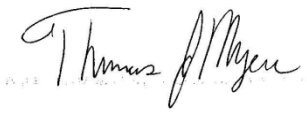
Rebuttal Report: Prediction of Impacts to Tippet and Deep Creek Valley Caused by Southern Nevada Water Authority Pumping Groundwater From Distributed Pumping Options for Spring Valley

Presented to the Office of the Nevada State Engineer

On behalf of the Confederated Tribes of the Goshute Reservation

August, 2011

Prepared by:



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This report presents drawdown maps and hydrographs for Tippet and Deep Creek Valleys for simulations using the Myers (2011b) Spring/Snake Valley groundwater model of the Southern Nevada Water Authority (SNWA) pumping the distributed pumping options, as described by BLM (2011) and Myers (2011f). Myers (2011d) considered two distributed options, the DEIS (BLM, 2011) option and a systematic grid option. The distributed pumping options were considered in addition to simulations of the original water rights applications because of the options presented in BLM (2011). Myers (2011d) explains the reasoning in detail. A primary reason for considering other options and for simulating the pumping out to 200 years and beyond is that Watrus and Drici (2011) considered pumping just the applications for only 75 years.

Differences between Tippet and Deep Creek Valleys were not discernible, therefore just the DEIS option is presented here.

Myers (2011a) described the conceptual model and Myers (2011b and c) described the numerical model developed to simulate groundwater flow in Spring and Snake Valley.

Results

Pumping the DEIS distributed pumping option would extend drawdown into Tippet Valley after 200 years, with the 20-foot drawdown roughly coincident with the topographic divide between Tippet and Spring Valleys (Figure 1). The full extent, 1-foot drawdown, reaches about a third of the way across Tippet Valley after 200 years. Drawdown contours for deeper model layers are approximately the same as shown in Figure 1, indicating that pumping does not change vertical circulation. Also, the contours for the grid-based distributed option (Myers, 2011d) are approximately the same as shown in Figure 1.

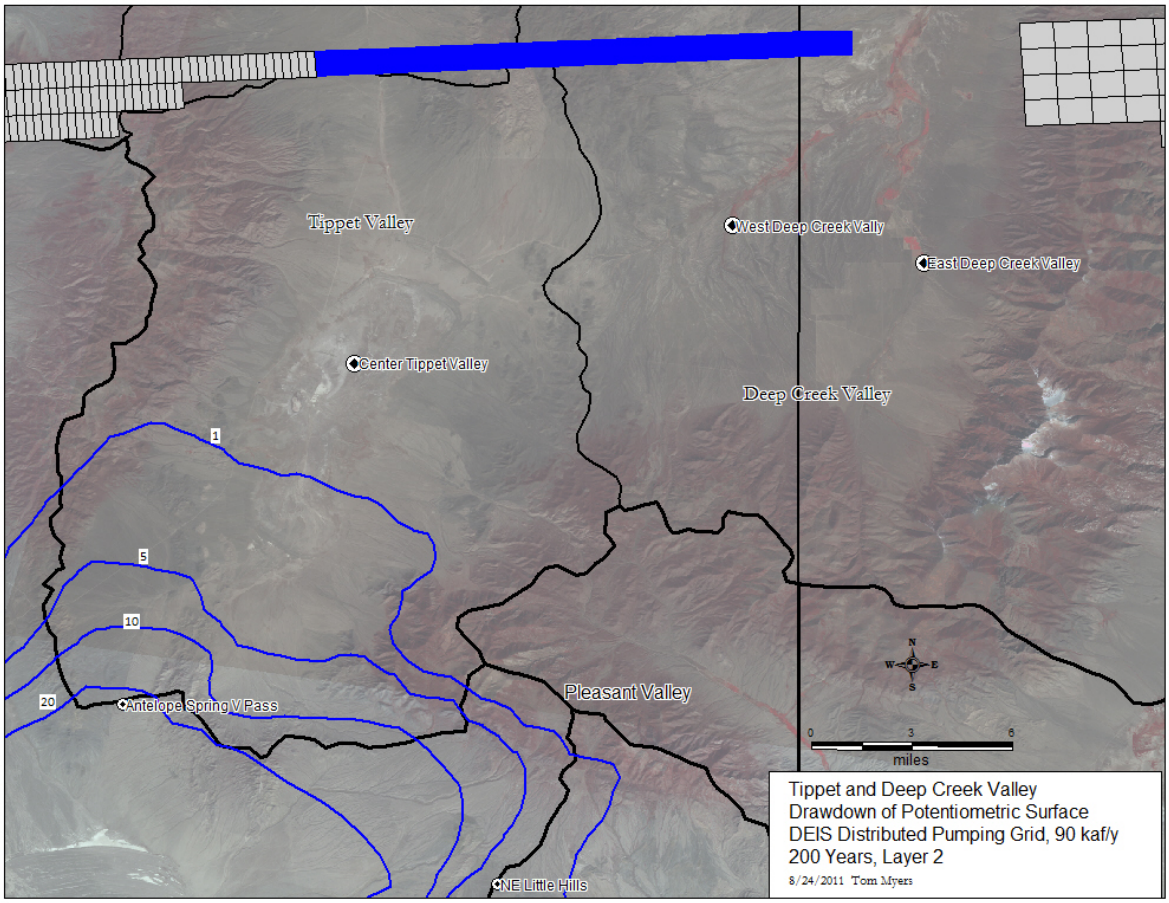

Figure 1: Drawdown map for Tippet and Deep Creek Valley for the DEIS distributed pumping option, full application amount, after 200 years in layer 2.

Drawdown hydrographs demonstrate that drawdown continues to deepen and expand over Tippet Valley and into Deep Creek Valley in years beyond 200 (Figure 2). On the pass between Spring and Tippet Valleys, the drawdown in model layer 2 will eventually reach about 65 ft. In the center of Tippet Valley, drawdown will approach 10 feet and at two sites in Deep Creek Valley, the drawdown approaches 4 and 1 ft, respectively.

Figure 2 shows that the drawdown continues to deepen even after 10,200 years. This shows that pumping the distributed pumping option within Spring Valley causes the system to essentially never reach equilibrium. The drawdown will continue to expand and affect groundwater resources further from the pumping essentially in perpetuity.

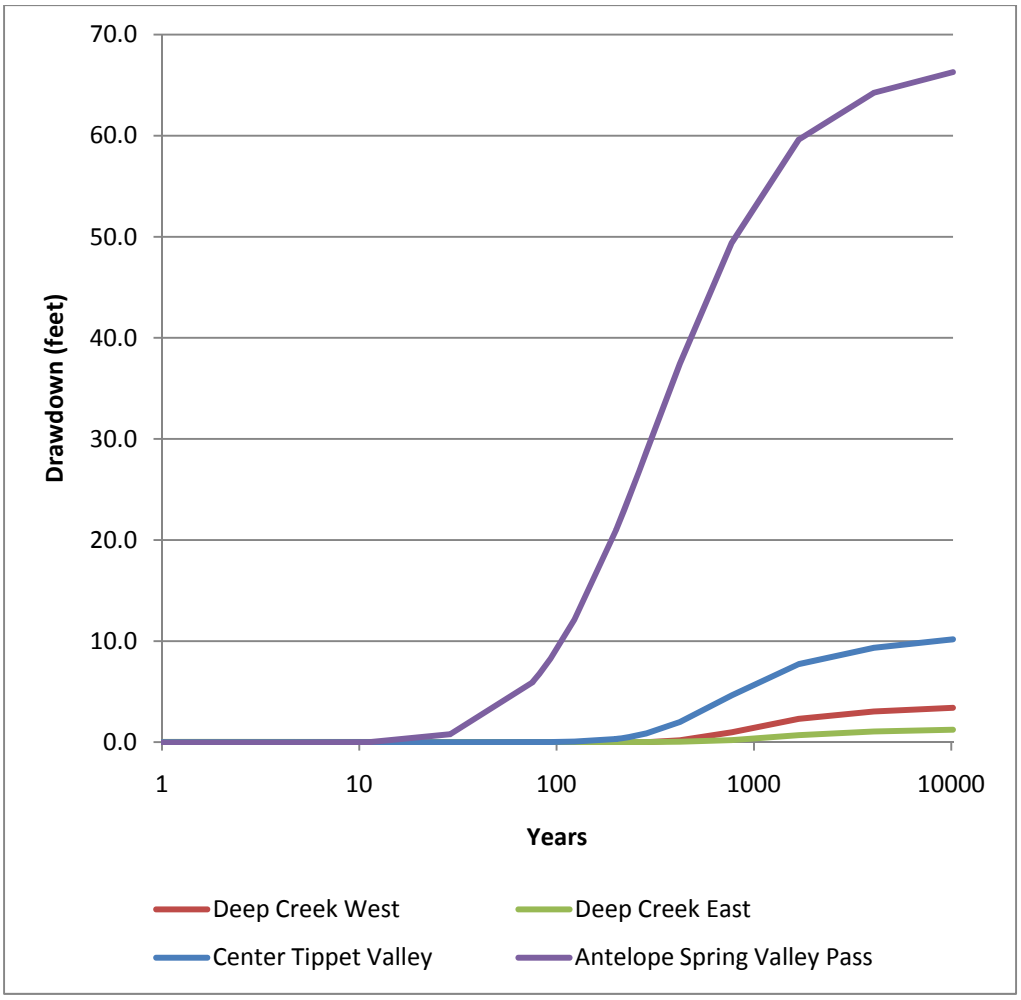

Figure 2: Hydrograph for monitoring site drawdown in layer 2 for the DEIS distributed pumping option, layer 2. Hydrographs in other layers were almost identical to those in layer 2.

The results of this analysis and other related analyses (Myers, 2011c and e) show that the groundwater system will not reach equilibrium for many millennia, if ever, for pumping SNWA's Spring Valley applications at any rate down to 30,000 af/y. This violates the concept of developing groundwater at rates up to the perennial yield which requires that drawdown eventually reach equilibrium, that continuing drawdown not occur.

Conclusion

SNWA's water rights applications in Spring Valley should be denied, in total, due to the fact that pumping them would cause continuing drawdown, in addition to the impacts of massive drawdown within Spring Valley documented in Myers (2011c and d).

References

(BLM) U.S. Bureau of Land Management, 2011. Clark, Lincoln, and White Pine Counties Groundwater Development Project Draft Environmental Impact Statement. Reno, NV.

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Myers, T. 2011d. Rebuttal Report: Part 3, Prediction of Impacts Caused by Southern Nevada Water Authority Pumping Groundwater From Distributed Pumping Options for Spring Valley, Cave Valley, Dry Lake Valley, and Delamar Valley. Presentedto the Nevada State Engineer on behalf of Great Basin Water Network and the Confederated Tribes of the Goshute Reservation.

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