

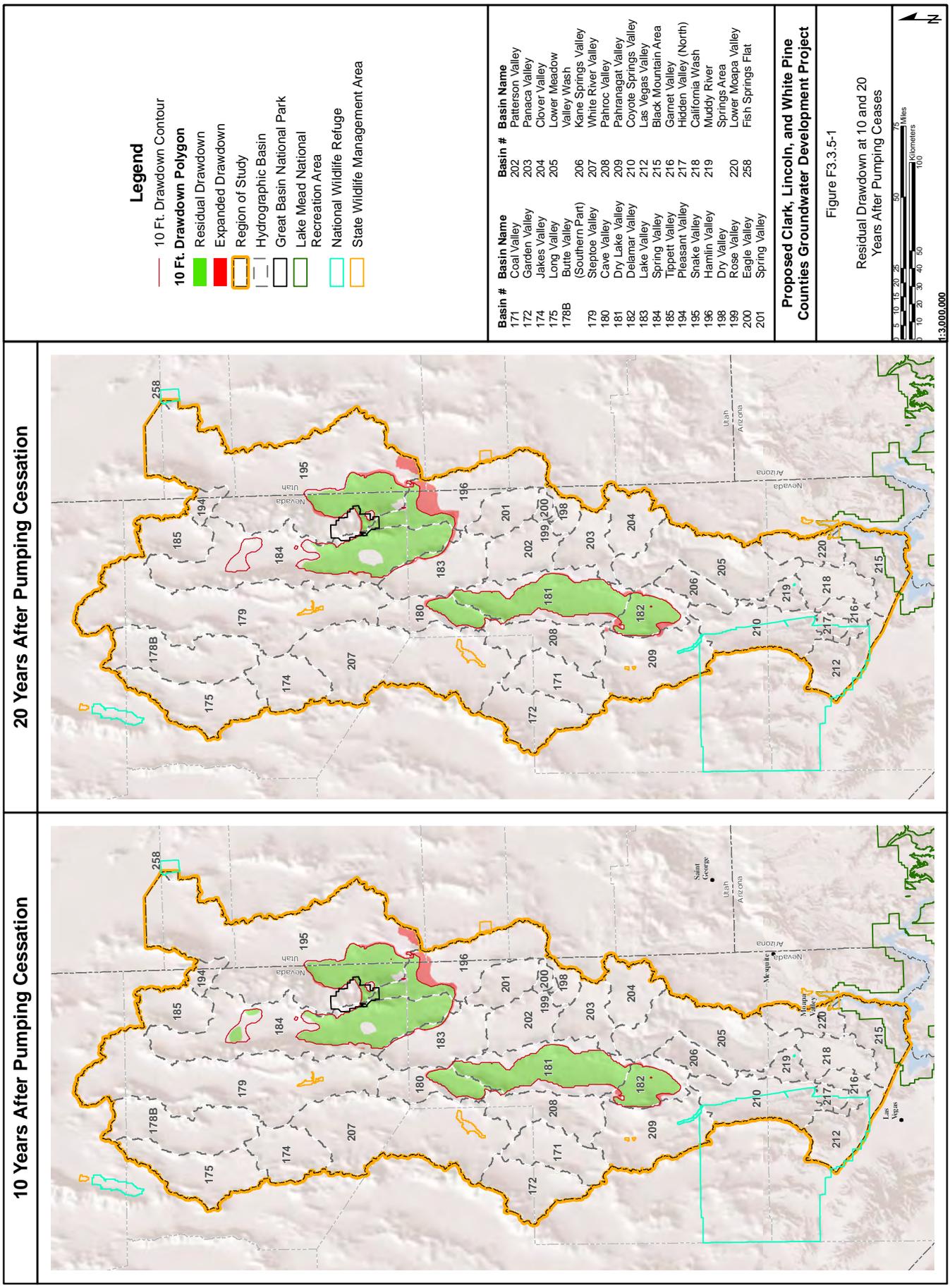
F3.3.5

Pumping Cessation-Recovery Analysis

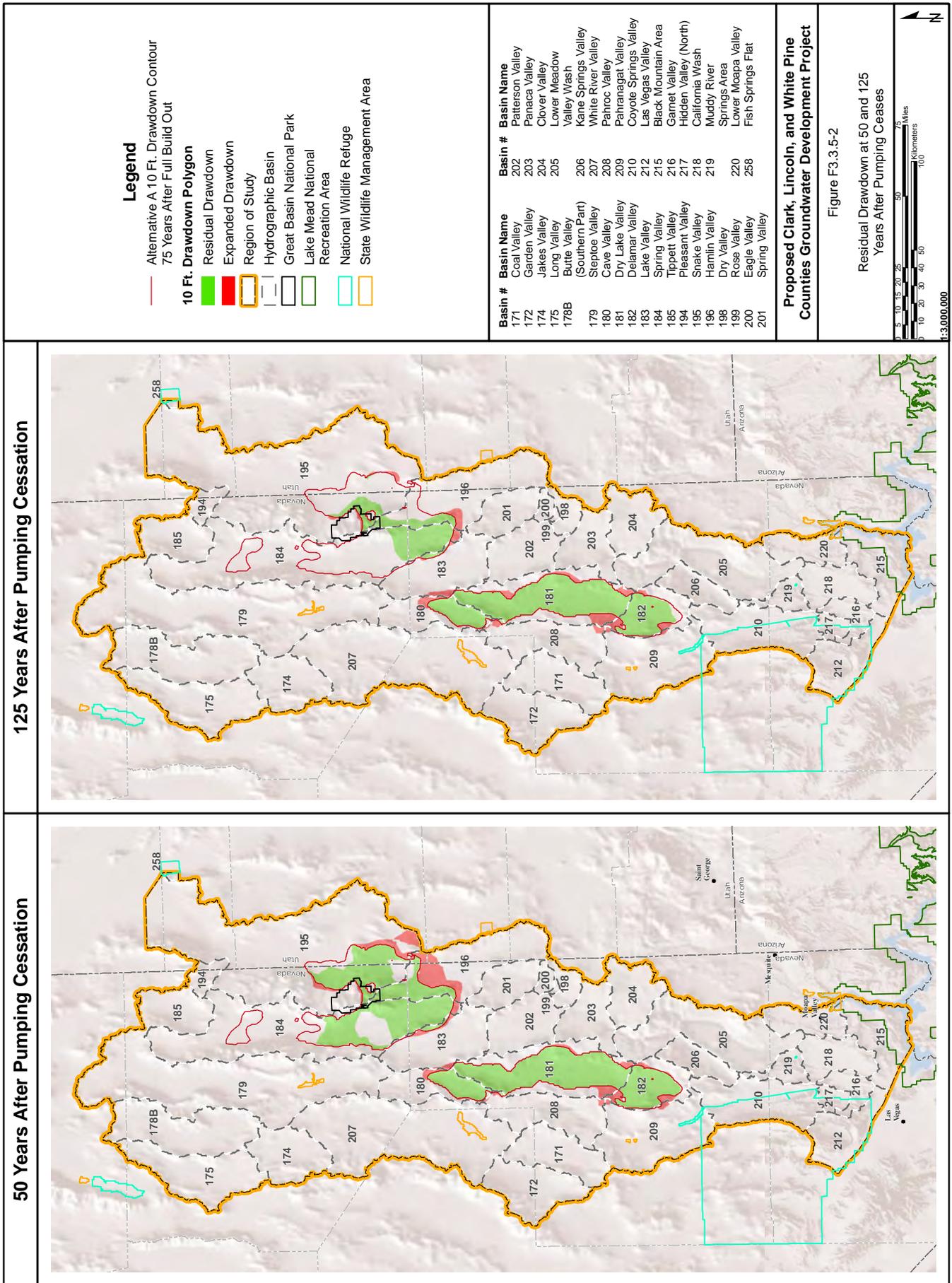
Pumping Cessation – Recovery Analysis

A major issue regarding the concept of adaptive management is the ability of the groundwater system to recover to pre-pumping conditions if pumping were terminated at some point in the future in specific areas. Of particular interest is how quickly the groundwater levels flow would recover if the pumping were terminated. The groundwater flow model was used to evaluate recovery for a hypothetical test case where pumping simulated under the Alternative A pumping scenario was terminated 75 years after full build out as described in the model simulation report (SNWA 2010b). The simulated recoveries of water levels were evaluated at 10, 20, 50 and 125 years after pumping cessation. Comparisons of the drawdown areas (defined as the area affected by 10 feet or more of drawdown) at the point at which pumping is terminated with the residual drawdown areas after 10, 20, 50 and 125 years after cessation of pumping are provided in **Figures F3.3.5-1** and **F3.3.5-2**. The areas defined as “Expanded Drawdown” shown on these figures indicates new areas that would be affected by 10 feet or more of drawdown after pumping cessation. The comparison of the initial drawdown areas with the residual drawdown areas indicates that for this hypothetical test case the residual drawdown area is predicted to persist over most of the initially affected area for at least 50 years. After 125 years of recovery, the drawdown areas in central Spring Valley and in most of Snake Valley and northern Hamlin Valley have recovered. However, residual drawdown is predicted to persist over most of the original drawdown area in southern Spring Valley and in Cave, Dry Lake, and Delamar valleys even after 125 years of recovery. In summary, the results from this hypothetical test case indicate that if an area is affected by drawdown of 10 feet or more, and the pumps are shut down to manage drawdown impacts, it is likely that the residual drawdown area (as defined above) would persist for decades (or longer) in most areas.

The simulated recoveries at six selected observation wells located within the proposed pumping basins are presented in **Figure F3.3.5-3**. The locations of the six observation wells are shown in **Figure 3.3.2-5**. The hydrographs illustrate the predicted rate and magnitude of water level decline and recovery resulting from the pumping and recovery test scenario described above. The model simulation results indicate that the water levels for the wells in Spring and Snake valleys gradually recover to less than 10 feet over the 125-year simulation period; whereas the water levels in Cave, Dry Lake, and Delamar valleys only partially recover over the 125-year recovery period. Moreover, the water levels in Cave and Dry Lake valleys have residual drawdowns of about 40 and 20 feet, respectively, that persist over the entire recovery period.



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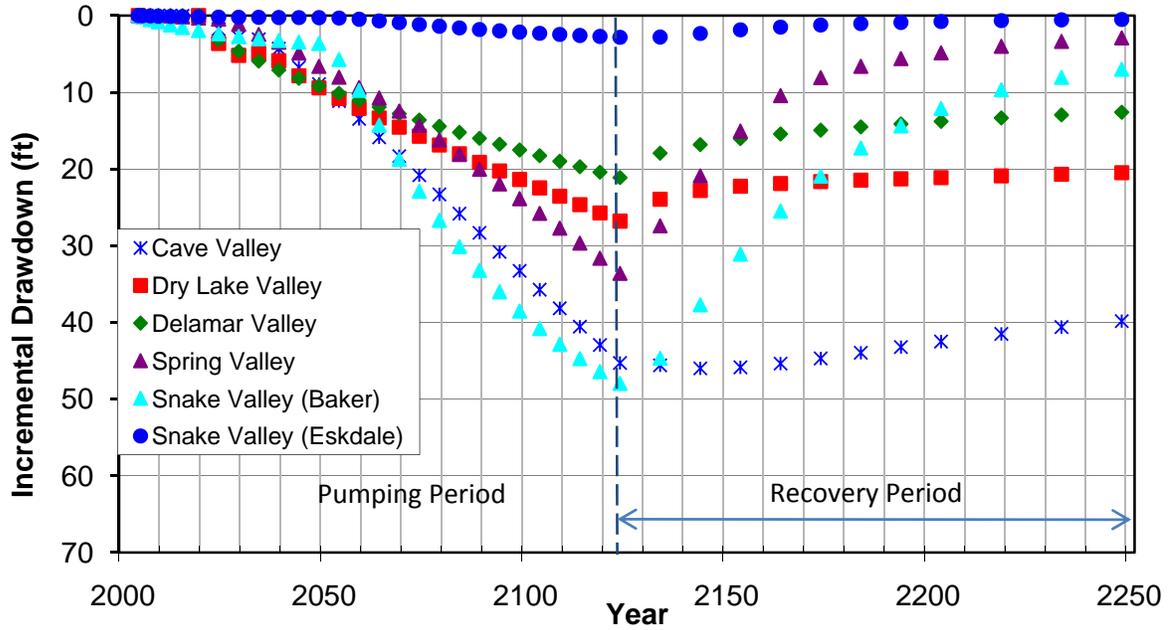


Figure F3.3.5-3 Drawdown Recovery Analysis- Water Level Hydrograph for Sected Locations in Spring, Snake, Cave, Dry Lake, and Delamar Valleys