

# PUBLIC INTEREST REVIEW FOR GROUNDWATER APPLICATIONS

TO: Water Rights Section Date February 10, 2016

FROM: Groundwater Section Michael J. Thoma  
Reviewer's Name

SUBJECT: Application G- 18226 Supersedes review of \_\_\_\_\_  
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: Trey Willison County: Lane

A1. Applicant(s) seek(s) 0.045 cfs from 1 well(s) in the Willamette Basin,  
Mohawk River subbasin

A2. Proposed use Nursery (10 ac) Seasonality: Year-round (assumed<sup>A</sup>)

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    | LANE 73698 | 1                  | Bedrock           | 0.045              | 17S/02W-03 NESE       | 760'S, 960'W of E ¼ cor S 03                                     |
| 2    |            |                    |                   |                    |                       |                                                                  |
| 3    |            |                    |                   |                    |                       |                                                                  |

\* 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    | 670              | 262                | 123        | 2/20/2015 | 345             | 0-38               | +2-38                 | 5-345                | 265-305<br>325-345           | 20               |                | A         |
|      |                  |                    |            |           |                 |                    |                       |                      |                              |                  |                |           |
|      |                  |                    |            |           |                 |                    |                       |                      |                              |                  |                |           |

Use data from application for proposed wells.

A4. **Comments:** <sup>A</sup>The application does not provide a relevant Period of Use but only lists "Morning (and afternoon as needed). Because it is nursery use, th Department assumes it will be year-round.

A5. ☒ **Provisions of the** Willamette (OAR 602-502) 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: \_\_\_\_\_

A6. ☐ **Well(s) #** \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, tap(s) an aquifer limited by an administrative restriction.  
Name of administrative area: \_\_\_\_\_  
Comments: \_\_\_\_\_

**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) 7C (7-year SWL); 'Medium' Water-use Reporting;
  - 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): \_\_\_\_\_

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- B3. **Groundwater availability remarks:** The proposed POA is located on the east slopes of the Mohawk River Valley and would be producing from volcanic rocks of the Early Western Cascades Terrane. There are no current OWRD observation wells near the proposed POA so over-appropriation could not be determined. There are also only a few permitted groundwater POAs within the same PLS section as the proposed POA, and these are located near the valley floor, so interference and injury will be unlikely.

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**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               |
|----------|------------------------------------------|-------------------------------------|--------------------------|
| <b>1</b> | <b>Bedrock of Little Butte Volcanics</b> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
|          |                                          | <input type="checkbox"/>            | <input type="checkbox"/> |

**Basis for aquifer confinement evaluation:** SWL reported on well log LANE 73698 is higher than reported 'first water'

**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<br>ft msl | SW Elev<br>ft msl | Distance<br>(ft) | Hydraulically Connected?            |                          |                          | Potential for Subst. Interfer. Assumed? |                          |
|----------|----------|---------------------|-------------------|-------------------|------------------|-------------------------------------|--------------------------|--------------------------|-----------------------------------------|--------------------------|
|          |          |                     |                   |                   |                  | YES                                 | NO                       | ASSUMED                  | YES                                     | NO                       |
| <b>1</b> | <b>1</b> | <b>Mohawk River</b> | <b>547</b>        | <b>465-470</b>    | <b>2160</b>      | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>                | <input type="checkbox"/> |
|          |          |                     |                   |                   |                  | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>                | <input type="checkbox"/> |
|          |          |                     |                   |                   |                  | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>                | <input type="checkbox"/> |

**Basis for aquifer hydraulic connection evaluation:** Higher GW elevation than SW elevation implies that water is flowing toward and discharging to surface water; topographic relief between proposed POA and Mohawk River.

**Water Availability Basin the well(s) are located within:** Mohawk R > McKenzie R – AB Mouth (ID# 134)

**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 source. Limit evaluation to instream rights and minimum stream flows that are pertinent to that surface water source, and 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?           | Qw > 5 cfs?              | Instream Water Right ID | Instream Water Right Q (cfs) | Qw > 1% ISWR?            | 80% Natural Flow (cfs) | Qw > 1% of 80% Natural Flow? | Interference @ 30 days (%) | Potential for Subst. Interfer. Assumed? |
|----------|----------|--------------------------|--------------------------|-------------------------|------------------------------|--------------------------|------------------------|------------------------------|----------------------------|-----------------------------------------|
| <b>1</b> | <b>1</b> | <input type="checkbox"/> | <input type="checkbox"/> | <b>MF134</b>            | <b>20</b>                    | <input type="checkbox"/> | <b>25.40</b>           | <input type="checkbox"/>     | <b>See comments</b>        | <input type="checkbox"/>                |
|          |          | <input type="checkbox"/> | <input type="checkbox"/> |                         |                              | <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:** Interference @ 30 d could not be estimated because the terrain (high-relief slopes) and hydrogeology (fractured bedrock aquifer; separate aquifers between proposed POA and surface water) do not meet model assumptions of the widely accepted techniques for determining stream depletion (e.g., Hunt 1999, 2003).

**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 # |  | Qw > 5 cfs?              | Instream Water Right ID | Instream Water Right Q (cfs) | Qw > 1% ISWR?            | 80% Natural Flow (cfs) | Qw > 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"/>                |

- 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 |
| (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:** \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

- 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:
- ☐ The permit should contain condition #(s) \_\_\_\_\_;
  - ☐ The permit should contain special condition(s) as indicated in "Remarks" below;

- C6. **SW / GW Remarks and Conditions:** The Department has made a finding that the proposed POA will be producing from an aquifer that is hydraulically connected to the Mohawk River. However, the proposed rate is under the limit of what would trigger a determination of Potential for Substantial Interference under OAR 690-009 Rules.
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

**References Used:**

Hunt, B. 1999. *Unsteady Stream Depletion from Ground Water Pumping*. Journal of Hydrologic Engineering, Vol 8(1), pp 12-19

Hunt, B. 2003. *Unsteady Stream Depletion when Pumping from a Semiconfined Aquifer*. Journal of Hydrologic Engineering, Vol 8(1), pp 12-19

McClaghry, J. D., T. J. Wiley, M. L. Ferns, and I. P. Madin. 2010. *Digital Geologic Map of the Southern Willamette Valley, Benton, Lane, Linn, Marion, and Polk Counties, Oregon*. Oregon Dept. of Geology and Mineral Industries. Open File Report O-10-13.

**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**

| MOHAWK R > MCKENZIE R - AB MOUTH<br>WILLAMETTE BASIN                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                     |                               |                      |                                                                                   |                           |                     |  |       |                     |                               |                      |                      |                           |                     |     |        |      |        |      |       |        |     |        |      |        |      |       |        |     |        |      |        |      |       |        |     |        |      |        |      |       |        |     |        |      |        |      |       |        |     |       |      |       |      |       |       |     |       |      |       |      |       |       |     |       |      |       |      |       |      |     |       |      |       |      |       |      |     |       |      |       |      |       |       |     |        |      |        |      |       |       |     |        |      |        |      |       |        |     |            |          |            |      |           |            |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|-------------------------------|----------------------|-----------------------------------------------------------------------------------|---------------------------|---------------------|--|-------|---------------------|-------------------------------|----------------------|----------------------|---------------------------|---------------------|-----|--------|------|--------|------|-------|--------|-----|--------|------|--------|------|-------|--------|-----|--------|------|--------|------|-------|--------|-----|--------|------|--------|------|-------|--------|-----|--------|------|--------|------|-------|--------|-----|-------|------|-------|------|-------|-------|-----|-------|------|-------|------|-------|-------|-----|-------|------|-------|------|-------|------|-----|-------|------|-------|------|-------|------|-----|-------|------|-------|------|-------|-------|-----|--------|------|--------|------|-------|-------|-----|--------|------|--------|------|-------|--------|-----|------------|----------|------------|------|-----------|------------|
| Water Availability as of 2/10/2016                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                     |                               |                      |                                                                                   |                           |                     |  |       |                     |                               |                      |                      |                           |                     |     |        |      |        |      |       |        |     |        |      |        |      |       |        |     |        |      |        |      |       |        |     |        |      |        |      |       |        |     |        |      |        |      |       |        |     |       |      |       |      |       |       |     |       |      |       |      |       |       |     |       |      |       |      |       |      |     |       |      |       |      |       |      |     |       |      |       |      |       |       |     |        |      |        |      |       |       |     |        |      |        |      |       |        |     |            |          |            |      |           |            |
| Watershed ID #: 134 ( <a href="#">Map</a> )                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                     |                               |                      | Exceedance Level: <span style="border: 1px solid black; padding: 2px;">80%</span> |                           |                     |  |       |                     |                               |                      |                      |                           |                     |     |        |      |        |      |       |        |     |        |      |        |      |       |        |     |        |      |        |      |       |        |     |        |      |        |      |       |        |     |        |      |        |      |       |        |     |       |      |       |      |       |       |     |       |      |       |      |       |       |     |       |      |       |      |       |      |     |       |      |       |      |       |      |     |       |      |       |      |       |       |     |        |      |        |      |       |       |     |        |      |        |      |       |        |     |            |          |            |      |           |            |
| Date: 2/10/2016                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                     |                               |                      | Time: 9:58 AM                                                                     |                           |                     |  |       |                     |                               |                      |                      |                           |                     |     |        |      |        |      |       |        |     |        |      |        |      |       |        |     |        |      |        |      |       |        |     |        |      |        |      |       |        |     |        |      |        |      |       |        |     |       |      |       |      |       |       |     |       |      |       |      |       |       |     |       |      |       |      |       |      |     |       |      |       |      |       |      |     |       |      |       |      |       |       |     |        |      |        |      |       |       |     |        |      |        |      |       |        |     |            |          |            |      |           |            |
| Water Availability Calculation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                     | Consumptive Uses and Storages |                      | Instream Flow Requirements                                                        |                           | Reservations        |  |       |                     |                               |                      |                      |                           |                     |     |        |      |        |      |       |        |     |        |      |        |      |       |        |     |        |      |        |      |       |        |     |        |      |        |      |       |        |     |        |      |        |      |       |        |     |       |      |       |      |       |       |     |       |      |       |      |       |       |     |       |      |       |      |       |      |     |       |      |       |      |       |      |     |       |      |       |      |       |       |     |        |      |        |      |       |       |     |        |      |        |      |       |        |     |            |          |            |      |           |            |
| Water Rights                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                     |                               |                      | Watershed Characteristics                                                         |                           |                     |  |       |                     |                               |                      |                      |                           |                     |     |        |      |        |      |       |        |     |        |      |        |      |       |        |     |        |      |        |      |       |        |     |        |      |        |      |       |        |     |        |      |        |      |       |        |     |       |      |       |      |       |       |     |       |      |       |      |       |       |     |       |      |       |      |       |      |     |       |      |       |      |       |      |     |       |      |       |      |       |       |     |        |      |        |      |       |       |     |        |      |        |      |       |        |     |            |          |            |      |           |            |
| <h3 style="margin: 0;">Water Availability Calculation</h3> <p style="margin: 5px 0 0 0;">Monthly Streamflow in Cubic Feet per Second<br/>Annual Volume at 50% Exceedance in Acre-Feet</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Month</th> <th>Natural Stream Flow</th> <th>Consumptive Uses and Storages</th> <th>Expected Stream Flow</th> <th>Reserved Stream Flow</th> <th>Instream Flow Requirement</th> <th>Net Water Available</th> </tr> </thead> <tbody> <tr><td>JAN</td><td>455.00</td><td>0.81</td><td>454.00</td><td>0.00</td><td>20.00</td><td>434.00</td></tr> <tr><td>FEB</td><td>532.00</td><td>0.81</td><td>531.00</td><td>0.00</td><td>20.00</td><td>511.00</td></tr> <tr><td>MAR</td><td>445.00</td><td>0.81</td><td>444.00</td><td>0.00</td><td>20.00</td><td>424.00</td></tr> <tr><td>APR</td><td>329.00</td><td>1.00</td><td>328.00</td><td>0.00</td><td>20.00</td><td>308.00</td></tr> <tr><td>MAY</td><td>190.00</td><td>2.44</td><td>188.00</td><td>0.00</td><td>20.00</td><td>168.00</td></tr> <tr><td>JUN</td><td>97.10</td><td>4.15</td><td>93.00</td><td>0.00</td><td>20.00</td><td>73.00</td></tr> <tr><td>JUL</td><td>45.00</td><td>6.66</td><td>38.30</td><td>0.00</td><td>20.00</td><td>18.30</td></tr> <tr><td>AUG</td><td>25.60</td><td>5.45</td><td>20.20</td><td>0.00</td><td>20.00</td><td>0.15</td></tr> <tr><td>SEP</td><td>25.40</td><td>3.05</td><td>22.30</td><td>0.00</td><td>20.00</td><td>2.35</td></tr> <tr><td>OCT</td><td>32.80</td><td>0.93</td><td>31.90</td><td>0.00</td><td>20.00</td><td>11.90</td></tr> <tr><td>NOV</td><td>118.00</td><td>0.78</td><td>117.00</td><td>0.00</td><td>20.00</td><td>97.20</td></tr> <tr><td>DEC</td><td>415.00</td><td>0.81</td><td>414.00</td><td>0.00</td><td>20.00</td><td>394.00</td></tr> <tr><td>ANN</td><td>290,000.00</td><td>1,680.00</td><td>288,000.00</td><td>0.00</td><td>14,500.00</td><td>274,000.00</td></tr> </tbody> </table> |                     |                               |                      |                                                                                   |                           |                     |  | Month | Natural Stream Flow | Consumptive Uses and Storages | Expected Stream Flow | Reserved Stream Flow | Instream Flow Requirement | Net Water Available | JAN | 455.00 | 0.81 | 454.00 | 0.00 | 20.00 | 434.00 | FEB | 532.00 | 0.81 | 531.00 | 0.00 | 20.00 | 511.00 | MAR | 445.00 | 0.81 | 444.00 | 0.00 | 20.00 | 424.00 | APR | 329.00 | 1.00 | 328.00 | 0.00 | 20.00 | 308.00 | MAY | 190.00 | 2.44 | 188.00 | 0.00 | 20.00 | 168.00 | JUN | 97.10 | 4.15 | 93.00 | 0.00 | 20.00 | 73.00 | JUL | 45.00 | 6.66 | 38.30 | 0.00 | 20.00 | 18.30 | AUG | 25.60 | 5.45 | 20.20 | 0.00 | 20.00 | 0.15 | SEP | 25.40 | 3.05 | 22.30 | 0.00 | 20.00 | 2.35 | OCT | 32.80 | 0.93 | 31.90 | 0.00 | 20.00 | 11.90 | NOV | 118.00 | 0.78 | 117.00 | 0.00 | 20.00 | 97.20 | DEC | 415.00 | 0.81 | 414.00 | 0.00 | 20.00 | 394.00 | ANN | 290,000.00 | 1,680.00 | 288,000.00 | 0.00 | 14,500.00 | 274,000.00 |
| Month                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Natural Stream Flow | Consumptive Uses and Storages | Expected Stream Flow | Reserved Stream Flow                                                              | Instream Flow Requirement | Net Water Available |  |       |                     |                               |                      |                      |                           |                     |     |        |      |        |      |       |        |     |        |      |        |      |       |        |     |        |      |        |      |       |        |     |        |      |        |      |       |        |     |        |      |        |      |       |        |     |       |      |       |      |       |       |     |       |      |       |      |       |       |     |       |      |       |      |       |      |     |       |      |       |      |       |      |     |       |      |       |      |       |       |     |        |      |        |      |       |       |     |        |      |        |      |       |        |     |            |          |            |      |           |            |
| JAN                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 455.00              | 0.81                          | 454.00               | 0.00                                                                              | 20.00                     | 434.00              |  |       |                     |                               |                      |                      |                           |                     |     |        |      |        |      |       |        |     |        |      |        |      |       |        |     |        |      |        |      |       |        |     |        |      |        |      |       |        |     |        |      |        |      |       |        |     |       |      |       |      |       |       |     |       |      |       |      |       |       |     |       |      |       |      |       |      |     |       |      |       |      |       |      |     |       |      |       |      |       |       |     |        |      |        |      |       |       |     |        |      |        |      |       |        |     |            |          |            |      |           |            |
| FEB                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 532.00              | 0.81                          | 531.00               | 0.00                                                                              | 20.00                     | 511.00              |  |       |                     |                               |                      |                      |                           |                     |     |        |      |        |      |       |        |     |        |      |        |      |       |        |     |        |      |        |      |       |        |     |        |      |        |      |       |        |     |        |      |        |      |       |        |     |       |      |       |      |       |       |     |       |      |       |      |       |       |     |       |      |       |      |       |      |     |       |      |       |      |       |      |     |       |      |       |      |       |       |     |        |      |        |      |       |       |     |        |      |        |      |       |        |     |            |          |            |      |           |            |
| MAR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 445.00              | 0.81                          | 444.00               | 0.00                                                                              | 20.00                     | 424.00              |  |       |                     |                               |                      |                      |                           |                     |     |        |      |        |      |       |        |     |        |      |        |      |       |        |     |        |      |        |      |       |        |     |        |      |        |      |       |        |     |        |      |        |      |       |        |     |       |      |       |      |       |       |     |       |      |       |      |       |       |     |       |      |       |      |       |      |     |       |      |       |      |       |      |     |       |      |       |      |       |       |     |        |      |        |      |       |       |     |        |      |        |      |       |        |     |            |          |            |      |           |            |
| APR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 329.00              | 1.00                          | 328.00               | 0.00                                                                              | 20.00                     | 308.00              |  |       |                     |                               |                      |                      |                           |                     |     |        |      |        |      |       |        |     |        |      |        |      |       |        |     |        |      |        |      |       |        |     |        |      |        |      |       |        |     |        |      |        |      |       |        |     |       |      |       |      |       |       |     |       |      |       |      |       |       |     |       |      |       |      |       |      |     |       |      |       |      |       |      |     |       |      |       |      |       |       |     |        |      |        |      |       |       |     |        |      |        |      |       |        |     |            |          |            |      |           |            |
| MAY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 190.00              | 2.44                          | 188.00               | 0.00                                                                              | 20.00                     | 168.00              |  |       |                     |                               |                      |                      |                           |                     |     |        |      |        |      |       |        |     |        |      |        |      |       |        |     |        |      |        |      |       |        |     |        |      |        |      |       |        |     |        |      |        |      |       |        |     |       |      |       |      |       |       |     |       |      |       |      |       |       |     |       |      |       |      |       |      |     |       |      |       |      |       |      |     |       |      |       |      |       |       |     |        |      |        |      |       |       |     |        |      |        |      |       |        |     |            |          |            |      |           |            |
| JUN                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 97.10               | 4.15                          | 93.00                | 0.00                                                                              | 20.00                     | 73.00               |  |       |                     |                               |                      |                      |                           |                     |     |        |      |        |      |       |        |     |        |      |        |      |       |        |     |        |      |        |      |       |        |     |        |      |        |      |       |        |     |        |      |        |      |       |        |     |       |      |       |      |       |       |     |       |      |       |      |       |       |     |       |      |       |      |       |      |     |       |      |       |      |       |      |     |       |      |       |      |       |       |     |        |      |        |      |       |       |     |        |      |        |      |       |        |     |            |          |            |      |           |            |
| JUL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 45.00               | 6.66                          | 38.30                | 0.00                                                                              | 20.00                     | 18.30               |  |       |                     |                               |                      |                      |                           |                     |     |        |      |        |      |       |        |     |        |      |        |      |       |        |     |        |      |        |      |       |        |     |        |      |        |      |       |        |     |        |      |        |      |       |        |     |       |      |       |      |       |       |     |       |      |       |      |       |       |     |       |      |       |      |       |      |     |       |      |       |      |       |      |     |       |      |       |      |       |       |     |        |      |        |      |       |       |     |        |      |        |      |       |        |     |            |          |            |      |           |            |
| AUG                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 25.60               | 5.45                          | 20.20                | 0.00                                                                              | 20.00                     | 0.15                |  |       |                     |                               |                      |                      |                           |                     |     |        |      |        |      |       |        |     |        |      |        |      |       |        |     |        |      |        |      |       |        |     |        |      |        |      |       |        |     |        |      |        |      |       |        |     |       |      |       |      |       |       |     |       |      |       |      |       |       |     |       |      |       |      |       |      |     |       |      |       |      |       |      |     |       |      |       |      |       |       |     |        |      |        |      |       |       |     |        |      |        |      |       |        |     |            |          |            |      |           |            |
| SEP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 25.40               | 3.05                          | 22.30                | 0.00                                                                              | 20.00                     | 2.35                |  |       |                     |                               |                      |                      |                           |                     |     |        |      |        |      |       |        |     |        |      |        |      |       |        |     |        |      |        |      |       |        |     |        |      |        |      |       |        |     |        |      |        |      |       |        |     |       |      |       |      |       |       |     |       |      |       |      |       |       |     |       |      |       |      |       |      |     |       |      |       |      |       |      |     |       |      |       |      |       |       |     |        |      |        |      |       |       |     |        |      |        |      |       |        |     |            |          |            |      |           |            |
| OCT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 32.80               | 0.93                          | 31.90                | 0.00                                                                              | 20.00                     | 11.90               |  |       |                     |                               |                      |                      |                           |                     |     |        |      |        |      |       |        |     |        |      |        |      |       |        |     |        |      |        |      |       |        |     |        |      |        |      |       |        |     |        |      |        |      |       |        |     |       |      |       |      |       |       |     |       |      |       |      |       |       |     |       |      |       |      |       |      |     |       |      |       |      |       |      |     |       |      |       |      |       |       |     |        |      |        |      |       |       |     |        |      |        |      |       |        |     |            |          |            |      |           |            |
| NOV                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 118.00              | 0.78                          | 117.00               | 0.00                                                                              | 20.00                     | 97.20               |  |       |                     |                               |                      |                      |                           |                     |     |        |      |        |      |       |        |     |        |      |        |      |       |        |     |        |      |        |      |       |        |     |        |      |        |      |       |        |     |        |      |        |      |       |        |     |       |      |       |      |       |       |     |       |      |       |      |       |       |     |       |      |       |      |       |      |     |       |      |       |      |       |      |     |       |      |       |      |       |       |     |        |      |        |      |       |       |     |        |      |        |      |       |        |     |            |          |            |      |           |            |
| DEC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 415.00              | 0.81                          | 414.00               | 0.00                                                                              | 20.00                     | 394.00              |  |       |                     |                               |                      |                      |                           |                     |     |        |      |        |      |       |        |     |        |      |        |      |       |        |     |        |      |        |      |       |        |     |        |      |        |      |       |        |     |        |      |        |      |       |        |     |       |      |       |      |       |       |     |       |      |       |      |       |       |     |       |      |       |      |       |      |     |       |      |       |      |       |      |     |       |      |       |      |       |       |     |        |      |        |      |       |       |     |        |      |        |      |       |        |     |            |          |            |      |           |            |
| ANN                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 290,000.00          | 1,680.00                      | 288,000.00           | 0.00                                                                              | 14,500.00                 | 274,000.00          |  |       |                     |                               |                      |                      |                           |                     |     |        |      |        |      |       |        |     |        |      |        |      |       |        |     |        |      |        |      |       |        |     |        |      |        |      |       |        |     |        |      |        |      |       |        |     |       |      |       |      |       |       |     |       |      |       |      |       |       |     |       |      |       |      |       |      |     |       |      |       |      |       |      |     |       |      |       |      |       |       |     |        |      |        |      |       |       |     |        |      |        |      |       |        |     |            |          |            |      |           |            |

## Well Location Map

