



## Technical Memo

**To:** Blaine County Planning & Zoning  
**From:** Charles G. Brockway, P.E.  
**Cc:**  
**Date:** May 13, 2021  
**Re:** Lateral 75 Ranch domestic well depletion analysis



This memo describes an analysis of depletion of the proposed domestic well usage on the proposed Lateral 75 Ranch subdivision. The memo is intended to provide technical data to evaluate concerns raised by the South Valley Groundwater District in a letter dated April 21, 2021.

Domestic well usage for each lot may consist of in-house use, up to 0.5 acre of irrigation, and associated uses as allowed by the exemption in Idaho Code 42-111(a). Individual domestic wells are an entitlement and the statute exempts these uses from the need to obtain a water permit

In-house usage has consistently and correctly been viewed by the Idaho Department of Water Resources as essentially non-consumptive, as it returns via drainfield systems. The depletion of the aquifer is the consumptive use due to irrigation. The attached depletion analysis for 24 lots at 0.5 acre per lot shows the monthly depletion. With a full season of irrigation, the total annual depletion would be 19.5 acre-feet and the maximum monthly depletion would be 5.71 acre-feet in July (this equates to 0.093 cfs). If the irrigation from groundwater occurs only after the median cutoff date of the existing surface water rights (August 11), the total annual depletion would be 6.68 acre-feet with a maximum monthly of 3.53 acre-feet or 0.057 cfs in August.

To evaluate the magnitudes of impacts, these depletions must be compared to the total groundwater discharge in the alluvial aquifer beneath the site. Groundwater discharge at an aquifer cross-section at Hailey has been estimated by Smith (1959) at 34,000 ac-ft/year, Luttrell and Brockway (1984) at 40,000 ac-ft/year, and Frenzel (1989) at 13,000 ac-ft/year. Lower in the aquifer, at a cross-section north of Bellevue, the calibrated groundwater model developed by the USGS and IDWR has the total average flow at 74,800 ac-ft/day. Assuming the 74,800 ac-ft/day is a reasonable figure, the depletion of the domestic usage would range from 0.0089% to 0.026% of the groundwater discharge, depending whether it is a full-season or part-season usage.

It be noted that groundwater depletion is a function of irrigated acreage only, and would be exactly the same whether or not a central water system is used. Pumped volume may be different due to differing irrigation efficiencies, but depletion would be the same.

42-111(a) also allows for “any other purpose in connection therewith.” These uses are unknown and undefined, but would be the same whether or not domestic irrigation will occur, and therefore were not included in the analysis.