

PUBLIC INTEREST REVIEW FOR GROUNDWATER APPLICATIONS

TO: Water Rights Section Date December 2, 2015

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

SUBJECT: Application G- 18150 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: Michael Meseroll, Panasonic Eco Solutions Solar America, LLC  
 County: Marion

A1. Applicant(s) seek(s) 0.22 cfs from 3 well(s) in the Willamette Basin,  
Pudding River subbasin

A2. Proposed use Industrial/Manufacturing 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	PROP	1	Alluvium	0.22	08S/02W-4 SWNW	2830'S, 945'E of N'ly NW cor DLC 70
2	PROP	2	Alluvium	0.22	08S/02W-4 SWNW	3050'S, 1565'E of N'ly NW cor DLC 70
3	PROP	3	Alluvium	0.22	08S/02W-4 SWNW	3550'S, 1150'E of N'ly NW cor DLC 70

\* 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	235		10-15 <sup>A</sup>		150		0-150		80-100			
2	240		10-15 <sup>A</sup>		150		0-150		80-100			
3	240		10-15 <sup>A</sup>		150		0-150		80-100			

Use data from application for proposed wells.

A4. **Comments:** <sup>A</sup>The applicant's wells are proposed. SWL is based on the range of reported SWLs from a nearby observation well (MARI 17268). All other numbers are as reported on application.

A5.  **Provisions of the Willamette (OAR 690-502)** 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) '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): \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

B3. **Groundwater availability remarks:** According to Woodward et al., (1998) the applicant's proposed POAs will produce from the edge of a large alluvial fan (referred to as the Salem Fan) that is composed of predominately sand/gravel and is over 200 ft thick near its center. The applicant's POAs are on the margin of the fan where it thins to 0 ft as it onlaps against the exposed bedrock of the Waldo Hills. The driller's log for a nearby well (MARI 17268) shows that basalt (i.e., bedrock) was encountered at 118 ft. It is likely that the applicant's proposed wells will encounter bedrock at a similar, possibly shallower, depth. The alluvial material is the primary production aquifer in the area with well yields generally < 100 gpm. There are not many permitted groundwater rights in the area but there is the potential for interference with smaller domestic wells – standard interference conditions should be applied.

Regarding appropriation: there are two wells within ½ mile of the proposed POAs that had been reported SWL from 1995-2007 and others within the same aquifer that are currently reporting SWLs. Nearly all the wells are producing from similar depths as the proposed POAs and show stable SWLs over the past several years (see hydrograph below).

\_\_\_\_\_

\_\_\_\_\_

**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"/>
3	Alluvium	<input checked="" type="checkbox"/>	<input type="checkbox"/>

**Basis for aquifer confinement evaluation:** A review of driller's logs for the area show that SWLs are generally above reported water-bearing zones for wells of similar depth as those proposed on this application.

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	Little Pudding R.	220-230	180-200	~13,000	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	1	Little Pudding R.	220-230	180-200	~13,000	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	1	Little Pudding R.	220-230	180-200	~13,000	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Basis for aquifer hydraulic connection evaluation:** The Little Pudding River is > 2 miles from the proposed POAs and published water table maps by Woodward et al. (1998) show groundwater flows toward that river.

**Water Availability Basin the well(s) are located within:** Pudding R > Molalla R – Ab Mill Cr (ID# 151)

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"/>

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"/>

**Comments:** There are no perennial streams within 1 mile of the proposed POAs.

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.

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

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

**Comments:** Although the proposed POAs were determined to be hydraulically connected to the Little Pudding River there is not an appropriate hydrogeologic model that can be used to estimate the impacts of pumping to the river. The variability in the thickness of the aquifer between the POAs and the river (up to 100 ft) and the proximity to the margin of the valley alluvial deposits (where it abuts bedrock) violates main assumptions of the accepted analytical models. However, based on previous interpretations of model results run for wells closer to the Little Pudding River than those proposed here (see GW Review of G18151), the Department has determined that the proposed use will not have the potential for substantial interference with the Little Pudding River.

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

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

C6. **SW / GW Remarks and Conditions:** \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**References Used:** \_\_\_\_\_

Gannett, M. W. and R. R. Caldwell. 1998. *Geologic Framework of the Willamette Lowland Aquifer System, Oregon and Washington*. USGS Professional Paper 1424-A.

Herrera, N. B., Burns, E. R., and T. D. Conlon. 2014. *Simulation of Groundwater Flow and the Interaction of Groundwater and Surface Water in the Willamette Basin and Central Willamette Subbasin, Oregon*. USGS Scientific Investigations Report 2014-5136

Woodward, D. G., M. W. Gannett, and J. J. Vaccaro. 1998. *Hydrogeologic Framework of the Willamette Lowland Aquifer System, Oregon and Washington*. USGS Professional Paper 1424-B.

**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) \_\_\_\_\_

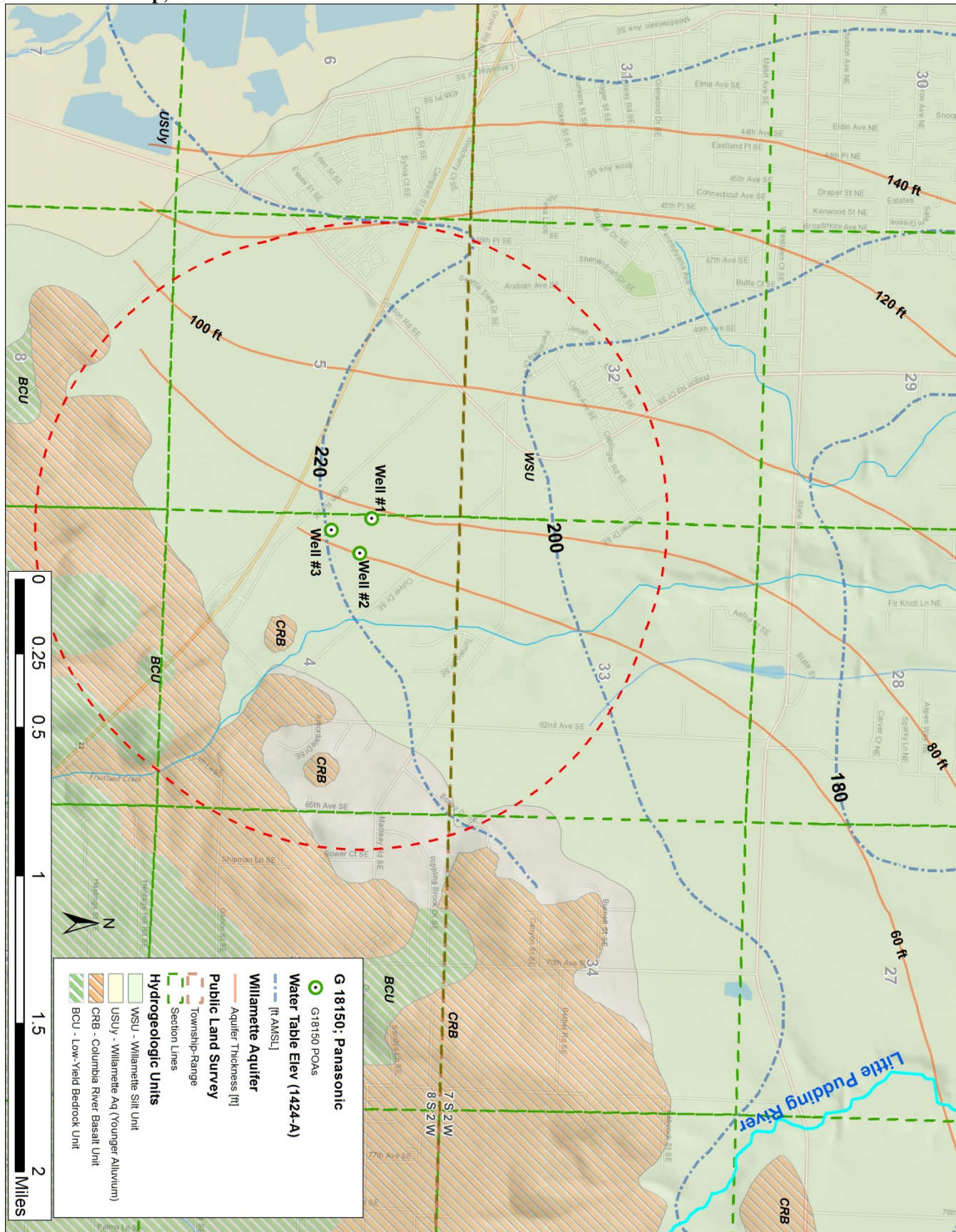
D3. **THE WELL construction deficiency or other comment is described as follows:** \_\_\_\_\_

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

**Water Availability Tables**

PUDDING R > MOLALLA R - AB MILL CR WILLAMETTE BASIN Water Availability as of 12/2/2015							
Watershed ID #: 151 ( <a href="#">Map</a> )				Exceedance Level: 80% ▾			
Date: 12/2/2015				Time: 2:26 PM			
Water Availability Calculation		Consumptive Uses and Storages		Instream Flow Requirements		Reservations	
Water Rights				Watershed Characteristics			
<b>Water Availability Calculation</b> Monthly Streamflow in Cubic Feet per Second Annual Volume at 50% Exceedance in Acre-Feet							
Month	Natural Stream Flow	Consumptive Uses and Storages	Expected Stream Flow	Reserved Stream Flow	Instream Flow Requirement	Net Water Available	
JAN	1,040.00	125.00	915.00	0.00	36.00	879.00	
FEB	1,180.00	115.00	1,060.00	0.00	36.00	1,030.00	
MAR	1,010.00	80.10	930.00	0.00	36.00	894.00	
APR	787.00	55.90	731.00	0.00	36.00	695.00	
MAY	425.00	52.70	372.00	0.00	36.00	336.00	
JUN	224.00	72.90	151.00	0.00	36.00	115.00	
JUL	109.00	113.00	-4.01	0.00	36.00	-40.00	
AUG	71.00	93.30	-22.30	0.00	36.00	-58.30	
SEP	67.30	54.50	12.80	0.00	36.00	-23.20	
OCT	91.60	14.00	77.60	0.00	36.00	41.60	
NOV	363.00	49.10	314.00	0.00	36.00	278.00	
DEC	957.00	119.00	838.00	0.00	36.00	802.00	
ANN	706,000.00	57,000.00	649,000.00	0.00	26,100.00	625,000.00	

**Well Location Map; red dashed line is 1 mile buffer around POAs**





Water-Level Trends in Nearby Wells; Values after Log ID are well completed depths

