CWEMF
IWFM v4.0 Workshop

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West Yost Associates, Davis, CA

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Session 6:

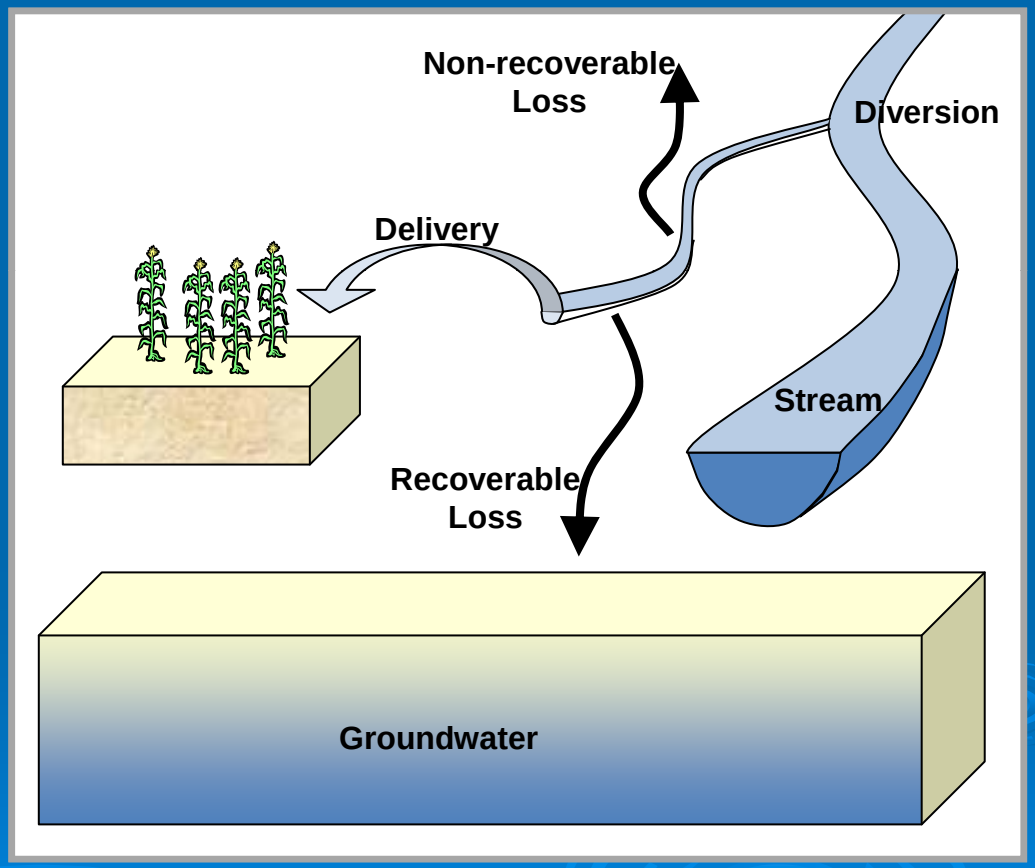
Stream Diversions and Groundwater Pumping as Water Supply

Agricultural and Urban Water Supply

- Stream flow diversions and groundwater pumping can be used as water supply to meet agricultural and urban demand
- Fractions of stream diversions and groundwater pumping to be used to meet agricultural water demand are defined by the user as a time-series data; the rest of the supply is used to meet the urban demand
- Actual water supply that is used to meet demand depends on the availability of stream flows and groundwater storage
- Water supply does not have to be equal to water demand; it can be less than the demand (e.g. not enough water in the modeled system) or greater than the demand (e.g. diversions part of which are being used for groundwater banking)

Stream Flow Diversions

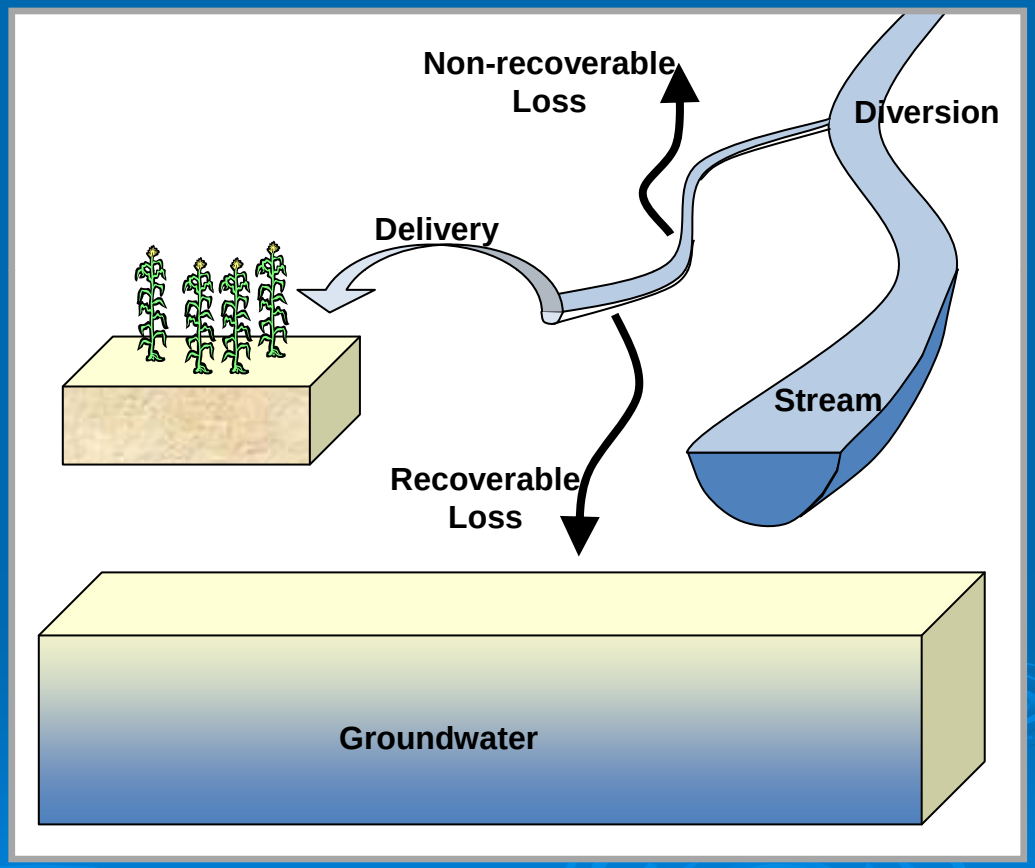
- Each stream flow diversion originates from a stream node and gets delivered to a sub-region, an element, a group of elements, or outside the modeled domain
- Diversions delivered to a subregion or a group of elements are distributed to individual cells with respect to the demand on each cell (if total demand is zero, with respect to cell area)



- Optionally, a time-series maximum diversion rate can be specified to represent diversion canal capacities

Stream Flow Diversions

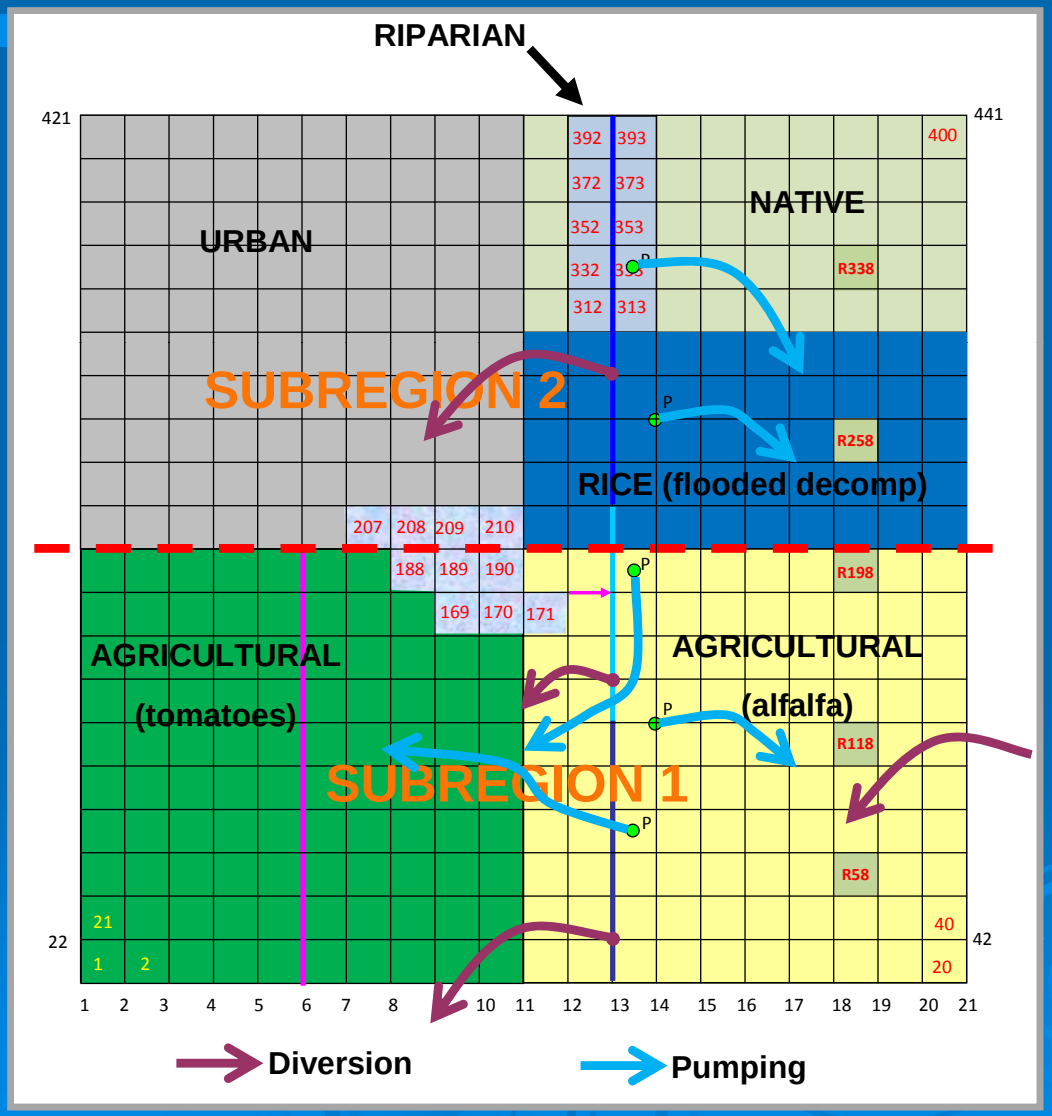
- A portion of each diversion is lost as non-recoverable (evapotranspiration) and recoverable (seepage from diversion canals into groundwater) losses based on user-specified fractions
- Recoverable losses are distributed to user-specified cells as groundwater recharge
- Diversions can be exported out of the model area or imported from streams that are outside the model area



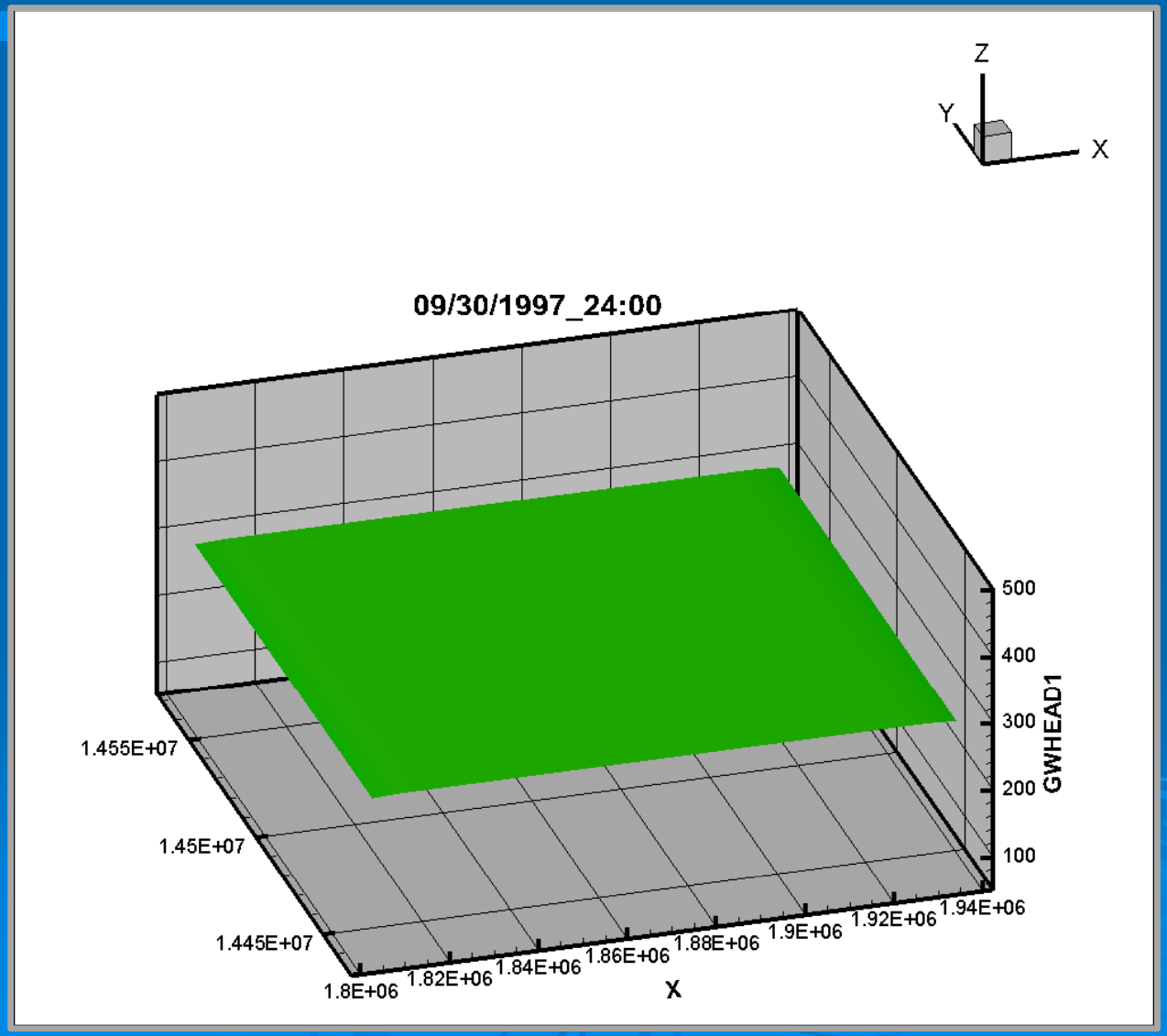
Pumping

- Both well pumping and element pumping can be used to meet agricultural demand, urban demand or both
- Fraction of each well / element pumping that will be used to meet the agricultural pumping is specified by the user as a time-series data; the rest of the pumping is used to meet the urban demand
- Pumping can be delivered to the cell it occurs, to a different cell, to a group of cells, to a subregion, or to outside the model domain
- When pumping is delivered to a subregion or a group of elements, it is distributed to individual cells with respect to the demand on each cell (if total demand is zero, then with respect to cell area)
- Optionally, a time-series maximum pumping rate can be specified to represent pump capacity

Example 6

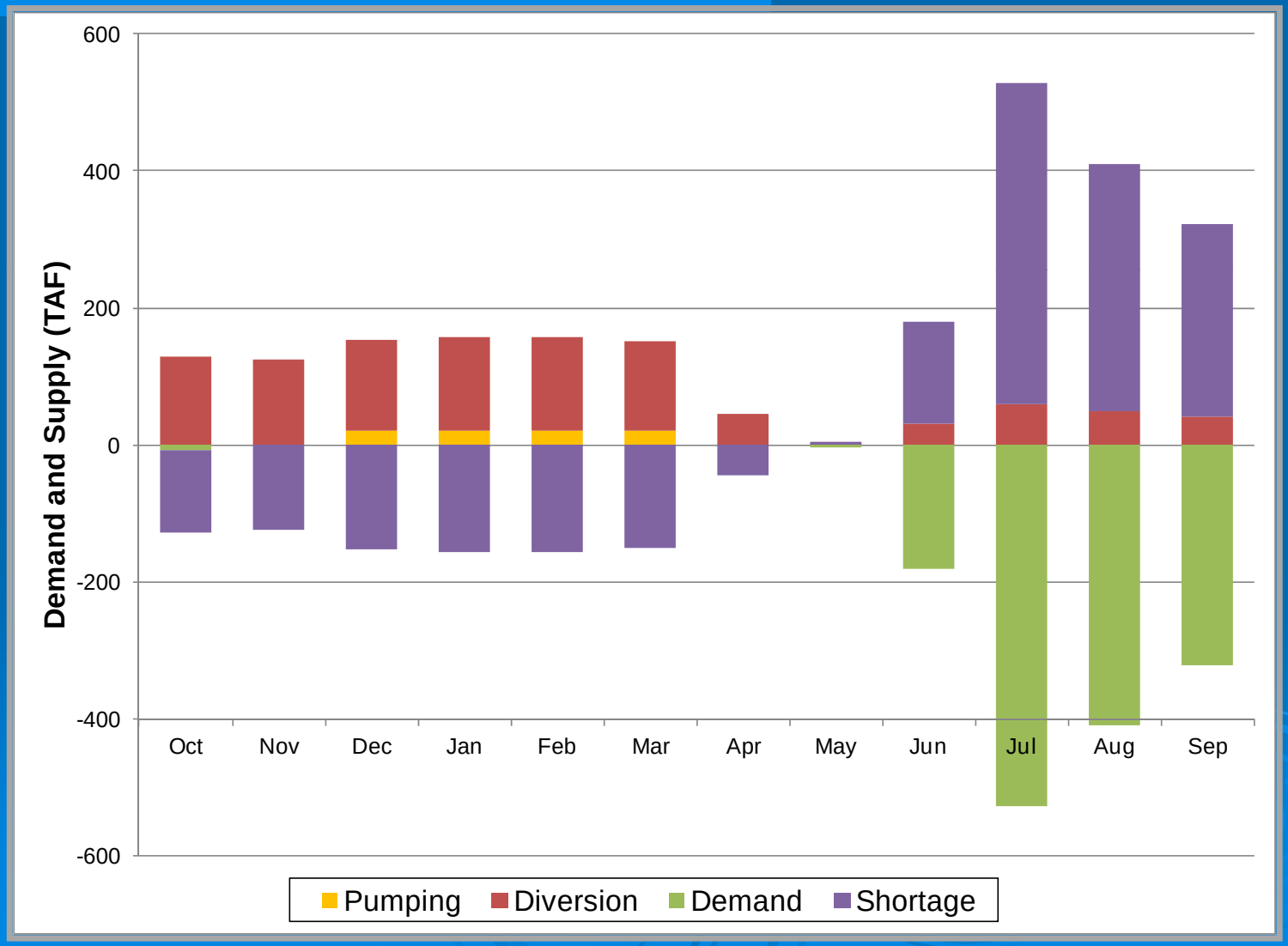

RIPARIAN
421
441
392
393
400
372
373
NATIVE
URBAN
352
353
332
333
R338
312
313
SUBREGION 2
P
R258
RICE (flooded decomp)
207
208
209
210
188
189
190
R198
169
170
171
AGRICULTURAL
(tomatoes)
AGRICULTURAL
(alfalfa)
P
R118
SUBREGION 1
P
R58
21
40
22
42
1
2
20
1 2 3 4 5 6 7 8 10 11 12 13 14 15 16 17 18 19 20 21
Diversion
Pumping

Example 6: Results

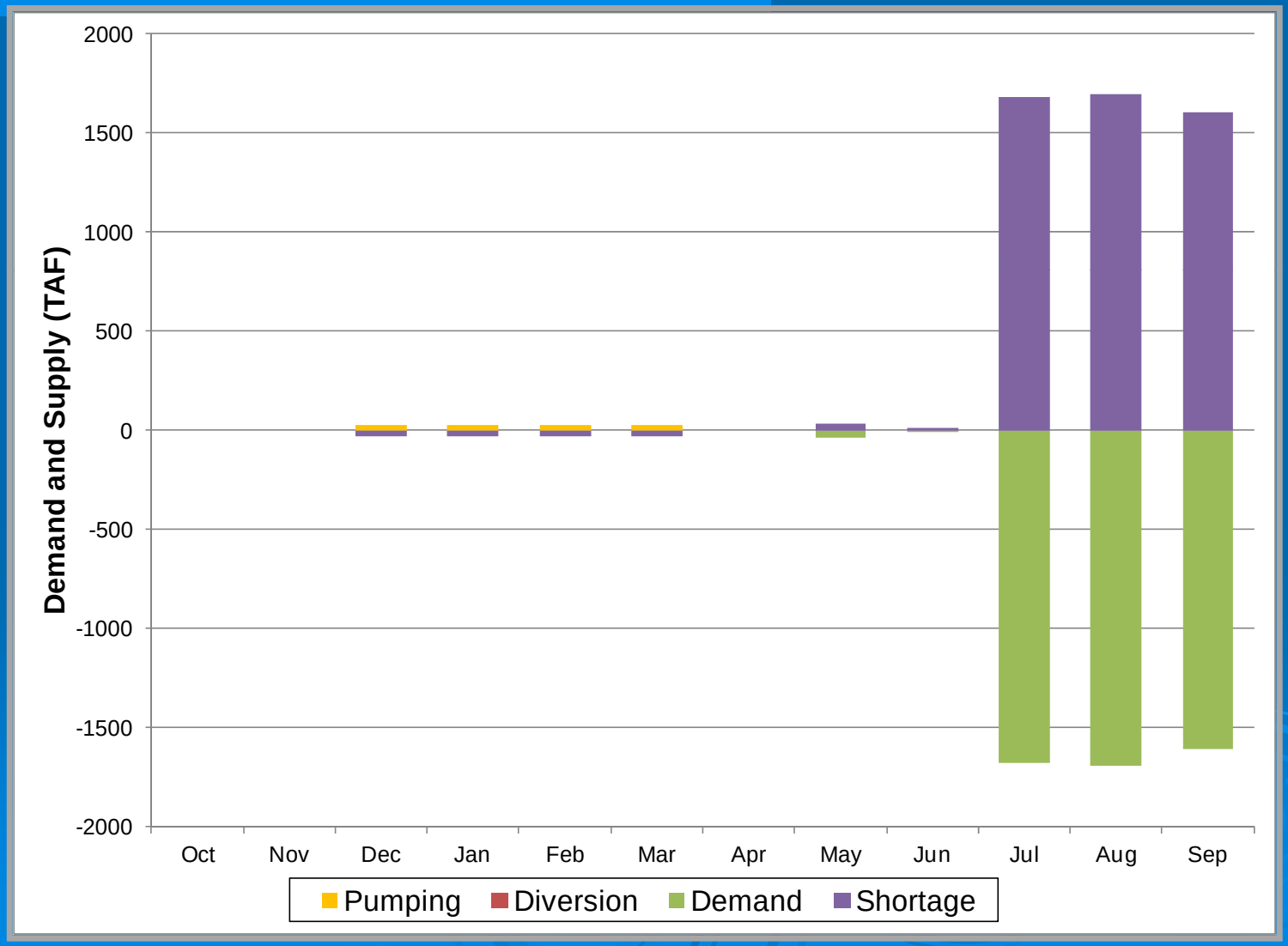


Example 6:
Demand versus Supply for Tomatoes

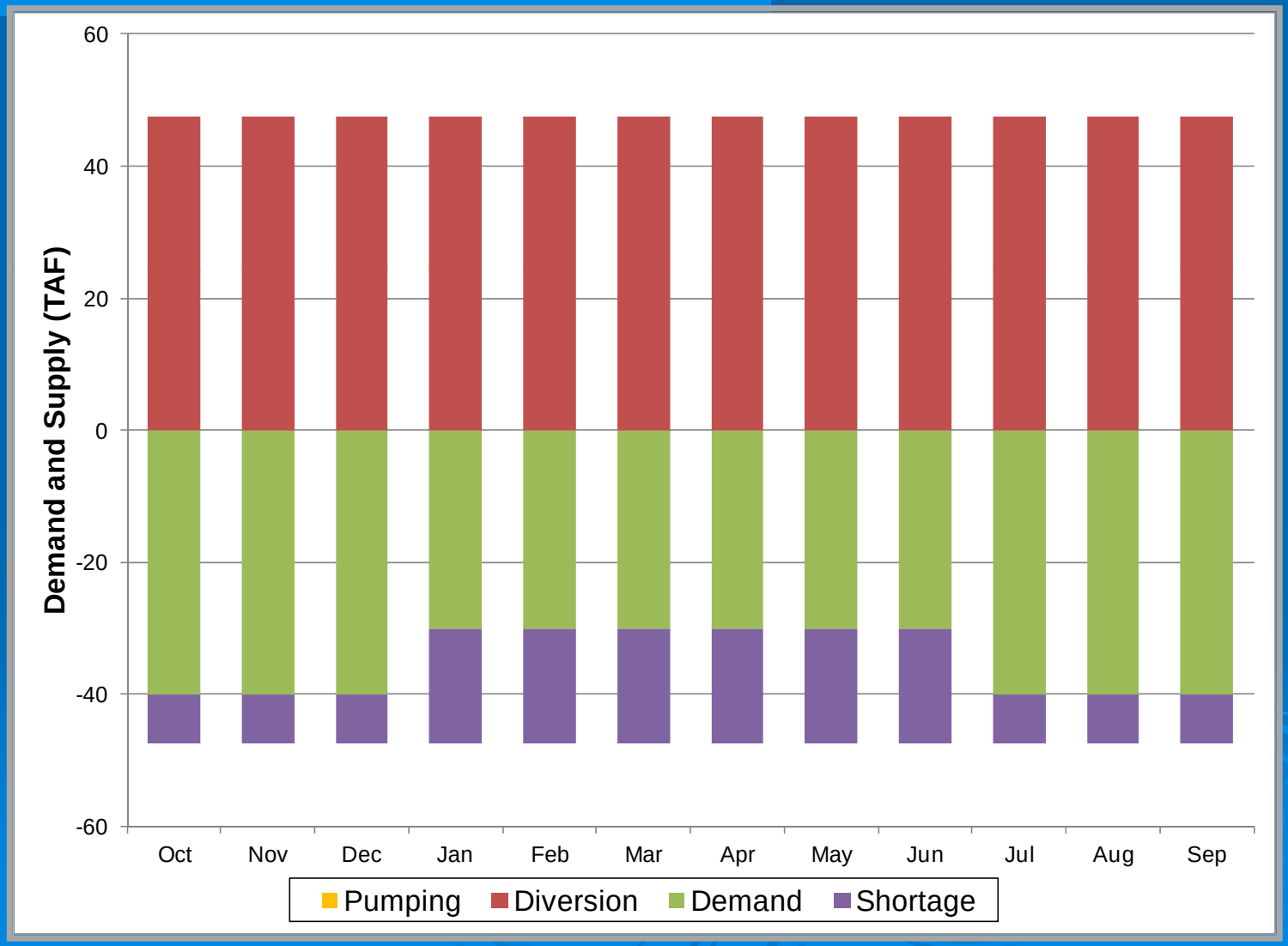
Example 6:
Demand versus Supply for Alfalfa



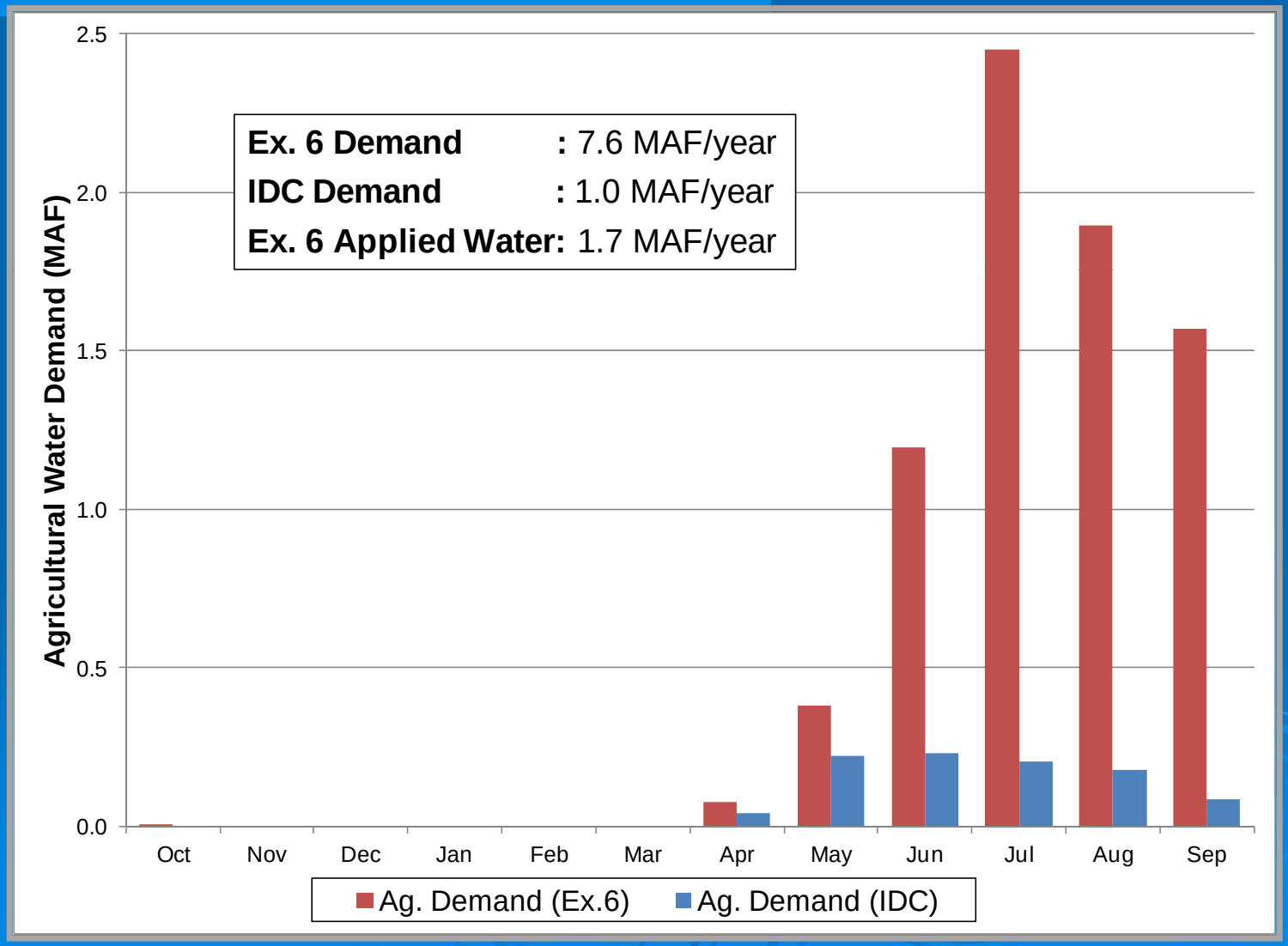
Example 6:
Demand versus Supply for Rice



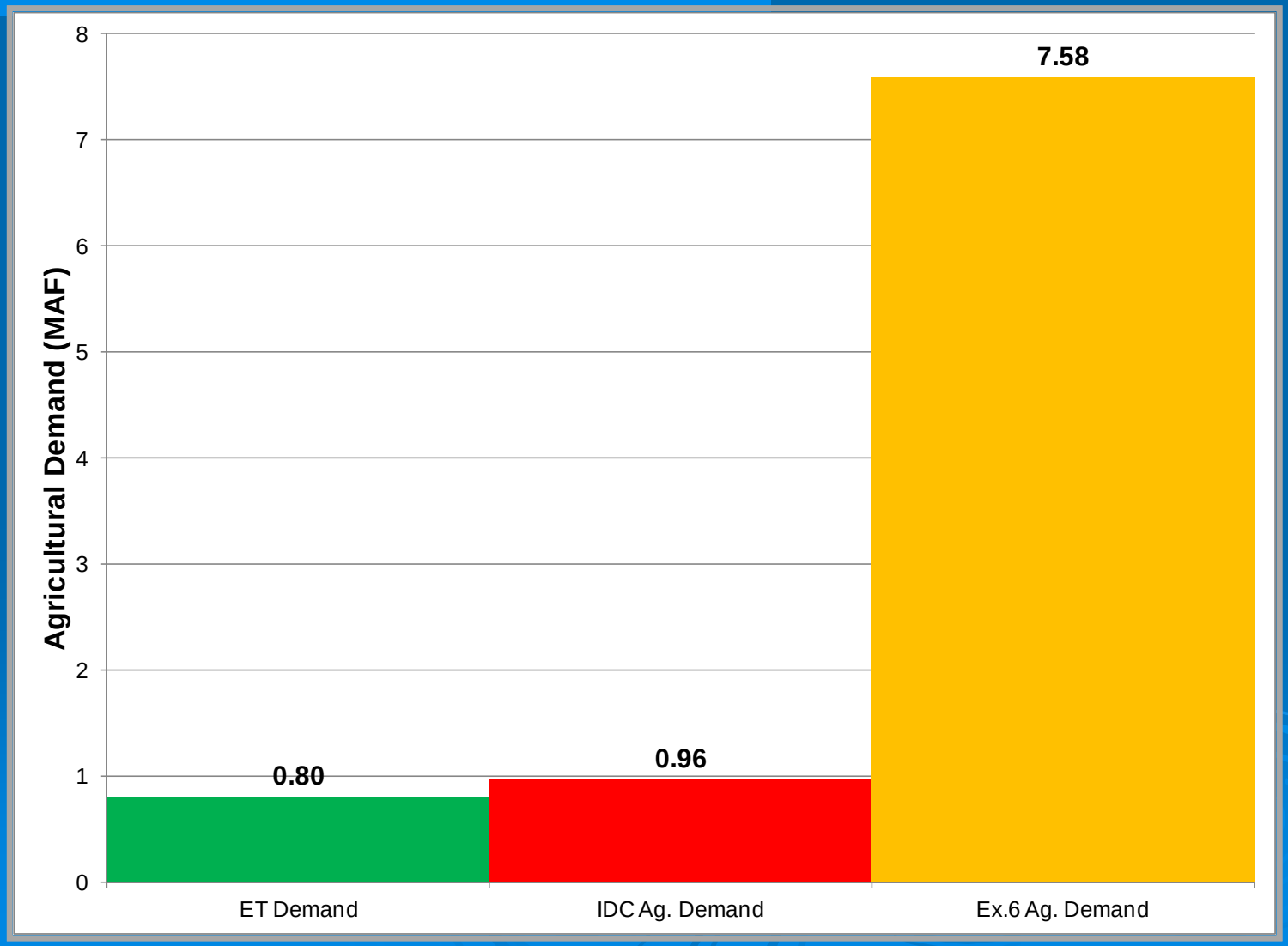
Example 6:
Demand versus Supply for Urban Area



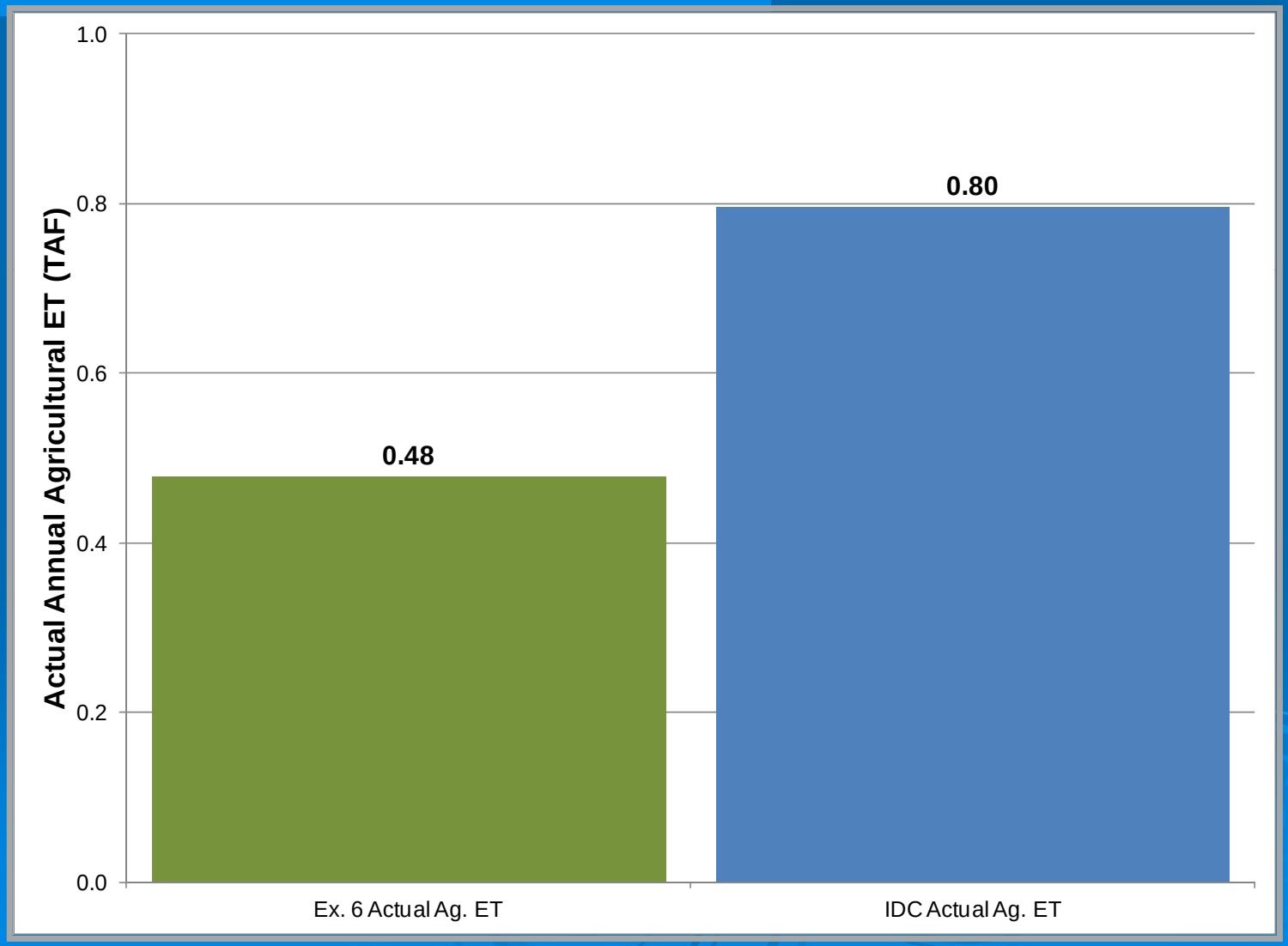
Example 6:
Ex.6 Demand versus IDC-Computed Demand



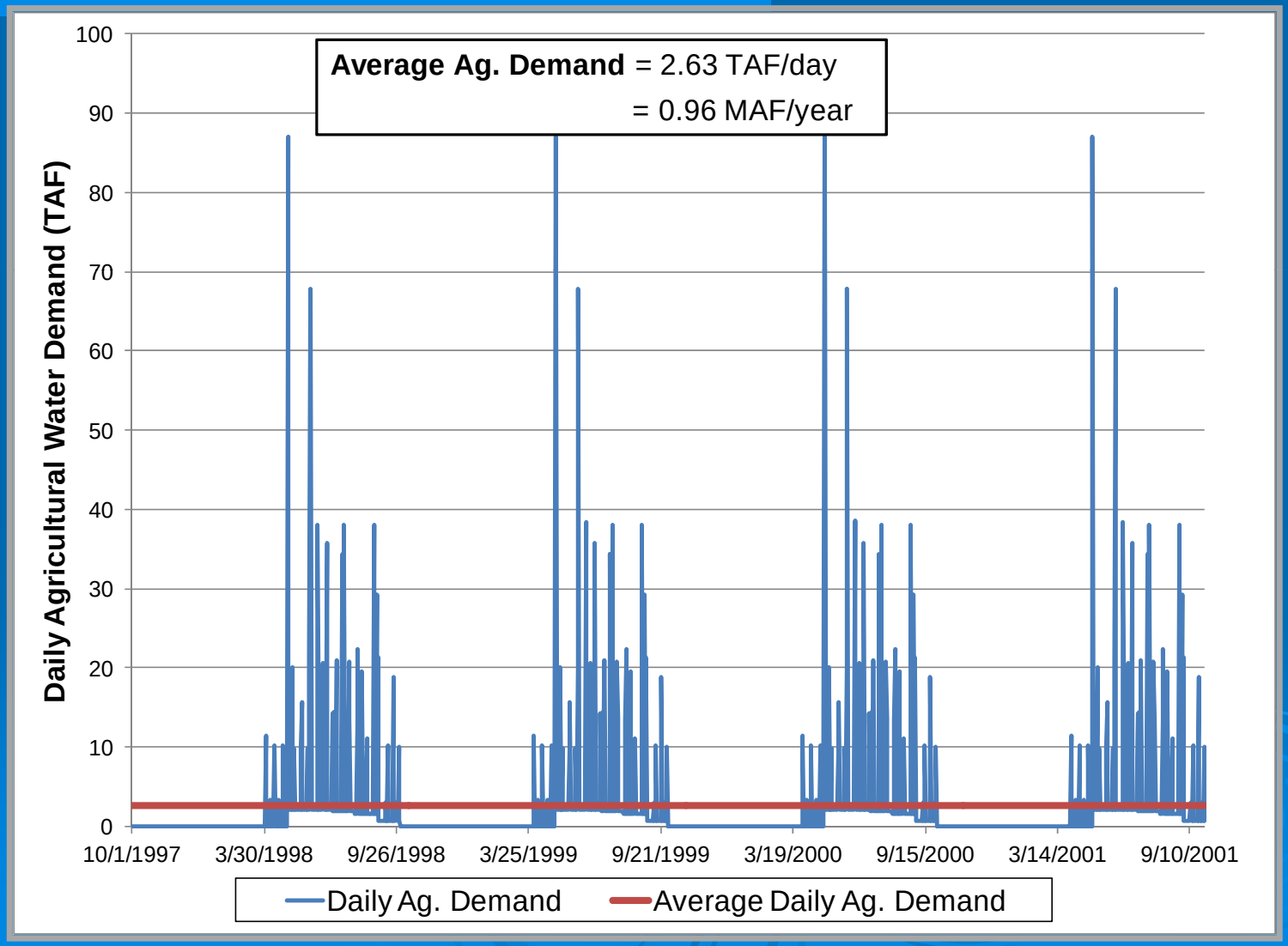
Example 6:
ET Demand versus Agricultural Water Demand



Example 6:
Actual ET versus IDC-Computed Actual ET



Example 6:
IDC-Computed Average Agricultural Water Demand



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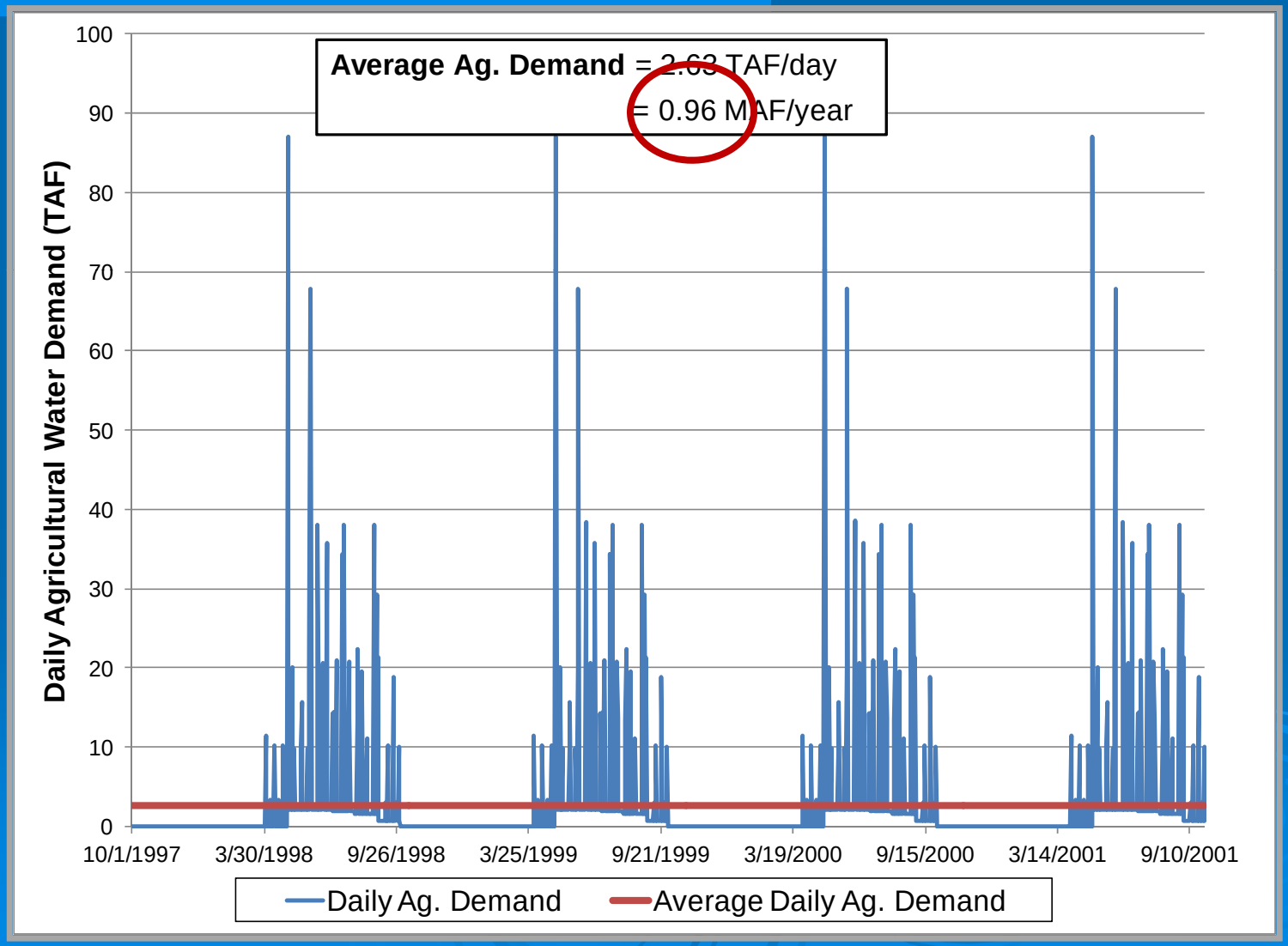
IDC-Computed Average Agricultural Water Demand



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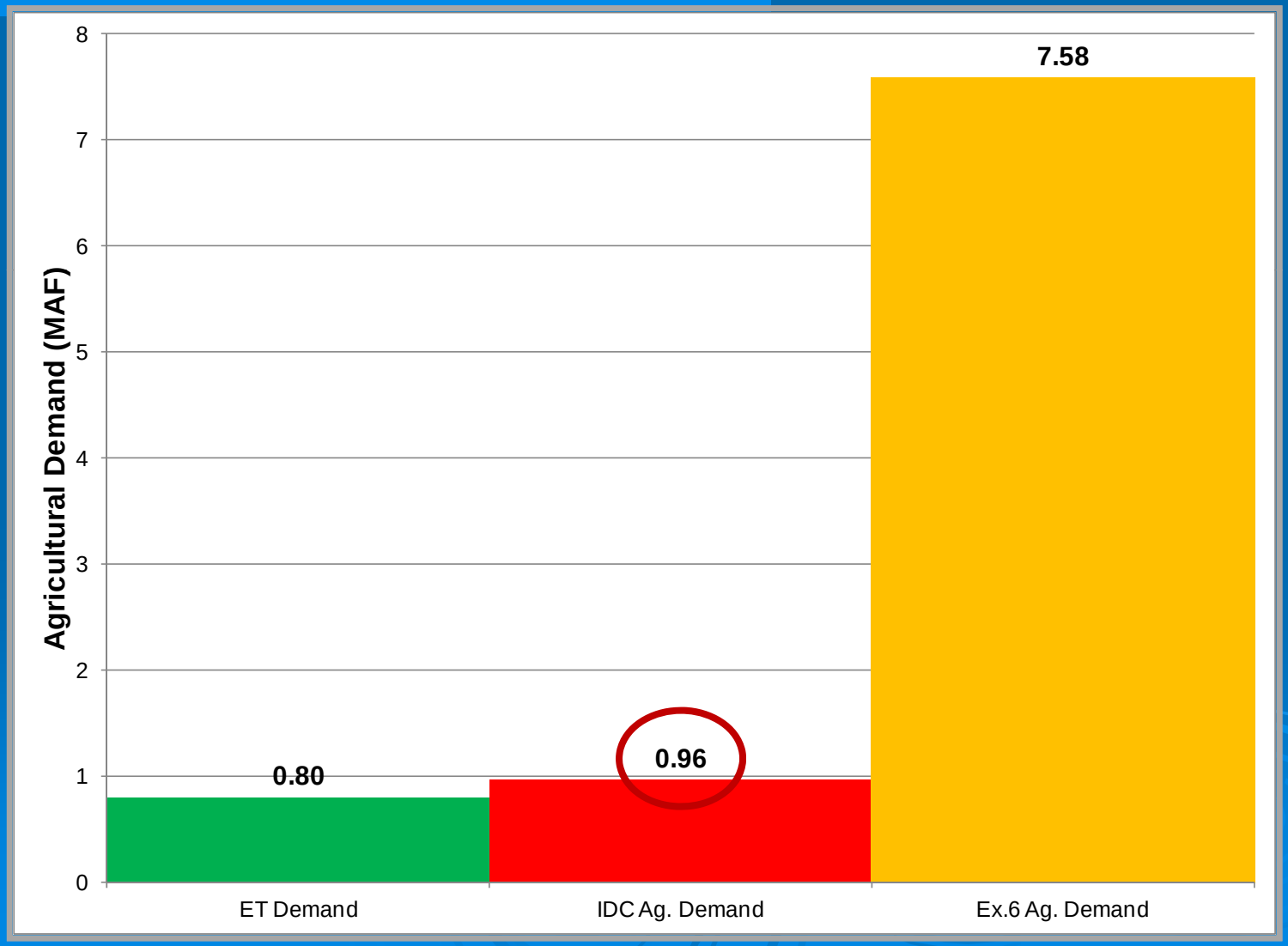
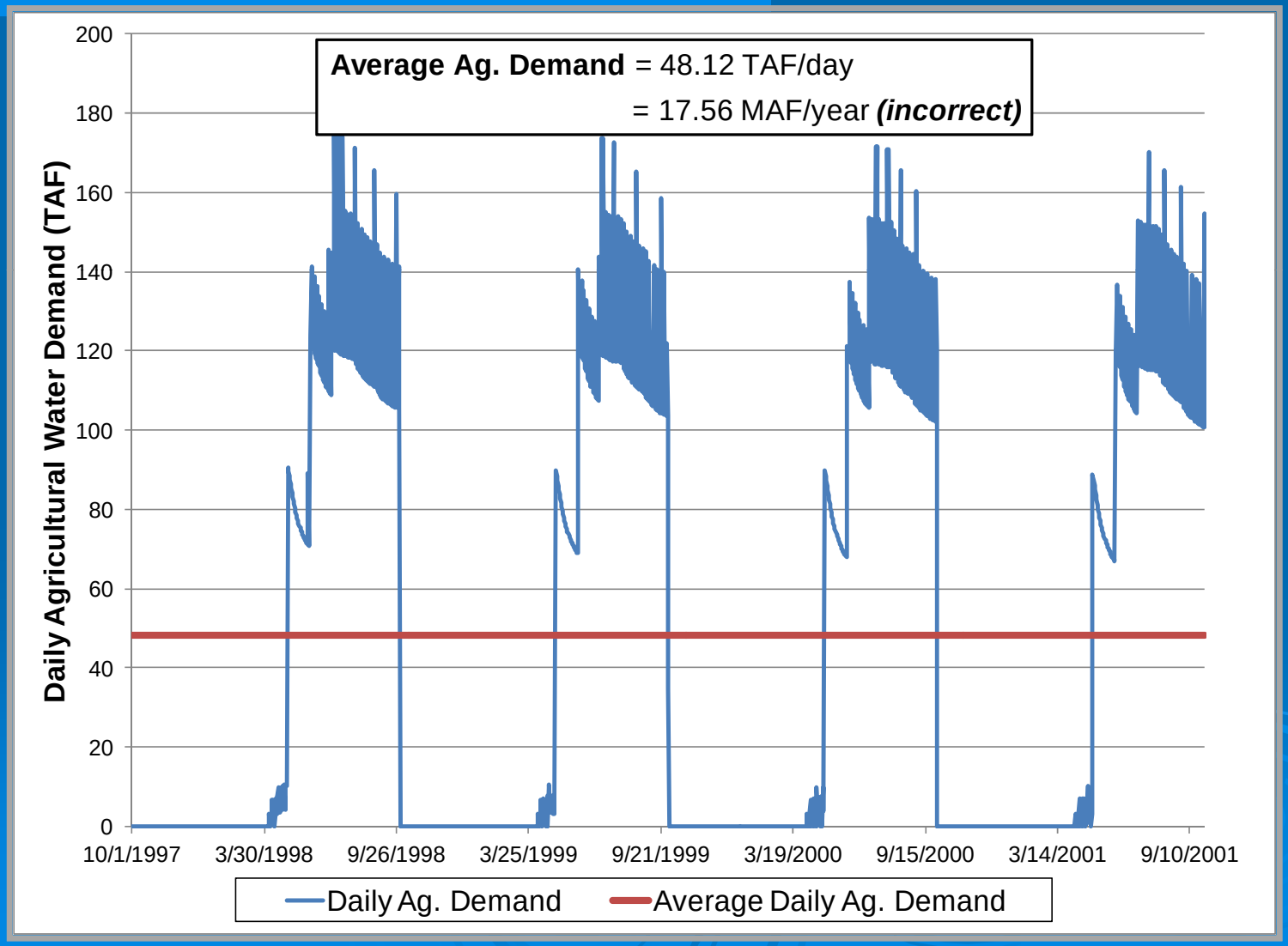


Example 6:
Must Use Budget Post-Processor for Aggregation



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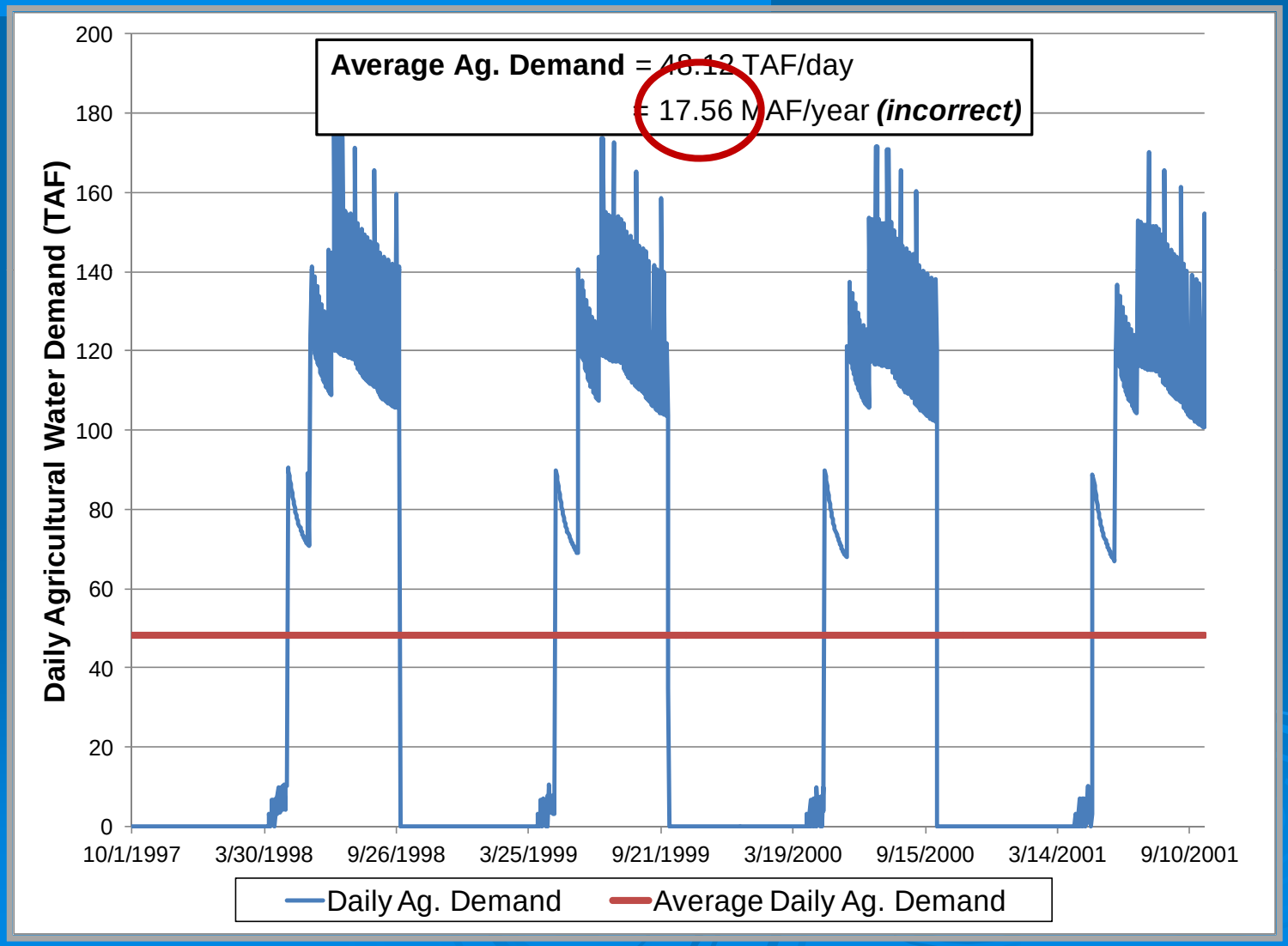

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ET Demand versus Agricultural Water Demand