

Key Water Budget Take-Aways

The Corning Subbasin GSP includes three types of water budgets (groundwater, surface water, and land surface budget) over three time periods: historical, current, and projected. Each water budget provides important information on relative contribution of each component to the overall water budget. When comparing the results from each of the three time frames, potential trends in water budget gains and losses can be established for future basin management.

Key take-aways of the detailed water budgets in the Subbasin can be summarized as follows:

- The Corning Subbasin is not currently in overdraft; however, water levels have been dropping in the past 15 years in some areas, reflected in the change in storage for the Subbasin.
- The historical water budget is not the most critical for GSP implementation; rather it gives an understanding of past behavior and interactions of various flow components. The water budgets provide background information that is complementary to the rest of the Basin Setting.
- The groundwater budget provides key information such as total groundwater pumping, and change in groundwater storage annually, and cumulatively over the full simulation period. The land surface budget provides information on the total water demand and relative use of surface water versus groundwater. The surface water budget primarily is used to assess stream depletions. In this Subbasin, streams are forming the boundary with other subbasins, and therefore, there are uncertainties in the stream depletion due to actions within the Subbasin, as compared to neighboring subbasins.
- Cumulative and annual change in storage is slightly declining in the current water budget compared to the historical water budget; therefore, if water management stays the same, the Subbasin may continue to experience storage declines and water level declines and an overall worsening of conditions compared to historical conditions.
- Agricultural groundwater pumping is projected to increase by about 20,700 acre-feet on average from the historical to current water budget, attributable to current land use and low WY2015 surface water deliveries. A 6,300-acre-foot increase in agricultural pumping is projected in the groundwater budget in 2030, and a 14,300-acre-foot increase is projected in the groundwater budget in 2070, as compared to current conditions.

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- The historical average annual change of groundwater in storage is 6,900 acre-feet, which shows a subbasin generally in balance over the historical time period. The Subbasin displays a cumulative¹ gain in groundwater storage of 290,300 acre-feet over the historical simulation period.
- The current water budget shows an average 5,800-acre-foot decrease in annual change of groundwater in storage. This results in a cumulative change of groundwater in storage of 56,100 acre-feet over the 50-year simulation period, down 234,200 acre-feet from the historical groundwater budget, driven mainly by decreases in surface water availability.
- The projected water budgets result in an additional depletion of 700 acre-feet of groundwater in storage per year on average in the 2030 simulation, and a depletion of 1,500 acre-feet per year on average in the 2070 simulation. These annual changes culminate in an additional 34,900 acre-feet loss of groundwater in storage in the 2030 projection and an additional 75,800-acre-foot loss in the 2070 projection as compared to historical. The 2070 projected water budget results in a cumulative change in storage of -19,700 over the 50-year projected period, indicative of an imbalanced water budget.
- The current, 2030, and 2070 water budgets display increasingly less groundwater discharge to streams and more streambed recharge to groundwater, indicating that progressively lowered groundwater elevations in the future may draw more water from the Subbasin's streams, and contribute less groundwater baseflow in return.
- Overall observations regarding historical/current/future baseline groundwater budgets:
 - Historical: Subbasin is generally in balance but the trend is downward in recent decades
 - Current (if all things stay the same): Somewhat declining trend in water levels due to increased pumping. Overall a bit worse than historical.
 - Projected baseline with climate change: The Subbasin begins to experience continual imbalance, particularly in the 2070 projection; will probably need to implement projects to maintain water levels.

¹ total annual change in storage over the simulation time frame

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- The projected future water budget is what the GSP will evaluate, and which will define the sustainable yield of the Subbasin.
- Simulated projected water budgets, along with sustainability indicator monitoring and Sustainable Management Criteria evaluation, will provide “proof” of continued sustainability during implementation.