Colorado Division of Water Resources

Water Literate Leaders of Northern Colorado
September 14, 2017
Dave Nettles, Division Engineer
Mark Simpson, Poudre Water Commissioner
Jean Lever, Thompson Water Commissioner



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Department of Natural Resources



- Water Resources
- Parks and Wildlife
- Oil & Gas
 Conservation
 Commission
- Avalanche Information Center
- Forestry

- Water
 - **Conservation Board**
- Reclamation, Mining and Safety
- State Land Board

https://cdnr.us/



COLORADO Division of Water Resources Department of Natural Resources

- The position of Water Commissioner was created by the Legislature in 1879
- The office of State Hydraulic Engineer was created by the Legislature in 1881
- State Engineer is Governor Appointed
- State Engineer's Office became part of DNR in 1969

www.water.state.co.us

Division of Water Resources Roles and Responsibilities

- Water Administration
 - Surface & Underground
 - Water Court Participation
- Interstate Compacts and Decrees
- Flow Measurement (Hydrographic Program)
- Public Safety (Dams and Wells)
- Water Well Permitting
- Public Information Service/Record Keeping



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DWR Water Divisions & Offices



Division of Water Resources

Division 1 Water Districts Map



South Platte Basin Hydrology

- USGS estimates total basin <u>native flows</u> to average about 1,400,000 acre-feet annually
- <u>Transmountain water imports</u> average about 400,000 acre-feet annually
- Total annual surface water diversions average about 4,000,000 acre-feet annually



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South Platte Water Usage

1980 Surface Water Use Breakdown

2005 Surface Water Use Breakdown



Ground Water Only	Ground Water & Surface Water	Surface Water Only
18%	27%	55%



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Source: Colorado Decision Support System - 2005

Department of Natural Resources

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SWSI 2010 – South Platte Basin

http://cwcb.state.co.us/water-management/water-supply-planning/pages/swsi2010.aspx

- Population
 - Current (2010) 5.05 million
 - Projected (2050) 8.6 to 10 million
- Irrigated Area
 - Current (2010) 860,000 acres
 - Projected (2050) Decrease by 180,000 to 267,000 acres
- Municipal & Industrial Supply "Gap"
 - between 99,000 AF and 360,000 AF
 - 110,000 130,000 AF (With Identified Projects and Process)



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Key Water Measurement Terms

cfs – a cubic foot of water past a fixed point in one second (second-foot)

Acre-foot – one acre covered one foot in depth (1 cfs for 1 day equals approximately 2 acre-feet) – Average surburban family uses about ½ acre-foot of water per year

Flume or Weir – specially shaped devices installed in a ditch to measure flow





In 1879, Colorado established Water Commissioners to distribute water rights in priority based upon principle of *"First In Time... First In Right"*



Colorado's Water Administration System

- The Prior Appropriation Doctrine means those that <u>put the water to</u> <u>use first</u> are <u>entitled to get their</u> <u>water first</u> during periods of water shortage.
- In Colorado, the <u>priority of a water right</u> is determined by **BOTH** the <u>date</u> when the water was first put to a <u>beneficial use</u> **and** the <u>date when</u> the right was decreed by the Water Court.
- This is opposed to the Riparian Doctrine that recognizes water rights as being attached to lands adjacent to the river or stream.







Definition of Terms for a Call

- Free River the supply of water in the river exceeds the demand for water by all decreed water users
- Call the demand for water by a user with a decreed water right
- Valid Call recognized and administered by Division of Water Resources – the determination by the Water Commissioner of the most junior right that may divert when the supply of water in the river is less than the demand on the river by all decreed water users (also known as "The Call")



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Over-Appropriated South Platte

- More water is usually claimed or desired by water users than is available.
- Generally experience a water shortage much of the year.
- Almost always throughout the summer only water users who have water rights dating from the 1860's to the 1890's can divert in-priority.
- Plans of augmentation allow replacement of out-ofpriority diversions.



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South Platte River Drainage Water Rights Development



Plan for Augmentation

- Plan to provide replacement water so that diversions by a junior water right user can occur without injuring other water right users.
- The junior water right diversion is often associated with a well or a group of wells and replacement is of the depletions of those wells.





Change of Water Right

- Change in type, place, or time of use
- Change in point of diversion
- Change from direct application to storage and subsequent application
- Change in point of storage
- Often, a change of an irrigation right to municipal or augmentation purposes. This may involve new or alternate points of diversion, but not always.



Two Recent Trends for Northern Front Range

- Expanding Dairy Industry
 - Leprino cheese factories in Greeley and Ft.
 Morgan
 - Private dairies need water supply
- Use of Technology
 - Electronic data loggers
 - Remote reporting



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Water Commissioner Responsibilities

- Day to Day Administration
 - Setting the Valid Call Based on Supply and Demand
 - Assuring Diversions In Priority For Decreed Uses Without Waste
 - Delivery of Augmentation and Other Water After Assessing Transit Losses
 - Operating Exchanges
 - Assuring Diversions Are Measured
 - Assuring Augmentation and Return Flow Requirements Are Made
 - Assuring Compliance with Other Decree Conditions in Augmentation and Change Cases
- Review of Accounting and Maintenance of Diversion Records



