150 Years of South Platte River Conjunctive Use History
1860 to 1890
Irrigation Ditches Constructed

First Settlers Constructed Small Irrigation Ditches Next to the River That Took Individual Effort

Later Irrigation Ditches Were Larger and Went Further Away From the River. Those Ditches Required a Group
By The 1880’s Storage Structures Were Constructed to Capture Spring Runoff By Junior Users
By 1882 The First Transmountain Ditches Were Being Constructed To Divert Water For Irrigation
It is well established fact that, before irrigation became so universal in Colorado, the water in the streams was greatly decreased in volume, as it found its way out upon the plains. This was more particularly observed in the time of low water during the spring and fall season. Those who came up the South Platte valley a few years ago will remember crossing the river, in the eastern part of Weld county, on the dry sand. Within the last ten years, at Platteville, the river has vanished utterly at times, so that people could cross and recross dry shod.
But there has come a change in this respect, and it has evidently been caused by the building of irrigating canals and the distribution and suspension, for a time, of the water upon and in the uplands adjacent to the streams. Observation and experience prove conclusively that seepage water is an important factor, and adds largely to the volume of water flowing in the channel.

The increase in the lower valley of the South Platte has been a matter of notice, and becomes so distinct and certain that new canals have been constructed to take advantage of this interesting and important condition of affairs.
RETURN FLOW MEASUREMENTS BEGAN IN 1885

- First Measurements occurred on the Cache La Poudre.

- In 1890 State Engineer Maxwell began measuring return Flows in the South Platte River down to Iliff with the assistance of the USGS.

- In 1895 the return flows measurements were extended to the Stateline because the first ditches below Iliff were known to be operating at that time.

- Measurements in the change in return flows continued until 1930.
Return Flows Studies Began in
Measured Changes in Return Flows

• Kersey to Iliff
  • 1895.......300 cfs Return Flow
  • 1900.......420 cfs Return Flow
  • 1908.......580 cfs Return Flow
  • 1916.......870 cfs Return Flow
  • 1926.......800 cfs Return Flow

Iliff to Stateline
• 1895.......-5 cfs Return Flow
• 1900.......50 cfs Return Flow
• 1908.......120 cfs Return Flow
• 1916.......140 cfs Return Flow
• 1926.......180 cfs Return Flow
Additional Contributions to Increased Flows In the Lower South Platte River Basin and And Additional Irrigation Recharge

- Colorado-Big Thompson Project
- Moffat Tunnel
- Roberts Tunnel
- Aurora Homestake Project Water
- Additional Reservoir Storage
- Nontributary Well Development

- Net Result increased water returning to stream system after first use

- Hardened Surfaces in Municipal Areas
Rising Groundwater Tables Occurred With the Introduction of Irrigation

Cache La Poudre experienced a change in the depth to the water table. Previous to irrigation 60 to 90 feet along Lone Tree Creek near Eaton. The Eaton Canal constructed in 1880 and the water table rose to within 16 feet by 1900.

In the Fort Morgan area 4 miles south of the city hall it was approximately 50 feet in 1885 to the water table. By 1913 was within 45 feet of the surface and 1923 it was with 10 feet of the surface. Other areas south of the city saw seep conditions and saw the creation of Crouch Lake and several other small ponds. The 1930 drought saw those lakes dry up even though there was no well pumping occurring in the area at that time.
The First Irrigation Well Of Record Was Constructed by 1885 Near the Town of Eaton
Number of Irrigation Wells by Area on Lower South Platte River Pre 1940

• Crow Creek First Irrigation Well 1918 near Gill By 1940 there were 43 wells

• Boxelder Creek First Irrigation Well 1908 near Kersey significant development did not occur until 1934 there were 82 wells by 1940

• Prospect Valley Area first well in 1929 a second well was constructed in 1932. There were a total of 67 wells on the Lost Creek drainage by 1940.

• Bijou Creek Drainage first wells constructed in 1915 however in 1940 only had 44 wells existed

• Beaver Creek first wells date back to 1910 by 1940 53 wells existed
Figure 8.—Rate of growth in number of pumping plants in Water Districts 2, 3, 7, and 64. A and B graphs are for the Poudre and Box Elder areas in District No. 3.
Total Number of Wells By 1940

Figure 9.—Rate of growth in number of pumping plants in the South Platte Valley.
Number of High Capacity Wells
South Platte River Basin Today

- 2010 there were 8,400 High Capacity Alluvial Groundwater Wells
- Currently 1,100 wells are on the 2010 Abandonment List
- 1,300 wells have been issued orders not to pump and have been tagged
- 6,000 wells are currently a part of decreed augmentation plans, State Engineer approved SWSP or otherwise can legally be pumped.
Future Activities That Will Reduce Groundwater Tables in the Lower Basin

• Increased Irrigation Efficiencies

• Capture and Reuse of foreign water supplies by Municipalities from their Wastewater Treatment plants and claiming lawn returns

• Increased Conservation by Municipalities

• Climate change could result in increased evapotranspiration and if additional storage is not developed less native flows during the summer available for surface water users.