latest Upgrade

2009

32 mgd

Greeley's winter
Demand = 14 mgd

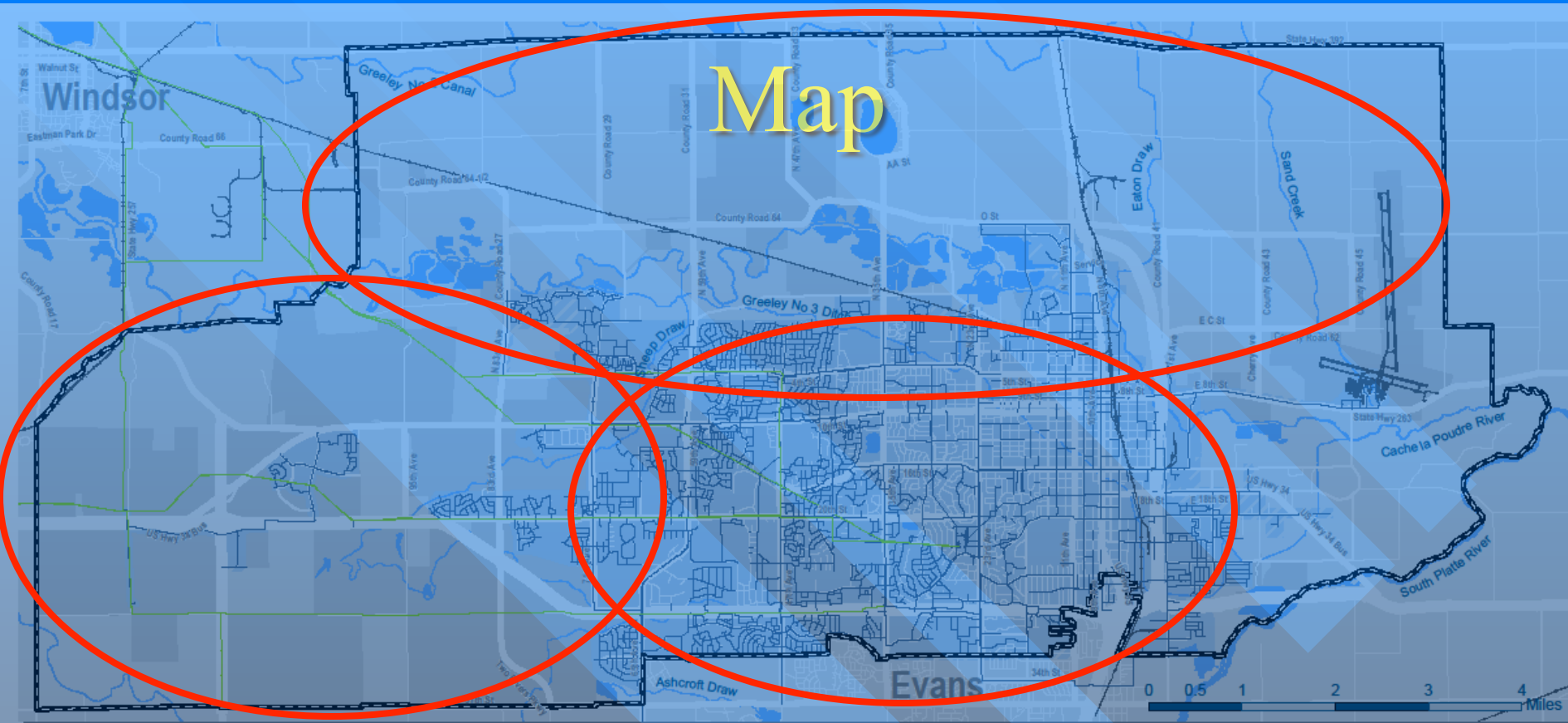
Summer = 54 mgd



Boyd Lake Filter Plant
Original 1964 Latest Upgrade 2005 38 mgd

Greeley' s 2060 Comprehensive Plan

- The 2060 Plan was adopted in 2009
- Update of “2020 Comp Plan” approved 2000
 - Reviewed key community indicators, trends, projections to assess growth and development
- Population and Growth – Population will Increase - Water Demands will Double
- Water Master Plan



2010 APFA WATER



Created: 6/29/2010 By: Planning, GIS

Legend

- 2010 APFA Water Service Boundary
- Within City Limits
- Out of City Limits
- Service Boundary:
The greatest extent of existing 8" or larger water service lines
- Water Transmission Lines
- 8" or Larger Water Lines

APFA:

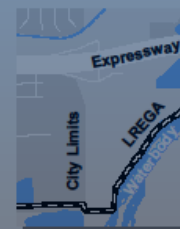
Adequate Public Facilities Area, the region within which there are existing or budgeted capital improvements for public facilities.

LREGA:

Long Range Expected Growth Area, the region within which the community is expected to grow over the next twenty to fifty years.

Service Note:

Updates to infrastructure are continual and data representation will change over time. Representation is a general boundary and further review based on different developments is required. Contact the City of Greeley to request a formal review of service locations for a subject property.



Notes:

All planimetric data was digitized from aerial photographs dated 1987, 1992, 1995, 2000, 2005, and 2008. Updates are continual and data representations will change over time. This product is not necessarily accurate to engineering or surveying standards but does meet National Mapping Accuracy Standards (NMAAS). The information contained within this document is not intended to be used for the preparation of construction documents.

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•Greeley Water is a service provider for the City's planned growth

Water Rights – Redundancy

- When your direct flow rights are called out, you have to use your stored water.
- Greeley has about 9 months water supply in storage, enough to supply today's population during a 6-year long, 50-year drought.
- For 3 months starting in June 2012 – Greeley was without direct flow rights
- Due to drought conditions and Post Fire Effects – Adequate Water Year?



Debris Flow at Boyd
Gulch



Debris Flow and Flooding into Poudre River



Poudre River at Greeley Diversion in July 2012



Planning for the Future

Supply and Demand Problem

Natural Environment



Driving Factors of Water Master Plan

- Age – Major parts of Greeley's water system are 50 to 70 years old.
- Growth /Demand– Population will over double in 50 years.
- Regulations – higher federal water quality standards: crypto, TOC,
- Competition – Regional Growth Limits
Water Availability

Water Master Plan

Four Point Plan

- Maintain what you have
 - Cement mortar lining of water lines
 - Fiberglass lining of sewer lines
- Conserve what you have
 - State approved water conservation plan
- Buy ahead of demand
 - Acquiring WSSC shares
- Build storage for the lean times
 - Halligan-Seaman Water Management Project

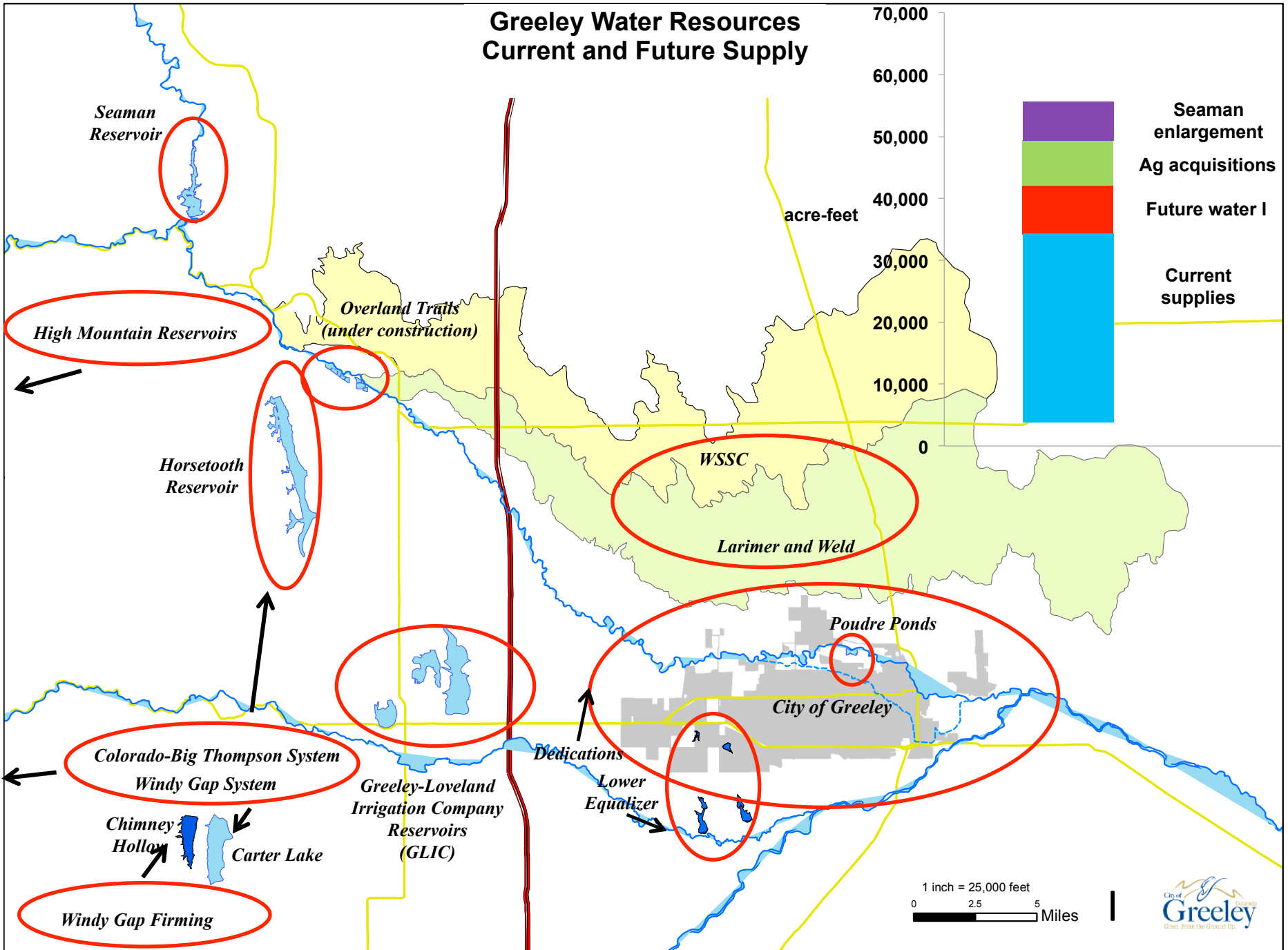
Before the Water

Water is scarce.

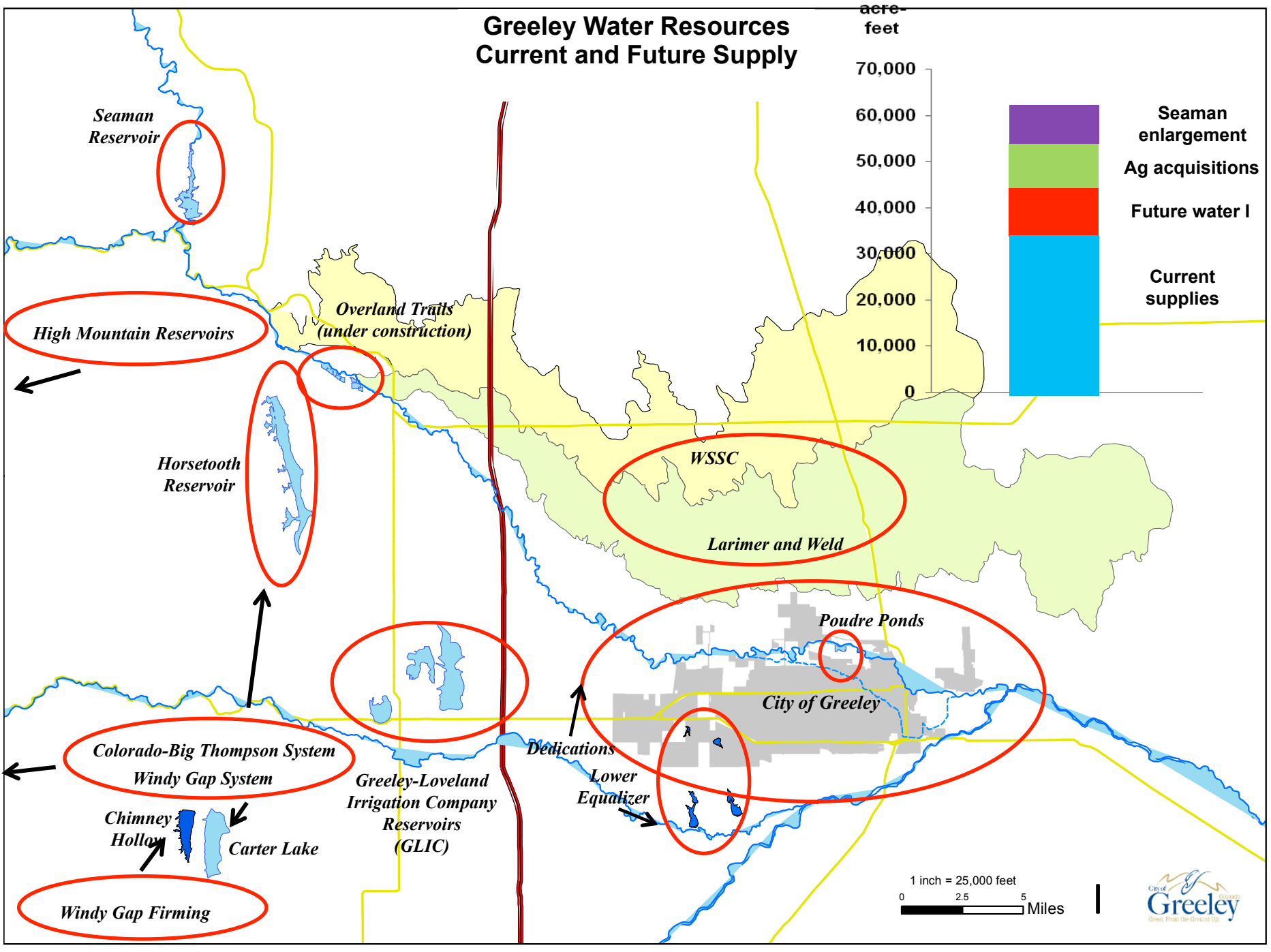
Supply Side Planning



Greeley Water Resources Current and Future Supply



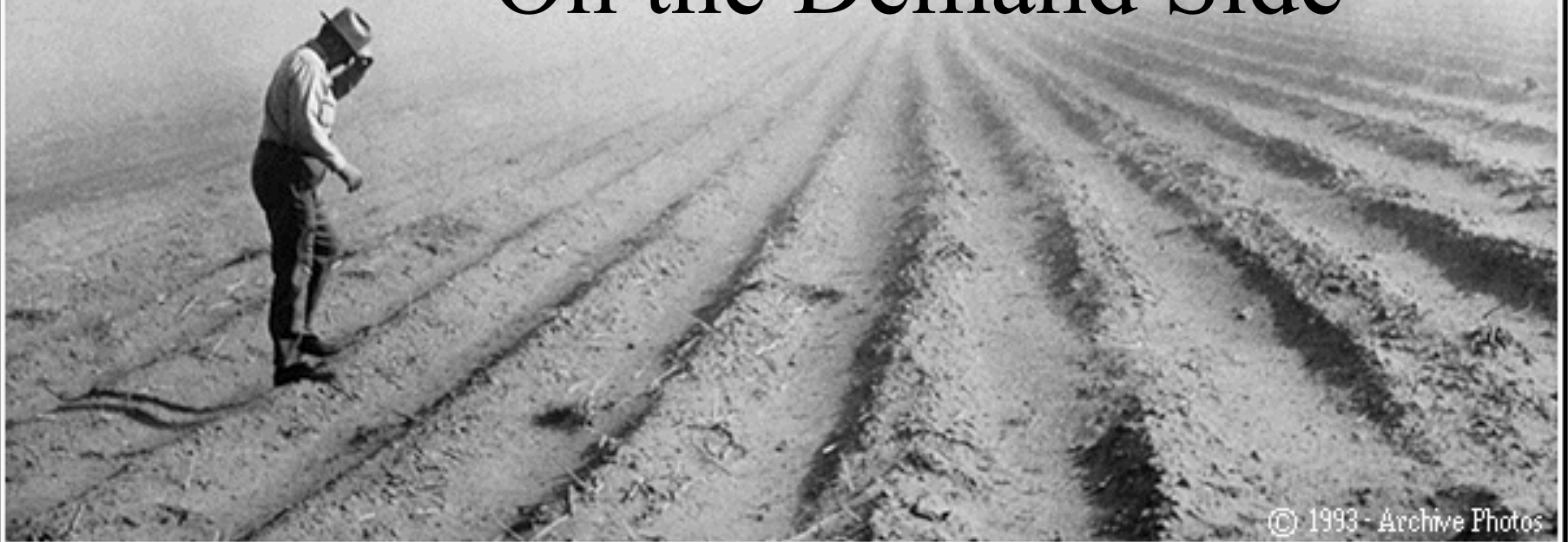
Greeley Water Resources Current and Future Supply



Drought

A regular occurrence in a semi-arid environment.

On the Demand Side



Drought Plan When Needed...

Water Conservation All the Time

- Daily conservation (watering restrictions) trims peak days and delays need for plant expansion
- Non-potable irrigation (uses existing untreated ditch water) also shaves peak demands
- Restrictions and education are both vital
- Always prohibit waste

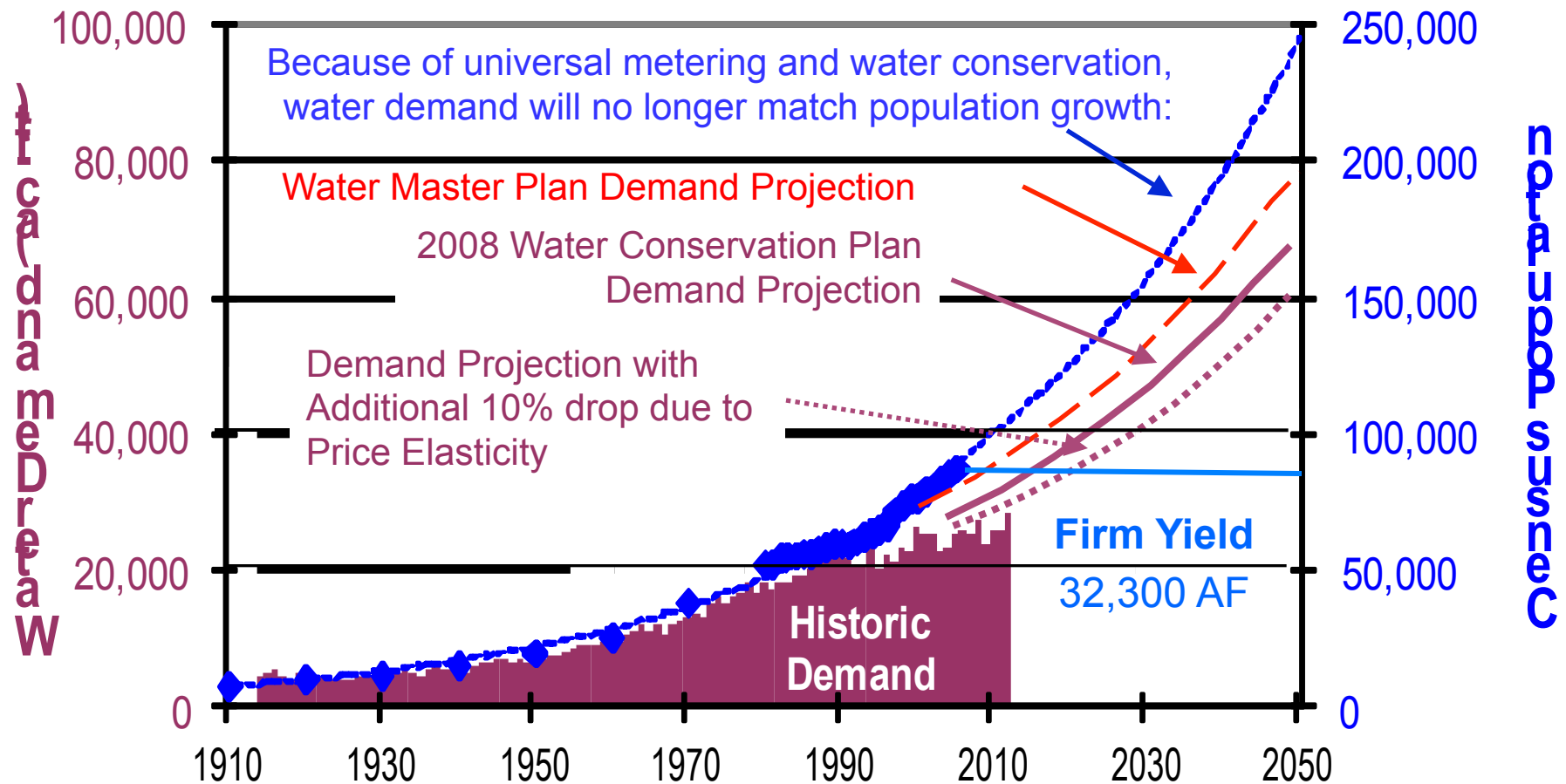
Long-Term Conservation Plan

- State law **requires** water providers to develop a state-approved conservation plan
- Greeley's Plan documents our commitment
 - Begun in 1907 with water restrictions
 - Fully metered by 1996
 - Comprehensive program by 2006
- Plan commits to additional 0.4% water demand reduction each year for 20 years
- State approved Greeley's Conservation Plan

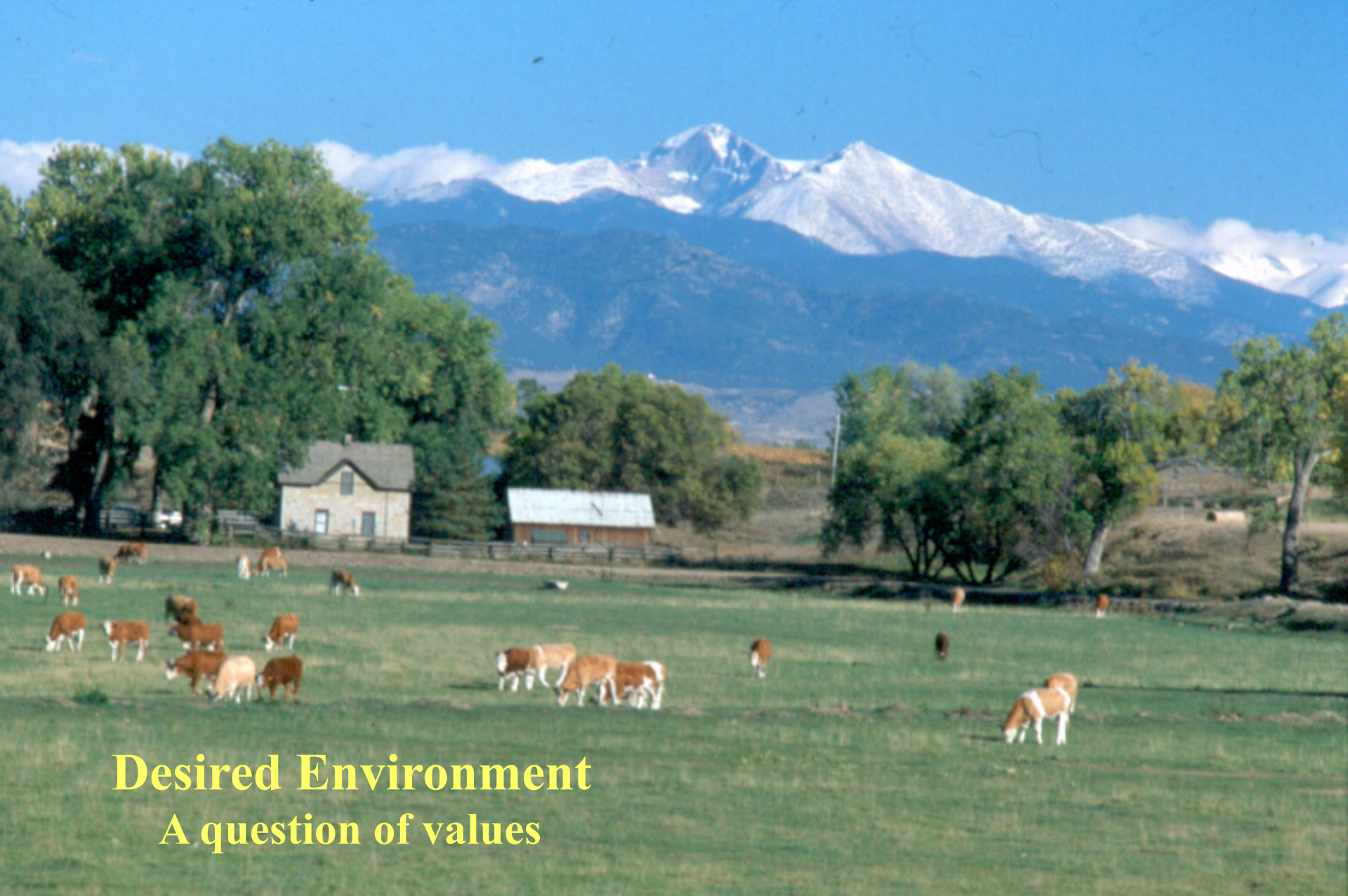
Comprehensive Conservation Program

- Fully metered since 1996
- Leak detection: less than 5% system losses
- Continual watering restrictions since 1907
- Free irrigation & commercial audits, rain sensors
 - JBS industrial conservation audit completed
 - Parks irrigation control system upgraded
- Rebates for high-efficiency washers and toilets
 - 11th Avenue toilet replacement program
- Required soil amendments; grants for xeric
- Water Budget Pilot Program – Tiered Rates
- Continual Education (e.g. water festival, mailers)

Reductions in Estimated Water Demand

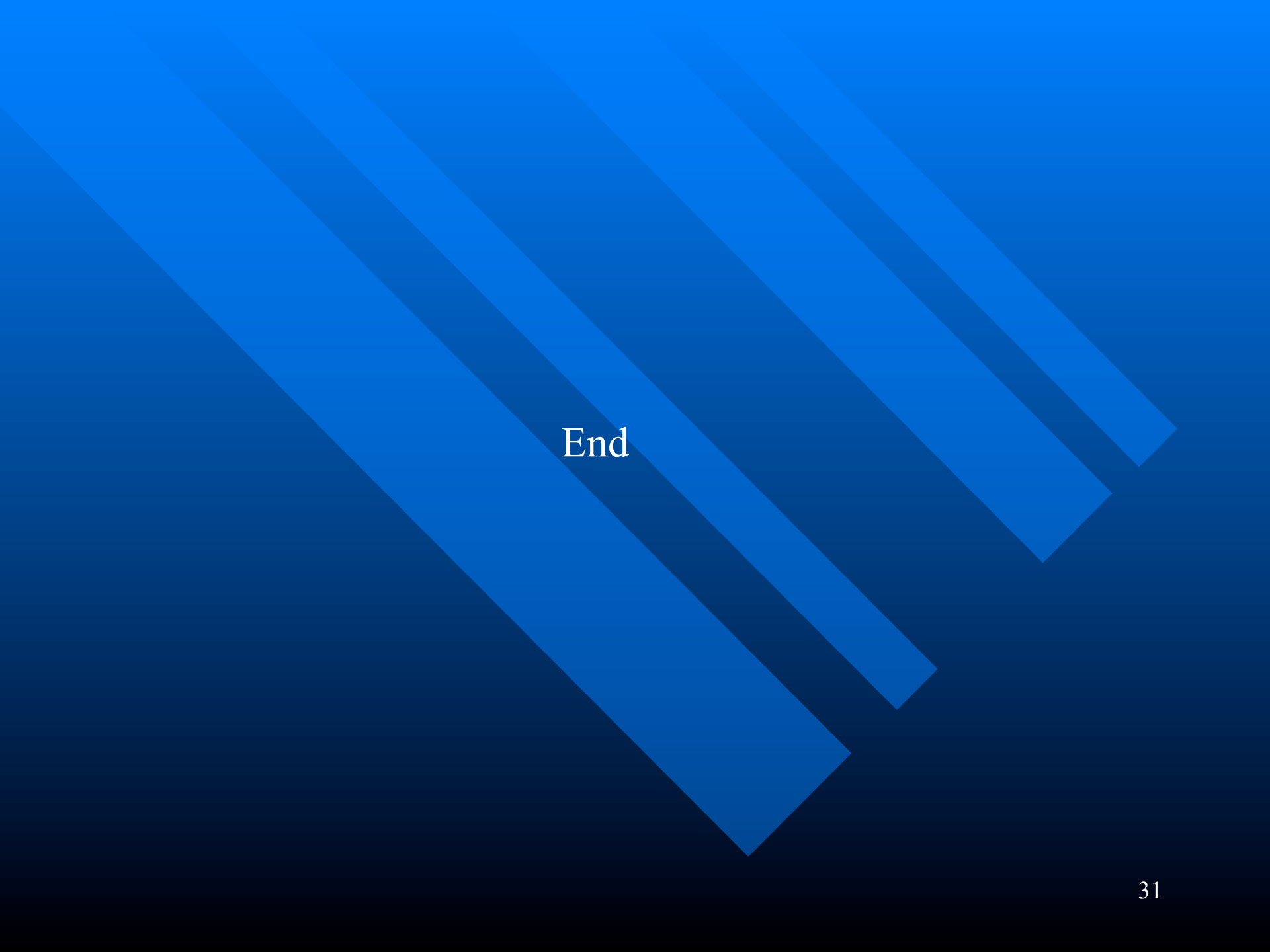


Greeley will reevaluate demand with each Master Plan revision.



Desired Environment

A question of values



End