PUBLIC INTEREST REVIEW FOR GROUND WATER APPLICATIONS

TO: Water Rights Section Date **October 5, 2009**

FROM: Ground Water/Hydrology Section **Josh Hackett**
Reviewer's Name

SUBJECT: Application G- **17221** 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 ground water 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: Issa and Ragehda Karam County: Clackamas

A1. Applicant(s) seek(s) 0.75 cfs from 4 well(s) in the **Willamette** Basin, **Clackamas** subbasin Quad Map: **Redland**

A2. Proposed use: **Gen. Nursery, Gen. Ag.** Seasonality: **year-round**

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	**Unknown**	**1**	**Basin-fill sediments**	**0.75**	**2S/3E-30 SW -NW**	**460'N,100'E fr W cor DLC 53**
2	**Proposed**	**2**	**Basin-fill sediments**	**0.75**	**2S/3E-30 NW-SW**	**40'N, 80'E fr W cor DLC 53**
3	**Proposed**	**3**	**Basin-fill sediments**	**0.75**	**2S/3E-30 SW -NW**	**700'N, 140'W fr W cor DLC 53**
4	**Proposed**	**4**	**Basin-fill sediments**	**0.75**	**2S/3E-30 SW -NW**	**1000'N, 230'W fr W cor DLC 53**
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	**258**				**Unk.**	**Unk.**	**Unk.**					
2	**275**				**>200**	**0-200**						
3	**260**				**>200**	**0-200**						
4	**265**				**>200**	**0-200**						

Use data from application for proposed wells.

A4. **Comments:** No well log has been found for well #1, so it will be assumed that the well is completed in shallow alluvium**.**

A5. ☒ **Provisions of the** **Willamette** Basin rules relative to the development, classification and/or management of ground water hydraulically connected to surface water ☐ **are**, *or* ☒ **are not**, activated by this application. (Not all basin rules contain such provisions.)
Comments: Wells are not within ¼ mile of the nearest surface water source, so pertinent basin rules do not apply.

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

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

B1. **Based upon available data**, I have determined that ground water* 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 ground water 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 ground water 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 ground water resource; or

d. ☒ **will, if properly conditioned**, avoid injury to existing ground water rights or to the ground water resource:
   i. ☒ The permit should contain condition #(s) **7B, 7N**;
   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 ground water production from no deeper than _____ ft. below land surface;

b. ☐ **Condition** to allow ground water production from no shallower than _____ ft. below land surface;

c. ☒ **Condition** to allow ground water production only from the **Alluvial** ground water 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 Ground Water 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. **Ground water availability remarks:**

SPECIAL CONDITION: The applicant's proposed wells (well 2, well 3, well 4) shall be continuously cased and sealed from land surface to a depth of at least 200 feet.

In the area of the applicant's wells, roughly 20 to 80 feet of coarse-grained deposits form a terrace adjacent to Clear Creek (Trimble, 1963). In the immediate area, the terrace overlies the Sandy River mudstone, a sequence of fine-grained deposits that are locally about 500 feet thick. The stream nearest the applicant's wells, Clear Creek, has incised through the coarser terrace deposits into the Sandy River mudstone. It is unknown whether the amount of water requested could be obtained from the Sandy River mudstone.

Clear Creek has incised to an elevation of 100 feet above mean sea level (msl) within a 1 mile radius of the applicant's wells. Due to the low vertical hydraulic conductivity of the Sandy River Mudstone, the applicant's wells can avoid an effective hydraulic connection with Clear Creek if they are cased and sealed below this elevation.

There is no available water level data for nearby wells, indicating a need for long term water level monitoring in the wells on the proposed permit.

C. GROUND WATER/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 (assumed)**	☐	☐
2	**Alluvium**	☒	☐
3	**Alluvium**	☒	☐
4	**Alluvium**	☒	☐
		☐	☐

Basis for aquifer confinement evaluation: In the area of the applicant's wells, the shallow gravels of the Estacada formation are likely unconfined. The underlying fine-grained deposits of the Sandy River mudstone are likely confined. Because the construction of well #1 is unknown, the confinement is also unknown. The proposed construction of wells 2, 3 and 4 indicate that the shallow gravels will be sealed off, and the well would produce water from the confined Sandy River mudstone.

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? YES	NO	ASSUMED	Potential for Subst. Interfer. Assumed? YES	NO
1	**1**	**Clear Creek**	**150-200**	**100-145**	**2050**	☒	☐	☐	☐	☒
2	**1**	**Clear Creek**	**150-200**	**100-145**	**2100**	☐	☒	☐	☐	☒
3	**1**	**Clear Creek**	**150-200**	**100-145**	**2300**	☐	☒	☐	☐	☒
4	**1**	**Clear Creek**	**150-200**	**100-145**	**2350**	☐	☒	☐	☐	☒
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐

Basis for aquifer hydraulic connection evaluation: The applicant's existing well (well #1) is assumed to be completed in the terrace gravels of the Estacada formation which are hydraulically connected to Clear Creek. If the applicant's proposed wells (well #2, well #3, well #4) are sealed to a depth of 200 feet below land surface, they will be completed in fine grained alluvial sediments mapped by Trimble (1963) as the Sandy River Mudstone. These sediments act as a resistor to groundwater flow, significantly reducing the effective hydraulic connection between the groundwater system and Clear Creek.

Water Availability Basin the well(s) are located within: 82 CLEAR CR > CLACKAMAS R - AT MOUTH

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?
1	**1**	☐	☐	**82A**	**20**	☒	**5.65**	☒	**Unknown**	☒
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐

		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐

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?
			☐			☐		☐		☐
			☐			☐		☐		☐
			☐			☐		☐		☐
			☐			☐		☐		☐

Comments:

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

Non-Distributed Wells

Well	SW#	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS													
Interference CFS													

Distributed Wells

Well	SW#	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS													
Interference CFS													
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS													
Interference CFS													
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS													
Interference CFS													
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS													
Interference CFS													
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS													
Interference CFS													
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS													
Interference CFS													

	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 ground water 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**

References Used: Trimble, Donald E., Geology of Portland, Oregon and Adjacent Areas, Geological Survey Bulletin 1119, 119 p., 1 pl. (1963)

USGS Redland 7.5 minute topographic quadrangle (1961, photorevised 1985)

McFarland, William D., and Morgan, David S., 1996, Description of the Groundwater Flow System in the Portland Basin, Oregon and Washington: U.S. Geological Survey Water-Supply Paper 2470-A, 58p, 7 plates.

Swanson, R.D., McFarland, W.D., Gonthier, J.B., and Wilkinson, J.M, 1993, A Description of Hydrogeologic Units in the Portland Basin, Oregon and Washington: U.S. Geological Survey Water-Resources Investigations Report 90-4196, 56 p., 10 sheets, scale 1:100,000.

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.

D. WELL CONSTRUCTION, OAR 690-200

D1. **Well #**: 1 **Logid: Unknown**

D2. **THE WELL does not 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**:
a. ☐ constitutes a health threat under Division 200 rules;
b. ☐ commingles water from more than one ground water reservoir;
c. ☐ permits the loss of artesian head;
d. ☐ permits the de-watering of one or more ground water reservoirs;
e. ☐ other: (specify) _____

D4. **THE WELL construction deficiency is described as follows:** Because no well log has been found for well #1, it is unknown if the well meets well construction standards. Because of the finding of PSI, no well reconstruction is recommended at this time.

D5. **THE WELL** a. ☐ **was**, *or* ☐ **was not** constructed according to the standards in effect at the time of original construction or most recent modification.

b. ☒ I don't know if it met standards at the time of construction.

D6. ☐ **Route to the Enforcement Section.** I recommend withholding issuance of the permit until evidence of well reconstruction is filed with the Department and approved by the Enforcement Section and the Ground Water Section.

THIS SECTION TO BE COMPLETED BY ENFORCEMENT PERSONNEL

D7. ☐ Well construction deficiency has been corrected by the following actions: _____

_____ _____, 200____.
(Enforcement Section Signature)

D8. ☐ **Route to Water Rights Section (attach well reconstruction logs to this page).**

DETAILED REPORT ON THE WATER AVAILABILITY CALCULATION
Water Availability as of 3/15/2005 for
CLEAR CR > CLACKAMAS R - AT MOUTH

Watershed ID #: 82 Basin: WILLAMETTE Exceedance Level: 80
Time: 15:25 Date: 03/15/2005

Month	Natural Stream Flow	CU + Stor Prior to 1/1/93	CU + Stor After 1/1/93	Expected Stream Flow	Reserved Stream Flow	Instream Water Rights	Net Water Available
1	126.00	1.07	0.07	125.00	0.00	0.00	125.00
2	128.00	0.99	0.06	127.00	0.00	0.00	127.00
3	128.00	0.60	0.05	127.00	0.00	0.00	127.00
4	131.00	0.73	0.05	130.00	0.00	0.00	130.00
5	111.00	2.31	0.08	109.00	0.00	0.00	109.00
6	48.10	3.37	0.01	44.70	0.00	40.00	4.72
7	19.00	5.89	0.01	13.10	0.00	40.00	-26.90
8	8.02	4.79	0.01	3.22	0.00	20.00	-16.80
9	5.65	1.99	0.01	3.65	0.00	20.00	-16.40
10	6.23	0.73	0.01	5.50	0.00	0.00	5.50
11	21.50	0.70	0.03	20.80	0.00	0.00	20.80
12	103.00	1.13	0.08	102.00	0.00	0.00	102.00
Stor	99100	1480	28	97500	0	7260	93400

DETAILED REPORT OF INSTREAM REQUIREMENTS
Water Availability as of 3/15/2005 for
CLEAR CR > CLACKAMAS R - AT MOUTH

Watershed ID #: 82 Basin: WILLAMETTE Exceedance Level: 80
Time: 15:25 Date: 03/15/2005

	ISWRs						
APP #	82A	0	0	0	0	0	MAXIMUM
Status	Cert.						
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	40.00	0.00	0.00	0.00	0.00	0.00	40.00
7	40.00	0.00	0.00	0.00	0.00	0.00	40.00
8	20.00	0.00	0.00	0.00	0.00	0.00	20.00
9	20.00	0.00	0.00	0.00	0.00	0.00	20.00
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Well Location Map