

Groundwater Review Summary Form

Application # G- 18426

GW Reviewer Phil Marcy Date Review Completed: 5/17/2017

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).

PUBLIC INTEREST REVIEW FOR GROUNDWATER APPLICATIONS

TO: Water Rights Section Date 05/17/2017
 FROM: Groundwater Section Phillip I. Marcy
Reviewer's Name
 SUBJECT: Application G- 18426 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: Dickman Farms Inc. / Mark Dickman County: Clackamas

A1. Applicant(s) seek(s) 1.18 cfs from 2 well(s) in the Willamette Basin,
Molalla River subbasin

A2. Proposed use Irrigation (94.5 acres) Seasonality: March 1st – October 31st (245 days)

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	Alluvium	1.18	4S/2E-29 SW-SW	140'N, 500'E fr SW cor, S 29
2	Proposed	2	Alluvium	1.18	4S/2E-30 SE-SE	140'N, 160'W fr SE cor S 30
3						
4						
5						

* 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	274	NA	NA	NA	300	0-100	0-300	Unknown	TBD	NA	NA	NA
2	272	NA	NA	NA	300	0-100	0-300	Unknown	TBD	NA	NA	NA

Use data from application for proposed wells.

A4. **Comments:** The applicant proposes to construct two wells in the alluvial aquifer in order to produce primary irrigation water for 94.5 acres.

A5. **Provisions of the** Willamette 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: Willamette Basin rules are not activated since neither of the proposed well locations are located within ¼ mile of surface waters, and are proposed to produce from a confined to semi-confined aquifer.

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) 7N; "Large 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): _____

B3. **Groundwater availability remarks:** _____

Over 900 feet of alluvial sediments occur beneath land surface in the vicinity of the proposed POA (Gannett and Caldwell, 1998). The water table occurs 30-50 feet below land surface. Productive sand and gravel beds occur throughout the sequence separated by beds of lower permeability silt and clay which progressively confine deeper water-bearing zones (Woodward et al., 1998).

Nearby observation wells indicate relatively stable long-term water-level for wells in the immediate vicinity of the proposed POA trends (see attached graph) but increased ground-water development in the area speaks to the need for additional water-level monitoring.

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	Alluvium	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2	Alluvium	<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"/>

Basis for aquifer confinement evaluation: The well logs for nearby wells report static water levels above the water-bearing zones at which water was first encountered, indicating confined to semi-confined conditions.

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	Molalla River	~245	248	5280	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2	1	Molalla River	~245	248	5900	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1	2	Dove Creek	~245	227	9800	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2	2	Dove Creek	~245	227	9300	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1	3	Gribble Creek	~245	238	10300	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2	3	Gribble Creek	~245	238	9650	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Basis for aquifer hydraulic connection evaluation: Nearby wells developed in the alluvial aquifer system have similar head elevations (see attached hydrograph), ranging from 235-250 feet above mean sea level, which corresponds to the elevation at which several local streams emerge. This elevation does not appear to change significantly despite varying well depths in the area. Published water table maps in the area indicate that groundwater flows towards, and discharges into the Molalla River (Woodward et al., 1998, and Conlon et al., 2005).

Water Availability Basin the well(s) are located within: Molalla River > Willamette River – At Mouth (ID# 69796)

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?
		<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"/>		<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"/>		<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"/>

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"/>
	<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"/>

Comments: This section does not apply.

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
1	1	16.7 %	16.5 %	.11 %	.87 %	2.4 %	4.3 %	6.5 %	8.8 %	11.2 %	13.2 %	15.1 %	16.3 %
Well Q as CFS		0.0	0.0	1.18	1.18	1.18	1.18	1.18	1.18	1.18	1.18	0.0	0.0
Interference CFS		0.197	0.194	0.001	0.010	0.028	0.051	0.077	0.104	0.132	0.156	0.178	0.192
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													
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS													
Interference CFS													
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS													
Interference CFS													
(A) = Total Interf.		0.197	0.194	0.001	0.010	0.028	0.051	0.077	0.104	0.132	0.156	0.178	0.192
(B) = 80 % Nat. Q		1870	2010	1830	1530	927	431	204	139	134	188	637	1700
(C) = 1 % Nat. Q		18.7	20.1	18.3	15.3	9.27	4.31	2.04	1.39	1.34	1.88	6.37	17.0
(D) = (A) > (C)		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
(E) = (A / B) x 100		.01 %	.01 %	0 %	0 %	0 %	.01 %	.04 %	.07 %	0.1 %	0.1 %	.03 %	.01 %

(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: Pumping impacts to the Molalla River from POA 1, assuming all pumping occurred at this location. This evaluation represents the scenario where stream depletion is expected to be most severe, since this is the least distance between proposed POA locations and hydraulically connected surface waters. At a distance of one mile, using parameters determined from local pump test results, the model of Hunt (2003) predicts that impacts to the Molalla River will be minimal during the initial year of pumping.

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:** The distance between the proposed POA wells and the streams results in an inefficient connection between the aquifer and the streams, therefore the interference at 30 days is much less than 25%.

References Used: Application G-18426; application reviews G-18411, G-17309, G-17550, G-18288; local well logs; OWRD groundwater level database, OWRD pump test data for CLAC 18102.

Gannett, Marshall W., and Caldwell, Rodney R., 1998, Geologic Framework of the Willamette Lowland Aquifer System, Oregon and Washington: U. S. Geological Survey Professional Paper 1424-A, 32p, 8 plates.

Hampton, E.R., 1972, Geology and ground water of the Molalla-Salem slope area, northern Willamette Valley, Oregon: U.S. Geological Survey Water-Supply Paper 1997, 83p.

Woodward, Dennis J., Gannett, Marshall W., and Vaccaro, John J., 1998, Hydrogeologic Framework of the Willamette Lowland Aquifer System, Oregon and Washington: U. S. Geological Survey Professional Paper 1424-B, 82p, 1 plate.

Conlon and others, 2005, Ground-water hydrology of the Willamette Basin, Oregon: U.S Geological Survey Scientific Investigations Report 2005-5168.

Hunt, B., 2003, Unsteady stream depletion when pumping from semiconfined aquifer: Journal of Hydrologic Engineering, January/February, 2003.

Theis, C.V., 1941, The effect of a well on the flow of a nearby stream: Am. Geophys. Union Trans., v. 22, pt.3, p. 734-738.

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) _____

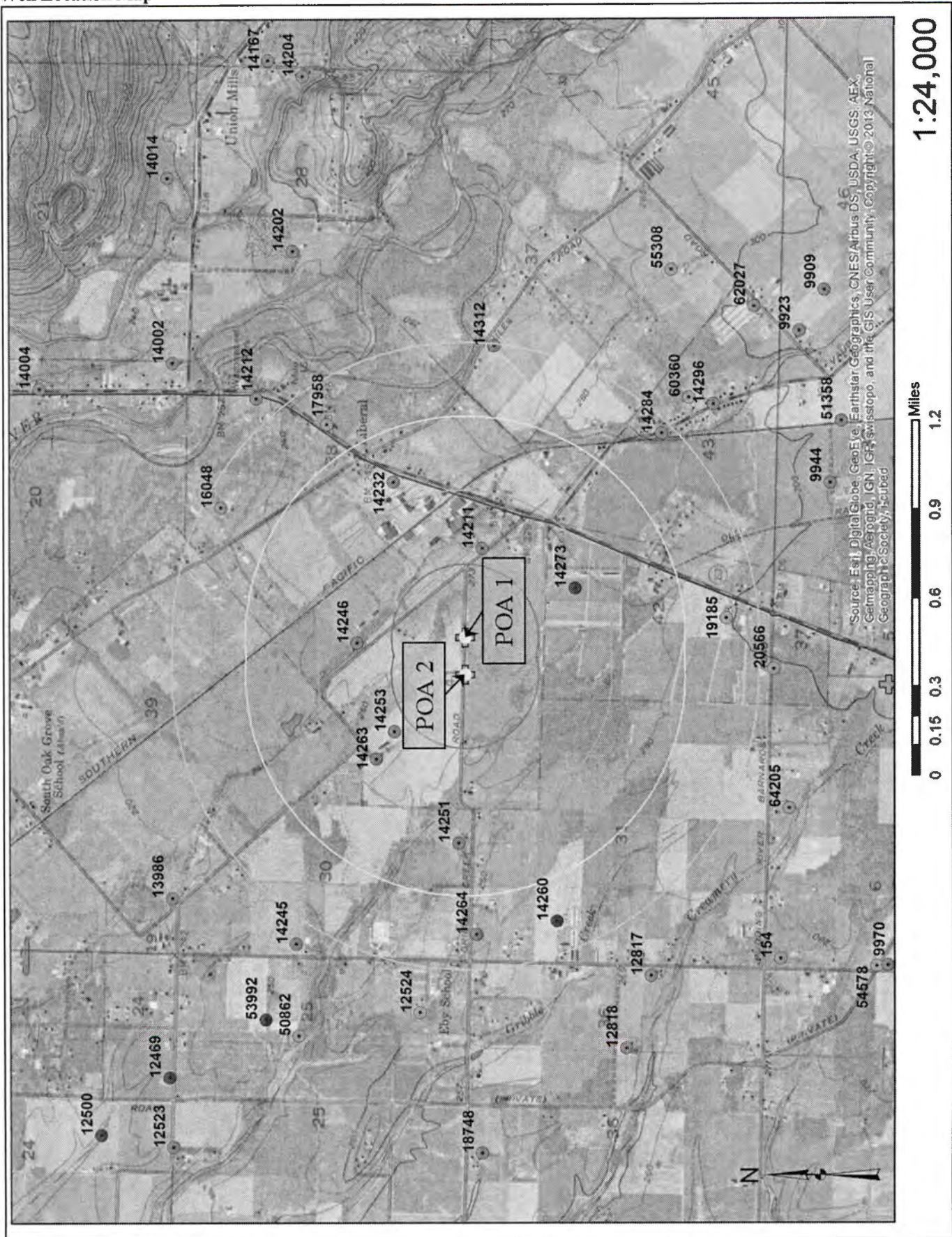
D3. **THE WELL construction deficiency or other comment is described as follows:** _____

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						
Watershed ID #: 69796 Time: 10:49 AM		MOLALLA R > WILLAMETTE R - AT MOUTH Basin: WILLAMETTE			Exceedance Level: 80 Date: 05/17/2017	
Month	Natural Stream Flow	Consumptive Use and Storage	Expected Stream Flow	Reserved Stream Flow	Instream Requirements	Net Water Available
Monthly values are in cfs. Storage is the annual amount at 50% exceedance in ac-ft.						
JAN	1,870.00	153.00	1,720.00	0.00	500.00	1,220.00
FEB	2,010.00	143.00	1,870.00	0.00	500.00	1,370.00
MAR	1,830.00	111.00	1,720.00	0.00	500.00	1,220.00
APR	1,530.00	84.60	1,450.00	0.00	500.00	945.00
MAY	927.00	95.00	832.00	0.00	500.00	332.00
JUN	431.00	116.00	315.00	0.00	500.00	-185.00
JUL	204.00	180.00	24.30	0.00	200.00	-176.00
AUG	139.00	151.00	-12.00	0.00	100.00	-112.00
SEP	134.00	80.00	54.00	0.00	150.00	-96.00
OCT	188.00	38.30	150.00	0.00	450.00	-300.00
NOV	637.00	78.60	558.00	0.00	500.00	58.40
DEC	1,700.00	148.00	1,550.00	0.00	500.00	1,050.00
ANN	1,320,000	83,200	1,240,000	0	295,000	967,000

Well Location Map



Water-Level Trends in Nearby Wells

