

*This Groundwater Technical Review and the included analysis help inform the Water Rights Section’s review of whether the proposed groundwater use will ensure the preservation of the public welfare, safety and health as described in ORS 537.525 and ORS 537.621. The Water Rights Section also considers other information sources when making its public interest determination, including watermaster input, any comments received, input from other agencies, other Commission rules not evaluated as part of the Groundwater Review, and other information.*

**PUBLIC INTEREST TECHNICAL REVIEW FOR GROUNDWATER APPLICATIONS**

TO: Water Rights Section Date: 11/12/2025  
FROM: Groundwater Section J. Hackett  
Reviewer's Name  
SUBJECT: Application LL - 1998 Supersedes review of \_\_\_\_\_

Date Reviewed by GW Mgr. and Returned to WRSD: JTI 3/13/26

**PUBLIC INTEREST PRESUMPTION: GROUNDWATER**

*OAR 690-310-0130 (1): The Department shall presume that a proposed groundwater use will ensure the preservation of the public welfare, safety and health as described in ORS 537.525 if*

*(a) The proposed use is allowed in the applicable basin program established pursuant to ORS 536.300 and 536.340 or given a preference under ORS 536.310(12);*

*(b) Water is available;*

*(c) The proposed use will not injure other water rights; and*

*(d) The proposed use complies with the rules of the Commission.*

Department staff review groundwater applications under OAR 690-310-0140 to determine whether the presumption is established and may modify or condition the proposed use to meet the presumption criteria.

**This review is based upon available information and agency policies in place at the time of evaluation.**

**A. GENERAL INFORMATION:**

**A1. Application**

Applicant’s Name: A and K Ranches County: Wasco

Applicant(s) seek(s) 0.20 cfs from 1 well(s) in the Deschutes Basin,  
\_\_\_\_\_ subbasin

Proposed use Road / General construction; fire suppression Seasonality: April 1 – November 1

A2. Well and aquifer data:

A2 a: Well identifiers, aquifer, rate, and location

POA Well	Well Log ID	Applicant's Well #	Proposed Aquifer	Proposed Rate (cfs)	Location (T/R-S QQ-Q)	Latitude	Longitude
1	WASC 52152	2	CRBG	0.20	5S/15E-2 NE-SE	45.16044524	-120.89197787
2							
3							
4							

A2 b: Well construction information by depth below land surface. All units in feet.

POA Well	Seal		Casing		Filter Pack		Open / Perforation / Screen		Well Bottom
	Min	Max	Min	Max	Min	Max	Min	Max	
1	0	190	0	416			376	416	416
2									
3									
4									

A2 c: Well construction information by elevation above mean sea level. All units in feet.

POA Well	Land Surface Elevation	Seal		Casing		Filter Pack		Open / Perforation / Screen		Well Bottom
		Min	Max	Min	Max	Min	Max	Min	Max	
1	2326	2326	2136	2326	1950			2136	1910	1910
2										
3										
4										

A2 d: Information relevant to water levels, including land surface elevation, depth of first water, recent annual high level, and reference levels for permit conditions

POA Well	Depth of First Water from Well Log (ft bls)	Shallowest Static Water Level (ft bls)	Most Recent Annual High WL		Reference Levels for:				Well Tests			
					RSGL		Permit Conditions		(max yield on well log)			
			Depth (ft bls)	WL Date	Depth (ft bls)	Depth (ft bls)	Date	Pro- visional?	Yield (gpm)	Draw-down (ft)	Test Type	Duration (hours)
1	330	230	224.95	3/21/2017	224.95	224.95	3/21/2017		100	N/A	A	1
2												
3												
4												

Use data from application for proposed wells.

“SWL” = static water level (most recent or representative SWL). “amsl” = above mean sea level. “bls” = below land surface

Comments: \_\_\_\_\_

A3. Description of hydrogeologic setting / conceptual model: Applicant's well likely produces from water-bearing zones in the lower Wanapum or upper Grande Ronde formations of the Columbia River Basalt Group. Recent water levels in the well show no obvious signs of declines. However, potential for water-level declines and overdraft of the resource exists virtually everywhere the Columbia River Basalt aquifers are developed, especially east of the Cascades where recharge is small. For this reason, water level measurement and water use reporting conditions should be included in the permit.

**B. BASIN PROGRAM:**

OAR 690-310-0130 (1)(a)

B1.  **Provisions of the** Deschutes Basin rules relative to the development, classification and/or management of groundwater hydraulically connected to surface water  **are, or**  **are not**, activated by this application. (Not all basin rules contain such provisions.)

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

B2.  **Well(s) #** \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, are limited by an administrative restriction under the applicable basin program.

Comments: \_\_\_\_\_  
\_\_\_\_\_

**C. WATER AVAILABILITY:**

OAR 690-310-0130 (1)(b)

OAR 690-300-0010(57): “Water is Available” [...] means: [...]

- (d) The proposed groundwater source exhibits Reasonably Stable Groundwater Levels, as defined in OAR 690-008-0001; and
- (e) The total requested rate of groundwater allocation is obtainable by the expected yield of the well(s) proposed in the application given best available information; and
- (f) The proposed groundwater use does not have the Potential for Substantial Interference (OAR 690-009-0020(5)) with a surface water source [that does not have water available]

**C1. Reasonably Stable Groundwater Levels**

OAR 690-008-0001 (9): “Reasonably Stable Groundwater Levels” means that Annual High Water Levels, based on observed trends over time, remain within a range consistent with sustaining the function and character of a groundwater reservoir indefinitely, and:

- (a) The Annual High Water Levels as measured at one or more representative wells in a groundwater reservoir or part thereof:
  - (A) indicate no decline or an average rate of decline of less than 0.6 feet per year over any immediately preceding averaging period with duration between 5 and 20 years. Four Annual High Water Levels are required to calculate the rate of change; one must have been measured in the year to which the evaluation of reasonably stable applies, and at least one must have been measured between 5 and 20 years prior; and
  - (B) have not declined by more than 25 feet from a reference level to the level in the year to which the evaluation of reasonably stable applies. The reference level shall be the highest known water level unless Annual High Water Levels have been measurably increased by human activity, in which case the Department may set a different reference level using best available information.
- (b) If water level data are insufficient to perform either test in (a) for a given year, then the Department will presume that groundwater levels are not reasonably stable unless:
  - (A) the most recent evaluation of reasonably stable applies to a year within 5 years of the given year, in which case the Department may presume that the recent evaluation still applies; or
  - (B) groundwater has not yet been extracted or authorized for extraction from the groundwater reservoir, in which case the Department may presume that groundwater levels are reasonably stable.
- (c) The Department may evaluate Reasonably Stable Groundwater Levels for the year of the priority date of a groundwater right application or for a later year if more recent data are available.

C1a. If part (a) of 690-008-0001(9) has been superseded by a basin program rule as per 690-008-0001(9)(B)(d) proceed to C1c. List one or more representative wells in the proposed groundwater reservoir or part thereof that have sufficient data to evaluate part (a) of 690-008-0001(9). Both the Rate (OAR 690-008-0001(9)(a)(A)) and Magnitude (OAR 690-008-0001(9)(a)(B)) tests for a given well must be passed in order to find that the water levels are Reasonably Stable. It is not necessary to include all POAs proposed on this application into this table, as long as they all access the same part of the groundwater reservoir and have the same reasonable stability status indicated in C1b below. If some POAs are found to be reasonably stable while others are not, then all the POAs on the application should be included in the table below, with their POA number indicated in the second column. In that situation, the reviewer does not need to indicate in this table which wells are considered representative for determining reasonable stability status for different POAs, but they should describe those relationships in the comments below.

Well Log ID	POA Well #	Reference Level for Evaluation of Reasonable Stability (ft bls)	Rate Test	Magnitude Test	Water Levels Reasonably Stable
WASC 52152	1		I.D.	I.D.	I.D.

Comments: **The Reasonably Stable Groundwater Levels evaluation is not completed because there is insufficient data.** There is no observation well data that meets the criteria for the Rate or Magnitude tests in the groundwater reservoir developed by the POA and surrounding wells. Specifically, POA #1 has only 2 near static water levels, and has no measured water levels in last 8 years.

C1b. Summary finding for this application. Check only one primary finding. It is possible that different proposed POAs could access different parts of the GW reservoir, and for some of those parts to be Reasonably Stable while others are not. In that case, summary finding for the application should be “Not Reasonably Stable,” and the reviewer should indicate which POAs access part(s) of the groundwater reservoir that are Reasonably Stable. OAR 690-008-0001(9)(a): *Annual High Water Levels as measured at one or more representative wells in a groundwater reservoir or part thereof.*

**Are Reasonably Stable**

Groundwater has not yet been extracted or authorized for extraction from the groundwater reservoir

**Are Not Reasonably Stable**

If some Proposed POAs are Reasonably Stable, list the Reasonably Stable POAs here: \_\_\_\_\_

**Sufficient data are not available to evaluate reasonable stability**

List representative wells identified during review that could be measured in order to overcome a finding of Insufficient Data: WASC 52152, WASC 51103, WASC 51104

Comments: \_\_\_\_\_

C1c. OAR 690-008-0001(d): Evaluation for reasonably stable water levels per superseding basin program rules OAR 690-\_\_\_\_\_ for the \_\_\_\_\_ administrative basin.

Comments: \_\_\_\_\_

## **C2. Well Yield**

C2a. OAR 690-300-0010(57)(e): Is the total requested rate of groundwater allocation obtainable by the expected yield of the well(s) proposed in the application given best available information?

**Yes**       **No**

Comments: 100 gpm is the reported yield on the original well log, and presumably 100 gpm was pumped regularly over the period of the previous Limited Licenses (LL-1863, LL-1906).

## **C3. Groundwater Interference with Surface Water**

OAR 690-300-0010(57): “Water is Available”, when used in OAR 690-310-0080, 690-310-0010 and 690-310-0130, means [...]:  
(f) The proposed groundwater use does not have the Potential for Substantial Interference (OAR 690-009-0020(5)) with a surface water source [that is not available for further appropriation]

OAR 690-009-0040: (1) When evaluating a Proposed Groundwater Use, Hydraulic Connection and the Potential for Substantial Interference with a surface water source shall be determined by the Department according to these rules. These determinations shall be based upon the application of generally accepted hydrogeologic principles using best available information concerning the hydrologic system of interest and the well(s) under consideration.

(a) Appropriate information that is provided in the application or in the public comment period for the application shall be considered in the process of making these determinations.

(b) Best available information may include, but is not limited to, pertinent water well reports, aquifer test analyses, hydrologic and geologic studies and reports, groundwater and surface water elevation data, available numerical and analytical groundwater flow models, and any other information that is used in applying generally accepted hydrogeologic principals and methodologies.

(2) A determination of Hydraulic Connection is a prerequisite for a determination of the Potential for Substantial Interference.

(3) A determination of the Potential for Substantial Interference with a surface water source shall at a minimum include application of the generally accepted hydrogeological principles described in “Streamflow Depletion by Wells – Understanding and Managing the Effects of Groundwater Pumping on Streamflow” by P. M. Barlow and S. A. Leake, 2012.

(4) The Potential for Substantial Interference with a surface water source exists if the well(s) under consideration will, over the full term of the proposed or authorized groundwater use, obtain water from Streamflow Depletion.

OAR 690-009-0020(4): “Hydraulic Connection” means saturated conditions exist allowing water to move between two or more sources of water, either between groundwater and surface water or between groundwater sources.

OAR 690-009-0020 (7) “Streamflow Depletion” means a reduction in the flow of a surface water source due to pumping a hydraulically connected groundwater source. Streamflow Depletion encompasses:

(a) captured groundwater that would otherwise discharge to a surface water source; or

(b) induced infiltration from a surface water source to the hydraulically connected groundwater source.

C3a. OAR 690-009-0020(5): *Potential for Substantial Interference*, or “PSI”, means that a groundwater use will cause streamflow depletion based on the assessments described in OAR 690-009-0040, and therefore may cause or has caused substantial interference with or undue interference with a surface water source, based on the definitions in OAR 690-008-0001.

Summary of surface water sources evaluated for hydraulic connection and Potential for Substantial Interference. For hydraulic connection and potential for substantial interference, a value of 1 means yes, and blank means no.

POA Well	WRD Streamcode	Streamcode Surface Water Name	Water Availability Basin (WAB)	WAB Watershed ID	Hydraulically Connected	Potential for Substantial Interference
1	051980	Deschutes River	Deschutes R > Columbia R - at Mouth	70087	No	No
1	0519800470	Buck Hollow	Buck Hollow > Deschutes R - at Mouth	71795	Yes	Yes
1	0519800570	Bakeoven Creek	Deschutes R > Columbia R - at Mouth	70087	Yes	Yes

Comments: Nearby surface water sources are incised into CRBG stratigraphic units penetrated by the proposed POA, indicating that hydraulic connection is likely. The site is approximately equidistant (approximately 2.5 – 3.0 miles) from Buck Hollow and Bakeoven Creek—both tributaries of the Deschutes River—and about 9 miles from the Deschutes River itself. Pumping impacts from the proposed POA are expected to propagate relatively quickly to Buck Hollow and Bakeoven Creek. A direct hydraulic connection with the Deschutes River is unlikely because (1) these tributaries act as positive recharge boundaries, and (2) the requested pumping rate is small enough to be supplied through depletion of these tributaries rather than the mainstem river. However, any reduction in flow within the tributaries will ultimately contribute to reduced flow in the Deschutes River downstream.

List all surface water sources identified to have PSI and their associated Water Availability Basin:

WRD Streamcode	Streamcode Surface Water Name	Water Availability Basin (WAB)	WAB Watershed ID
00519800470	Buck Hollow	Buck Hollow	71795
0519800570	Bakeoven Creek	Deschutes R	70087
051980	Deschutes River	Deschutes R	70087

**D. INJURY:**

*OAR 690-310-0130 (1): The Department shall presume that a proposed groundwater use will ensure the preservation of the public welfare, safety and health as described in ORS 537.525 if... (c) The proposed use will not injure other water rights.*

To make a finding of injury to an existing water right, the Department must make a finding of “Substantial Interference” as defined in OAR 690-008-0001(10). The finding of “Substantial Interference” with a surface water right is made by the Water Rights Services Division based on the evaluation in section C3. Sections D1 and D2, below, address the finding of “Substantial Interference” with a groundwater right.

*OAR 690-008-0001(10): “Substantial or Undue interference”, means the spreading of the cone of depression of a well to intersect a surface water source or another well, or the reduction of the groundwater levels as a result of pumping or otherwise extracting groundwater from an aquifer, which contributes to:*

- (b) The groundwater level being drawn down to the Economic Pumping Level of the senior appropriator(s); or*
- (c) One or more of the senior groundwater appropriators being unable to obtain either the permitted or customary quantity of groundwater, whichever is less, from a reasonably efficient well that fully penetrates the aquifer where the aquifer is relatively uniformly permeable. However, in aquifers where flow is predominantly through fractures, full penetration may not be required as a condition of substantial or undue interference.*

D1a. OAR 690-008-0001(10): Will the proposed groundwater use result in substantial or undue interference with an existing groundwater user?

- Yes       No       **No, as long as the permit is conditioned as indicated in item F below.**

Comments: \_\_\_\_\_

**E. OTHER RULES OF THE COMMISSION:**

*OAR 690-310-0130 (1): The Department shall presume that a proposed groundwater use will ensure the preservation of the public welfare, safety and health as described in ORS 537.525 if...(d) The proposed use complies with the rules of the Commission.*

**E1. OAR 690-200, 690-210 and 690-215: Well Construction**

Identify any notable well construction deficiencies or hydrogeologic considerations to support review by Well Construction & Compliance.

E1a. Well #: \_\_\_\_\_ Logid: \_\_\_\_\_

E1b. Well construction deficiency or other comment is described as follows: \_\_\_\_\_

**E2. OAR 690-310-0260: Water Rights Within or Above State Scenic Waterways**

E2a. Are any of the proposed sources of appropriation hydraulically connected to a State Scenic Waterway or its tributaries?  
 Yes       No

Hydraulically connected State Scenic Waterway: The Deschutes Scenic Waterway

Comments: Proposed POA is hydraulically connected to two tributaries of the Deschutes Scenic Waterway (Buck Hollow and Bakeoven Creek). Any permit issued pursuant to this application should contain the State Scenic Waterway condition (7j).

Stream depletions due to the proposed use will increase with time until a new steady state is reached between recharge (including stream capture) and discharge, at which time approximately 100 percent of the water consumed from the proposed POA will be depleted from surface water (Theis, 1940; Bredehoeft, 2011; Barlow and Leake, 2012). Therefore, the monthly interference with surface water above the State Scenic Waterway is estimated as 1/12 of the full volume of consumptive use, assuming that at steady state the depletion of surface water will be distributed approximately evenly throughout the year.

E2b. Per ORS 390.835, is the Groundwater Section able to calculate ground water interference with surface water that contributes to a Scenic Waterway?

**Yes. The calculated interference is distributed below:**

*Calculate the percentage of consumptive use by month and fill in the table below. If interference cannot be calculated, per criteria in 390.835, do not fill in the table but check the "No" option below, thus informing Water Rights that the Department is unable to make a Preponderance of Evidence finding.*

Exercise of this permit is calculated to reduce monthly flows in Deschutes River Scenic Waterway by the following amounts expressed as a proportion of the consumptive use by which surface water flow is reduced.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%

**No. Therefore, the Department is unable to find that there is a preponderance of evidence that the proposed use will measurably reduce the surface water flows necessary to maintain the free-flowing character of a scenic waterway.**

Comments: \_\_\_\_\_

**E3. Other Relevant Rules of the Commission:**

Comments: \_\_\_\_\_

**F. RECOMMENDED MODIFICATIONS OR CONDITIONS:**

*OAR 690-310-0140(2): If the Department determines that the presumption is not established, the Department shall determine whether the proposed use will impair or adversely affect the public welfare, safety and health under ORS 537.525 and may either:*

- (a) Propose denial of the application upon a finding that the use will impair or adversely affect the public welfare, safety and health;*
- or*
- (b) Make specific findings to demonstrate that even though the presumption is not established, the proposed use will not impair or adversely affect the public welfare, safety and health and propose approval of the application with appropriate modifications or conditions.*

Based on the findings in sections A-D above, the following conditions are recommended if the permit is approved:

**7RLN, 7J**

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**REFERENCES:**

Oregon Department of Geology and Mineral Industries, Geologic Map of Oregon. <http://www.oregongeology.org/geologicmap/>

OWRD Well Log Database. [[https://apps.wrd.state.or.us/apps/gw/well\\_log/Default.aspx](https://apps.wrd.state.or.us/apps/gw/well_log/Default.aspx)]

OWRD Groundwater Information System Database,

[[https://apps.wrd.state.or.us/apps/gw/gw\\_info/gw\\_info\\_report/gw\\_search.aspx](https://apps.wrd.state.or.us/apps/gw/gw_info/gw_info_report/gw_search.aspx)]

Swanson, D. A., J. L. Anderson, V.E. Camp, P.R. Hooper, W.H. Taubeneck, and T. L. Wright. 1981. *Reconnaissance geologic map of the Columbia River basalt group, northern Oregon and western Idaho*. USGS Open-File Report 81-797.

Barlow, P., and Leake, J., 2012. Streamflow depletion by wells – understanding and managing the effects of groundwater pumping on streamflow: U.S. Geological Survey, Circular 1376, 84 p.

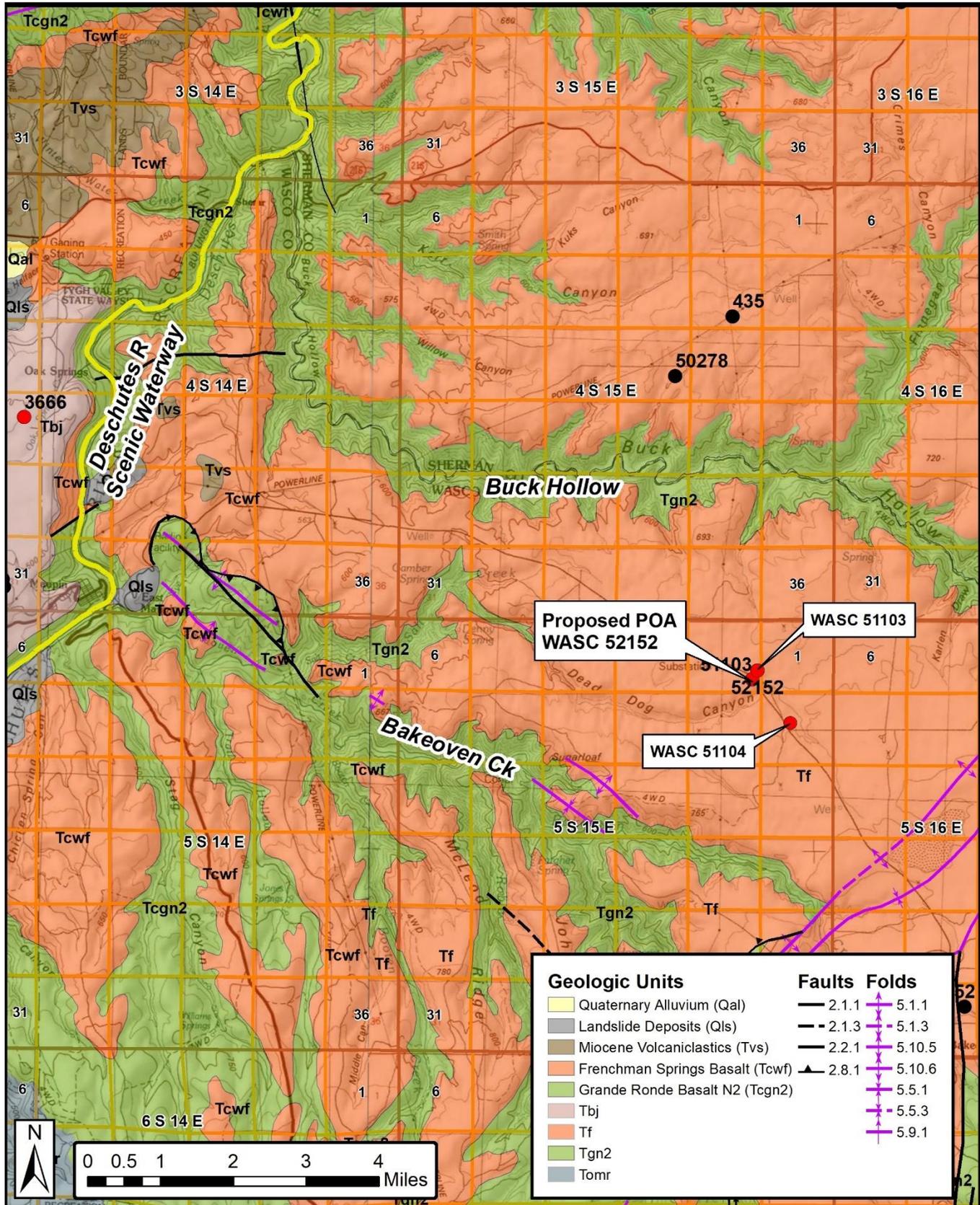
Bredehoeft, J., 2011, Hydrologic trade-offs in conjunctive use management: Ground Water, v. 49, no. 4, p. 468-475.

**ATTACHMENTS:**

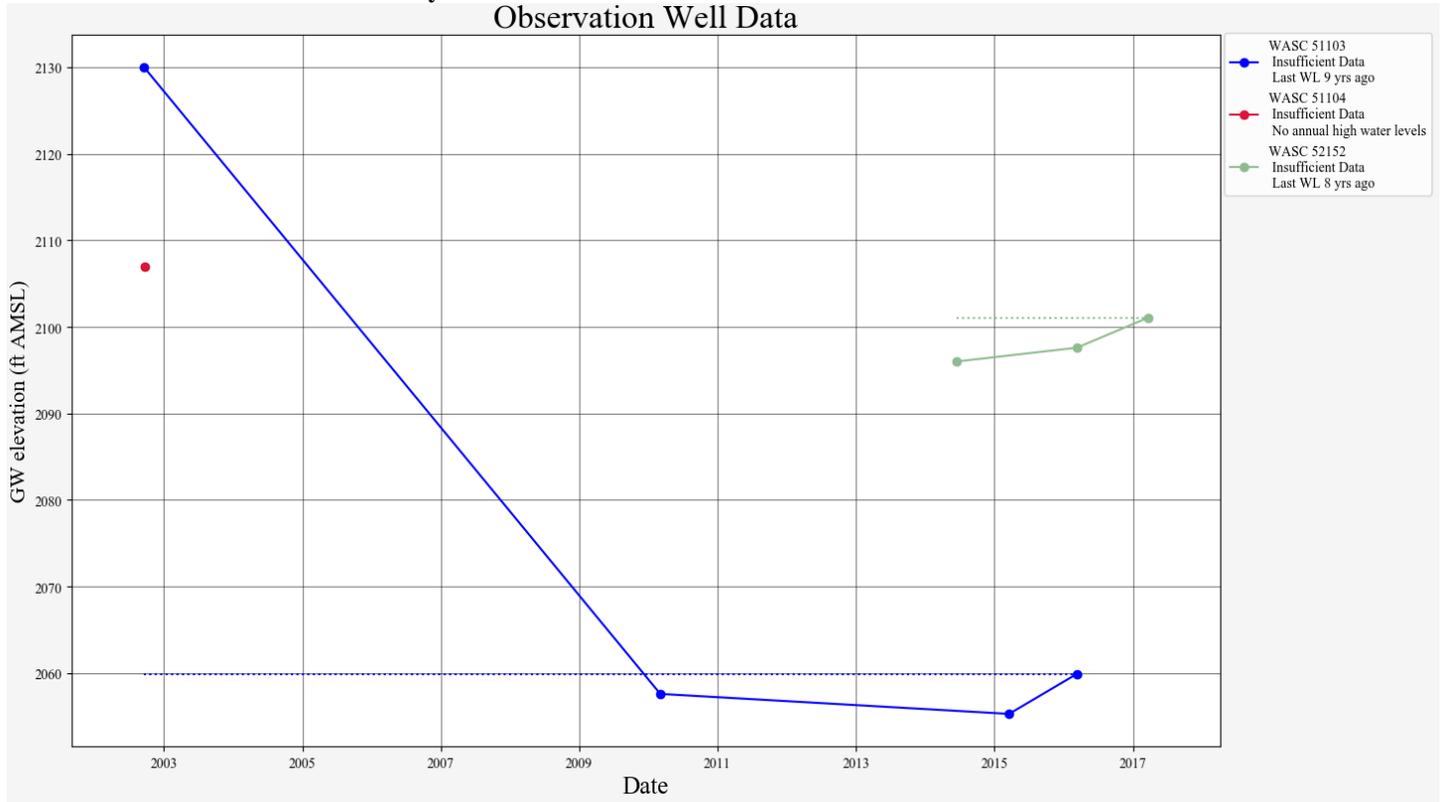
**Well Location Map**

**LL-1998, A & K Ranches**

1:100,000 Scale



Water-Level Measurements in Nearby Wells



Water Availability Basins

Water Availability Analysis  
Detailed Reports

DESCHUTES R > COLUMBIA R - AB MOUTH AT GAGE 14103000  
DESCHUTES BASIN

Watershed ID #: 70087 (Map)  
Date: 11/12/2025

Water Availability as of 11/12/2025

Exceedance Level: 80%  
Time: 10:13 AM

Water Availability Calculation | Water Rights | Consumptive Uses and Storages | Instream Flow Requirements | Watershed Characteristics | Reservations

Water Availability Calculation

Monthly Streamflow in Cubic Feet per Second  
Annual Volume at 50% Exceedance in Acre-Feet

Month	Natural Stream Flow	Consumptive Uses and Storages	Expected Stream Flow	Reserved Stream Flow	Instream Flow Requirement	Net Water Available
JAN	4,970.00	675.00	4,300.00	450.00	4,500.00	-655.00
FEB	5,530.00	745.00	4,780.00	450.00	4,500.00	-165.00
MAR	6,140.00	1,020.00	5,120.00	450.00	4,500.00	171.00
APR	6,470.00	994.00	5,480.00	450.00	4,000.00	1,030.00
MAY	6,220.00	1,160.00	5,060.00	450.00	4,000.00	606.00
JUN	5,560.00	1,230.00	4,330.00	450.00	4,000.00	-117.00
JUL	4,610.00	968.00	3,640.00	450.00	4,000.00	-808.00
AUG	4,320.00	873.00	3,450.00	450.00	3,500.00	-503.00
SEP	4,410.00	758.00	3,650.00	450.00	3,800.00	-598.00
OCT	4,520.00	804.00	3,720.00	450.00	3,800.00	-534.00
NOV	4,610.00	856.00	3,750.00	450.00	3,800.00	-496.00
DEC	4,820.00	782.00	4,040.00	450.00	4,500.00	-912.00
ANN	4,390,000.00	656,000.00	3,730,000.00	326,000.00	2,950,000.00	506,000.00

Water Availability Analysis  
Detailed Reports

BUCK HOL > DESCHUTES R - AT MOUTH  
DESCHUTES BASIN

Watershed ID #: 71795 (Map)  
Date: 11/12/2025

Water Availability as of 11/12/2025

Exceedance Level: 80%  
Time: 10:16 AM

Water Availability Calculation | Water Rights | Consumptive Uses and Storages | Instream Flow Requirements | Watershed Characteristics | Reservations

Water Availability Calculation

Monthly Streamflow in Cubic Feet per Second  
Annual Volume at 50% Exceedance in Acre-Feet

Month	Natural Stream Flow	Consumptive Uses and Storages	Expected Stream Flow	Reserved Stream Flow	Instream Flow Requirement	Net Water Available
JAN	5.43	0.63	4.80	0.00	25.10	-20.30
FEB	24.10	1.31	22.80	0.00	52.00	-29.20
MAR	31.80	1.65	30.20	0.00	54.80	-24.60
APR	24.30	2.29	22.00	0.00	56.80	-34.80
MAY	7.50	3.23	4.27	0.00	19.50	-15.20
JUN	1.81	3.19	-1.38	0.00	3.02	-4.40
JUL	0.52	2.22	-1.70	0.00	0.70	-2.40
AUG	0.26	1.79	-1.53	0.00	0.23	-1.76
SEP	0.26	1.57	-1.31	0.00	0.23	-1.54
OCT	0.26	1.25	-0.99	0.00	0.46	-1.45
NOV	0.52	0.06	0.46	0.00	2.55	-2.09
DEC	1.81	0.29	1.52	0.00	11.40	-9.88
ANN	13,500.00	1,180.00	12,700.00	0.00	13,500.00	0.00