

221 **CoSANA Model (Section 2.4.1.2)**

222 Water budgets (next section) were developed utilizing the Cosumnes-South American-North
 223 American (CoSANA) model, a fully integrated surface and groundwater numerical flow model
 224 that covers the entire South American Subbasin as well as the adjoining North American and
 225 Cosumes Subbasins. CoSANA integrates the groundwater aquifer with the surface hydrologic
 226 system and land surface processes and operations. Using data from federal, state, and local
 227 resources, CoSANA is used to perform analyses of hydrogeologic conditions, agricultural and
 228 urban water demands, agricultural and urban water supplies, and an evaluation of current and
 229 projected future regional water quality conditions.

230 **Water Budget (Section 2.4)**

231 For each baseline condition, water budgets were developed for the stream and canal system,
 232 the land surface system, and for the groundwater system. The groundwater system budget
 233 reports inflows (deep percolation, stream losses to the groundwater system and subsurface
 234 inflow), outflows (stream gain from the groundwater system, groundwater production, and
 235 subsurface outflow) and the estimate change in groundwater storage under different land use
 236 and climate conditions. **Table ES-3** shows average annual estimated change in groundwater
 237 storage for each baseline condition. **Figure ES-9** through **Figure ES-11** depicts the average
 238 annual values for each groundwater system component.
 239

240 **Table ES-3:** Projected change in groundwater storage in each baseline condition

Baseline	Average Annual Groundwater Storage Change (AFY)
Historical Conditions	+7,700
Current Conditions	+2,200
Projected Conditions without Climate Change	-1,100
Projected Conditions with Climate Change	-6,200

w/ Baseline based on 2015?

Water Budget Section → But Calc. is GW Storage

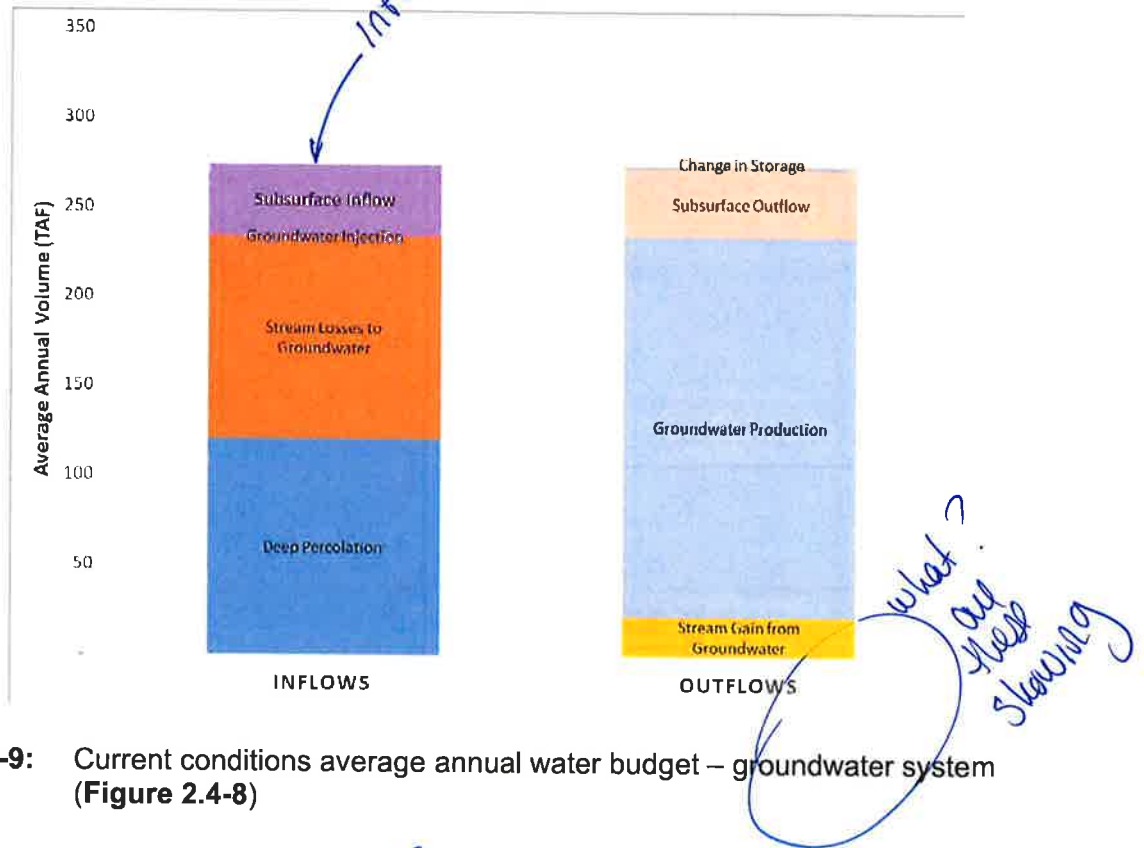


Figure ES-9: Current conditions average annual water budget – groundwater system (Figure 2.4-8)

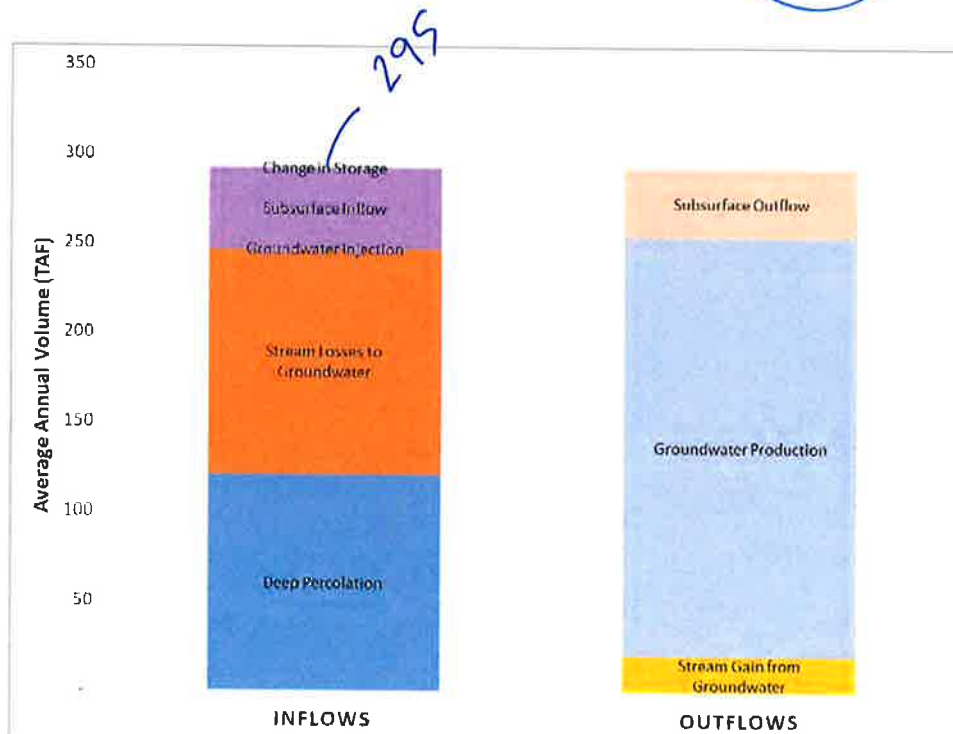


Figure ES-10: Projected conditions *without* climate change average annual water budget – groundwater system (Figure 2.4-11)

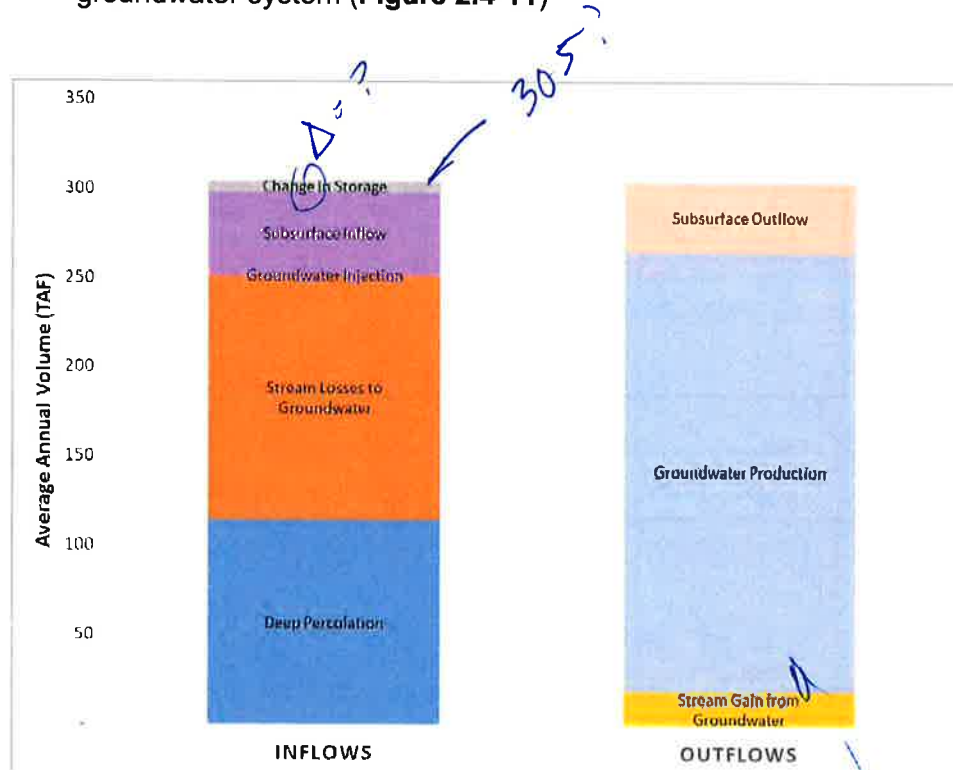


Figure ES-11: Projected conditions *with* climate change average annual water budget – groundwater system (Figure 2.4-14)

241 **Groundwater Storage (Section 2.3.2)**

242 The CoSANA model was used to estimate historical changes in storage of groundwater in the
 243 SASb from 1990-2018. **Figure ES-12** shows annual total groundwater storage for the SASb and
 244 the cumulative change in storage over varying water year types. Between 1990 and 2018, the
 245 cumulative storage in the subbasin is estimated to have increased by 188,000 acre-feet. For the
 246 most recent 10-year period (2009-2018), the cumulative storage increase is estimated to be
 247 ~77,000 acre-feet.

art of order storage