PUBLIC INTEREST REVIEW FOR GROUND WATER APPLICATIONS

FROM: Ground Water/Hydrology Section Gerald H. Grondin Reviewer's Name SUBJECT: Application G- 16828 Supersedes review of none		August 2007	27	Date					tion	ts Se	r Rights	Water		TO:
SUBJECT: Application G- 16828 Supersedes review of none								Section _	drology	iter/H	nd Wat	Grour	:	FROM
		ne	no	of					16828	G	ication	Appli	CT:	SUBJE
PUBLIC INTEREST PRESUMPTION; GROUNDWATER OAR 690-310-130 (1) The Department shall presume that a proposed groundwater use will ensure the preservation welfare, safety and health as described in ORS 537.525. Department staff review ground water applications under Ox to determine whether the presumption is established. OAR 690-310-140 allows the proposed use be modified or cond the presumption criteria. This review is based upon available information and agency policies in place at the time. A. GENERAL INFORMATION: Applicant's Name: Melissa J. Ward & Louis P. Molt County: Hard	of the public AR 690-310-140 litioned to meet e of evaluation.	ations under OA nodified or condi place at the time	er applicuse be national extension of the second exten	und wateroposed ncy poli	ew grour s the pro nd agend	ed groundv staff revie 140 allows mation an	at a proposi Department R 690-310- lable infor	resume tha 537.525. I ished. OAF upon avai	ent shall p ed in ORS n is establi is based	partn lescrit imptio	The Dep th as de- e presur . This r	30 (1) 7 and healt ther the criteria.	90-310-13 safety armine whe umption o	OAR 69 welfare, to determ the pres
A1. Applicant(s) seek(s) (449 gpm) 1.00* cfs from 1 well(s) in the Malheur Lake	Basin	· Lake	Malheur	N	the	well(s) in	om <u>1</u>	*_cfs fr	pm) 1.00	(449	ek(s) _(nt(s) se	Applica	A1.
Silvies subbasin Quad Map: Poison Creek		on Creek	Poise	Гар:	uad Ma	asin Q	subt					Silvies	s	
A2. Proposed use: Irrigation (primary 56.30 acres) Seasonality: 1 March – 31 October A3. Well and aquifer data (attach and number logs for existing wells; mark proposed wells as such under logs.)														
		Location, metes a 2250' N, 1200' E 1						d Aquifer*	Propose			id	Logi	Well
1 HARN 106 Pon #20 Sand, Gravel, Rock Rock 22S/31E-sec 33 BAA 230' S, 2180' E			AA 2									106	HARN	1
2														
3 4			_				1							_
							+							5
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* Alluvium, CRB, Bedrock											k	Bedrock	ım, CRB,	
* Alluvium, CRB, Bedrock Well First SWL SWL Depth Interval Intervals Intervals Or Screens Yield (ft) (ft) (ft) (ft) (ft) (ft) (ft) (gpm)	Draw Down (ft) Test Type	reens Yield t) (gpm)	Or Sc (f	tervals (ft)	Inte	Intervals (ft)	Interval (ft)	Depth (ft)	Date	ols	r SWI	First Water ft bls	Well Elev ft msl	* Alluvii Well
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* Alluvium, CRB, Bedrock Well First SWL SWL Depth Interval Intervals Intervals Or Screens Yield (gpm) 1 4182 54 44.7 10/11/68 425 0 - 20 +1 - 21 none none 1100 Use data from application for proposed wells. A4. Comments: Proposed pumping rate of 1.0 cfs (449 gpm) is more than the rate allowed for 56.3 acres (0.70 cfs, 315) The proposed aquifer is sediment and rock. The well site is mapped as near but beyond the basin fill northern Harney Valley. Piper and others (1939) show sedimentary beds and rhyolite (Td) for the occurring in coarse sediments and fractured rhyolite. Greene and others (1972) show show terrace gwelded tuff (Tdo) for the site. Walker (1979) shows volcanic, pyroclastic, and sedimentary rock (Tvs)	pown (ft) Type 86 P gpm). and alluvium in site with water avel (QTtg) and	reens Yield (gpm) ne 1100 s (0.70 cfs, 315 g d the basin fill s ite (Td) for the show terrace gra	6.3 acre	ed for 50 near bubeds and rs (1972 c, and s	allowed bed as notary bed others oclastic,	the rate at the is mappy sedimen reene and ranic, pyro	Interval (ft) 0 - 20 more that The well si 1939) showly olite. Coshows volce	Depth (ft) 425 49 gpm) is nd rock. 7 d others (ractured rece (1979)	Date 0/11/68 ells. 1.0 cfs (4 diment at Piper an ents and fite. Walk	rate o	for proportion of the second o	First Water ft bls 54 lication f ents: ed pum oposed n Harr ng in co tuff (T	Well Elev ft msl 4182 from appl Comme Propose The pro norther occurrii welded	* Alluviu Well 1 Use data
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* Alluvium, CRB, Bedrock Well	pown (ft) Type 86 P gpm). and alluvium in site with water avel (QTtg) and for the site with water avel (other s	s (0.70 cfs, 315 g d the basin fill site (Td) for the show terrace gratary rock (Tvs) site (Tvs) s	or Sc (f no 6.3 acre t beyond rhyoli) show sediment ds. o the dev	none mear bubeds and rs (1972 c, and s interbe	allowed oed as notary bed others oclastic, gravel in	the rate: te is mappy sediment reene and and generated an	Interval (ft) 0 - 20 more than The well si 1939) show hyolite. G shows volc cocks and se	Depth (ft) 425 49 gpm) is nd rock. 7 d others (fractured rer (1979) volcanic residually connicions.)	Date 0/11/68 rells. 1.0 cfs (4 diment and frite. Walkections of the control o	rate o er is s alley. sedim r the ower Mad wat ontain 690-4	for proportion of ground the f ground the ground the f ground the ground the ground the f ground the ground	First Water ft bls 54 lication from the state of the sta	Well Elev ft msl 4182 from appl Comme Propose The pro norther occurring welded water of Provisi manager (Not all Comme	* Alluviu Well 1 Use data A4.
* Alluvium, CRB, Bedrock Well First SWL SWL Depth Interval Intervals Intervals Or Screens Yield (ft) (f	gpm). and alluvium in esite with water avel (QTtg) and for the site with sification and/or this application.	s (0.70 cfs, 315 g d the basin fill site (Td) for the show terrace gratary rock (Tvs) velopment, classion, activated by the elevation versus	6.3 acre t beyond rhyoli) show sedimenteds. o the developmented are not developmented.	ed for 50 near bubeds and rs (1972 c, and s interbe	allowed bed as notary bed others oclastic, gravel in	the rate: te is mappy sediment reene and anic, pyrotand and generates and and generates and anic, pyrotand and generates and	Interval (ft) 0 - 20 more that The well si 1939) show hyolite. Coshows volce cocks and sected to su ched), see	Depth (ft) 425 49 gpm) is nd rock. The ser (1979) Evolcanic is ke leasily connicions.) Is (see attack)	Date 0/11/68 ells. 1.0 cfs (4 diment at Piper an ents and fite. Walk ections of attentions of attentions attentions at the province applies at the province attentions at the province attention attention at the province attention attention at the province attention attention at the province attention at the province attention at the province att	rate o er is s alley. sedim r the ower Mod wat ontain 690-5	for proportion of the formules corrected of	First Water ft bls 54 Lication ft ents: ed pum Deposed n Haring in co tuff (T ccurring ions of fi ment of basin ri ents: ent comm #N	Well Elev ft msl 4182 from appl Comme Propose The pronorther occurring welded water of the manager (Not all Comme elevatio) Well(s)	* Alluviu Well 1 Use data A4.

Applic	cation:	, G- <u>16828</u>	continued			Date:	27 August 2007
В. <u>GF</u>	ROUN	D WATER A	VAILABILITY	CONSIDERATION	ONS, OAR 690-31	0-130, 400-	<u>-010, 410-0070</u>
B1.	Base	ed upon availal	ole data, I have de	etermined that ground	water* for the propo	osed use:	
	a.	period of th	e proposed use.		ted to the ground war		be over appropriated during any f the over-appropriation
	b.			available in the amou			orior water rights. * This finding DAR 690-310-130;
	c.	will not or	will likely to	be available within th	ne capacity of the gro	ound water r	esource; or
	d.	i. 🔲 Th ii. 🔲 Th	ne permit should one permit should be	ed, avoid injury to exist contain condition #(s) be conditioned as indicated contain special condition	7B, 7F, 7N cated in item 2 below	·	e ground water resource: w;
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 water reser	to allow ground v voir between appr	vater production only roximately	from the ft. and	ft. below la	ground ground ground
	d.	to occur wi withholding	th this use and wi	thout reconstructing a permit until evidence of	re cited below. With	nout reconst	ns. The problems that are likely ruction, I recommend the Department and approved
							reconstruction (interference w/
В3.	Gro	und water avai	lability remarks	:			
	Rec	ommend condi	ions 7B, 7F, and	7N			
	vicinabo Vall sedi for in lo Ava Har	nity of Poison over ground water over and ments and fracthe site. Walker over sections of the black ov	Creek Slough. Ter. The well site others (1939) shoured rhyolite. It (1979) shows yolcanic rocks a luding Piper and generally unconsecur where disco	The well appears to be is mapped as near ow sedimentary beds Greene and others (lyolcanic, pyroclastic, and sand and gravel in dothers (1939), Leon fined and hydraulic ontinuous low perme	be in an area receive but beyond the bas and rhyolite (Td) 1972) show show te and sedimentary ranterbeds. nard (1970), and wally connected to lability layers are p	ving rechar asin fill and for the site rrace grave ock (Tvs) fo ater well re Malheur ar resent. Leo	lley, northeast of Burns, in the ge from surface water perched alluvium in northern Harne with water occurring in coarsel (QTtg) and welded tuff (Tdoor the site with water occurring the Harney Lakes. Some local control (1970) indicates confined terlying Tertiary volcanic and
	the	lake perched at	ove ground water	er in most areas.			nto Malheur Lake is small wit

The closest wells with ground water level trend data are wells HARN 463 in T23S/R31E-sec 16 (about 3.5 miles to the south), and HARN 547 in T23S/R32E-sec 07 (about 4.6 miles to the southeast). Well HARN 463 appears to be in a recharge area, well HARN 547 does not. Both are in basin fill sediments downgradient of the applicant's well. The ground water level data for both is from 1960 to 2006. The ground water level trend at each site show seasonal and climatic influences. A possible net decline of less than 5 feet may have occurred at HARN 547, but not at HARN 463. Interestingly, no recovery of the annual trend is apparent at HARN 547 from 1996 to 1999 (a generally wetter than average period in Oregon), but is apparent at HARN 463. Seasonal ground water level fluctuations range from 10 to 40 feet. This could adversely impact the use of shallow wells, but likely not adversely impact the use of deeper wells.

		continued			,	Date:	<u>2</u> 7	August 20	<u> 107</u>	
<u>ROUND</u>	WATE	R/SURFACE WATER CO	<u>NSIDERA</u>	TIONS,	OAR 690-	<u>09-040</u>	1			
				·						
(1939) show sedimentary beds and rhyolite (Td) for the site with water occurring in coarse sediments and fractur rhyolite. Greene and others (1972) show show terrace gravel (QTtg) and welded tuff (Tdo) for the site. Walker (15 shows volcanic, pyroclastic, and sedimentary rock (Tvs) for the site with water occurring in lower sections of volcar rocks and sand and gravel interbeds. Available data, including Piper and others (1939), Leonard (1970), and water well reports indicate ground water in basin is generally unconfined and hydraulically connected to surface water including Malheur and Harney La Some local confinement can occur where discontinuous low permeability layers are present. Leonard (1970) indic confined ground water occurs at depth in the basin in deep basin fill sediments and underlying Tertiary volcanic sedimentary rocks. Hubbard (1975) indicates ground water flow into Malheur Lake is small with the lake perc above ground water in most areas. The well site appears to be in an area receiving recharge from surface water perched above ground water. 690-09-040 (2) (3): Evaluation of distance to, and hydraulic connection with, surface water sources. All wells located a horizontal distance less than ½ 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 mit that are evaluated for PSI. Well SW Surface Water Name Elev Elev Elev (fit) YES NO ASSUMED Y										
	Sedim		Aquilei				u			inea
Basis for	· aquifer	confinement evaluation:								
The well	sito is	manned as near but beyond t	he hesin fil	ll and allu	wium in no	rthorn	Harney	Valley	Dinor	and a
shows vo	olcanic,	pyroclastic, and sedimentary								
rocks and	d sand a	nd gravel interbeds.								
<u>Available</u>	e data, i	ncluding Piper and others (19	39), Leona	rd (1970),	and water	<u>well re</u>	ports ind	licate gro	und y	vater i
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above	Ound W	atti ili iliost artas.								
The small		agus 4a ha iu au ausa wasaisina								
<u>I ne well</u>	site app	<u>ears to de in an area receiving</u>	recnarge i	rom suria	ice water pe	ercnea	above gr	ouna_wat	er.	
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	sw	Confess Water Name			Distance	1 .		ally i	l Po	tential
100	!			171	Distance		Campage			
Well	#	Surface water Name						d?	Sub A	st. Inte
Well	#	Surface water Name				YES	NO ASS	d?	Sub A	st. Inte
1	1	Poison Creek & Slough	ft msl 4137	ft msl 4155	(ft) 3,250	YES	NO ASS	d?	Sub A	st. Inte
1 1	1 2	Poison Creek & Slough Silvies River & tributaries	ft msl 4137 4137	ft msl 4155 4155	(ft) 3,250 12,100	YES	NO ASS	d?	Sub A	st. Inte
1 1	1 2	Poison Creek & Slough Silvies River & tributaries	ft msl 4137 4137	ft msl 4155 4155	(ft) 3,250 12,100	YES	NO ASS	d?	Sub A	st. Inte
1 1	1 2	Poison Creek & Slough Silvies River & tributaries	ft msl 4137 4137	ft msl 4155 4155	(ft) 3,250 12,100	YES	NO ASS	d?	Sub A	st. Inte
1 1	1 2	Poison Creek & Slough Silvies River & tributaries	ft msl 4137 4137	ft msl 4155 4155	(ft) 3,250 12,100	YES	NO ASS	d?	Sub A	st. Inte
1 1 1	1 2 3	Poison Creek & Slough Silvies River & tributaries Malheur & Harney Lakes	ft msl 4137 4137 4137	ft msl 4155 4155	(ft) 3,250 12,100	YES	NO ASS	d?	Sub A	st. Inte
Basis for aquifer confinement evaluation: Well Aquifer or Proposed Aquifer Confined Unconfined										
1 1 1 Basis for	1 2 3	Poison Creek & Slough Silvies River & tributaries Malheur & Harney Lakes hydraulic connection evaluat	ft msl 4137 4137 4137 4137	ft msl 4155 4155 4098	(ft) 3,250 12,100 102,000	YES	NO ASS	d? SUMED	Sub A Y C C C C	ost. Interest interes
1 1 1 Basis for	1 2 3 aquifer	Poison Creek & Slough Silvies River & tributaries Malheur & Harney Lakes hydraulic connection evaluat	ft msl 4137 4137 4137 ion: Cound in Pi	ft msl 4155 4155 4098	(ft) 3,250 12,100 102,000 thers (1939)	YES	NO ASS	d? SUMED	Sub A YY E E E	ost. Interest interes
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1 1 1 Sasis for Ground (well log the vicin	1 2 3 aquifer water e s) indica	Poison Creek & Slough Silvies River & tributaries Malheur & Harney Lakes hydraulic connection evaluat levation data for the vicinity for the ground water elevations free proposed well, surface water	ft msl 4137 4137 4137 ion: cound in Pigom 4135 to	ft msl 4155 4155 4098 per and or 4150 feet above gro	(ft) 3,250 12,100 102,000 thers (1939) over multiplication (1939)	YES	NO ASS	d? SUMED D), and w	Sub A Y Y C C C C C C C C C C C C C C C C C	ost. Interest in the Assume IES
Basis for Ground (well log the vicin water is	aquifer water e s) indica ity of th not at th	Poison Creek & Slough Silvies River & tributaries Malheur & Harney Lakes hydraulic connection evaluat levation data for the vicinity for the ground water elevations from the proposed well, surface water the nearest reach, but about 14	ft msl 4137 4137 4137 4137 ion: Cound in Pijom 4135 to is perched miles south	ft msl 4155 4155 4098 per and o 4150 feet above greeast.	(ft) 3,250 12,100 102,000 thers (1939) over multipound water	YES	NO ASS	d? SUMED D), and w seasonal	Sub A Y C C C C C C C C C C C C C C C C C C	vell re
Basis for Ground (well log the vicin water is	aquifer water es) indicatity of the not at the	Poison Creek & Slough Silvies River & tributaries Malheur & Harney Lakes hydraulic connection evaluat levation data for the vicinity for the ground water elevations from the proposed well, surface water the nearest reach, but about 14 to the basin outlet for ground	ft msl 4137 4137 4137 4137 ion: Cound in Pipom 4135 to ris perched miles south water flow	ft msl 4155 4155 4098 per and or 4150 feet above greeast. (through	3,250 12,100 102,000 thers (1939) over multipound water	YES	NO ASS	d? SUMED D), and w seasonal ater conn	Sub A Y C C C C C C C C C C C C C C C C C C	vell requation to su
Basis for Ground (well log the vicin water is Malheur derived	aquifer water es) indicatity of the not at the Lake is from U	Poison Creek & Slough Silvies River & tributaries Malheur & Harney Lakes hydraulic connection evaluat levation data for the vicinity for the ground water elevations from the proposed well, surface water the nearest reach, but about 14 to the basin outlet for ground SGS 1:24,000 quadrangle ma	ft msl 4137 4137 4137 4137 ion: Cound in Pipom 4135 to ris perched miles south water flow	ft msl 4155 4155 4098 per and or 4150 feet above greeast. (through	3,250 12,100 102,000 thers (1939) over multipound water	YES	NO ASS	d? SUMED D), and w seasonal ater conn	Sub A Y C C C C C C C C C C C C C C C C C C	vell requation to su
Basis for Ground (well log the vicin water is	aquifer water es) indicatity of the not at the Lake is from U	Poison Creek & Slough Silvies River & tributaries Malheur & Harney Lakes hydraulic connection evaluat levation data for the vicinity for the ground water elevations from the proposed well, surface water the nearest reach, but about 14 to the basin outlet for ground SGS 1:24,000 quadrangle ma	ft msl 4137 4137 4137 4137 ion: Cound in Pipom 4135 to ris perched miles south water flow	ft msl 4155 4155 4098 per and or 4150 feet above greeast. (through	3,250 12,100 102,000 thers (1939) over multipound water	YES	NO ASS	d? SUMED D), and w seasonal ater conn	Sub A Y C C C C C C C C C C C C C C C C C C	vell requation to su
Basis for Ground (well log the vicin water is Malheur derived	aquifer water es) indicatity of the not at the Lake is from U	Poison Creek & Slough Silvies River & tributaries Malheur & Harney Lakes hydraulic connection evaluat levation data for the vicinity for the ground water elevations from the proposed well, surface water the nearest reach, but about 14 to the basin outlet for ground SGS 1:24,000 quadrangle ma	ft msl 4137 4137 4137 4137 ion: Cound in Pipom 4135 to ris perched miles south water flow	ft msl 4155 4155 4098 per and or 4150 feet above greeast. (through	3,250 12,100 102,000 thers (1939) over multipound water	YES	NO ASS	d? SUMED D), and w seasonal ater conn	Sub A Y C C C C C C C C C C C C C C C C C C	vell requation to su
Basis for Ground (well log the vicin water is Malheur derived	aquifer water es) indicatity of the not at the Lake is from U	Poison Creek & Slough Silvies River & tributaries Malheur & Harney Lakes hydraulic connection evaluat levation data for the vicinity for the ground water elevations from the proposed well, surface water the nearest reach, but about 14 to the basin outlet for ground SGS 1:24,000 quadrangle ma	ft msl 4137 4137 4137 4137 ion: Cound in Pipom 4135 to ris perched miles south water flow	ft msl 4155 4155 4098 per and or 4150 feet above greeast. (through	3,250 12,100 102,000 thers (1939) over multipound water	YES	NO ASS	d? SUMED D), and w seasonal ater conn	Sub A Y C C C C C C C C C C C C C C C C C C	vell requation to su
Basis for Ground (well log the vicin water is Malheur derived significan	aquifer water e s) indica ity of th not at th Lake is from U ntly var	Poison Creek & Slough Silvies River & tributaries Malheur & Harney Lakes hydraulic connection evaluat levation data for the vicinity for the ground water elevations from the proposed well, surface water the nearest reach, but about 14 sthe basin outlet for ground SGS 1:24,000 quadrangle many.	ft msl 4137 4137 4137 ion: Cound in Pipom 4135 to ris perched miles south water flow disps. The dispersion of the dis	ft msl 4155 4155 4098 per and or 4150 feet above greeast. (through	3,250 12,100 102,000 thers (1939) over multipound water	YES	NO ASS	d? SUMED D), and w seasonal ater conn	Sub A Y C C C C C C C C C C C C C C C C C C	vell requation to su
Basis for Ground (well log the vicin water is Malheur derived significan	aquifer water e s) indica ity of th not at th Lake is from U ntly var	Poison Creek & Slough Silvies River & tributaries Malheur & Harney Lakes hydraulic connection evaluat levation data for the vicinity for the ground water elevations from the proposed well, surface water the nearest reach, but about 14 to the basin outlet for ground SGS 1:24,000 quadrangle ma	ft msl 4137 4137 4137 ion: Cound in Pipom 4135 to ris perched miles south water flow disps. The dispersion of the dis	per and of 4150 feet above grast. (through listance is	thers (1939) over multipound water evaporatio to the 198	YES	ard (1970) ard (1970) ard with cround w	d? SUMED D), and w seasonal ater conn evation a he shore	Substance of the substa	vell reuation to su is for
Basis for Ground (well log the vicin water is Malheur derived significan	aquifer water e s) indica ity of th not at th Lake is from U ntly var	Poison Creek & Slough Silvies River & tributaries Malheur & Harney Lakes hydraulic connection evaluat levation data for the vicinity for the ground water elevations from the proposed well, surface water the nearest reach, but about 14 sthe basin outlet for ground SGS 1:24,000 quadrangle many.	ft msl 4137 4137 4137 ion: Cound in Pipom 4135 to ris perched miles south water flow disps. The dispersion of the dis	per and o 4155 4098 per and o 4150 feet above graeast. (through listance is	thers (1939) over multipound water evaporatio to the 198	YES	ard (1970) ard (1970) ard swith cround w	d? SUMED D), and w seasonal ater conn evation a he shore	Substance of the substa	vell reuation to su
Basis for Ground (well log the vicin water is Malheur derived significan	aquifer water e s) indica ity of th not at th Lake is from U ntly var	Poison Creek & Slough Silvies River & tributaries Malheur & Harney Lakes hydraulic connection evaluat levation data for the vicinity for the ground water elevations from the proposed well, surface water the nearest reach, but about 14 sthe basin outlet for ground SGS 1:24,000 quadrangle many.	ft msl 4137 4137 4137 ion: Cound in Pipom 4135 to ris perched miles south water flow disps. The dispersion of the dis	per and or 4150 feet above greast. (through listance is POISC W FK	thers (1939) over multipound water evaporatio to the 198	YES	ard (1970) ard (1970) ard swith ground w	D), and we seasonal ater connected the shore	Substance of the substa	vell reuation to su

	G- <u> </u>	6828	contin	ued			D	ate:2	7 August 2007		
connect that are Compar	ted and pertiner te the re	less than nt to that sequested ra	1 mile fro surface wa ate against	om a surface ter source, a the 1% of 8	water source and not lower 0% <i>natural</i> f	e. Limit eval SW sources low for the	uation to ins to which the pertinent Wa	tream rights a e stream unde ter Availabili	to be hydraulicand minimum streer evaluation is to ty Basin (WAB to have the pote	ream flooributary.). If Q is	
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 (%)	Potent for Sul Interfe Assum	
1	1			110	(CIS)		(CIS)	Tiow:		Assum	
					-						
			\perp \square \sqcup								
		🗆									
	SW #		Qw > 5 cfs?	Instream Water Right	Instream Water Right Q	Qw > 1%	80% Natural Flow	ral of 80%	Interference @ 30 days	Poten for Su Interf	
	·		0 0.5.	ID	(cfs)	ISWR?	(cfs)	Flow?	(%)	Assun	
					(222)		\				
					-						
The dis	ction is		proposed						ess than 1 mile		
This see	ction is stance f	from the	proposed ty of the	proposed		water is	perched ab	ove ground	ess than 1 mile water. The g		
This see	ction is stance f	from the	proposed ty of the	proposed	well, surface	water is	perched ab	ove ground			
This sec	ction is stance f	from the	proposed ty of the	proposed	well, surface	water is	perched ab	ove ground			
This sec	ction is stance f	from the	proposed ty of the	proposed	well, surface	water is	perched ab	ove ground			
This see	ction is stance f	from the	proposed ty of the	proposed	well, surface	water is	perched ab	ove ground			

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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-D	istributed V	Vells											
Well	SW#	<u>Jan</u>	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	1	4.64%	4.90%	0.00%	0.07%	0.31%	0.71%	1.21%	1.77%	2.37%	3.00%	3.63%	4.22%
Well Q	as CFS	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00
Interfer	ence CFS	0.046	0.049	0.000	0.001	0.003	0.007	0.012	0.018	0.024	0.030	0.036	0.042
Distrib	uted Wells											_	
Well	SW#	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
		%	%	%	%	%	%	%	<u>%</u>	%	%	%	%
Well Q	as CFS												
	ence CFS												
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q	as CFS												
Interfer	ence CFS												
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q	as CFS												
Interfer	ence CFS												
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q	as CFS												
Interfer	ence CFS												
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q	as CFS												
Interfer	ence CFS												
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q	as CFS												
Interfer	ence CFS												
(A) = To	otal Interf.	0.046	0.049	0.000	0.001	0.003	0.007	0.012	0.018	0.024	0.030	0.036	0.042
(B) = 80	% Nat. Q	1.43	4.59	11.30	25.20	14.80	7.49	1.74	0.69	0.49	0.42	0.51	0.90
(C) = 1	% Nat. Q	0.014	0.046	0.113	0.252	0.148	0.075	0.017	0.007	0.005	0.004	0.005	0.009
(D) = (A	A) > (C)	Yes	Yes	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes
• •	/ B) x 100	3.22%	1.07%	0.00%	0.00%	0.02%	0.09%	0.69%	2.61%	4.90%	7.14%	7.06%	4.67%

(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.

The distance from the proposed well to the nearest reach of Poison Creek & Slough is less than 1 mile (3,250 feet). However in the vicinity of the proposed well and the nearest reach, surface water is perched above ground water. The ground water connection to surface water is not at the nearest reach, but about 14 miles southeast like Silvies River.

Hunt (1999) was used to calculate the interference at Poison Creek & Slough. The values used for the calculations are for the nearby basin fill sediments, the geologic material where the ground water connection to surface water occurs. The values used for the calculations are conservative and appropriate until better values become available. The calculations used a transmissivity of 7,500 ft2/day which is consistent for Eastern Oregon basin fill transmissivities noted by Gonthier (1985) and transmissivity values derived from specific capacity data from wells in T23S/R32.57E-sec 10, 13, 14, 15, 22, and 24 (HARN 564, HARN 641, HARN 642, HARN 645, HARN 648, HARN 649, HARN 650, HARN 651, HARN 657, HARN 1870, HARN 50054, HARN 50491, HARN 50514, and HARN 51204). The transmissivity derived from specific capacity data for the geologic material in the vicinity of the proposed well is similar. Additionally, the calculation used an assumed intermediate storage coefficient (0.001). The hydraulic conductivity assigned to the bed of the tributary is 0.20 feet/day.

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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-Di	istributed V	Vells											
Well_	SW#	Jan	Feb	Mar	Apr	May	Jun	<u>Jul</u>	Aug	Sep	Oct	Nov	Dec
1	2	4.64%	4.90%	0.00%	0.07%	0.31%	0.71%	1.21%	1.77%	2.37%	3.00%	3.63%	4.22%
Well Q	as CFS	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00
Interfer	ence CFS	0.046	0.049	0.000	0.001	0.003	0.007	0.012	0.018	0.024	0.030	0.036	0.042
Distrib	uted Wells							_			_		_
Well	SW#	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q	as CFS												
Interfer	ence CFS												
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q	as CFS												
Interfer	ence CFS												
	Т	%	%	%	%	%	%	%	%	%	%	%	%
Well Q	as CFS												
Interfer	ence CFS												
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q	as CFS												
Interfer	ence CFS												
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q	as CFS												
Interfer	ence CFS												
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q	as CFS												
Interfer	ence CFS												
(A) = To	otal Interf.	0.046	0.049	0.000	0.001	0.003	0.007	0.012	0.018	0.024	0.030	0.036	0.042
				132.00	343.00	235.00	124.00	38.60	17.30	13.30	16.90	25.20	27.40
`	% Nat. Q	31.50	53.00			_							0.274
(C) = 1	% Nat. Q	0.315	0.530	1.320	3.430	2.350	1.240	0.386	0.173	0.133	0.169	0.252	0.274
(D) = (A	A) > (C)	No	No	No	No	No	No	No	No	No	No	No	No
$(\mathbf{E}) = (\mathbf{A}$	/B) x 100	0.15%	0.09%	0.00%	0.00%	0.00%	0.01%	0.03%	0.10%	0.18%	0.18%	0.14%	0.15%

(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:		

The distance from the proposed well to the nearest reach of Silvies River is more than 1 mile (12,100 feet). However in the vicinity of the proposed well and nearest reach, surface water is perched above ground water. The ground water connection to surface water is not at the nearest reach, but about 14 miles southeast like Poison Creek & Slough.

Hunt (1999) was used to calculate the interference at Silvies River. The values used for the calculations are for the nearby basin fill sediments, the geologic material where the ground water connection to surface water occurs. The values used for the calculations are conservative and appropriate until better values become available. The calculations used a transmissivity of 7,500 ft2/day which is consistent for Eastern Oregon basin fill transmissivities noted by Gonthier (1985) and transmissivity values derived from specific capacity data from wells in T23S/R32.57E-sec 10, 13, 14, 15, 22, and 24 (HARN 564, HARN 641, HARN 642, HARN 645, HARN 648, HARN 649, HARN 650, HARN 651, HARN 657, HARN 1870, HARN 50054, HARN 50491, HARN 50514, and HARN 51204). The transmissivity derived from specific capacity data for the geologic material in the vicinity of the proposed well is similar. Additionally, the calculation used an assumed intermediate storage coefficient (0.001). The hydraulic conductivity assigned to the bed of the tributary is 0.20 feet/day.

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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.

Well	stributed V SW#	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	3	%	%	%	%	%	%	%	%	%	%	%	
		70	70	70	70	70	70	70	70	70	70	70	70
Well Q													
Interfere	ence CFS												
Dis	stributed W	ells											
Well	SW#	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
		%	%	%	%	%	%	%	<u>%</u>	%	%	%	%
Well Q	as CFS												
	ence CFS												
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q	as CFS												
	ence CFS												
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q	as CFS												
Interfere	ence CFS												
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q	as CFS												
Interfere	ence CFS												
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q	as CFS												
Interfere	ence CFS												
		%	%	%	%	%	%	%	%	%		%	%
Well Q	as CFS												
Interfere	ence CFS												
(A) - T-	tal Intent												
	otal Interf.												
-	% Nat. Q												
(C) = 1	% Nat. Q												
(D) = (A	(C)							_					
	/ 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:	·		
*** This analysis was not done given the	re is no WAR for Malhaur and H	arnov Lakos	

Drawdown at Malheur and Harney Lakes was estimated using the Theis drawdown equation. The values used for the calculations are for the nearby basin fill sediments, the geologic material where the ground water connection to surface water occurs. The values used for the calculations are conservative and appropriate until better values become available. The calculations used a transmissivity of 7,500 ft2/day which is consistent for Eastern Oregon basin fill transmissivities noted by Gonthier (1985) and transmissivity values derived from specific capacity data from wells in T23S/R32.57E-sec 10, 13, 14, 15, 22, and 24 (HARN 564, HARN 641, HARN 642, HARN 645, HARN 648, HARN 649, HARN 650, HARN 651, HARN 657, HARN 1870, HARN 50054, HARN 50491, HARN 50514, and HARN 51204). The transmissivity derived from specific capacity data for the geologic material in the vicinity of the proposed well is similar. Additionally, the calculation used an assumed intermediate storage coefficient (0.001). The estimated drawdown for continuous pumping at the full proposed rate ranged from less than 0.01 feet at the end of 90 days to about 0.10 feet at the end of 245 days. The estimated drawdown for a pro-rated pumping rate ranged from less than 0.01 feet at the end of 245 days. The estimated drawdown for a pro-rated pumping rate ranged from less than 0.01 feet at the end of 245 days.

Appli	ication: G	16828	continued		Date: _	27 August 2007
C4b.		0 (5) (b) Section.	The potential to imp	air or detrimentally affect the p	public interest	is to be determined by the Wate
25. [under this	permit car		ound to substantially interfere wit		terference, and/or ground water user:
				cial condition(s) as indicated in "	'Remarks" belo	ow;
26. S	W / GW Rei	marks and	Conditions:			
Ē	Recommend	conditions	7B, 7F, and 7N if a p	permit is issued.		
<u>H</u>	<u>Iowever in t</u>	<u>he vicinit</u>	of the proposed we	le nearest reach of Poison Crell and the nearest reach, surfanot at the nearest reach, but al	ce water is pe	n is less than 1 mile (3,250 feet erched above ground water. Th southeast like Silvies River.
<u>t</u> 1	he vicinity o	f the proj	osed well and neare		ched above g	1 mile (12,100 feet). However in round water. The ground wate Poison Creek & Slough.
_				heur and Harney Lakes is more		
<u>0</u> <u>W</u> 0 fi	f Poison Cre vater. The v thers (1939) ractured rhy	ek Slough well site is show se olite. Gre	. The well appears to mapped as near budimentary beds and tene and others (1972)	to be in an area receiving rechat t beyond the basin fill and all rhyolite (Td) for the site w show show terrace gravel (Q	arge from sur luvium in nor ith water occ Ttg) and weld	northeast of Burns, in the vicinit face water perched above ground thern Harney Valley. Piper and curring in coarse sediments and ed tuff (Tdo) for the site. Walke er occurring in lower sections of
			l and gravel interbed			
b lo g re	asin is gener ocal confinen round water	rally unco nent can o occurs at ard (1975	nfined and hydraulic ocur where disconting depth in the basin in	ally connected to surface water nuous low permeability layers a n deep basin fill sediments and	r including M are present. I underlying T	orts indicate ground water in the alheur and Harney Lakes. Som Leonard (1970) indicates confined ertiary volcanic and sedimentary the lake perched above ground
<u>T</u>	he well site a	appears to	be in an area receivi	ng recharge from surface wate	r perched abo	ove ground water.
$\overline{\underline{\mathbf{T}}}$	here is a gen	eral and i	ncreasing local conce	ern about ground water availab	oility in the Ha	arney Valley.
g cl lı a	outh), and I- echarge area round water limatic influ- nterestingly, verage perio	HARN 54° a, well HA elevel date ences. A no recov d in Oreg	7 in T23S/R32E-sec ARN 547 does not. a for both is from 1 possible net decline ery of the annual tr on), but is apparent	07 (about 4.6 miles to the sou Both are in basin fill sedimen 960 to 2006. The ground war of less than 5 feet may have of end is apparent at HARN 54	ntheast). Wel tes downgradi ter level trend ccurred at H. 7 from 1996 nd water level	1E-sec 16 (about 3.5 miles to the last HARN 463 appears to be in sent of the applicant's well. The dat each site show seasonal and ARN 547, but not at HARN 463 to 1999 (a generally wetter that fluctuations range from 10 to 46 to the use of deeper wells.
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Gonthier, J.B. 1985. A Description of Aquifer Units in Eastern (84-4095.	Oregon. USGS Water Resources Investigations Repor
OWRD water well reports and hydrographs: HARN 463 and HAI	RN 547
OWRD water well reports: HARN 51204, HARN 650, HARN 6 HARN 50514, HARN 657, HARN 106, HARN 121, HARN 126, HARN 51178, HARN 51179, HARN 51235, HARN 51236, HARN 122, HARN 128, HARN 50380, HARN 51144, HARN 129, HARN HARN 642, HARN 645, HARN 1870, HARN 50491, and HARN 51	HARN 50509, HARN 123, HARN 127, HARN 51140 N 51278, HARN 51279, HARN 120, HARN 119, HARN 51264, HARN 118, HARN 124, HARN 125, HARN 641

Appli	cation: G- <u>168</u>	28 contir	ued		Date:	27 August 2007	
D. <u>W</u>	ELL CONSTRU	CTION, OAR	690-200				
D1.	Well #: <u>1 (I</u>	Pon #20)	Logid:	HARN 106			
D2.	a. review b. field in c. report	of the well log; spection by of CWRE	rent well construction				;
D3.	b. commi c. permits d. permits	utes a health thre ngles water from the loss of artes the de-watering	at under Division 200 ru more than one ground v	vater reservoir;			
D4.	THE WELL co	enstruction defi	ciency is described as fo	llows:			
D5.	THE WELL		or was not construction or most		andards in ef	fect at the time of	
		b. 🛛 I do	n't know if it met standa	rds at the time of const	ruction.		
			cement Section. I recound Water Section appro				
D6. [tion. I recommend with approved by the Enforce				econstruction
THIS	SECTION TO	BE COMPLE	TED BY ENFORCE	MENT PERSONNE	EL		
D7.	Well construction	on deficiency has	s been corrected by the fo	ollowing actions:			
							, 200
	(Enforce	cement Section S	ignature)				
D8.	Route to Wate	r Rights Section	ı (attach well reconstru	ction logs to this page	e).		



The Oregon Administrative Rules contain OARs filed through July 13, 2007

WATER RESOURCES DEPARTMENT

DIVISION 512

MALHEUR LAKE BASIN PROGRAM PROVISION

690-512-0040

Water Availability

- (1) Except as provided in section (3) of this rule, the Department shall not accept an application for permit, or issue a permit, for any use of surface water, or of groundwater the use of which has the potential to substantially interfere with surface water, in the Malheur Lake Basin unless the applicant shows, by a preponderance of evidence, that unappropriated water is available to supply the proposed use at the times and in the amounts requested. The evidence provided shall be prepared by a qualified hydrologist or other water resources specialist and shall include:
- (a) Streamflow measurements of gage records from the source or, for use of groundwater, the stream in hydraulic connection with the source; or
- (b) An estimate of water availability from the source or, for use of groundwater, the stream in hydraulic connection with the source which includes correlations with streamflow measure-ments or gage records on other, similar streams and considers current demands for water affecting the streamflows.
- (2) The criteria used in determining if the use of groundwater has the potential to substantially interfere with surface water shall be those established in OAR Chapter 690, Division 9.
- (3) This rule shall not apply to issuance of:
- (a) Instream water rights;
- (b) Permits for storage of water between March 1 and May 31 if the application is not required to be referred to the Commission under OAR 690-011-0080(2)(a)(C); or
- (c) Permits for use of water legally stored.

Stat. Auth.: ORS 536.300 & ORS 536.340

Stats. Implemented:

Hist.: WRD 3-1985, f. & cert. ef. 3-28-85; WRD 23-1990, f. & cert. ef. 12-14-90; Administrative

Renumbering 1-1993, Renumbered from 690-080-0120

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of this report are to be
filed with the

STATE ENGINEER SALEM 10, OREGON

within 30 days from the date

WELL REPORT

ENGINEER OF OREGON

OREGON

OREGON

OREGON

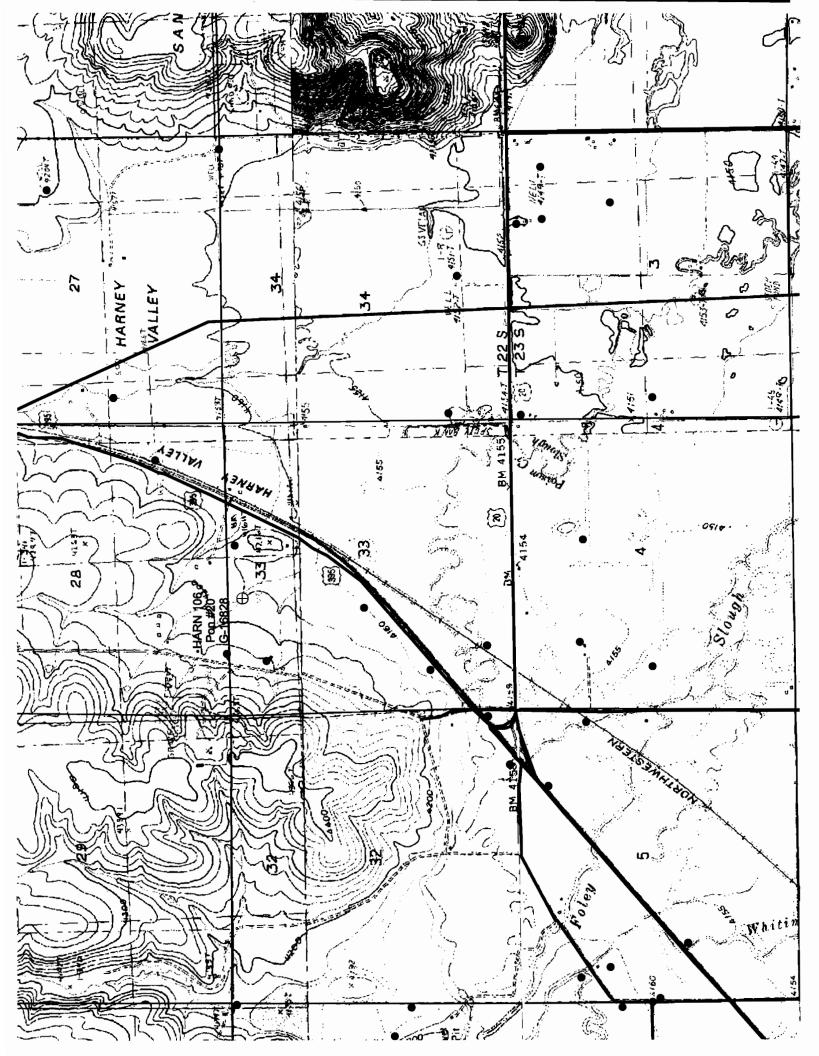
OREGON

Han 106

22/31-28

State Well No.

of well completion.	EM: Citrates on			tate Permit No		-
(1) OWNER: Name HARRY PO	V		made? 📝 Yes 🗀	rawdown is amount vowered below static le	17/JR/X	YEV
Address (SAPR)	EGON	Yield: //00	gal./min. with	86 ft. drawdow	n after	hrs.
		"		· · · · · · · · · · · · · · · · · · ·		:_ <u></u> ;
(2) LOCATION OF WELL: OW County HARNE, V Driller's well	Ners # 20	Bailer test	gal./min. with		n after	hrs.
	235 R. 3/EW.M.	Artesian flow	1 0	p.m. Date		
Bearing and distance from section or subdivisi		Temperature of v	water () Was	a chemical analysis r	nade? LI Y	es U.Aro
500 Jds West	BURNS	(12) WELL Depth drilled <		neter of well below completed w		14
						ture, and
		show thickness of stratum penetrate	aquifers and the	racter, size of materia kind and nature of one entry for each c	the materi hange of f	il in each ormation
			MATERIAL		FROM	то
(3) TYPE OF WORK (check):		SAND	V LOAN	1	0	6
New Well	iitioning 🔲 Abandon 🖂	_CLA1	/		6	19
bandonment, describe material and procedu	ure in Item 12.	No.	K BLA	CKHARN	19	44
(4) PROPOSED USE (check):	(5) TYPE OF WELL:	- C' & A	1,1/	11/2 /	44	54.
Domestic Industrial Municipal	Rotary Driven	- Sa RAT	KX Y SA	Not Some WAX	4.23	177
Irrigation D Test Well Other	Cable Detted 🗆		1310	KIN	200	360
Integration to rest west a content	Dug Bored □	1130	D BANG	TBLACK	760	100
(6) CASING INSTALLED: Thr	eaded Welded	- 50 CM	Jean	PAR	303	373
Diam. from ft. to	ft. Gage	B 2 2	O PO JUGO	DAACIA	1 7 XX	7 20-
" Diam. from ft. to	ft. Gage	- Apour		ADD SE JIBO	7	720
	ft. Gage				- · · · · · · · · · · · · · · · · · · ·	. بنگ سب
(E) DEDUCE A STORY					1	
	forated? Yes 7-No					
Type of perforator used					7	
Size of perforations in. by perforations from	inft. toft.					
perforations from M	ft to					
perforations from	e the to					
perforations from		``.	-	51 - 545: · · · · · · · · · · · · · · · · · · ·		
perforations from	ft. toft.	l ———		······································		
(8) SCREENS: Well screen ins	stalled Yes 1/2					
Manufacturer's Name	***************************************					
Type Mo	del No.				1	· ·
a Slot size Set from		Work started	1-20 19 %	2_Completed / (7-23	1962
Dlam. Slot size Set from	ft. to ft.	Date well deliling	machine moved	off of well	<u>~33.</u>	1962
(9) CONSTRUCTION:		(13) PUMP:	•			
Well seal-Material used in seal Sex	IN ROCKSLAU	Manufacturer's N				
a . / ·	acker used?	Type:	-		f.P	
Diameter of well bore to bottom of seal						
Were any loose strata cemented off? [] Yes [•	Water Well Co	ntractor's Cert	lfication:		
Was a drive shoe used? Yes No				er my jurisdiction	and this	report is
Was well gravel packed? ☐ Yes ☐ No Size	of gravel:	true to the best	or my knowle	age and pelief.	, ,	
Gravel placed from ft. to	tt	NAME Ha	LLOWA	V DRIL	UNC	60
Did any strata contain unusable water?	es 1 No		(Person, firm or	orporation) (Cype or prir	it)
Type of water? Depth of	strata	Address	NIA R	10 4/10		
Method of sealing strate off	<u> </u>	Drilling Machin	ne Onerstor's I	icense No. 16	00.	<u>.</u>
(10) WATER LEVELS:				1 11		
Static level , 54 ft. below land	surface Date/2-21/1	[Signed]	A Sum A	Water Well Contractor)	uf_	
	are inch Date	Contractor's Li	cense No	Date //-	-1/2	1963
ers require breasure inst bet squi		Contractors In	/ 1	Dave Jake	7	, 10.30-4



in the vicinity of application Wells 1 6 8 2 8 Application well(s) in this 1/4-1/4 section • Well(s) identified in this 1/4-1/4 section from OWAD's well log database within 1 mi, radius of application well(s) Conditioned, permitted well(s) in this 1/4-1/4 section within 5 mi. radius of application well(s) Critical GW Area Well(s) identified in this section from OWRD's well log database within 1 mi. radius of application well(s) Regulated GW Area Permitted well(s) in this 1/4-1/4 section within 1 mi, radius of application well(s) OWRD Observation well and well-id within 5 mi. radius of application well(s) 2 2 S 31 Burns 2 3 S 3 1 E 3 2 E

```
ABANDON:
                     0
RECONDITIONED:
                     7
    REPAIRED:
                     0
  CONVERSION:
                     0
                     3
  DEEPENINGS:
                  107
NEW CONSTRUCT:
COMMUNITY USE:
                     0
 DOMESTIC USE:
                     55
INDUSTRIAL USE:
                     0
INJECTION USE:
                      0
IRRIGATION USE:
  THERMAL USE:
                     0
LIVESTOCK USE:
                     12
         ****************
         PERMITTED WELLS WITHIN 1 MILE OF APPLICATION G 16828
$RECNO
        APPLICATION PERMIT
                              CLAIM
                                         LOC-OO
                                                            USE_CODE
    1
                                         22.00S31.00E27NWNW
    2
                                         22.00S31.00E27SENE
     3
                                         22.00S31.00E34NENE
     4
                                         22.00S31.00E33NWNE
    5
        G 16828
                            0
                                       0 22.00S31.00E33NENW IR
     6
                                         22.00S31.00E33NWNW
    7
                                         22.00S31.00E31NENE
    8
                                         22.00S31.00E33SENW
    9
                                         22.00S31.00E33SWNW
   10
                                         22.00S31.00E33NWSW
   11
                                         22.00S31.00E31NESE
   12
                                         22.00S31.00E34SWSE
   13
                                         22.00S31.00E34SWSW
   14
                                         22.00S31.00E33SWSW
   15
                                         23.00S31.00E 3NENE
   16
                                         23.00S31.00E 3NWNE
   17
                                         23.00S31.00E 3NWNW
   18
                                         23.00S31.00E 4NWNW
   19
                                         23.00S31.00E 5NWNE
   20
                                         23.00S31.00E 3SENE
   21
                                         23.00S31.00E 4SWNE
   22
                                         23.00S31.00E 4SWNW
   23
                                         23.00S31.00E 5SENE
   24
                                         23.00S31.00E 5SWNW
   25
                                         23.00S31.00E 6SENE
   26
                                         23.00S31.00E 3NWSW
   27
                                         23.00S31.00E 5NWSW
   28
                                         23.00S31.00E10NWNW
         CONDITIONED WELLS WITHIN 5 MILES OF APPLICATION G
                                                            16828
$RECNO
        APPLICATION PERMIT
                                                 CONDITION-CODE
                               LOC-QQ
            13201 G 11830
    1
        G
                               23.00S32.00E30NWNE 4IG
    1
            13201 G
        G
                       11830
                               23.00S32.00E30NWNE 4IR
         ***********
```

APPLICATION G 16828 FALLS WITHIN THESE QUAD(S)

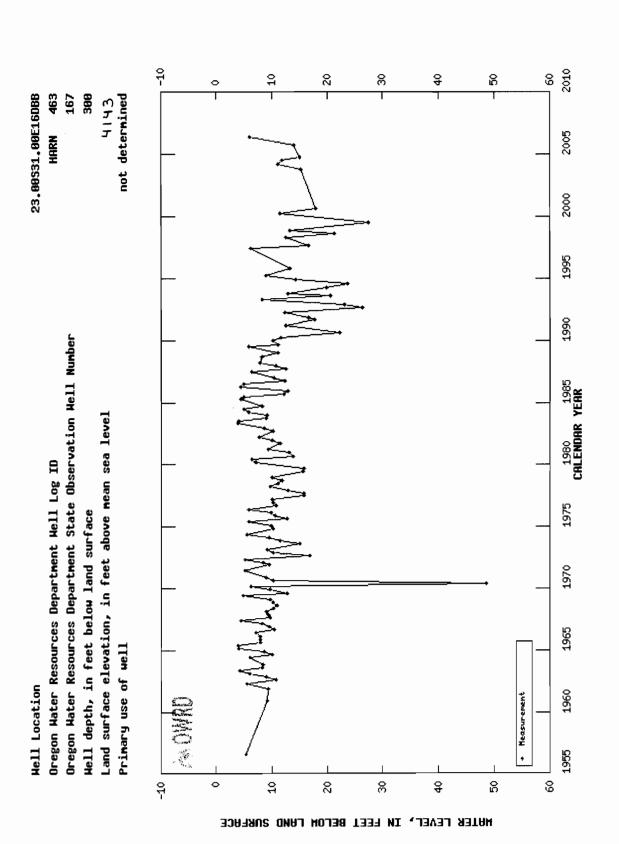


Table showing water-level data for State Well HARN 463, State Observation Well # 167

8/16/2007

Water-level data for State Well HARN 547, State Observation Well # 169

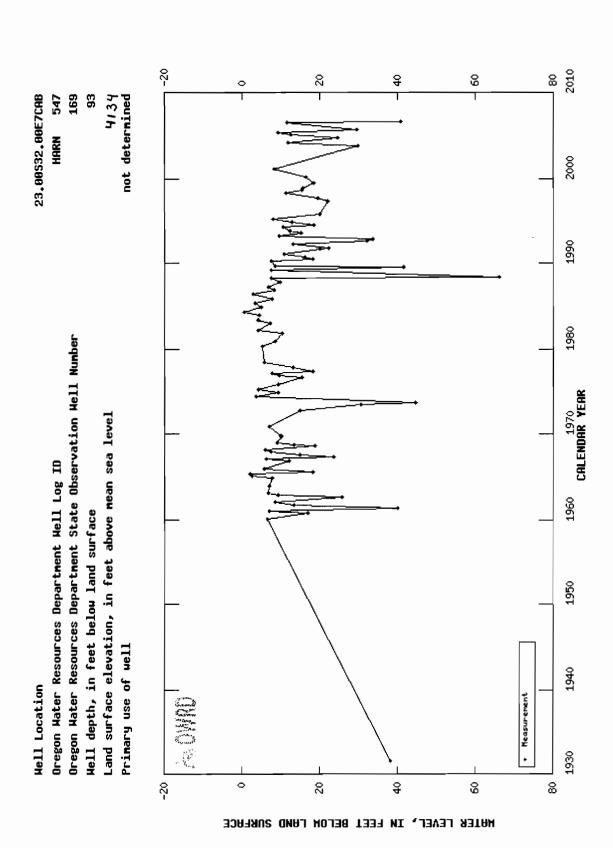
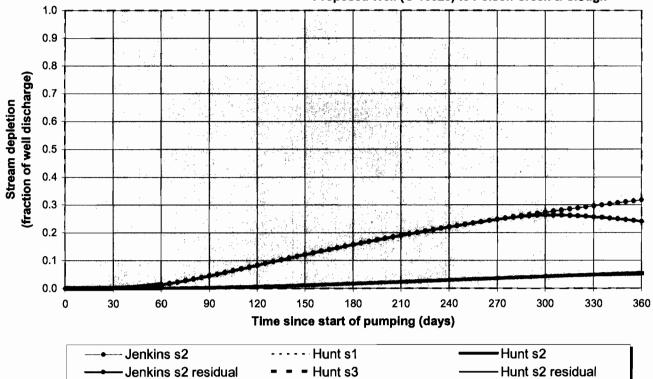


Table showing water-level data for State Well HARN 547, State Observation Well # 169

8/16/2007

Transient Stream Depletion (Jenkins, 1970; Hunt, 1999)

Proposed Well (G-16828) to Poison Creek & Slough

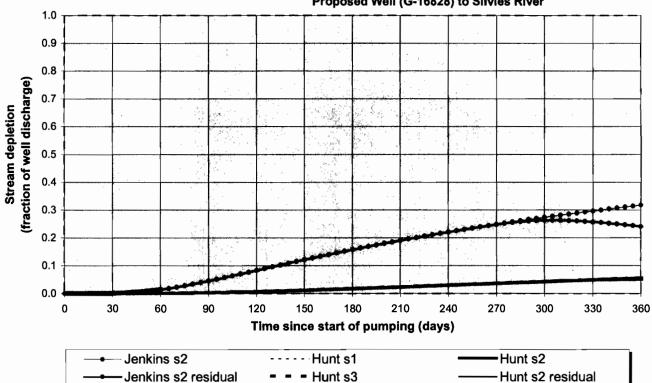


Output for Hunt Stream Depletion, Scenerio 2 (s2): Time pump on = 245 days

Output 101 11	u 0 1 0 u	יייי ביייייייייייייייייייייייייייייייי	, 000	= /	/·							
Days	30	60	90	120	150	180	210	240	270	300	330	360
Hunt SD s2	0.0000	0.0007	0.0031	0.0071	0.0121	0.0177	0.0237	0.0300	0.0363	0.0422	0.0464	0.0490
Qw, cfs	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
H SD s2, cfs	0.000	0.001	0.003	0.007	0.012	0.018	0.024	0.030	0.036	0.042	0.046	0.049

Parameters:		Scenario 1	Scenario 2	Scenario 3	Units
Net steady pumping rate	Qw	1	1	1	cfs
Distance to stream	а	73500	73500	73500	ft
Aquifer hydraulic conductivity	К	50	50	50	ft/day
Aquifer thickness	b	150	150	150	ft
Aquifer transmissivity	T	7500	7500	7500	ft*ft/day
Aquifer storage coefficient	S	0.001	0.001	0.001	
Stream width	ws	10	10	10	ft
Streambed hydraulic conductivity	Ks	0.2	0.2	0.2	ft/day
Streambed thickness	bs	25	25	25	ft
Streambed conductance	sbc	0.08	0.08	0.08	ft/day
Stream depletion factor (Jenkins)	sdf	720.3	720.3	720.3	days
Streambed factor (Hunt)	sbf	0.784	0.784	0.784	

Transient Stream Depletion (Jenkins, 1970; Hunt, 1999) Proposed Well (G-16828) to Silvies River



Output for Hunt Stream Depletion, Scenerio 2 (s2): Time pump on = 245 days 300 360 Days 30 60 120 150 180 210 240 270 330 90 Hunt SD s2 0.0000 0.0007 0.0031 0.0071 0.0121 0.0177 0.0237 0.0300 0.0363 0.0422 0.0464 0.0490 Qw, cfs 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 H SD s2, cfs 0.000 0.003 0.018 0.024 0.030 0.036 0.042 0.046 0.049 0.001 0.007 0.012

Parameters:		Scenario 1	Scenario 2	Scenario 3	Units
Net steady pumping rate	Qw	1	1	1	cfs
Distance to stream	а	73500	73500	73500	ft
Aquifer hydraulic conductivity	К	50	50	50	ft/day
Aquifer thickness	b	150	150	150	ft
Aquifer transmissivity	T	7500	7500	7500	ft*ft/day
Aquifer storage coefficient	S	0.001	0.001	0.001	
Stream width	ws	10	10	10	ft
Streambed hydraulic conductivity	Ks	0.2	0.2	0.2	ft/day
Streambed thickness	bs	25	25	25	ft
Streambed conductance	sbc	0.08	0.08	0.08	ft/day
Stream depletion factor (Jenkins)	sdf	720.3	720.3	720.3	days
Streambed factor (Hunt)	sbf	0.784	0.784	0.784	

Drawdown Calcul	Drawdown Calculations Using Theis Equation	s Equation										
Thois Complian	IV./ANTY-ATTAN/OIL	7										
iners Equation:		ľ'n										
	(```(\``)\\\\\\\\\\\\\\\\\\\\\\\\\	72157)+(1/1*1!))+(u*u/2*2!)+(u*u	u/3*3!)-(u*u*u*u	/4*4!)+							
	(1)		/ / / /	(
	s = drawdown (L)				r = radial distance (L)	ance (L)						
	T = transmissivity (L*L/T)	(17.7)			t = time (T)							
	S = storage coefficient (dimensionless)	ient (dimensionly	less)		u = dimensionless	nless						
	pi = 3.141592654				W(u) = well function	unction						
Transmissivity	Transmissivity	Storage	Pumping Rate	Pumping Rate Pumping Rate	Time	Distance	iq	3	(n)M	Drawdown	Comments	
-	-	Coefficient	σ	σ	+	_				89		
(gpd/ft)	(ft2/day)	S	(gal/min)	(ft3/sec)	(days)	(feet)				(feet)		
								lote: W(u)	Note: W(u) calculation valid when u < 7.1	Ilid when u	67.1	
	:							\top			7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	
Note	Note: yellow grid areas are where values are calculated	are where valu	les are calculate	2				0000.	1.1343E-04		W(u) calculation test	
Application G-168	Application G-16828 owner well Pon #20 (HARN 106) to Malheur and Harney Lakes	#20 (HARN 10	6) to Malheur ar	nd Harney Lake	8							
56,103.90	7,500.00	0.00100	448.83	.00	30.00	102,000.00	3.14	11.5600	-12.9689	-11.8890	Continuous Pumping at Proposed Full Rate	u limit exceeded
56,103.90	7,500.00	0.00100	448.83	8:	90.09	102,000.00	3.14	5.7800	0.0005	0.0004	Continuous Pumping at Proposed Full Rate	
56,103.90	7,500.00	0.00100	448.83	1.00	90.00	102,000.00	3.14	3.8533	0.0045	0.0041	Continuous Pumping at Proposed Full Rate	
56,103.90	7,500.00	0.00100	448.83	8:	120.00	102,000.00	3.14	2.8900	0.0150	0.0138	Continuous Pumping at Proposed Full Rate	
56,103.90	7,500.00	0.00100	448.83	9.	150.00	102,000.00	3.14	2.3120	0.0320	0.0293	Continuous Pumping at Proposed Full Rate	
56,103.90	7,500.00	0.00100	448.83	9.	180:00	102,000.00	3.14	1.9267	0.0541	0.0496	Continuous Pumping at Proposed Full Rate	
56,103.90	7,500.00	0.00100	448.83	8.	210.00	102,000.00	3.14	1.6514	0.0801	0.0734	Continuous Pumping at Proposed Full Rate	
56,103.90	7,500.00	0.00100	448.83	8	240.00	102,000.00	3.14	1.4450	0.1086	0.0995	Continuous Pumping at Proposed Full Rate	
56,103.90	7,500.00	0.00100	448.83	 8. 	245.00	102,000.00	3.14	1.4155	0.1135	0.1041	Continuous Pumping at Proposed Full Rate	
56 103 00	7 500 00	0000	215 BG	0,0	30,00	102 000 00	3.14	11 5600	-12 0680	7 8368	Continuous Primping at Allowed Full Rate	II limit avcaadad
56,103.90	7 500 00	00100	315.86	2 2	8.8	102 000 00	3.14	5 7800	0005	0 0003	Continuous Pumping at Allowed Full Rate	3
56 103 90	7 500 00	0 00100	315.86	0.70	00.06	102 000 00	3.14	3.8533	0.0045	0.0029	Continuous Pumping at Allowed Full Rate	
56,103.90	7,500.00	0.00100	315.86	0.70	120.00	102,000.00	3.14	2.8900	0.0150	0.0097	Continuous Pumping at Allowed Full Rate	
56,103.90	7,500.00	0.00100	315.86	0.70	150.00	102,000.00	3.14	2.3120	0.0320	0.0206	Continuous Pumping at Allowed Full Rate	
56,103.90	7,500.00	0.00100	315.86	0.70	180.00	102,000.00	3.14	1.9267	0.0541	0.0349	Continuous Pumping at Allowed Full Rate	
56,103.90	7,500.00	0.00100	315.86	0.70	210.00	102,000.00	3.14	1.6514	0.0801	0.0517	Continuous Pumping at Allowed Full Rate	
56,103.90	7,500.00	0.00100	315.86	0.70	240.00	102,000.00	3.14	1.4450	0.1086	0.0701	Continuous Pumping at Allowed Full Rate	
56,103.90	7,500.00	0.00100	. 315.86	0.70	245.00	102,000.00	3.14	1.4155	0.1135	0.0732	Continuous Pumping at Allowed Full Rate	
20,000		00000	450.00	100	90	700 000	77	44 5600	- 75 0600	1 1222	Chapter of Assert	habatan Maril
30,103.90	00:00:1	0.00100	20.00	0.00	90.00	102,000.00	0.14	0000	-12.3009	1353	D. D. L. D.	ת וווווון פערפפרפת
56,103.90	7,500.00	0.00100	136.00	0.30	8.8	102,000.00	3.14	3.7800	0.0000	0.000	Dr. Pated Pumping Kate	
20,103.30	7,500.00	960	156.00	35.0	35.5	102,000.00	2 7	2,000	0.00	9000	Dr. Pated Cimping Nate	
20,103.90	7,300.00	0.00	130.00	8.6	150.00	102,000.00	2 14	2.0300	0000	200	Des Dated Dismains Date	
20,103.90	7 500.00	0.00	156.00	S. S.	180.00	102,000.00	214	1 9267	0.0320	0.0102	Pro-Rated Pumping Rate	
56 103 90	7 500 00	0000	25.00	35	210.00	102 000 00	3 7	1 6514	0.001	0.0255	Pro-Rated Pumping Rate	
56,103.90	7.500.00	0.00100	156.00	0.35	240.00	102,000.00	3.14	1.4450	0.1086	0.0346	Pro-Rated Pumping Rate	
56,103.90	7,500.00	0.00100	156.00	0.35	245.00	102,000.00	3.14	1.4155	0.1135	0.0362	Pro-Rated Pumping Rate	