

Groundwater Application Review Summary Form

Application # G- 18754

GW Reviewer Darrick E. Boschmann Date Review Completed: 03/09/2023

Summary of GW Availability and Injury Review:

Groundwater for the proposed use is either over appropriated, will not likely be available in the amounts requested without injury to prior water rights, OR will not likely be available within the capacity of the groundwater resource per Section B of the attached review form.

Summary of Potential for Substantial Interference Review:

There is the potential for substantial interference per Section C of the attached review form.

Summary of Well Construction Assessment:

The well does not appear to meet current well construction standards per Section D of the attached review form. Route through Well Construction and Compliance Section.

This is only a summary. Documentation is attached and should be read thoroughly to understand the basis for determinations and for conditions that may be necessary for a permit (if one is issued).

WATER RESOURCES DEPARTMENT

MEMO

03/09/2023

TO: **Application G- 18754**

FROM: **GW: Darrick E. Boschmann**
 (Reviewer's Name)

SUBJECT: Scenic Waterway Interference Evaluation

YES The source of appropriation is hydraulically connected to a State Scenic
 NO Waterway or its tributaries

YES
 NO Use the Scenic Waterway Condition (Condition 7J)

Per ORS 390.835, the Groundwater Section is **able** to calculate ground water interference with surface water that contributes to a Scenic Waterway. The calculated interference is distributed below

Per ORS 390.835, the Groundwater Section is **unable** to calculate ground water interference with surface water that contributes to a scenic waterway; **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**

DISTRIBUTION OF INTERFERENCE

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 "unable" option above, 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 John Day 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
0.083	0.083	0.083	0.083	0.083	0.083	0.083	0.083	0.083	0.083	0.083	0.083

PUBLIC INTEREST REVIEW FOR GROUNDWATER APPLICATIONS

TO: Water Rights Section Date 03/09/2023
 FROM: Groundwater Section Darrick E. Boschmann
 Reviewer's Name
 SUBJECT: Application G- 18754 Supersedes review of 12/28/2018
 Date of Review(s)

PUBLIC INTEREST PRESUMPTION; GROUNDWATER

OAR 690-310-130 (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.* Department staff review groundwater applications under OAR 690-310-140 to determine whether the presumption is established. OAR 690-310-140 allows the proposed use be modified or conditioned 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: Applicant's Name: Charles M. McGrath County: Crook

A1. Applicant(s) seek(s) 2.87 cfs from 6 well(s) in the Deschutes Basin,
Upper Crooked subbasin

A2. Proposed use Irrigation: 28.7 ac. primary; 201.0 ac. Supplemental Seasonality: irrigation season

A3. Well and aquifer data (attach and number logs for existing wells; mark proposed wells as such under logid):

Well	Logid	Applicant's Well #	Proposed Aquifer*	Proposed Rate(cfs)	Location (T/R-S QQ-Q)	Location, metes and bounds, e.g. 2250' N, 1200' E fr NW cor S 36
1	proposed	1	Clarno FM	2.87	16S/18E-17 SE-SW	80' N, 500' W fr S ¼ cor S 17
2	proposed	2	Clarno FM	2.87	16S/18E-17 SE-SW	170' N, 340' W fr S ¼ cor S 17
3	*proposed	3	Clarno FM	2.87	16S/18E-17 SE-SW	230' N, 200' W fr S ¼ cor S 17
4	proposed	4	Clarno FM	2.87	16S/18E-18 SE-NW	100' N, 2950' W fr E ¼ cor S 18
5	proposed	5	Clarno FM	2.87	16S/18E-18 SW-NE	400' N, 2210' W fr E ¼ cor S 18
6	proposed	6	Clarno FM	2.87	16S/18E-18 SW-NE	2' S, 2000' W fr E ¼ cor S 18

* Alluvium, CRB, Bedrock

Well	Well Elev ft msl	First Water ft bls	SWL ft bls	SWL Date	Well Depth (ft)	Seal Interval (ft)	Casing Intervals (ft)	Liner Intervals (ft)	Perforations Or Screens (ft)	Well Yield (gpm)	Draw Down (ft)	Test Type
1	3365	N/A	N/A	N/A	500	0-400	0-400	none	none	N/A	N/A	N/A
2	3355	N/A	N/A	N/A	500	0-400	0-400	none	none	N/A	N/A	N/A
3	3360	N/A	N/A	N/A	500	0-400	0-400	none	none	N/A	N/A	N/A
4	3310	N/A	N/A	N/A	500	0-400	0-400	none	none	N/A	N/A	N/A
5	3345	N/A	N/A	N/A	500	0-400	0-400	none	none	N/A	N/A	N/A
6	3325	N/A	N/A	N/A	500	0-400	0-400	none	none	N/A	N/A	N/A

Use data from application for proposed wells.

A4. **Comments:** _____

This re-review addresses the finding in section B1a in accordance with the 02/06/2023 clarification memo on the current policy for determining over-appropriation for new groundwater applications. Additionally, this re-review finds the preponderance of the evidence suggests groundwater at the proposed locations is hydraulically connected to the Crooked River, and that attenuation by deep casing and seal is not sufficient to overcome the criteria specified in OAR 690-009-0040.

The proposed wells are located in west-central Crook County, about 6 miles northwest of Post, along the Crooked River just above Prineville Reservoir. The area underlying the proposed wells was mapped by Waters and Vaughan (1968) as Tc (Clarno Formation – lava flows, mudflows, and tuffs, chiefly of basaltic and andesitic composition). Six existing well logs for wells completed in Clarno Formation in this area report a variety of claystone, sandstone, conglomerate, and basalt lithologies, which is consistent with the description of Clarno Formation in this area from Waters and Vaughan (1968).

A5. **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: The wells are located outside the USGS Groundwater Study Area.

A6. **Well(s) #** _____, _____, _____, _____, _____, tap(s) an aquifer limited by an administrative restriction.
 Name of administrative area: _____
 Comments: Currently no administrative area.

B. GROUNDWATER AVAILABILITY CONSIDERATIONS, OAR 690-310-130, 400-010, 410-0070

B1. **Based upon available data**, I have determined that groundwater* for the proposed use:

- a. is over appropriated, is not over appropriated, or cannot be determined to be over appropriated during any period of the proposed use. * This finding is limited to the groundwater portion of the over-appropriation determination as prescribed in OAR 690-310-130;
- b. will not or will likely be available in the amounts requested without injury to prior water rights. * This finding is limited to the groundwater portion of the injury determination as prescribed in OAR 690-310-130;
- c. will not or will likely to be available within the capacity of the groundwater resource; or
- d. will, if properly conditioned, avoid injury to existing groundwater rights or to the groundwater resource:
 - i. The permit should contain condition #(s) 7N, Large water use reporting, 7J;
 - ii. The permit should be conditioned as indicated in item 2 below.
 - iii. The permit should contain special condition(s) as indicated in item 3 below;

- B2. a. **Condition** to allow groundwater production from no deeper than _____ ft. below land surface;
- b. **Condition** to allow groundwater production from no shallower than _____ ft. below land surface;
- c. **Condition** to allow groundwater production only from the _____ groundwater reservoir between approximately _____ ft. and _____ ft. below land surface;
- d. **Well reconstruction** is necessary to accomplish one or more of the above conditions. The problems that are likely to occur with this use and without reconstructing are cited below. Without reconstruction, I recommend withholding issuance of the permit until evidence of well reconstruction is filed with the Department and approved by the Groundwater Section.

Describe injury –as related to water availability– that is likely to occur without well reconstruction (interference w/ senior water rights, not within the capacity of the resource, etc): _____

B3. **Groundwater availability remarks:** _____

There are no time-series water level data available for wells completed in the Clarno Formation in this area. There are six existing wells in this area for which only single well log derived static water level measurements are available. Over 9 miles to the southeast, wells completed in the Clarno formation do not suggest any clear decline trend over the period of record. Given the lack of groundwater development in this area it is unlikely that water levels in this area would meet the Division 8 definition of excessively declining or declined excessively (for the storage portion of the source of water to wells).

If a permit is issued, the following conditions are recommended: _____

7N: Annual Measurement and Decline Condition _____

Flow meter condition: Use the water rights “large” permit condition requiring a totalizing flow meter and reporting. _____

7J: Scenic waterway _____

C. GROUNDWATER/SURFACE WATER CONSIDERATIONS, OAR 690-09-040

C1. **690-09-040 (1):** Evaluation of aquifer confinement:

Well	Aquifer or Proposed Aquifer	Confined	Unconfined
1	Clarno FM	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2	Clarno FM	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3	Clarno FM	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4	Clarno FM	<input checked="" type="checkbox"/>	<input type="checkbox"/>
5	Clarno FM	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6	Clarno FM	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Basis for aquifer confinement evaluation: _____

The wells are producing from the Clarno formation which in this area consists primarily of layered volcanically-derived sediments and lavas; these layers likely provide increasing confinement with depth. Additionally, well logs in this area report static water levels above the depth of the reported water-bearing zone, which indicates some degree of confinement.

C2. **690-09-040 (2) (3):** Evaluation of distance to, and hydraulic connection with, surface water sources. All wells located a horizontal distance less than ¼ mile from a surface water source that produce water from an unconfined aquifer shall be assumed to be hydraulically connected to the surface water source. Include in this table any streams located beyond one mile that are evaluated for PSI.

Well	SW #	Surface Water Name	GW Elev ft msl	SW Elev ft msl	Distance (ft)	Hydraulically Connected?			Potential for Subst. Interfer. Assumed?	
						YES	NO	ASSUMED	YES	NO
1	1	Crooked River	3306	<3250	1500	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2	1	Crooked River	3306	<3250	1500	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3	1	Crooked River	3306	<3250	1500	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4	1	Crooked River	3306	<3250	1550	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5	1	Crooked River	3306	<3250	2200	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6	1	Crooked River	3306	<3250	1850	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Basis for aquifer hydraulic connection evaluation: _____

There are six existing wells in this area developing groundwater from the Clarno Formation with total depths ranging from 100 to 630 feet. The hydraulic head in these wells ranges from 3250 to 4007 ft amsl. Test well CROO 54965, which was drilled by the applicant to a depth of 630 feet has a reported static water level elevation of 3306 feet amsl. The groundwater elevations listed above are based on CROO 54965, as this well has a similar total depth and surface elevation as the proposed wells.

The groundwater elevation is above the elevation of the Crooked River at the adjacent reach.

The preponderance of the evidence suggests groundwater at the proposed locations is hydraulically connected to the Crooked River, and that attenuation by deep casing and seal is not sufficient to overcome the criteria specified in OAR 690-009-0040.

Water Availability Basin the well(s) are located within: CROOKED R > DESCHUTES R - AB SAND CR

C3a. **690-09-040 (4):** Evaluation of stream impacts for each well that has been determined or assumed to be **hydraulically connected and less than 1 mile** from a surface water (SW) source. Limit evaluation to instream rights and minimum stream flows that are pertinent to that SW source, not lower SW sources to which the stream under evaluation is tributary. Compare the requested rate against the 1% of 80% *natural* flow for the pertinent Water Availability Basin (WAB). If Q is not distributed by well, use full rate for each well. Any checked box indicates the well is assumed to have the potential to cause PSI.

Well	SW #	Well < ¼ mile?	Q _w > 5 cfs?	Instream Water Right ID	Instream Water Right Q (cfs)	Q _w > 1% ISWR?	80% Natural Flow (cfs)	Q _w > 1% of 80% Natural Flow?	Interference @ 30 days (%)	Potential for Subst. Interfer. Assumed?
1	1	<input type="checkbox"/>	<input type="checkbox"/>	IS70353A	47.8	<input checked="" type="checkbox"/>	38.7	<input checked="" type="checkbox"/>	*	<input checked="" type="checkbox"/>
2	1	<input type="checkbox"/>	<input type="checkbox"/>	IS70353A	47.8	<input checked="" type="checkbox"/>	38.7	<input checked="" type="checkbox"/>	*	<input checked="" type="checkbox"/>
3	1	<input type="checkbox"/>	<input type="checkbox"/>	IS70353A	47.8	<input checked="" type="checkbox"/>	38.7	<input checked="" type="checkbox"/>	*	<input checked="" type="checkbox"/>
4	1	<input type="checkbox"/>	<input type="checkbox"/>	IS70353A	47.8	<input checked="" type="checkbox"/>	38.7	<input checked="" type="checkbox"/>	*	<input checked="" type="checkbox"/>
5	1	<input type="checkbox"/>	<input type="checkbox"/>	IS70353A	47.8	<input checked="" type="checkbox"/>	38.7	<input checked="" type="checkbox"/>	*	<input checked="" type="checkbox"/>
6	1	<input type="checkbox"/>	<input type="checkbox"/>	IS70353A	47.8	<input checked="" type="checkbox"/>	38.7	<input checked="" type="checkbox"/>	*	<input checked="" type="checkbox"/>

C3b. **690-09-040 (4):** Evaluation of stream impacts by total appropriation for all wells determined or assumed to be **hydraulically connected and less than 1 mile** from a surface water source. **Complete only if Q is distributed among wells.** Otherwise same evaluation and limitations apply as in C3a above.

	SW #		Q _w > 5 cfs?	Instream Water Right ID	Instream Water Right Q (cfs)	Q _w > 1% ISWR?	80% Natural Flow (cfs)	Q _w > 1% of 80% Natural Flow?	Interference @ 30 days (%)	Potential for Subst. Interfer. Assumed?
			<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
			<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>

Comments: _____

C3a. PSI is assumed for wells 1-6 and SW1. Q_w is greater than 1% of the ISWR and 1% of the 80% natural flow.

*Interference at 30 days not estimated because PSI is already found under other criteria.

C4a. **690-09-040 (5):** Estimated impacts on **hydraulically connected surface water sources greater than one mile** as a percentage of the proposed pumping rate. Limit evaluation to the effects that will occur up to one year after pumping begins. This table encompasses the considerations required by 09-040 (5)(a), (b), (c) and (d), which are not included on this form. Use additional sheets if calculated flows from more than one WAB are required.

Non-Distributed Wells													
Well	SW#	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS													
Interference CFS													
Distributed Wells													
Well	SW#	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS													
Interference CFS													
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS													
Interference CFS													
(A) = Total Interf.													
(B) = 80 % Nat. Q													
(C) = 1 % Nat. Q													
(D) = (A) > (C)		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
(E) = (A / B) x 100		%	%	%	%	%	%	%	%	%	%	%	%

(A) = total interference as CFS; (B) = WAB calculated natural flow at 80% exceed. as CFS; (C) = 1% of calculated natural flow at 80% exceed. as CFS; (D) = highlight the checkmark for each month where (A) is greater than (C); (E) = total interference divided by 80% flow as percentage.

Basis for impact evaluation: _____

 No evaluation. All wells are located within a mile of the Crooked River.

C4b. **690-09-040 (5) (b)** The potential to impair or detrimentally affect the public interest is to be determined by the Water Rights Section.

- C5. **If properly conditioned**, the surface water source(s) can be adequately protected from interference, and/or groundwater use under this permit can be regulated if it is found to substantially interfere with surface water:
- i. The permit should contain condition #(s) _____;
 - ii. The permit should contain special condition(s) as indicated in "Remarks" below;

C6. SW / GW Remarks and Conditions: _____

C1. 690-09-040 (1)

It is determined that all wells will produce water from a confined aquifer.

C2. 690-09-040 (2) (3)

It is determined that all wells are hydraulically connected with the Crooked River.

C3a./C3b. 690-09-040 (4)

PSI is assumed for wells 1-6 and SW1. Qw is greater than 1% of the ISWR and 1% of the 80% natural flow.

C4a. 690-09-040 (5)

No evaluation. All wells are located within a mile of the Crooked River.

The applicant's proposed POAs would be producing from an aquifer that has been found to be hydraulically-connected to surface water – specifically to the Crooked River. The proposed POAs are hydraulically connected to a tributary of the Deschutes State Scenic Waterway and will have a long-term impact on flows necessary for the scenic waterway. Given the distance between the POAs and the Deschutes State Scenic Waterway, along with the reservoirs in between, the impact from the proposed use on the scenic waterway will likely be evenly distributed throughout the entire year (see Scenic Waterway Memo on page 2).

References Used: _____

Waters, A.C., Vaughan, R.H., 1968, Reconnaissance geologic map of the Eagle Rock quadrangle, Crook County, Oregon. U.S. Geological Survey Miscellaneous Geologic Investigations Map I-540. Scale 1:62,500.

OWRD Well Log Database

D. WELL CONSTRUCTION, OAR 690-200

D1. Well #: _____ Logid: _____

D2. **THE WELL does not appear to meet current well construction standards based upon:**

- a. review of the well log;
- b. field inspection by _____;
- c. report of CWRE _____;
- d. other: (specify) _____

D3. **THE WELL construction deficiency or other comment is described as follows:** _____

D4. **Route to the Well Construction and Compliance Section for a review of existing well construction.**

Water Availability Tables

DETAILED REPORT ON THE WATER AVAILABILITY CALCULATION

CROOKED R > DESCHUTES R - AB SAND CR
 Basin: DESCHUTES

Watershed ID #: 70353
 Time: 10:34 AM

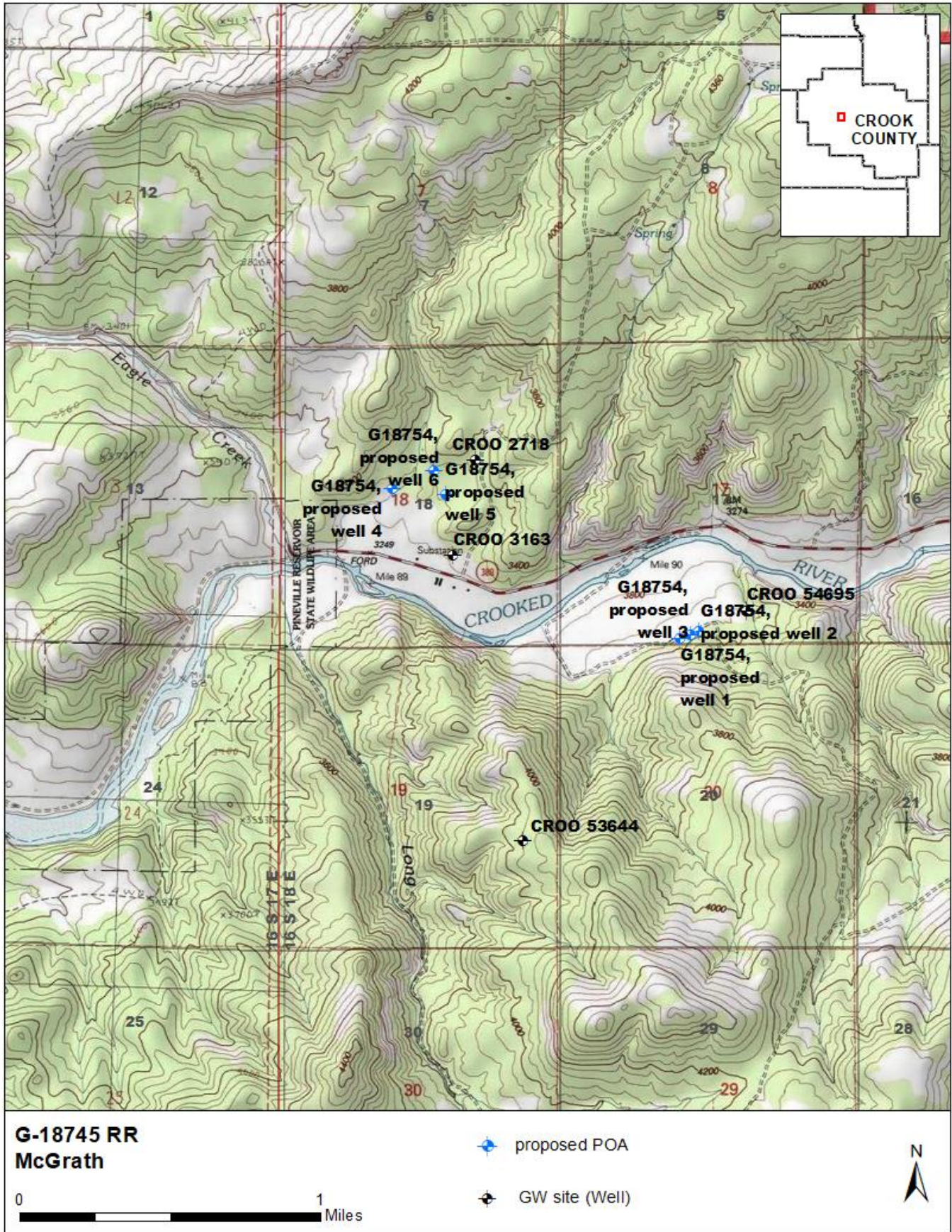
Exceedance Level: 80
 Date: 03/09/2023

Month	Natural Stream Flow	Consumptive Use and Storage	Expected Stream Flow	Reserved Stream Flow	Instream Requirements	Net Water Available
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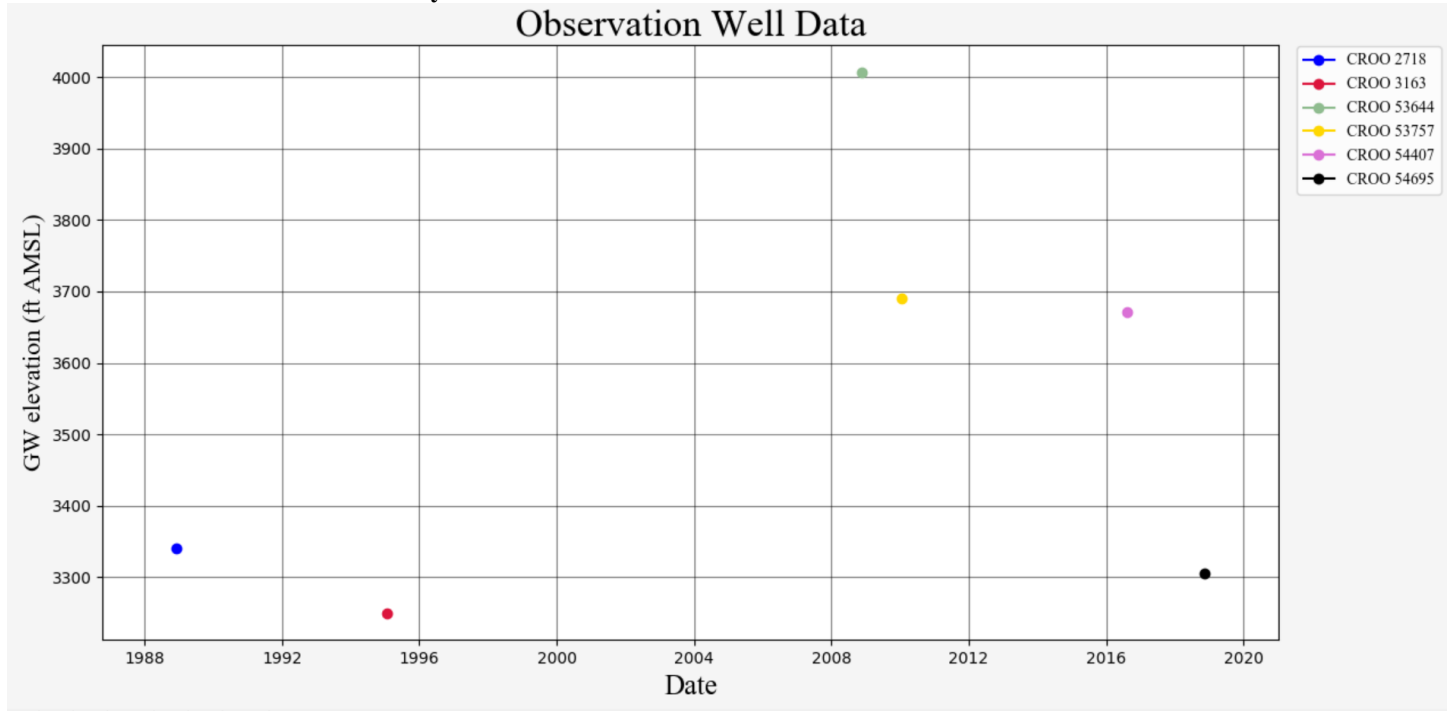
Monthly values are in cfs.
 Storage is the annual amount at 50% exceedance in ac-ft.

JAN	78.90	7.74	71.20	0.00	50.00	21.20
FEB	175.00	15.50	160.00	0.00	75.00	84.50
MAR	337.00	73.70	263.00	0.00	113.00	150.00
APR	598.00	178.00	420.00	0.00	113.00	307.00
MAY	404.00	370.00	34.20	0.00	113.00	-78.80
JUN	261.00	295.00	-34.50	0.00	75.00	-109.00
JUL	80.10	85.00	-4.86	0.00	50.00	-54.90
AUG	38.70	43.20	-4.47	0.00	47.80	-52.30
SEP	45.20	44.80	0.37	0.00	50.00	-49.60
OCT	47.30	22.90	24.40	0.00	50.00	-25.60
NOV	60.60	3.44	57.20	0.00	50.00	7.16
DEC	76.50	5.50	71.00	0.00	50.00	21.00
ANN	223,000	69,300	154,000	0	50,500	114,000

Well Location Map



Water-Level Measurements in Nearby Wells



OK
JH

MEMO

To: Kristopher Byrd, Well Construction and Compliance Section Manager
From: Joel Jeffery, Well Construction Program Coordinator
Subject: Review of Water Right Application G-18754
Date: January 8, 2019

The attached application was forwarded to the Well Construction and Compliance Section by Water Rights. Aurora Bouchier reviewed the application. Please see Aurora's Groundwater Review.

Applicant's Well #1, Well #2, Well #3, Well #4, Well #5 and Well #6 are proposed wells and have not been constructed and therefore there is no way to determine if the wells meet minimum construction standards.

The construction of Applicant's Well #1, Well #2, Well #3, Well #4, Well #5 and Well #6 may not satisfy hydraulic connection issues.

Applicant's Test Well #3 (CROO 54695); Based on a review of the well report, Applicant's Test Well # 3 (CROO 54695) seems to protect the groundwater resource.

The construction of Applicant's Test Well #3 may not satisfy hydraulic connection issues.