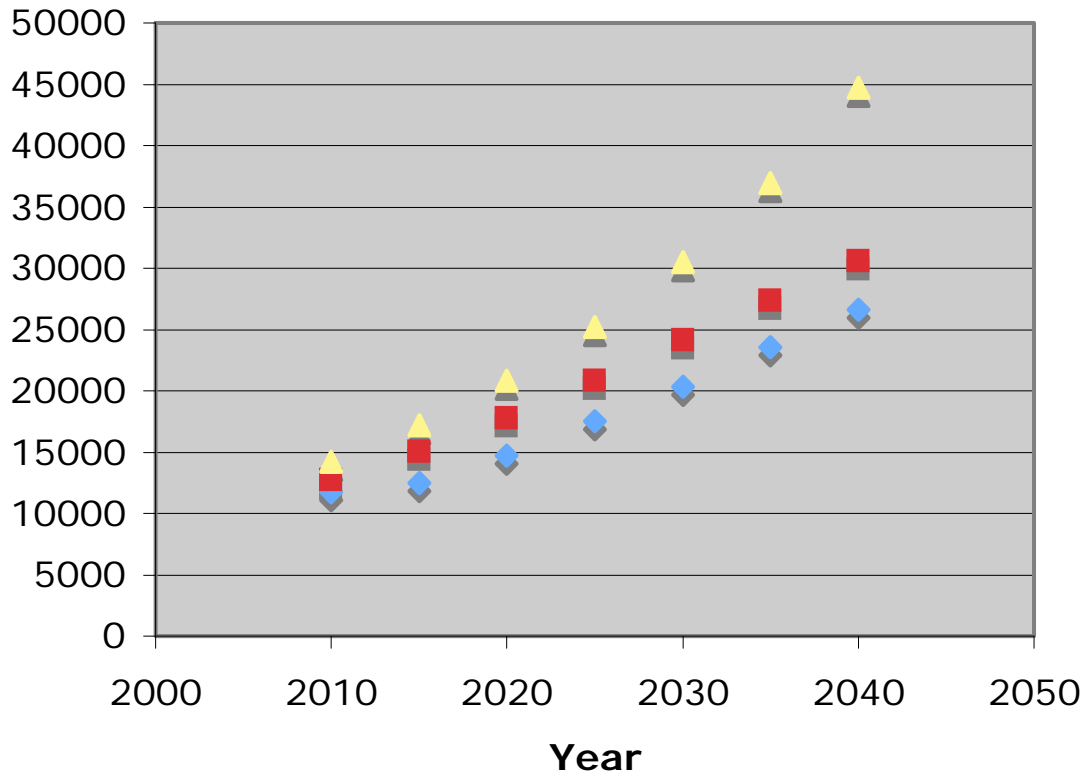


# Archuleta County Population Forecasts

Harris (top), CO (Middle), WGB (bottom)



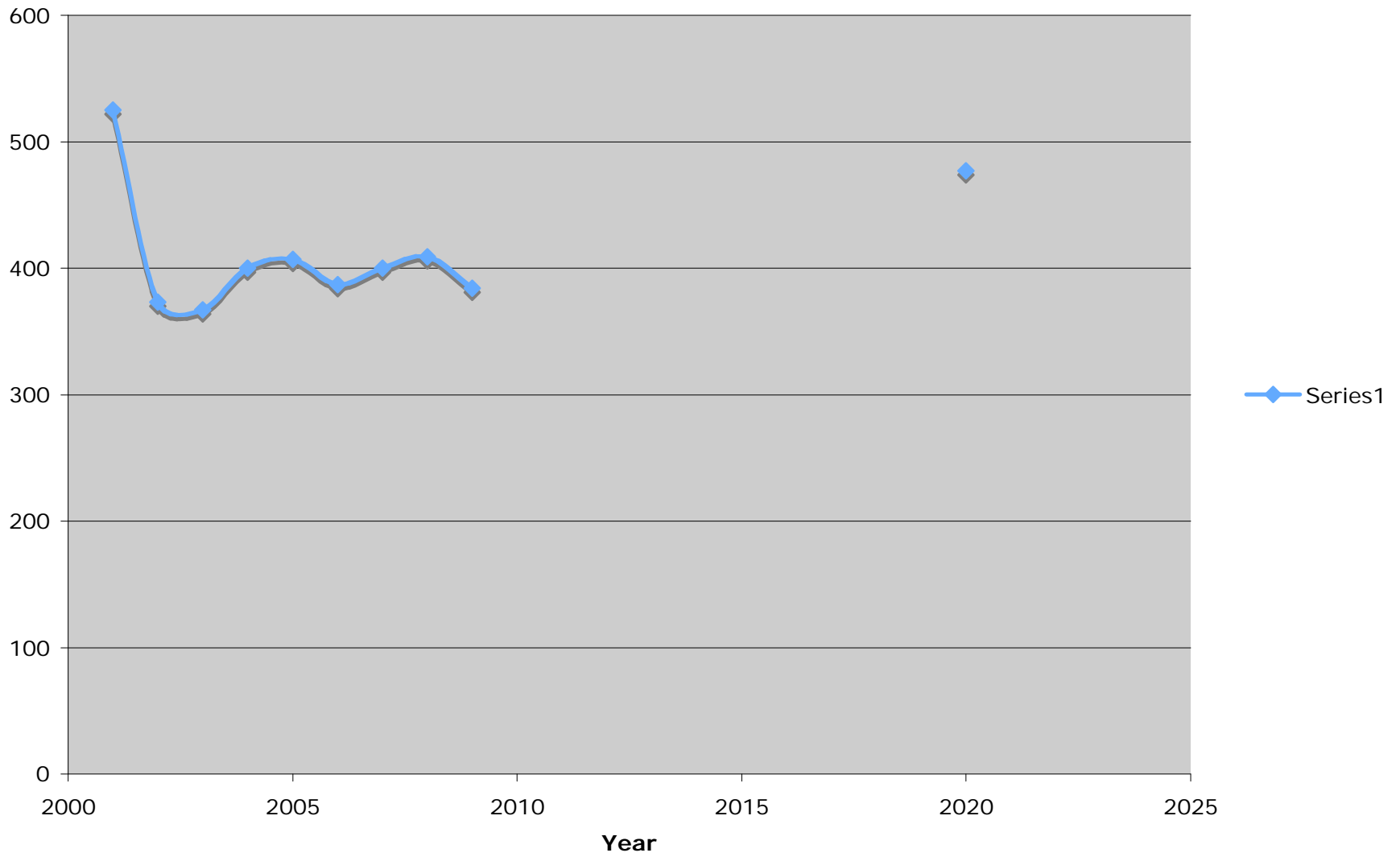
# **Critical Facts for Addressing PAWSD Water Needs**

**John S. Ramberg, Ph D Engineering Statistics**

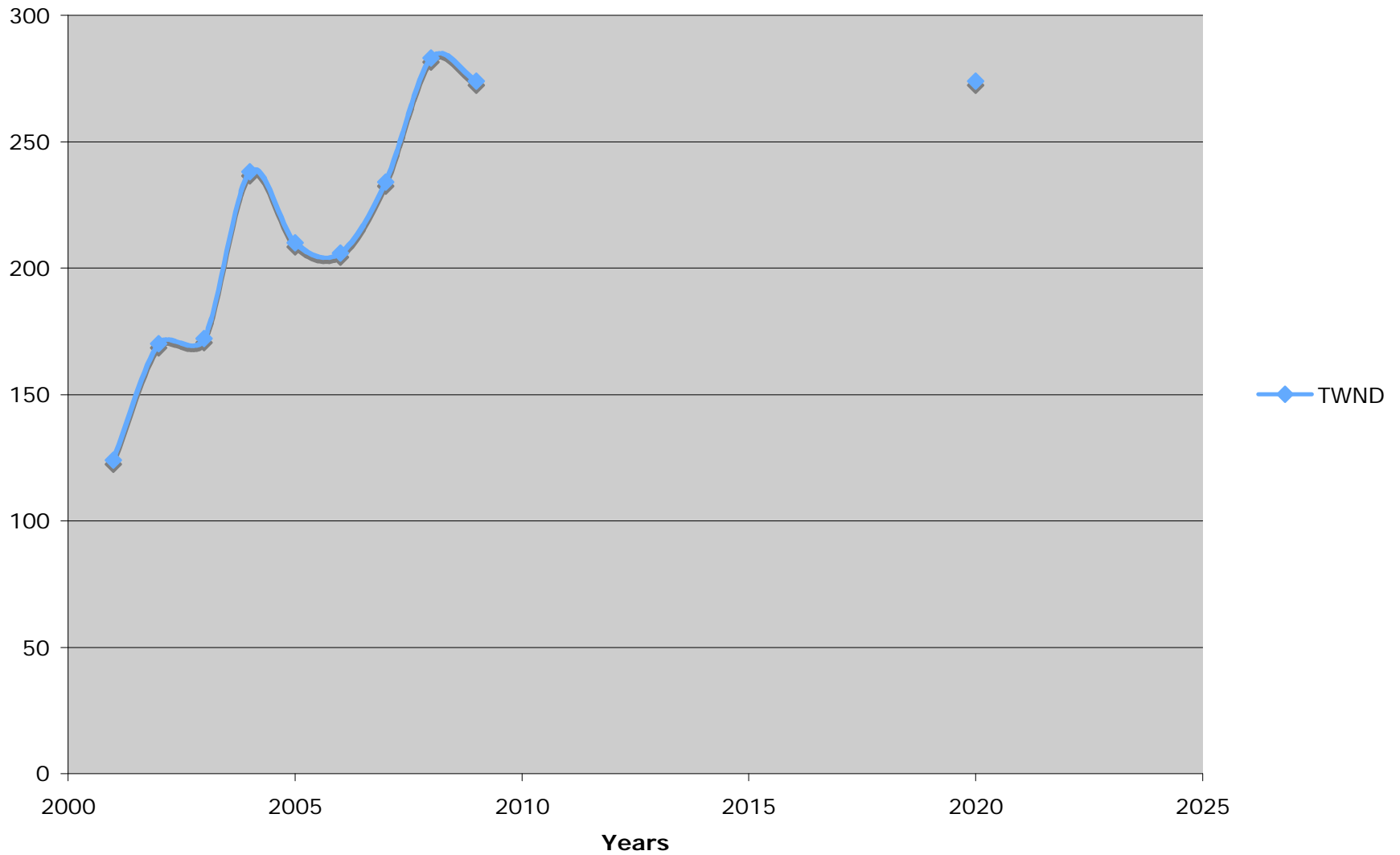
Prudent decisions by the PAWSD Board and  
management action could mean:

- treatment facilities and reservoirs adequate for 3 decades
- high quality, low cost water, rather than vice-versa

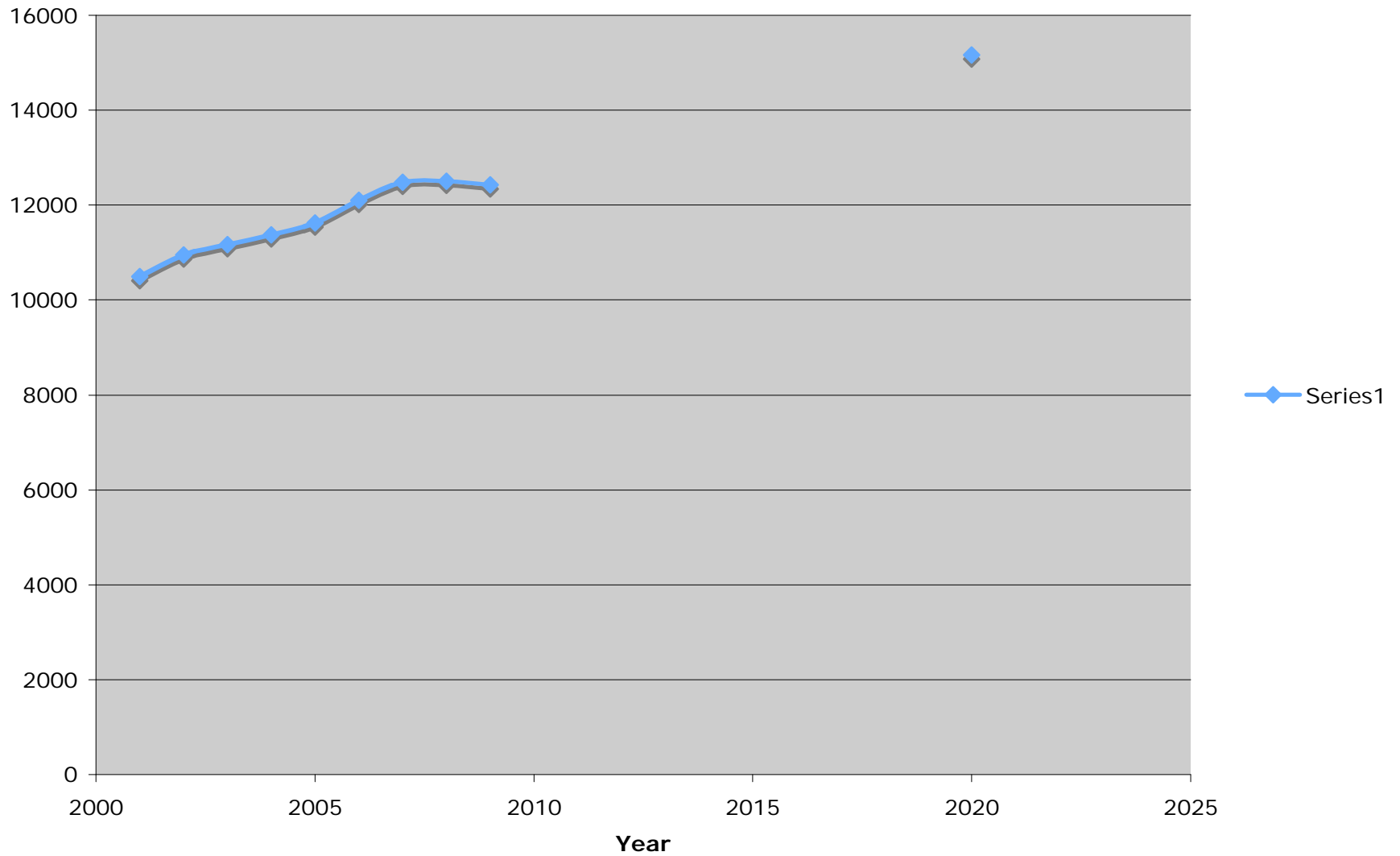
**Fig 1. Treated Water Sold**



**Fig 2. Treated Water Not Delivered**



**Fig 3. Archuleta County Population**



# Benchmarks for Forecasts (2009)

- 1. 12,428 residents in Archuleta Cty**
- 2. 1179 acre-ft of treated water sold**  
0.100 acre-ft per person per yr (Archuleta Cty)
- 3. 2020 acre-ft of treated water produced**  
0.165 acre-ft per person per yr (Archuleta Cty)  
Includes delivered and nondelivered water

# Why Archuleta Cty Population?

- Values and forecasts are available
- Serves as a Proxy Variable for
  - PAWSD population (3/4)
  - And a host of other factors that are not known or unknowable

*Proxy Variable- “A measurable variable that is used in place of a variable that can not be measured.”*

# Impact of 10,000 New Residents

- $10,000 \cdot 0.100 = 1000$  additional acre-ft
- $10,000 \cdot 0.165 = 1650$  additional acre-ft
- Difference shows Impact of Water Losses

# Table 1. Archuleta County Population, Water Sold & Delivered, Water for other Purposes, Total Water (Treated in Mgal)

Year	Archuleta County Population	Treated Water Sold & Delivered	Treated Water Other Purposes	Total Treated Water
2001	10521	525	124	649
2002	10816	373	170	543
2003	11137	367	172	539
2004	11398	400	238	638
2005	11680	407	210	617
2006	12148	387	206	593
2007	12529	400	234	634
2008	12551	409	283	692
2009	12428	384	274	658

# Table 1A. Archuleta County Population, Water Sold & Delivered, Water for other Purposes, Total Water (Acre-Ft for ease of Conversion)

Year	Archuleta County Population	Treated Water Sold & Delivered (acre-ft)	Treated Water for Other Purposes	Total Treated Water (acre ft)
2001	10521	1612	381	1993
2002	10816	1145	522	1667
2003	11137	1127	528	1655
2004	11398	1228	731	1959
2005	11680	1249	645	1894
2006	12148	1188	632	1820
2007	12529	1228	718	1946
2008	12551	1256	869	2125
2009	12428	1179	841	2020

# Water Losses

- Required losses, such as back-flushing of filters and hydrant flushing
- Preventable losses, such as main line water breaks and seepage
- Shadow losses, such as inaccurate meters