

Daily Readings

WELL SITE

January 2004

Note: Well readings normally occur at 9:00 to 9:00am ... all others are midnite to midnite

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
DATE	Initials	Well #1 Reading Gallons	Well #1 USAGE Gallons	Well #2 Reading Gallons	Well #2 USAGE Gallons	Total Well water Usage (gallons)	Manzanita Well usage	Wheeler Well usage	Well Site MIOX Used	Well Site Soda used	Finished Turbidity	CL17 Chlorine Residual	EC1000 pH Finish	Peak Flow from Wells GPM	REMARKS
Last		Well 1 flow meter 17,666,502	Auto calc	Well 2 flow meter 14,545,983	Auto calc		Gal C - Daily Readings	Gal (O - H)	Read at SCADA Gallons - Midnite to Midnite	Read at SCADA Gallons - Midnite to Midnite	Well Site NTU's	Daily ppm/mg/L	Water at S.U.		Miox - 25% / 8.6 gph & Soda (OFF) - 65% / 18.0 gph
1	Bret	18,056,200	189,698	14,946,896	913	190,611	0	190,611			0.05	0.90	6.82		Wheeler on wells
2	Bret	18,206,409	150,209	14,946,896	0	150,209	0	150,209			0.05	0.89	6.81		Wheeler on wells
3	Bret	18,374,200	167,791	14,946,896	0	167,791	0	167,791			0.05	0.90	6.79		Wheeler on wells
4	Bret	18,542,909	168,709	14,946,896	0	168,709	0	168,709			0.05	0.87	6.77		Wheeler on wells
5	jh	18,660,964	118,055	14,947,468	572	118,627	0	118,627	51	104	0.05	0.88	6.77	289	Wheeler on wells - Cold 28°F
6	jh	18,893,871	232,907	14,947,988	520	233,427	0	233,427	50	102	0.05	0.87	6.76	292	Wheeler on wells - Ice/Snow/Cold 28°F
7	jh	19,055,630	161,759	14,947,988	0	161,759	0	161,759	35	72	0.05	0.87	6.43	302	Wheeler on wells
8	DC	19,178,681	123,051	14,948,508	520	123,571	0	123,571	49	100	0.04	0.89	6.43	305	Wheeler on wells
9	DC	19,261,267	62,586	15,073,771	125,263	207,849	0	207,849	52	107	0.05	0.87	7.10	310	Wheeler on wells
10	DC	19,261,267	0	15,285,434	211,663	211,663	0	211,663	42	86	0.05	0.85	6.98	309	Wheeler on wells
11	DC	19,261,267	0	15,368,334	82,900	82,900	0	82,900	32	66	0.13	0.66	6.97	307	Wheeler on wells
12	jh	19,261,267	0	15,575,576	207,242	207,242	0	207,242	59	122	0.04	0.88	6.97	300	Wheeler on wells - Clean/Refill Soda Ash Tank
13	jh	19,261,267	0	15,601,075	25,499	25,499	0	25,499	14	30	0.04	0.78	6.86	305	Wheeler on wells
14	jh	19,261,267	0	15,723,616	122,541	122,541	0	122,541	39	80	0.04	0.82	6.87	303	Wheeler on wells
15	jh	19,261,267	0	15,841,890	118,274	118,274	0	118,274	18	37	0.05	0.84	6.99	305	Wheeler on wells
16	jh	19,261,267	0	15,892,985	51,095	51,095	0	51,095	13	27	0.04	0.80	7.05	305	Wheeler on wells
17	jh	19,261,267	0	15,958,388	65,403	65,403	0	65,403	31	64	0.05	0.81	6.93	303	Wheeler on wells
18	jh	19,261,267	0	16,087,068	128,680	128,680	0	128,680	34	69	0.05	0.79	6.93	305	Wheeler on wells
19	jh	19,261,267	0	16,203,434	116,366	116,366	0	116,366	19	39	0.04	0.79	6.92	300	Wheeler on wells
20	jh	19,261,267	0	16,266,939	63,505	63,505	0	63,505	12	25	0.04	0.80	6.93	298	Wheeler on wells
21	jh	19,261,267	0	16,323,126	56,187	56,187	0	56,187	31	54	0.05	0.79	6.94	300	Wheeler on wells
22	jh	19,261,267	0	16,441,971	118,845	118,845	0	118,845	20	41	0.05	0.79	6.94	300	Wheeler on wells
23	BS	19,261,267	0	16,520,361	78,390	78,390	0	78,390	BS?		0.04	0.79	6.93	300	Wheeler on wells
24	BS	19,261,267	0	16,598,751	78,390	78,390	0	78,390	BS?		0.05	0.80	6.93	300	Wheeler on wells
25	jh	19,261,267	0	16,677,148	78,397	78,397	0	78,397	33	68	0.05	0.79	6.92	305	Wheeler on wells
26	DC	19,261,267	0	16,799,795	122,647	122,647	0	122,647	18	37	0.04	0.80	6.92	305	Wheeler on wells
27	DC	19,261,267	0	16,863,158	63,363	63,363	0	63,363	13	26	0.05	0.76	6.87	304	Wheeler on wells
28	DC	19,261,267	0	16,942,816	79,658	79,658	0	79,658	30	61	0.04	0.69	6.86	305	Wheeler on wells
29	DC	19,261,267	0	17,092,340	149,524	149,524	0	149,524	34	70	0.04	0.92	6.91	325	Wheeler on wells
30	DC	19,346,100	84,833	17,092,424	84	84,917	0	84,917	17	34	0.04	0.97	6.01	320	Wheeler on wells
31	DC	19,400,162	54,062	17,092,424	0	54,062	0	54,062	30	61	0.04	0.85	7.03	316	Wheeler on wells
		1,533,660		2,146,441											
(Automatically counts days) →		31		Totals >>>		3,680,101	0	3,680,101	Well Site MIOX	Well Site Soda	Static Turbidity	Finish CL Resid	Finish pH	GPM	
				Percent >>>			0.0%	100.0%							
				Total pumped		Manzanita	Wheeler								
						0	118,713		539	1,107	0.13	0.97	7.10	325	Sum or Max
TOTAL Wellsite		Gallons		3,680,101		Well Site - Avg gpd		29	64	0.05	0.84	6.88	304	Daily AVG	
Daily Chlorine residual - AVG mg/L		0.84		mg/L		AVERAGE		Manzanita	Wheeler	11.1					
Daily pH reading - AVG		6.88		pH		Daily Use		Avg. daily	Avg. daily	Est bags used					
Turbidity - DAILY Avg		0.048		NTU's				Well Site >	0	118,713	GPD				
Well Site Production - AVG		118,713		GPD				Anderson Cr >	ERR	0	GPD				
								Total AVG >>	ERR	118,713	GPD				

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JUN 22 2005

WATER RESOURCES DEPT
SALEM, OREGON

file: C:\Documents and settings\WTP\My Documents\City1d.wb3\13a Daily Well Readings

Daily Readings

WELL SITE

December 2003

Note: Well readings normally occur at 9:00 to 9:00am ... all others are midnite to midnite

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
DATE	Initials	Well #1 Reading Gallons	Well #1 USAGE Gallons	Well #2 Reading Gallons	Well #2 USAGE Gallons	Total Well water Usage (gallons)	Manzanita Well usage	Wheeler Well usage	Well Site MIOX Used	Well Site Soda used	Finished Turbidity	CL17 Chlorine Residual	EC1000 pH Finish	Peak Flow from Wells	REMARKS
Last		Well 1 flow meter	Auto calc	Well 2 flow meter	Auto calc		Gallons - Sam to Sam	Gallons - Midnite to Midnite	Read at SCADA	Read at SCADA	Well Site	Daily	Water at	GPM	Miox - 25% / 8.6 gph & Soda (OFF) - 65% / 18.0 gph
1	DC	15,204,567	125,691	12,965,663	0	125,691	0	125,691	44	91	0.05	0.81	6.93	306	Wheeler on wells
2	DC	15,485,056	154,698	12,965,663	0	154,698	0	154,698	43	88	0.04	0.83	6.92	306	Wheeler on wells
3	DC	15,689,549	184,493	12,965,663	0	184,493	0	184,493	25	52	0.05	0.75	6.91	305	Wheeler on wells
4	DC	15,794,709	125,160	12,987,354	21,691	148,851	0	148,851	42	86	0.04	0.82	6.94	300	Wheeler on wells
5	DC	15,897,174	102,465	12,987,874	520	102,985	0	102,985	37	77	0.05	0.84	6.97	390	Wheeler on wells
6	DC	15,897,174	0	13,129,577	141,703	141,703	0	141,703	37	76	0.04	0.83	6.96	310	Wheeler on wells
7	DC	15,897,174	0	13,267,452	137,875	137,875	0	137,875	28	58	0.05	0.79	6.90	310	Wheeler on wells
8	jh	15,897,174	0	13,380,763	113,311	113,311	0	113,311	39	80	0.07	0.92	6.92	303	Wheeler on wells
9	jh	15,897,174	0	13,547,973	167,210	167,210	0	167,210	49	100	0.05	0.89	6.93	293	Wheeler on wells
10	jh	15,897,174	0	13,710,303	162,330	162,330	0	162,330	38	79	0.05	0.85	6.94	292	Wheeler on wells
11	jh	15,897,174	0	13,853,993	143,690	143,690	0	143,690	29	60	0.05	0.87	6.92	308	Wheeler on wells
12	BS	16,030,415	133,241	13,853,993	0	133,241	0	133,241							Wheeler on wells
13	BS	16,163,655	133,240	13,853,993	0	133,240	0	133,240							Wheeler on wells
14	DC	16,296,899	133,244	13,853,993	0	133,244	0	133,244	41	83	0.05	0.87	6.97	310	Wheeler on wells
15	jh	16,434,323	137,424	13,853,993	0	137,424	0	137,424	25	52	0.04	0.86	6.96	305	Wheeler on wells
16	jh	16,560,757	126,434	13,853,993	0	126,434	0	126,434	51	106	0.06	0.87	6.98	303	Wheeler on wells
17	jh	16,749,448	188,691	13,854,253	260	188,951	0	188,951	43	89	0.05	0.91	7.03	291	Wheeler on wells
18	jh	16,917,319	167,871	13,854,253	0	167,871	0	167,871	39	80	0.07	1.01	7.09	289	Wheeler on wells
19	jh	16,928,056	10,737	13,998,981	144,728	155,465	0	155,465	34	69	0.05	0.89	6.96	300	Wheeler on wells
20	jh	16,928,056	0	13,998,981	0	0	0	0	23	48	0.05	0.87	6.96	0	Problem - Wheeler's SCADA System, (Vosburg communications)
21	jh	16,928,056	0	14,249,718	250,737	250,737	0	250,737	65	134	0.05	0.93	6.95	330	Wheeler on wells
22	DC	16,928,056	0	14,435,896	186,178	186,178	0	186,178	41	85	0.05	0.93	6.45	305	Wheeler on wells
23	DC	16,928,056	0	14,629,546	193,650	193,650	0	193,650	39	81	0.05	0.88	6.94	302	Wheeler on wells
24	DC	16,928,056	0	14,766,029	136,483	136,483	0	136,483	39	80	0.05	0.90	6.92	310	Wheeler on wells
25	DC	16,928,056	0	14,896,623	130,594	130,594	0	130,594	42	86	0.05	0.90	6.85	310	Wheeler on wells
26	DC	17,062,851	134,795	14,945,983	49,360	184,155	0	184,155	42	87	0.05	0.89	6.71	307	Wheeler on wells
27	DC	17,244,891	182,040	14,945,983	0	182,040	0	182,040	43	87	0.05	0.09	6.79	305	Wheeler on wells
28	DC	17,352,872	107,981	14,945,983	0	107,981	0	107,981	41	84	0.05	0.90	6.76	305	Wheeler on wells
29	jh	17,525,294	172,422	14,945,983	0	172,422	0	172,422	52	106	0.05	0.91	6.63	300	Wheeler on wells
30	jh	17,724,149	198,855	14,945,983	0	198,855	0	198,855	41	85	0.09	0.84	6.71	294	Wheeler on wells
31	jh	17,866,502	142,353	14,945,983	0	142,353	0	142,353	34	70	0	1	6	304	Wheeler on wells
		2,661,835		1,980,320											
(Automatically counts days) ->		31	Totals >>>	4,642,155	0	4,642,155	Well Site	Well Site	Static	Finish	Finish	OPM			
			Percent >>>	100.0%	0.0%	100.0%	MIOX	Soda	Turbidity	CL Resid	pH				
			Total pumped	Manzanita	Wheeler										
				0	149,747		802	1,851	0.09	1.01	7.09	390	Sum or Max		
TOTAL Well Site		Gallons		4,642,155			Well Site - Avg gpd	37	76	0.05	0.79	6.87	296	Daily AVG	

Daily Chlorine residual - AVG mg/L 0.79 mg/L
 Daily pH reading - AVG 6.87 pH
 Turbidity - DAILY Avg 0.048 NTU's
 Well Site Production - AVG 149,747 GPD

AVERAGE Daily Use	Manzanita Avg dailys	Wheeler Avg dailys
Well Site >	0	149,747
Anderson Cr >	156,806	0
Total AVG >>	156,806	149,747

1 bag/100gal
 16.5
 Bags used

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JUN 22 2005

WATER RESOURCES DEPT
SALEM, OREGON

Daily Readings

November 2003

WELL SITE

Note: Well readings normally occur at 9:00 to 9:00am ... all others are midnite to midnite

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	
DATE	Initials	Well #1 Reading Gallons	Well #1 USAGE Gallons	Well #2 Reading Gallons	Well #2 USAGE Gallons	Total Well water Usage (gallons)	Manzanita Well usage	Wheeler Well usage	Well Site MIOX Used	Well Site Soda used	Finished Turbidity	CL17 Chlorine Residual	EC1000 pH Finish	Peak Flow from Wells	REMARKS	
Last		Well #1 Flow meter 13,840,187	Auto calc	Well #2 Flow meter 10,186,079	Auto calc	Auto calc	Cal C - "Daily Readings" autoCalc - gals	Cal (G - H) autoCalc - gals	Read at SCADA gals	Read at SCADA gals	Well Site NTU's	Daily ppm/mg/L	Water at S.U.	GPM	Miox - 25% / 8.6 gph & Soda (OFF) - 65% / 18.0 gph	
1	BS	13,840,187	0	10,186,079	0	0	0	0	(— Data not recorded —)						Wheeler on wells	
2	DC	13,840,187	0	10,216,433	30,354	30,354	0	30,354	8	17	0.04	0.91	6.46	304	Wheeler on wells Alarm > "pH low" at well site	
3	jh	13,840,187	0	10,221,892	5,459	5,459	0	5,459	1	2	0.07	0.85	6.38	334	Wheeler on wells Alarm > "pH low" at well site	
4	jh	13,840,187	0	10,593,526	371,634	371,634	0	371,634	72	148	0.05	0.97	6.97	310	Wheeler on wells	
5	jh	13,840,187	0	10,812,116	218,590	218,590	0	218,590	67	137	0.05	0.88	6.86	287	Wheeler on wells ... Well O&M on SCADA & pH, reset alarm	
6	jh	13,840,707	520	10,974,203	162,087	162,607	27,000	135,607	39	81	0.05	0.85	6.89	297	Wheeler on wells ... Miox alarm, Hard fault cell 1 > temp off	
7	jh	13,840,707	0	11,079,817	105,614	105,614	0	105,614	38	79	0.05	0.87	6.89	290	Wheeler on wells ... Miox alarm, Hard fault cell 2 > flush & reset	
8	jh	13,840,707	0	11,226,288	146,471	146,471	0	146,471	47	96	0.05	0.86	6.83	300	Wheeler on wells	
9	jh	13,840,707	0	11,373,848	147,580	147,580	0	147,580	30	62	0.04	0.90	6.85	292	Wheeler on wells	
10	DC	13,840,707	0	11,528,626	154,778	154,778	0	154,778	37	76	0.05	0.87	6.75	297	Wheeler on wells	
11	DC	13,840,707	0	11,647,472	118,846	118,846	0	118,846	43	88	0.04	0.84	6.81	297	Wheeler on wells	
12	DC	13,840,707	0	11,796,043	148,571	148,571	0	148,571	37	76	0.04	0.88	6.80	297	Wheeler on wells	
13	DC	13,840,707	0	11,932,666	136,623	136,623	0	136,623	27	56	0.05	0.86	6.82	297	Wheeler on wells	
14	DC	13,840,707	0	12,031,473	98,807	98,807	0	98,807	37	75	0.04	0.84	6.87	298	Wheeler on wells	
15	DC	13,840,707	0	12,179,972	148,499	148,499	0	148,499	51	105	0.04	0.86	6.86	304	Wheeler on wells	
16	DC	13,840,707	0	12,354,970	174,998	174,998	0	174,998	37	77	0.04	0.91	6.90	300	Wheeler on wells	
17	jh	13,840,707	0	12,494,807	139,837	139,837	0	139,837	28	59	0.05	0.85	6.82	303	Wheeler on wells	
18	jh	13,840,707	0	12,607,031	112,224	112,224	0	112,224	36	74	0.05	0.85	6.85	298	Wheeler on wells	
19	jh	13,840,707	0	12,743,938	136,907	136,907	0	136,907	36	74	0.05	0.94	6.92	302	Wheeler on wells	
20	jh	13,840,707	0	12,877,864	133,926	133,926	0	133,926	35	72	0.05	0.85	6.89	303	Wheeler on wells	
21	BS	13,976,156	135,449	12,930,547	52,683	188,132	8,000	180,132	(— Data not recorded —)						Water to Wheeler & Manzanita - Wheeler on wells pump 2 VFD testing	
22	BS	14,111,605	135,449	12,930,547	0	135,449	0	135,449	(— Data not recorded —)						Wheeler on wells	
23	DC	14,247,074	135,469	12,930,547	0	135,469	0	135,469	42	86	0.19	0.98	6.96	303	Wheeler on wells	
24	jh	14,384,306	137,232	12,930,547	0	137,232	0	137,232	32	65	0.07	0.99	6.88	297	Wheeler on wells	
25	jh	14,499,993	115,687	12,963,817	33,270	148,967	33,000	115,957	45	92	0.05	0.87	6.91	525	Water to Wheeler & Manzanita - Pump 2 VFD repair and testing	
26	jh	14,647,933	147,940	12,963,817	0	147,940	0	147,940	32	67	0.05	0.81	6.90	295	Wheeler on wells - Soda delivery & discount = \$10.65ea x 49	
27	jh	14,752,987	105,054	12,964,077	260	105,314	0	105,314	44	91	0.05	0.88	6.94	296	Wheeler on wells ... Miox alarm, Hard fault cell 2 > flush & reset	
28	jh	14,799,254	46,267	12,965,663	1,586	47,853	0	47,853	15	31	0.05	0.92	6.95	295	Wheeler on wells ... Wheeler computer & CPU failure (storm)	
29	jh	15,082,139	282,885	12,965,663	0	282,885	0	282,885	54	110	0.04	0.82	6.91	315	Wheeler on wells ... catch up	
30	jh	15,204,667	122,528	12,965,663	0	122,528	0	122,528	39	81	0.05	0.91	6.96	305	Wheeler on wells	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
				1,364,480	2,779,584											
(Automatically counts days)----->				31	Totals >>>		4,144,064	68,000	4,076,064	Well Site MIOX	Well Site Soda	Static Turbidity	Finish CL Resid	Finish pH	GPM	
					Percent >>>		100.0%	1.6%	98.4%							
					Total pumped		Manzanita	Wheeler								
							2,194	131,486	707	1,455	0.19	0.99	6.97	525	Sum or Max	
TOTAL Wellsite Gallons				4,144,064			AVG GPD	AVG GPD	33	67	0.05	0.77	6.60	298	Daily AVG	
Daily Chlorine residual - AVG mg/L				0.77	mg/L	AVERAGE Daily Use				Manzanita Avg dailys	Wheeler Avg dailys	14.6				
Daily pH reading - AVG				6.60	pH	Well Site >				2,194	131,486	GPD				
Turbidity - DAILY Avg				0.047	NTU's	Anderson Cr. >				141,167	0	GPD				
Well Site Production - AVG				133,679	GPD	Total AVG >>				143,360	131,486	GPD				
RECEIVED JUN 22 2005 WATER RESOUR																

Daily Reading

WELL SITE

October 2003

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Last		Well 1 flow meter		Well 2 flow meter			Cal C - "Daily Reading"	Cal J O - "H"	Read at SCADA	Read at SCADA	Well Site NTU's	Daily ppm/mg/L	Water at S.U.	GPM	Miox - 25% / 8.6 gph & Soda (OFF) - 65% / 18.0 gph
1	jh	12,604,023	Auto calc	7,031,894	Auto calc	Auto calc	gals	gals	gals	gals	0.05	0.60	6.83	290	Wheeler on wells
2	DC	12,758,997	154,964	7,031,894	0	154,964	0	154,964	33	67	0.05	0.83	6.85	291	Wheeler on wells
3	DC	12,884,095	105,108	7,031,894	0	105,108	0	105,108	39	80	0.05	0.83	6.85	291	Wheeler on wells
4	BS	12,876,052	11,957	7,163,976	132,082	144,039	0	144,039	40	82	0.04	0.69	6.78	295	Wheeler on wells
5	DC	12,876,052	0	7,163,976	0	0	0	0							Wheeler on wells
6	DC	12,876,052	0	7,505,391	341,415	341,415	0	341,415	42	86	0.07	0.90	6.79	290	Wheeler on wells
7	jh	12,876,052	0	7,612,431	107,040	107,040	0	107,040	33	68	0.05	0.84	6.74	284	Wheeler on wells
8	jh	12,876,052	0	7,757,616	145,185	145,185	0	145,185	41	84	0.05	0.81	6.72	295	Wheeler on wells
9	DC	12,876,052	0	7,896,329	138,713	138,713	0	138,713	38	78	0.04	0.88	6.76	301	Wheeler on wells
10	jh	12,876,052	0	8,026,680	130,351	130,351	0	130,351	27	55	0.04	0.83	6.74	290	Wheeler on wells
11	jh	12,980,869	104,817	8,115,716	89,036	193,853	43,000	150,853	57	117	0.04	0.82	6.89	289	Manzanita (pump tests) & Wheeler on wells
12	jh	13,106,066	125,197	8,116,496	780	125,977	0	125,977	44	90	0.04	0.83	6.87	284	Wheeler on wells
13	DC	13,297,357	191,291	8,116,496	0	191,291	0	191,291	39	80	0.04	0.83	6.82	286	Wheeler on wells
14	jh	13,419,212	121,855	8,116,496	0	121,855	0	121,855	30	62	0.04	0.91	6.82	303	Wheeler on wells
15	jh	13,535,072	115,860	8,116,496	0	115,860	0	115,860	35	72	0.04	0.82	6.85	285	Wheeler on wells
16	jh	13,682,796	127,724	8,116,496	0	127,724	0	127,724	43	88	0.04	0.84	6.84	292	Wheeler on wells
17	jh	13,803,976	141,180	8,116,496	0	141,180	0	141,180	47	96	0.04	0.83	6.83	297	Wheeler on wells
18	jh	13,840,187	36,211	8,240,962	124,466	160,677	0	160,677	26	54	0.05	0.84	6.81	288	Wheeler on wells
19	jh	13,840,187	0	8,344,247	103,285	103,285	0	103,285	37	77	0.04	0.82	6.79	293	Wheeler on wells
20	jh	13,840,187	0	8,513,609	189,362	189,362	0	189,362	39	80	0.04	0.82	6.80	296	Wheeler on wells
21	jh	13,840,187	0	8,651,909	138,300	138,300	0	138,300	38	74	0.05	0.80	6.78	283	Wheeler on wells
22	DC	13,840,187	0	8,790,205	138,296	138,296	0	138,296	27	55	0.05	0.82	6.81	302	Wheeler on wells
23	DC	13,840,187	0	8,888,267	98,062	98,062	0	98,062	36	74	0.04	0.82	6.81	302	Wheeler on wells
24	DC	13,840,187	0	9,027,283	139,016	139,016	0	139,016	49	99	0.05	0.81	6.79	299	Wheeler on wells
25	DC	13,840,187	0	9,113,657	86,374	86,374	0	86,374	15	31	0.05	0.85	6.81	316	Wheeler on wells
26	DC	13,840,187	0	9,342,908	229,251	229,251	0	229,251	57	118	0.04	0.88	6.82	316	Wheeler on wells
27	DC	13,840,187	0	9,478,031	135,123	135,123	0	135,123	35	72	0.05	0.85	6.84	303	Wheeler on wells
28	jh	13,840,187	0	9,622,012	143,981	143,981	0	143,981	28	58	0.05	0.85	6.80	292	Wheeler on wells
29	jh	13,840,187	0	9,721,227	99,215	99,215	0	99,215	45	94	0.05	0.85	6.78	290	Wheeler on wells
30	jh	13,840,187	0	9,862,326	141,099	141,099	0	141,099	43	89	0.07	0.90	6.79	300	Wheeler on wells
31	jh	13,840,187	0	10,045,767	183,441	183,441	0	183,441	23	48	0.04	0.85	6.75	285	Wheeler on wells
31	jh	13,840,187	0	10,186,079	140,312	140,312	0	140,312	39	80	0	1	6	290	Wheeler on wells
			1,236,164				3,154,185								
(Automatically counts days)----->				31	Totals >>>	4,390,349	43,000	4,347,349	Well Site MIOX	Well Site Soda	Static Turbidity	Finish CL Resid	Finish pH	GPM	
					Percent >>>	100.0%	1.0%	99.0%							
					Total pumped	Manzanita	Wheeler								
						1,387	140,237		830	1,708	0.07	0.91	6.89	316	Sum or Max
TOTAL Well site			Gallons		4,390,349		AVG GPD	AVG GPD	36	74	0.04	0.82	6.79	294	Daily AVG
Daily Chlorine residual - AVG mg/L			0.82	mg/L											
Daily pH reading - AVG			6.79	pH											
Turbidity - DAILY Avg			0.045	NTU's											
Well Site Production - AVG			141,624	GPD											

Daily Readings

WELL SITE

September 2003

Note: Well readings normally occur at 9:00 to 9:00am ... all others are midnite to midnite

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P										
DATE	Initials	Well #1 Reading Gallons Well 1 flow meter	Well #1 USAGE Gallons Auto calc	Well #2 Reading Gallons Well 2 flow meter	Well #2 USAGE Gallons Auto calc	Total Well water Usage (gallons) Auto calc	Manzanita Well usage Auto calc	Wheeler Well usage Auto calc	Well Site MIOX Used Read at SCADA	Well Site Soda used Read at SCADA	Finished Turbidity Well Site	CL17 Chlorine Residual Daily ppm/mg/L	EC1000 pH Finish Water at S.U.	Peak Flow from Wells GPM	REMARKS										
1	jh	10,633,071	0	5,803,161	229,954	229,954	241,000	(11,046)	86	180	0.05	0.78	6.83	187	Miox - 25% / 8.6 gph & Soda (OFF) - 65% / 18.0 gph										
2	jh	10,847,133	14,062	5,863,138	59,977	74,039	133,000	(58,961)	61	128	0.05	0.73	6.83	323	Manzanita & Wheeler on Wells										
3	jh	10,750,518	103,385	6,021,238	158,100	261,485	106,000	155,485	57	119	0.05	0.69	6.87	461	Manzanita & Wheeler on Wells - VFD & Radio link checks										
4	jh	10,846,356	95,838	6,063,606	42,368	138,206	105,000	33,206	58	119	0.04	0.71	6.80	518	Manzanita & Wheeler on Wells - VFD & Radio link checks										
5	DC	11,088,087	241,731	6,063,606	0	241,731	114,000	127,731	66	135	0.05	0.75	6.88	505	Manzanita & Wheeler on Wells - Radio link checks										
6	DC	11,199,432	111,345	6,063,606	0	111,345	0	111,345	19	38	0.05	0.75	6.85	290	Wheeler on wells										
7	BS	11,199,432	0	6,063,606	0	0	0	0	?	?	0.05	0.76	6.85	?	Wheeler on wells										
8	DC	11,427,730	228,298	6,063,606	0	228,298	0	228,298	19	40	0.05	0.77	6.81	305	Wheeler on wells										
9	DC	11,468,356	38,626	6,063,606	0	38,626	0	38,626	31	63	0.13	0.84	6.91	277	Wheeler on wells										
10	DC	11,548,115	81,759	6,063,606	0	81,759	0	81,759	33	67	0.05	0.76	6.80	295	Wheeler on wells										
11	DC	11,658,825	108,710	6,064,126	520	109,230	0	109,230	12	25	0.04	0.80	6.80	285	Wheeler on wells										
12	DC	11,712,828	55,803	6,064,126	0	55,803	0	55,803	29	60	0.04	0.79	6.84	290	Wheeler on wells										
13	DC	11,827,672	115,044	6,064,126	0	115,044	0	115,044	34	70	0.04	0.78	6.82	290	Wheeler on wells										
14	DC	11,942,197	114,525	6,064,126	0	114,525	0	114,525	19	40	0.04	0.80	6.81	290	Wheeler on wells										
15	jh	12,052,084	109,887	6,064,126	0	109,887	0	109,887	17	34	0.05	0.82	6.81	290	Wheeler on wells										
16	DC	12,100,384	48,300	6,064,126	0	48,300	0	48,300	25	51	0.05	0.77	6.80	290	Wheeler on wells										
17	jh	12,104,471	4,087	6,156,595	92,469	96,556	22,000	74,556	39	80	0.09	0.85	6.73	278	Manz & Whe on wells - VFD #2 testing (Faulted - 32 min@ 100%)										
18	jh	12,104,471	0	6,273,768	117,173	117,173	0	117,173	19	40	0.05	0.83	6.73	293	Wheeler on wells										
19	BS	12,104,471	0	6,343,160	69,392	69,392	0	69,392	18	38	0.05	0.85	6.75	285	Wheeler on wells										
20	BS	12,104,471	0	6,343,160	0	0	0	0	?	?	0.05	0.84	6.75	293	Wheeler on wells										
21	BS	12,104,471	0	6,343,160	0	0	0	0	?	?	0.04	0.83	6.72	290	Wheeler on wells										
22	jh	12,104,471	0	6,825,277	282,117	282,117	0	282,117	25	52	0.04	0.82	6.74	280	Wheeler on wells										
23	jh	12,104,471	0	6,715,654	90,377	90,377	0	90,377	21	43	0.05	0.81	6.74	285	Wheeler on wells										
24	jh	12,104,471	0	6,802,574	86,920	86,920	0	86,920	13	47	0.05	0.84	6.76	290	Wheeler on wells										
25	jh	12,104,471	0	6,919,610	117,036	117,036	0	117,036	45	93	0.05	0.80	6.76	293	Wheeler on wells										
26	jh	12,104,471	0	7,019,792	100,182	100,182	0	100,182	22	46	0.05	0.85	6.70	278	Wheeler on wells										
27	jh	12,225,744	121,273	7,031,894	12,102	133,375	0	133,375	25	51	0.04	0.77	6.84	290	Wheeler on wells										
28	jh	12,278,419	52,675	7,031,894	0	52,675	0	52,675	34	70	0.05	0.79	6.85	285	Wheeler on wells										
29	jh	12,440,854	162,435	7,031,894	0	162,435	0	162,435	38	79	0.05	0.81	6.83	290	Wheeler on wells										
30	jh	12,604,023	163,169	7,031,894	0	163,169	0	163,169	34	71	0.05	0.85	6.84	285	Wheeler on wells										
31	-	-	auto	-	auto	auto	auto	auto	-	-	-	-	-	-	-										
			1,970,952				1,458,687				502	1,057													
(Automatically counts days)----->				31	Totals >>>	3,429,639	721,000	2,708,639																	
					Percent >>>	100.0%	21.0%	79.0%																	
					Total pumped		Manzanita	Wheeler																	
TOTAL Wellsite				Gallons	3,429,639																				
Daily Chlorine residual - AVG mg/L						0.77	mg/L																		
Daily pH reading - AVG						6.59	pH																		
Turbidity - DAILY Avg						0.050	NTU's																		
Water Production - AVG						110,634	GPD																		
Water Production - MAX						282,117	GPD	<<< Includes more than 1 day																	

@ 1bag/100gal	Static	Finish	Finish	GPM
10.6	Turbidity	CL Resid	pH	
Bags used				
Sum or Max	0.13	0.85	6.91	
Daily AVG	0.05	0.77	6.59	

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JUN 22 2005

WATER RESOURCES DEPT

SALEM, OREGON

Daily Readings
August 2003

WELL SITE

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	
DATE	Initials	Well #1 Reading Gallons Well 1 flow meter	Well #1 USAGE Gallons	Well #2 Reading Gallons Well 2 flow meter	Well #2 USAGE Gallons	Total Well water Usage (gallons) Auto Calc - Daily Residual	Manzanita Well usage Cal C - Daily Residual	Wheeler Well usage Cal D - H	Well Site MIOX Used Read at SCADA	Well Site Soda used Read at SCADA	Finished Turbidity Well Site NTU's	CL17 Chlorine Residual Daily ppm/mg/L	EC1000 pH Finish Water at S.U.	Peak Flow from Wells GPM	REMARKS	
Last		3,133,831		3,573,782		Auto calc	gals	gals	gals	gals					Miox - 50% / 18.00 gph & Soda (OFF) - 85% / 18.0 gph	
1	DC	3,133,831	0	3,781,822	207,840	207,840	0	207,840	-	-	0.07	1.86	6.70	283		
2	DC	3,133,831	0	3,910,406	128,784	128,784	0	128,784	-	-	0.07	1.67	6.70	292		
3	DC	3,133,831	0	4,036,991	126,585	126,585	0	126,585	-	-	0.07	1.65	6.70	297		
4	jh	3,133,831	0	4,159,112	119,121	119,121	0	119,121	-	-	0.07	1.85	6.70	300	Maintenance on MIOX Cell 1 - cleaned cathode of debris	
5	DC	3,133,831	0	4,272,223	116,111	116,111	0	116,111	-	-	0.04	1.81	6.70	292	Check Groundwater Valves x 45 and Finish Well site plumbing!	
6	jh	3,133,831	0	4,344,271	72,048	72,048	0	72,048	-	-	0.05	1.60	6.70	292	Wheeler on Wells, Manzanita started using Wells	
7	jh	3,241,136	107,305	4,463,590	119,319	226,624	95,000	131,624	-	-	0.09	2.03	6.70	457	Manzanita & Wheeler on Wells - Miox to 30%	
8	BS - est>	3,731,136	490,000	4,463,590	0	490,000	263,000	227,000	-	-	0.05	1.02	6.70	460	Manzanita & Wheeler on Wells	
9	BS - est>	4,221,136	490,000	4,463,590	0	490,000	442,000	48,000	-	-	0.05	1.03	6.70	429	Manzanita & Wheeler on Wells - Miox to 40%	
10	BS - est>	4,715,279	494,143	4,519,504	55,914	550,057	410,000	140,057	311	0	0.05	1.00	6.70	429	Manzanita & Wheeler on Wells - pH ccurrently ... 6.30 S.U.	
11	jh	5,175,114	459,835	4,519,504	0	459,835	305,000	154,835	225	181	0.05	1.58	6.96	449	Manz & Whe on Wells - Soda on at 65% @ 18.00 gph at wells	
12	jh	5,668,514	493,400	4,519,504	0	493,400	421,000	72,400	267	304	0.05	1.62	6.94	449	Manz & Whe on Wells - ph now ... 6.90 S.U.	
13	jh	6,075,040	406,526	4,519,504	0	406,526	293,000	113,526	198	224	0.05	1.53	6.93	469	Manzanita & Wheeler on Wells	
14	jh	6,503,117	428,077	4,519,504	0	428,077	316,000	112,077	221	252	0.04	1.60	6.92	470	Manzanita & Wheeler on Wells	
15	jh	6,865,928	382,811	4,520,024	520	363,331	256,000	107,331	196	223	0.05	1.47	6.89	470	Manzanita & Wheeler on Wells	
16	jh	6,865,928	0	4,637,951	117,627	117,627	0	117,627	41	47	0.04	0.99	6.78	290	Wheeler on wells - Manzanita on surface source - Miox to 30%	
17	jh	6,865,928	0	4,755,030	117,379	117,379	0	117,379	48	53	0.05	0.96	6.80	287	Wheeler on wells - Manzanita on surface source	
18	DC	7,161,149	295,221	4,775,351	20,321	315,542	207,000	108,542	163	186	0.04	0.94	6.87	469	Manzanita & Wheeler on Wells	
19	DC	7,360,959	199,810	4,775,351	0	199,810	138,000	61,810	125	142	0.05	1.00	6.89	471	Manzanita & Wheeler on Wells	
20	DC	7,626,854	265,895	4,775,351	0	265,895	126,000	139,895	129	147	0.05	1.03	6.89	365	Wheeler on wells - Manzanita on surface source - Miox to 33%	
21	DC	8,013,369	386,515	4,775,351	0	386,515	267,000	119,515	216	212	0.05	1.18	6.86	361	Manzanita & Wheeler on Wells	
22	DC	8,300,900	287,531	4,775,351	0	287,531	183,000	104,531	191	175	0.05	1.15	6.85	468	Manzanita & Wheeler on Wells	
23	DC	8,683,154	382,254	4,775,351	0	382,254	226,000	156,254	199	183	0.05	1.35	6.88	473	Manzanita & Wheeler on Wells	
24	DC	9,095,417	412,263	4,775,351	0	412,263	287,000	125,263	257	236	0.05	1.13	6.89	503	Manzanita & Wheeler on Wells	
25	DC	9,491,060	395,643	4,775,351	0	395,643	318,000	77,643	254	234	0.04	1.13	6.84	466	Manzanita & Wheeler on Wells	
26	DC	9,775,543	284,483	4,775,351	0	284,483	198,000	86,483	201	184	0.05	1.10	6.92	504	Manzanita & Wheeler on Wells	
27	DC	10,242,997	497,454	4,775,351	0	467,454	304,000	163,454	243	223	0.05	1.25	6.90	470	Manzanita & Wheeler on Wells	
28	jh	10,495,447	252,450	4,775,351	0	252,450	176,000	76,450	176	168	0.04	0.78	6.88	363	Manzanita & Wheeler on Wells - Miox to 25%	
29	BS - est>	10,633,071	137,624	5,041,303	265,952	403,576	188,000	215,576	220	220	0.05	0.80	6.86	355	Manzanita & Wheeler on Wells	
30	BS - est>	10,633,071	0	5,307,255	265,952	265,952	58,000	207,952	140	170	0.05	0.71	6.78	305	Manzanita & Wheeler on Wells	
31	BS - est>	10,633,071	0	5,573,207	265,952	265,952	162,000	103,952	140	170	0.04	0.75	6.80	310	Manzanita & Wheeler on Wells	
			7,499,240		1,999,425				4,157	3,934					RECEIVED JUN 22 2005 WATER RESOURCES DEPT SALEM, OREGON	
(Automatically counts days)----->			31	Totals >>>	9,498,665	5,639,000	3,859,665			39.3	Stade	Finish	Finish	GPM		
				Percent >>>	100.0%	59.4%	40.6%			Days used	Turbidity	CL Resid	pH			
					Total pumped	Manzanita	Wheeler			Sum or Max	0.09	2.03	6.96			
										Daily AVG	0.05	1.30	6.82			
TOTAL		Gallons		9,498,665												
Daily Chlorine residual - AVG mg/L						1.30	mg/L									
Daily pH reading - AVG						6.82	pH									
Turbidity - DAILY PEAK						0.090	NTU's									
Water Production - AVG						306,409	GPD									
Water Production - MAX						550,057	GPD									

file: C:\Documents and settings\WTP\My Documents\City1d.wb3113b Daily Well Site

Daily Readings
July 2003

WELL SITE

DATE Readings taken	Initials	Well #1 Reading Gallons	Well #1 USAGE Gallons	Well #2 Reading Gallons	Well #2 USAGE Gallons	Total Water Usage (gallons)	Manzanita Well useage	Wheeler Well useage	Read at SCADA Pumps on or off at reading	Read at comp. Press. Well site (PSI) am / pm	Finished Turbidity Well Site	Chlorine Residual Daily	pH Finish Water at EC310	Flow to Town Site GPM	REMARKS
Last		1,537,853		1,578,651		Auto calc									Dan Weiss - Taurus, in Wheeler setting up PLC's etc
1	jh	1,537,853	0	1,578,651	0	0	0	0	On	84.4	0.05	1.91	6.7	302	Miox - 60% / 25.00 gph ... Soda - 65%/18.00 gph
2	jh	1,537,853	0	1,719,847	141,196	141,196	0	141,196	On	85.6	0.07	1.93	6.7	300	Someone closed intake valve while wells were running
3	jh	1,572,984	35,131	1,720,999	1,152	36,283	0	36,283	On	84.7	0.09	1.89	6.7	307	Repaired Miox Cell #1 at wells & Tested
4	jh	1,685,176	112,192	1,720,999	0	112,192	0	112,192	off	68.5	0.07	1.86	6.7	OFF	VFD's in AUTO at well site (manual turn on via OIT screen)
5	jh	1,733,979	48,803	1,731,527	10,528	59,331	0	59,331	On	83.6	0.07	1.84	6.7	320	Filled CL17 Analyser - Calibrated EC1000 ph analyser
6	jh	1,896,246	162,267	1,790,985	59,458	221,725	0	221,725	On	84.2	0.06	2.47	6.7	302	Built / Installed Soda Ash Fill, float valve - Checked Miox 1
7	jh	1,896,246	0	1,932,213	141,228	141,228	0	141,228	off	68.9	0.07	2.38	6.7	OFF	
8	jh	1,896,246	0	1,932,213	0	0	0	0	On	85.0	0.04	2.34	6.7	305	
9	jh	2,076,738	180,492	2,077,520	145,307	325,799	0	325,799	On	85.8	0.04	2.29	6.7	284	
10	bs	2,076,738	0	2,077,520	0	0	0	0			0.04	1.90	6.7		
11	bs	2,076,738	0	2,077,520	0	0	0	0			0.04	1.90	6.7		
12	bs	2,076,738	0	2,077,520	0	0	0	0			0.04	1.90	6.7		
13	bs	2,076,738	0	2,077,520	0	0	0	0			0.04	1.90	6.7		
14	jh	2,275,206	198,468	2,322,928	245,408	443,876	0	443,876	On	84.3	0.07	2.26	6.7	307	
15	jh	2,418,124	142,918	2,322,928	0	142,918	0	142,918	off	68.3	0.06	2.18	6.7	OFF	Installed touchkey lock - Repaired Miox alarm/ Cath flow
16	DC	2,418,124	0	2,356,370	33,442	33,442	0	33,442	off	70.1	0.07	2.09	6.7	OFF	
17	DC	2,529,437	111,313	2,378,403	22,033	133,346	0	133,346	On	84.0	0.19	2.13	6.7	302	
18	DC	2,529,703	266	2,527,451	149,048	149,314	0	149,314	On	84.6	0.07	2.28	6.7	313	Terry Nelson - Camtronics - Setup Wheeler connection at Wheeler
19	DC	2,600,997	71,294	2,658,572	131,121	202,415	0	202,415	off	69.4	0.07	2.01	6.7	OFF	Wheeler on automatic
20	DC	2,665,424	64,427	2,768,739	110,167	174,594	0	174,594	On	86.5	0.24	2.22	6.7	290	
21	DC	2,666,664	1,240	2,831,328	62,589	63,829	0	63,829	off	71.4	0.07	1.96	6.7	OFF	
22	jh	2,743,802	77,138	2,881,654	30,326	107,464	0	107,464	off	70.5	0.07	2.02	6.7	OFF	Reset - Miox - 55% / 22.80 gph ... Soda - 65%/18.00 gph
23	jh	2,761,035	17,233	2,976,864	115,210	132,443	0	132,443	On	85.0	0.07	2.05	6.7	285	
24	jh	2,762,726	1,691	3,099,974	123,110	124,801	0	124,801	off	71.0	0.07	2.03	6.7	OFF	
25	jh	2,768,814	6,088	3,203,035	103,061	109,149	0	109,149	off	71.7	0.07	2.08	6.7	296	
26	jh	2,891,127	122,313	3,203,064	29	122,342	0	122,342	off	72.3	0.07	1.53	6.7	296	Reset - Miox - 50% / 18.00 gph & Soda (OFF) - 65%/ 18.0 gph
27	jh	2,983,435	92,308	3,203,064	0	92,308	0	92,308	off	72.1	0.07	1.52	6.7	295	
28	jh	3,133,831	150,396	3,203,064	0	160,396	0	150,396	off	81.2	0.07	1.51	6.70	302	Well Site alarms - Hi press & Security @ 6 am
29	DC	3,133,831	0	3,331,895	128,831	128,831	0	128,831	off	72.8	0.07	1.51	6.70	0	
30	DC	3,133,831	0	3,458,951	127,056	127,056	0	127,056	off	71.1	0.07	1.84	6.70	0	
31	DC	3,133,831	0	3,573,782	114,831	114,831	0	114,831	off	71.1	0.07	1.84	6.70	0	

(Automatically counts days) →

31

Totals >>>

3,591,109

0

3,591,109

Percent >>>

100.0%

0.0%

100.0%

Total pumped

Manzanita

Wheeler

TOTAL

Gallons

3,591,109

Daily Chlorine residual - AVG mg/L

1.99 mg/L

Daily pH reading - AVG

6.70 pH

Turbidity - DAILY PEAK

0.240 NTU's

Water Production - AVG

115,842 GPD

Water Production - MAX

443,876 GPD

Static

Turbidity

Finish

CL Resid

Finish

pH

GPM

Sum or Max

0.24

2.47

6.71

Daily AVG

0.07

1.99

6.70

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WATER RESOURCES DEPT
SALEM, OREGON

Daily Readings

WELL SITE

June 2003

City of Ma.

These are from "LOOKOUT" SCREEN

Date	Time	Well #1 Reading Gallons	Well #1 USAGE Gallons	Well #2 Reading Gallons	Well #2 USAGE Gallons	Total Water Usage (gallons)	Press. Manz dist (PSI)	Press. Well site (PSI)	Static <u>Finished</u> Turbidity Well Site AM	Dynamic <u>Finished</u> Turbidity Well Site PM	Chlorine Residual Daily Afternoon	pH Finish Water at EC310	Flow to Town Site GPM	Water Flow TO W / M / B	REMARKS
Last						Auto calc									Miox pump - 50% / 25.00 gph ... Soda - 65%/18.00 gph
1			auto		auto	auto									
2			auto		auto	auto									
3			auto		auto	auto									
4			auto		auto	auto									
5			auto		auto	auto									
6			auto		auto	auto									
7			auto		auto	auto									
8			auto		auto	auto									
9			auto		auto	auto									
10			auto		auto	auto									
11			auto		auto	auto									
12			auto		auto	auto									
13			auto		auto	auto									
14			auto		auto	auto									
15			auto		auto	auto									
16			auto		auto	auto									
17			auto		auto	auto									
18			auto		auto	auto									
19			auto		auto	auto									
20			auto		auto	auto									
21			auto		auto	auto									
22			auto		auto	auto									
23		1,182,883	0	1,182,180	0	0			0.05	0.05	1.89	6.67	0	-	
24	4.45pm	1,182,883	0	1,255,180	93,000	93,000			0.05	0.05	1.93	6.69	360	Wheeler	
25	8.00am	1,182,883	0	1,255,180	0	0			0.09	0.09	1.88	6.66	0	-	
26	8.00am	1,182,883	0	1,255,180	0	0				0.05	2.03	6.78	304	Wheeler	Dan Weiss - Taurus, in Wheeler setting up PLC's etc
27	8.00am	1,337,439	154,756	1,267,143	11,903	166,719	62	84.7	0.13		2.16	6.76	308	Wheeler	Dan Weiss - Taurus, in Wheeler setting up PLC's etc
28		1,337,439	0	1,267,143	0	0									
29		1,337,439	0	1,267,143	0	0									
30		1,337,439	0	1,267,143	0	0									
07/01/03		1,537,853	200,414	1,578,651	311,508	511,922	72	90.9		0.15	1.91	6.71	169	Wheeler	Someone closed intake valve while wells were running
(Automatically counts days) → 9									Static Turbidity	Dynamic Turbidity	Finish CL Resid	Finish pH	GPM		
Sum or Max								0.13	0.150	2.16	6.78				
Daily AVG								0.04	0.078	1.31	4.48				
TOTAL		Gallons		771,641											
Daily Chlorine residual - AVG mg/L						1.31	mg/L								
Chlorine used per day - AVG						0	GPD								
Chlorine used per day - PEAK						72	GPD								
Daily pH reading - AVG						4.48	pH								
Dynamic Turbidity - DAILY AVG						0.078	NTU's								
Dynamic Turbidity - DAILY PEAK						0.130	NTU's								
Water Production - AVG						85,738	GPD								
Water Production - MAX						511,922	GPD								

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SALEM, OREGON

file: C:\Documents and settings\WTP\My Documents\City1d.wb3\...13b Daily Well Site

APPENDIX 4

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SALEM, OREGON

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SALEM, OREGON

2004 Oregon Population Report

- **Population Growth in Oregon: 2000 to 2004**
- **Population Estimates for Oregon, July 1, 2004**

Population Research Center
College of Urban and Public Affairs
Portland State University
Portland, OR 97207-0751

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Table 4. Population Estimates for Oregon and Its Counties and Incorporated Cities:
April 1, 1990 to July 1, 2004 (continued)

WATER RESOURCES DEPT
SALEM, OREGON

County/ City	July 1, 2004 Population Estimates	July 1, 2003 Population Estimates	July 1, 2002 Population Estimates	July 1, 2001 Population Estimates	July 1, 2000 Population Estimates	April 1, 2000 Census Population	April 1, 1990 Census Population
MORROW	11,750	11,750	11,250	11,150	11,100	10,995	7,625
Boardman	3,120	3,080	3,000	2,940	2,910	2,855	1,387
Heppner	1,420	1,410	1,410	1,390	1,395	1,395	1,412
Ione	340	340	340	320	325	321	255
Irrigon	1,790	1,780	1,770	1,750	1,740	1,702	737
Lexington	260	260	260	260	265	263	286
Uninc.	4,820	4,880	4,470	4,490	4,465	4,459	3,548
MULTNOMAH	685,950	677,850	670,250	666,350	662,400	660,486	583,887
Fairview	9,250	8,590	8,400	8,070	8,055	7,561	2,391
Gresham	94,250	93,660	92,620	91,420	90,835	90,205	68,249
Maywood Park	750	750	750	780	780	777	781
Portland*	550,560	545,140	538,180	536,240	531,600	529,121	438,802
Troutdale	14,380	14,300	14,240	13,980	13,975	13,777	7,852
Wood Village	2,870	2,870	2,850	2,860	2,860	2,860	2,814
Uninc.	13,795	12,430	13,075	12,870	14,155	16,046	62,649
POLK	64,950	64,000	63,450	63,600	62,700	62,380	49,541
Dallas	13,500	13,270	12,850	12,650	12,550	12,459	9,422
Falls City	960	960	960	980	970	966	818
Independence	7,170	6,850	6,580	6,400	6,080	6,035	4,425
Monmouth	8,590	8,080	8,110	7,910	7,780	7,741	6,288
Uninc.	14,210	14,600	15,380	16,550	16,610	16,579	15,231
SHERMAN	1,900	1,900	1,850	1,900	1,950	1,934	1,918
Grass Valley	170	170	170	170	170	171	160
Moro	320	340	340	340	340	337	292
Rufus	270	270	270	270	270	268	295
Wasco	380	380	380	380	380	381	374
Uninc.	760	740	690	740	790	777	797
TILLAMOOK	24,950	24,900	24,600	24,600	24,300	24,262	21,570
Bay City	1,150	1,150	1,160	1,160	1,150	1,149	1,027
Garibaldi	900	900	900	900	900	899	886
Manzanita	630	610	590	580	565	564	513
Nehalem	210	210	200	200	205	203	232
Rockaway Beach	1,320	1,300	1,290	1,290	1,275	1,267	970
Tillamook	4,350	4,350	4,340	4,340	4,360	4,352	4,006
Wheeler	410	410	400	400	395	391	335
Uninc.	15,980	15,970	15,720	15,730	15,450	15,437	13,601
UMATILLA	72,250	71,100	71,000	70,900	70,850	70,548	59,249
Adams	330	330	320	310	300	297	223
Athena	1,270	1,270	1,250	1,270	1,225	1,221	997
Echo	690	690	690	670	655	650	500
Helix	190	180	180	180	185	183	150
Hermiston	14,700	14,540	14,120	13,560	13,260	13,154	10,047

* Indicates city has population in more than one county.

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Table 7. Alphabetical Listing of Incorporated Cities with Population for July 1, 2004 (continued)

WATER RESOURCES DEPT
SALEM, OREGON

City	July 1, 2004 Population Estimates	April 1, 2000 Census Population	Population Change 2000-2004	Percentage Change 2000-2004	City	July 1, 2004 Population Estimates	April 1, 2000 Census Population	Population Change 2000-2004	Percentage Change 2000-2004
Malin	800	640	160	25.0%	Scappoose	5,590	4,976	614	12.3%
Manzanita	630	564	66	11.7%	Scio	710	695	15	2.2%
Maupin	450	411	39	9.5%	Scotts Mills	300	312	-12	-3.8%
Maywood Park	750	777	-27	-3.5%	Seaside	6,080	5,900	180	3.1%
McMinnville	29,200	26,499	2,701	10.2%	Seneca	220	223	-3	-1.3%
Medford	69,220	63,687	5,533	8.7%	Shady Cove	2,580	2,307	273	11.8%
Merrill	910	897	13	1.4%	Shaniko	20	26	-6	-23.1%
Metolius	790	729	61	8.4%	Sheridan	5,620	5,561	59	1.1%
Mill City	1,540	1,537	3	0.2%	Sherwood	14,190	11,791	2,399	20.3%
Millersburg	760	651	109	16.7%	Siletz	1,130	1,133	-3	-0.3%
Milton-Freewater	6,500	6,470	30	0.5%	Silverton	8,060	7,414	646	8.7%
Milwaukie	20,590	20,490	100	0.5%	Sisters	1,490	959	531	55.4%
Mitchell	170	170	0	0.0%	Sodaville	290	290	0	0.0%
Molalla	5,930	5,647	283	5.0%	Spray	140	140	0	0.0%
Monmouth	8,590	7,741	849	11.0%	Springfield	55,350	52,864	2,486	4.7%
Monroe	610	607	3	0.5%	St. Helens	11,370	10,019	1,351	13.5%
Monument	150	151	-1	-0.7%	St. Paul	400	354	46	13.0%
Moro	320	337	-17	-5.0%	Stanfield	1,980	1,979	1	0.1%
Mosier	420	410	10	2.4%	Stayton	7,360	6,816	544	8.0%
Mt. Angel	3,600	3,121	479	15.3%	Sublimity	2,160	2,148	12	0.6%
Mt. Vernon	600	595	5	0.8%	Summerville	120	117	3	2.6%
Myrtle Creek	3,490	3,419	71	2.1%	Sumpter	170	171	-1	-0.6%
Myrtle Point	2,490	2,451	39	1.6%	Sutherlin	7,360	6,669	691	10.4%
Nehalem	210	203	7	3.4%	Sweet Home	8,380	8,016	364	4.5%
Newberg	19,910	18,064	1,846	10.2%	Talent	5,890	5,589	301	5.4%
Newport	9,760	9,532	228	2.4%	Tangent	930	933	-3	-0.3%
North Bend	9,640	9,544	96	1.0%	The Dalles	12,410	12,156	254	2.1%
North Plains	1,650	1,605	45	2.8%	Tigard	44,650	41,223	3,427	8.3%
North Powder	490	489	1	0.2%	Tillamook	4,350	4,352	-2	0.0%
Nyssa	3,170	3,163	7	0.2%	Toledo	3,580	3,472	108	3.1%
Oakland	940	954	-14	-1.5%	Troutdale	14,380	13,777	603	4.4%
Oakridge	3,680	3,172	508	16.0%	Tualatin	24,940	22,791	2,149	9.4%
Ontario	11,200	10,985	215	2.0%	Turner	1,480	1,199	281	23.4%
Oregon City	28,370	25,754	2,616	10.2%	Ukiah	260	255	5	2.0%
Paisley	250	247	3	1.2%	Umatilla	6,270	4,978	1,292	26.0%
Pendleton	16,850	16,354	496	3.0%	Union	1,950	1,926	24	1.2%
Philomath	4,340	3,838	502	13.1%	Unlty	120	131	-11	-8.4%
Phoenix	4,570	4,060	510	12.6%	Vale	1,990	1,976	14	0.7%
Pilot Rock	1,540	1,532	8	0.5%	Veneta	3,660	2,762	898	32.5%
Port Orford	1,190	1,153	37	3.2%	Vernonia	2,260	2,228	32	1.4%
Portland	550,560	529,121	21,439	4.1%	Waldport	2,060	2,050	10	0.5%
Powers	730	734	-4	-0.5%	Walla	870	869	1	0.1%
Prairie City	1,100	1,080	20	1.9%	Warrenton	4,330	4,096	234	5.7%
Prescott	60	72	-12	-16.7%	Wasco	380	381	-1	-0.3%
Prineville	8,640	7,358	1,282	17.4%	Waterloo	230	239	-9	-3.8%
Rainier	1,750	1,687	63	3.7%	West Linn	23,970	22,281	1,709	7.7%
Redmond	18,100	13,481	4,619	34.3%	Westfir	330	280	50	17.9%
Reedsport	4,230	4,378	-148	-3.4%	Weston	720	717	3	0.4%
Richland	150	147	3	2.0%	Wheeler	410	391	19	4.9%
Riddle	1,020	1,014	6	0.6%	Willamina	1,850	1,844	6	0.3%
Rivergrove	340	324	16	4.9%	Wilsonville	16,250	13,991	2,259	16.1%
Rockaway Beach	1,320	1,267	53	4.2%	Winston	4,940	4,613	327	7.1%
Rogue River	1,950	1,851	99	5.3%	Wood Village	2,870	2,860	10	0.3%
Roseburg	20,530	20,017	513	2.6%	Woodburn	21,790	20,100	1,690	8.4%
Rufus	270	268	2	0.7%	Yachats	710	617	93	15.1%
Salem	143,700	136,924	6,776	4.9%	Yamhill	820	794	26	3.3%
Sandy	6,360	5,385	975	18.1%	Yoncalla	1,080	1,052	28	2.7%

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WATER RESOURCES DEPT
SALEM, OREGON

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THE CITY OF WHEELER

Comprehensive Plan Background Data

ADOPTED
OCTOBER 1979
WITH AMENDMENTS THROUGH
DECEMBER 1997

The vacant land inside the urban growth boundary can be characterized as follows:

VACANT LAND

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**WATER RESOURCES DEPT
SALEM OREGON**

WITHIN CITY LIMITS

ACRES

General Commercial	11.0
Water Related Commercial	1.0
Industrial	5.6
Residential	141.0
TOTAL VACANT BUILDABLE LANDS IN CITY	158.6

URBANIZING AREA

Residential	33.7
TOTAL VACANT BUILDABLE LANDS IN UGB	192.3

Land requirements to accommodate projected residential growth

1.	Population projection 2020	475
2.	Population 1996 (Est.)	375
3.	Population increase	100
4.	Household size (1997)	1.6
	234 occupied / 375	
5.	Additional DU needed in 2020	62
6.	Vacancy rate 5.5%	3
7.	Total DU needed	65
8.	Housing mix, multiple units in 14 structures	52
	22% multi-unit	
	78% single family units	
9.	Land requirements	8 acres
10.	Total residential land requirements	8 acres
	1.75 acres multiple dwellings	
	6.25 acres single family dwellings"	

— IMPORTANT NOTICE —

PRELIMINARY 2003 POPULATION ESTIMATE

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WATER RESOURCES DEPT
SALEM, OREGON

November 17, 2003

~~PAID~~ NOV 19 2003
Reid

To: Wheeler City

Listed below is the preliminary population estimate for July 1, 2003, as well as the certified 2002 estimate and 2000 Census figure. The July 1, 2003 estimate will be certified by December 15, 2003.

PRELIMINARY POPULATION ESTIMATE:

JULY 1, 2003: 410

CERTIFIED POPULATION ESTIMATE:

JULY 1, 2002: 400

CERTIFIED CENSUS FIGURE:

APRIL 1, 2000: 391

If you have any questions, please contact:

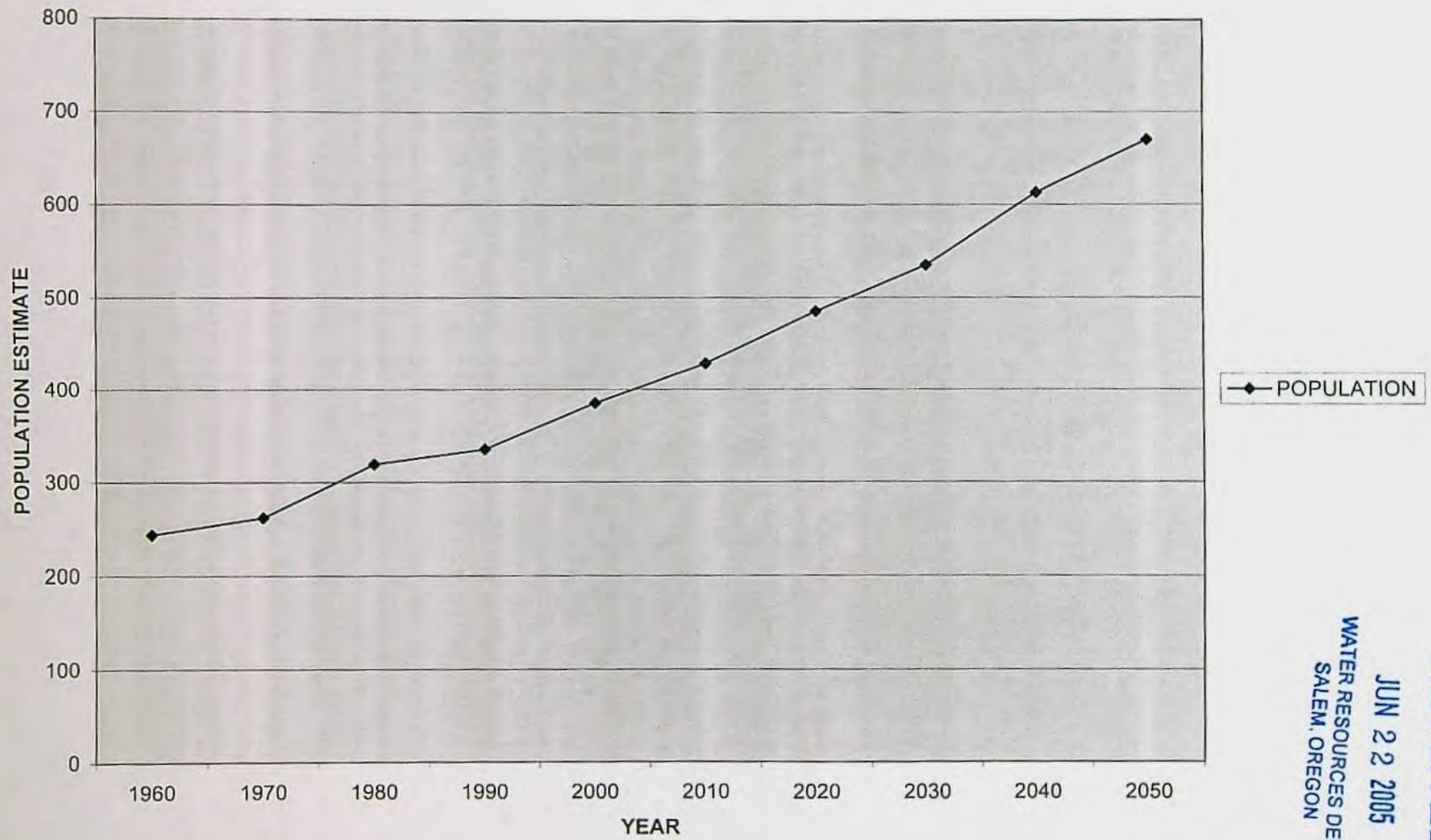
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CITY OF WHEELER



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WATER RESOURCES DEPT
SALEM, OREGON

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SALEM, OREGON

CITY OF WHEELER

POPULATION FORCAST

	YEAR	POPULATION
HISTORICAL CENSUS DATA	1960	244
	1970	262
	1980	319
	1990	335
	2000	385
ESTIMATED POPULATION	2010	428
	2020	485
	2030	535
	2040	613
	2050	670

City of Manzanita

Water Connections

Maximum build-out estimated
for the year 2016
at 2034 connections



ACTUAL GROWTH ... avg 3.3% yr

Projected growth if 2% per year

Projected growth if 3% per year

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WATER RESOURCES DEPT
SALEM, OREGON

Projections - Growth & Water usage

Updated April 26, 2005 Based on Actual records of Service connections and water usage

Total Estimated H2O, needed in Year 2047

Manzanita in CFS	3.17	If growth rate continues at 3.3% annually (likely to continue) and usage per service = 300 gpd (+ fewer full time residents)
Wheeler in CFS	0.19	If growth rate continues at 0.9% annually (likely to increase) and usage per service = 300 gpd (+ more full time residents)
Zaddack & Tideland in CFS	0.04	If growth rate continues at 0.9% annually (likely to continue) and usage per service = 400 gpd (+ higher due to farms in area)

3.39 < Total Estimated Need in CFS = at year 2047

Manzanita Water Services

Year	Actual Services on Dec 31st	Actual growth No of Serv	Actual growth rate %	Actual peak flow in gpd	Projected in '05' 3.3% growth Start @ 891	Population based on 2.01 people per connection	Daily AVG usage if 350 gpd/serv in GPD	Daily AVG usage if 350 gpd/serv in CFS
1989	891	Start	Start	no records	891	1,791	311,850	0.48
1990	930	39	4.4%	no records	920	1,850	322,141	0.50
1991	968	38	4.1%	no records	951	1,911	332,772	0.51
1992	1,004	36	3.7%	no records	982	1,974	343,753	0.53
1993	1,027	23	2.3%	no records	1,015	2,035	355,097	0.55
1994	1,100	73	7.1%	no records	1,048	2,107	366,815	0.57
1995	1,133	33	3.0%	480,000	1,083	2,176	378,920	0.59
1996	1,160	27	2.4%	460,000	1,118	2,248	391,424	0.61
1997	1,196	36	3.1%	480,000	1,155	2,322	404,342	0.63
1998	1,231	35	2.9%	509,000	1,193	2,399	417,685	0.65
1999	1,265	34	2.8%	434,000	1,233	2,478	431,468	0.67
2000	1,292	27	2.1%	363,000	1,273	2,560	445,707	0.69
2001	1,316	24	1.9%	414,000	1,315	2,644	460,415	0.71
2002	1,343	27	2.1%	479,000	1,359	2,731	475,609	0.74
2003	1,393	50	3.7%	499,000	1,404	2,821	491,304	0.76
2004	1,456	63	4.5%	520,000	1,450	2,915	507,517	0.79
2005					1,498	3,011	524,265	0.81
2006					1,547	3,110	541,566	0.84
2007					1,598	3,213	559,437	0.87
2008					1,651	3,319	577,899	0.89
2009					1,706	3,428	596,970	0.92
2010					1,762	3,541	616,670	0.95
2011					1,820	3,658	637,020	0.99
2012					1,880	3,779	658,041	1.02
2013					1,942	3,904	679,757	1.05
2014					2,006	4,033	702,189	1.09
2015					2,072	4,166	725,361	1.12
2016					2,141	4,303	749,268	1.16
2017					2,211	4,445	774,025	1.20
2018					2,284	4,592	799,567	1.24
2019					2,360	4,743	825,953	1.28
2020					2,438	4,900	853,210	1.32
2021					2,518	5,062	881,385	1.36
2022					2,601	5,229	910,451	1.41
2023					2,687	5,401	940,495	1.46
2024					2,776	5,575	971,532	1.50
2025					2,867	5,763	1,003,592	1.55
2026					2,962	5,954	1,036,711	1.60
2027					3,060	6,150	1,070,922	1.66
2028					3,161	6,353	1,106,263	1.71
2029					3,265	6,563	1,142,769	1.77

Wheeler Services

Year	Population based on 2.44 people per connection	Daily AVG usage if 368 gpd/serv in GPD	Daily AVG usage if 368 gpd/serv in CFS
1989			
1990			
1991			
1992			
1993			
1994			
1995			
1996			
1997			
1998			
1999			
2000			
2001			
2002			
2003	542	81,252	0.13
2004	547	81,984	0.13
2005	551	82,722	0.13
2006	556	83,465	0.13
2007	561	84,218	0.13
2008	567	84,976	0.13
2009	572	85,740	0.13
2010	577	86,512	0.13
2011	582	87,291	0.14
2012	587	88,076	0.14
2013	592	88,869	0.14
2014	598	89,669	0.14
2015	603	90,476	0.14
2016	609	91,290	0.14
2017	614	92,112	0.14
2018	620	92,941	0.14
2019	625	93,777	0.15
2020	631	94,621	0.15
2021	636	95,473	0.15
2022	642	96,332	0.15
2023	648	97,199	0.15
2024	654	98,074	0.15
2025	660	98,956	0.15
2026	666	99,847	0.15
2027	672	100,748	0.16
2028	678	101,652	0.16
2029	684	102,567	0.16

Zaddack & Tideland Services

Year	Population based on 2.44 people per connection	Daily AVG usage if 400 gpd/serv in GPD	Daily AVG usage if 350 gpd/serv in CFS
1989			
1990			
1991			
1992			
1993			
1994			
1995			
1996			
1997			
1998			
1999			
2000			
2001			
2002			
2003			
2004	96	16,000	0.02
2005	98	16,144	0.02
2006	99	16,289	0.03
2007	100	16,436	0.03
2008	101	16,584	0.03
2009	102	16,733	0.03
2010	103	16,884	0.03
2011	104	17,036	0.03
2012	105	17,189	0.03
2013	106	17,344	0.03
2014	107	17,500	0.03
2015	108	17,657	0.03
2016	109	17,816	0.03
2017	110	17,977	0.03
2018	111	18,138	0.03
2019	112	18,302	0.03
2020	113	18,466	0.03
2021	114	18,632	0.03
2022	115	18,800	0.03
2023	116	18,969	0.03
2024	117	19,140	0.03
2025	118	19,312	0.03
2026	119	19,486	0.03
2027	120	19,662	0.03
2028	121	19,838	0.03
2029	122	20,017	0.03

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33	2030				3,373	6,775	1,180,481	1.53	2030	283	690	103,490	0.16	50	123	20,197	0.03
34	2031				3,484	7,003	1,219,437	1.55	2031	285	696	104,422	0.16	51	124	20,379	0.03
35	2032				3,599	7,234	1,259,578	1.55	2032	288	702	105,361	0.16	51	125	20,562	0.03
36	2033				3,718	7,473	1,301,247	2.01	2033	290	709	106,310	0.16	52	127	20,747	0.03
37	2034				3,841	7,719	1,344,189	2.05	2034	293	715	107,266	0.17	52	128	20,934	0.03
38	2035				3,967	7,974	1,388,547	2.15	2035	296	722	108,232	0.17	53	129	21,123	0.03
39	2036				4,098	8,237	1,434,369	2.22	2036	298	728	109,206	0.17	53	130	21,313	0.03
40	2037				4,233	8,509	1,481,703	2.29	2037	301	735	110,189	0.17	54	131	21,504	0.03
41	2038				4,373	8,780	1,530,599	2.37	2038	304	741	111,181	0.17	54	132	21,698	0.03
42	2039				4,517	9,060	1,581,109	2.45	2039	307	748	112,181	0.17	55	134	21,893	0.03
43	2040				4,667	9,350	1,633,296	2.53	2040	309	755	113,191	0.18	55	135	22,090	0.03
44	2041				4,821	9,649	1,687,184	2.61	2041	312	761	114,210	0.18	56	136	22,289	0.03
45	2042				4,980	10,009	1,742,661	2.70	2042	315	768	115,237	0.18	56	137	22,490	0.03
46	2043				5,144	10,339	1,800,376	2.79	2043	318	775	116,275	0.18	57	138	22,692	0.04
47	2044				5,314	10,680	1,859,788	2.85	2044	321	782	117,321	0.18	57	140	22,895	0.04
48	2045				5,489	11,033	1,921,181	2.97	2045	323	789	118,377	0.18	58	141	23,102	0.04
49	2046				5,670	11,397	1,984,559	3.07	2046	326	796	119,442	0.18	58	142	23,310	0.04
50	2047				5,857	11,773	2,050,050	3.17	2047	329	803	120,517	0.19	59	143	23,520	0.04

Last year average daily flow in ...CFS >>>

CFS = 3.17

CFS = 0.19

CFS = 0.04

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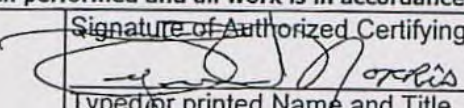
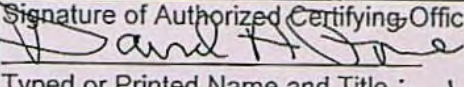
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APPENDIX 5

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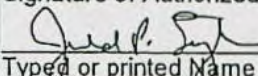
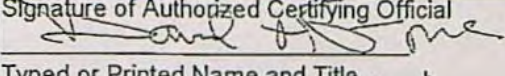
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SALEM, OREGON

PROJECT MONITORING REPORT		1. Type of Request		2. Report No. 21		
		Final Partial X				
3. REPORT PERIOD 01/01/2004 - 01/31/2004		4. BORROWER INFORMATION Name: City of Wheeler Address: PO Box 177, Wheeler OR 97147				
BUDGET ITEMS		STATUS OF BUDGET				
*All entries under Column "b" must be justified with an attachment) (All entries under column "e" must be documented with an attached invoice)		(a) Budgeted Amounts	(b) Budget Change	(c) Revised Budget	(d) Previous Total	(e) This Period
		TOTAL (d)+(e)				
a. Administrative Expense		\$10,250		\$10,250	\$8,768	\$8,768
b. Preliminary Expense(Engineer)				\$0	\$0	\$0
c. Land, Structures, Right-of-Way		\$61,542		\$61,542	\$61,542	\$61,542
d. Engineering: Study/Rept. Phase		\$23,282		\$23,282	\$23,282	\$23,282
e. Engineering: Basic Services		\$134,259		\$134,259	\$127,391	\$127,391
f. Engineering: Res. Proj. Observer		\$89,109		\$89,109	\$94,510	\$94,510
g. Engineering: Add.Serv. & Reim.Exp.		\$90,308		\$90,308	\$66,590	\$66,590
h. Interest		\$93,800		\$93,800	\$93,800	\$93,800
i. Legal		\$29,300		\$29,300	\$15,640	\$15,640
j. Contingencies		\$5,626		\$5,626	\$0	\$0
k. Construction Cost -Morse Cons. Grp.		\$1,668,877		\$1,668,877	\$1,472,366	\$1,472,366
Schedule A:						
Schedule B:						
Schedule C:						
Schedule D:						
TOTAL PROJECT COST		\$2,206,353	\$0	\$2,206,353	\$1,963,889	\$0
n. Funding Allocation						
1) Program Income		\$33,011		\$33,011	\$33,011	\$33,011
2) Construction Loan (RUS Takeout)		\$1,156,300		\$1,156,300	\$1,156,300	\$1,156,300
3) Rural Development Grant		\$932,000		\$932,000	\$689,636	\$689,636
4) Other:		\$0		\$0	\$0	\$0
5) Other:		\$0		\$0	\$0	\$0
6) Other:		\$0		\$0	\$0	\$0
7) Local		\$85,042		\$85,042	\$84,942	\$84,942
n. Total Project Funding (equals line l)		\$2,206,353	\$0	\$2,206,353	\$1,963,889	\$0
o. Percentage of Completion						
5. CERTIFICATION						
I certify that to the best of my knowledge and belief costs or disbursements shown are in accordance with the terms of the project and that an inspection has been performed and all work is in accordance with the terms of the construction contract.						
BORROWER City of Wheeler		Signature of Authorized Certifying Official  Typed or printed Name and Title Eugene A. Norris, City Manager			Date Submitted: 02/10/04 Telephone: 503-368-5767	
6. RURAL DEVELOPMENT ACCEPTANCE						
This form and attachments have been reviewed and are accepted by Rural Development, unless otherwise noted. This review and acceptance by Rural Development does not attest to the correctness of the amounts, the quantities shown, or that the work has been performed under the terms of the agreements or contracts.						
RURAL DEVELOPMENT		Signature of Authorized Certifying Official  Typed or Printed Name and Title C.P. Specialist			Date Submitted: 2/12/04 Telephone:	

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**WATER RESOURCES DEPT
SALEM, OREGON**

PROJECT MONITORING REPORT	1. Type of Request 2. Report No. 15 Final <u>XX</u> Partial					
3. REPORT PERIOD 6/1/03 to 6/30/03	4. BORROWER INFORMATION Name: City of Manzanita Address: P.O. Box 129, Manzanita, OR 97130					
BUDGET ITEMS	STATUS OF BUDGET					
(All entries under Column "b" must be justified with an attachment) (All entries under column "e" must be documented with an attached invoice)	(a) Budgeted Amounts	(b) Budget Change	(c) Revised Budget	(d) Previous Total	(e) This Period	TOTAL (d)+(e)
a. Administrative Expense	\$40,000		\$40,000	\$19,832	\$0	\$19,832
b. Preliminary Expense(Engineer)	\$243,924		\$243,924	\$86,230	\$0	\$86,230
c. Land, Structures, Right-of-Way	\$140,000		\$140,000	\$131,557	\$0	\$131,557
d. Engineering Basic Fees	\$388,624		\$388,624	\$352,393	\$0	\$352,393
e. Other Engineering Fees	\$249,950		\$249,950	\$238,019	\$132	\$238,151
f. Project Inspection Fees	\$197,000		\$197,000	\$178,217	\$2,706	\$180,923
g. Interest	\$130,000		\$130,000	\$110,250	\$0	\$110,250
h. Legal	\$35,000		\$35,000	\$13,718	\$0	\$13,718
i. Contingencies	\$127,047		\$127,047	\$0	\$0	\$0
j. Construction Cost						\$0
Schedule: Treatment Plant	\$2,016,446		\$2,016,446	\$1,862,403	\$154,043	\$2,016,446
Schedule: Well, Transmission Line	\$2,730,351		\$2,730,351	\$2,674,283	\$0	\$2,674,283
Schedule:			\$0			\$0
Schedule:			\$0			\$0
k. TOTAL PROJECT COST	\$6,298,342	\$0	\$6,298,342	\$5,666,902	\$156,881	\$5,823,783
Funding Allocation						
1) Program Income			\$0			\$0
2) Rural Development Loan	\$3,290,410		\$3,290,410	\$3,290,410	\$0	\$3,290,410
3) Rural Development Grant	\$2,631,300		\$2,631,300	\$2,308,660	\$156,881	\$2,465,541
4) Other: City contribution	\$67,832		\$67,832	\$67,832	\$0	\$67,832
5) Other: Addnl City contribution	\$308,800		\$308,800	\$0	\$0	\$0
6) Other:			\$0			\$0
7) Local			\$0			\$0
m. Total Project Funding (equals line k)	\$6,298,342	\$0	\$6,298,342	\$5,666,902	\$156,881	\$5,823,783
n. Percentage of Completion						
5. CERTIFICATION						
I certify that to the best of my knowledge and belief costs or disbursements shown are in accordance with the terms of the project and that an inspection has been performed and all work is in accordance with the terms of the construction contract.						
BORROWER	Signature of Authorized Certifying Official  Typed or printed Name and Title Jerald P. Taylor, City Manager			Date Submitted: July 18, 2003 Telephone: 503-368-5343		
6. RURAL DEVELOPMENT ACCEPTANCE						
This form and attachments have been reviewed and are accepted by Rural Development, unless otherwise noted. This review and acceptance by Rural Development does not attest to the correctness of the amounts, the quantities shown, or that the work has been performed under the terms of the agreements or contracts.						
RURAL DEVELOPMENT	Signature of Authorized Certifying Official  Typed or Printed Name and Title RUS Specialist			Date Submitted: 503 7/23/03 Telephone:		

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WATER RESOURCES DEPT
SALEM, OREGON



United States
Department of
Agriculture

Rural
Utilities
Service

101 SW Main, Suite 1410
Portland, OR 97204-3222
PHONE (503) 414-3327
FAX (503) 414-3397
TTY (503) 414-3387
Office Hours 8:00 - 4:30 PM

July 23, 2003

Jerald P. Taylor, City Manager
City of Manzanita
PO Box 129
Manzanita, OR 97130-0129

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JUL 24 2003

CITY OF MANZANITA

Dear Jerry,

This office has reviewed Project Monitoring Report Number 15. A copy of the accepted report is enclosed.

Please call me with any questions.

Sincerely,

David A. Force
Rural Utilities Service Specialist

Enc.

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WATER RESOURCES DEPT
SALEM, OREGON

APPENDIX 6

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WATER RESOURCES DEPT
SALEM, OREGON

Well Site - Daily Checklist

file ... C:\Documents and settings\WTP\My Documents\Spreadsheets\Well Site Checklists

Period - Mar 8, 2004 ... to ... Mar 14, 2004

Description

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Totals		
Date of Check	1-Mar	2-Mar	3-Mar	4-Mar	5-Mar	6-Mar	7-Mar		Date	Date readings taken
Time of AM Systems Check									Time	Time readings taken
KEN - Wheeler ... time at site - (include drive time)									Hours	Include time to and from site
JOHN - Wheeler ... time at site - (include drive time)									Hours	Include time to and from site
BRET - Manzanita ... time at site - (include drive time)									Hours	Include time to and from site
JOHN - Manzanita ... time at site - (include drive time)									Hours	Include time to and from site
DOUG - Manzanita ... time at site - (include drive time)									Hours	Include time to and from site
Any Alarms?									Yes / No	or Item in alarm
System in Auto... Manual On ... or Manual Off									Auto On or OFF	Daily - check and record
Filling Manzanita / Wheeler / Both									M, W, B	Record areas being served
Check and record system pressure at Touch Screen ... (range 80 to 90 psi is ok)									PSI	Daily - check and record
Chemicals								Total		
Check and fill soda Rock Salt ... (record bags added to tank)									bags added	Maintain salt above level marked on tank
Check and fill soda Ash Tank ... (record bags added to tank)									bags added	Mix solution as needed ... 50# to 100 gal ratio
Pumps										
Pump Speed Setting									%	Daily - as noted on touch screen
Pump Flow at time of readings									gpm	Daily - as noted on touch screen
Mlox System										
Cell 1 - Hours									Hours	Daily - Hours as noted on Mlox panel readout
Cell 2 - Hours									Hours	Daily - Hours as noted on Mlox panel readout
Instruments										
Hach CL17 - Check fluid levels & check flow									(X) If done	Flow should be 500 to 750 ml/minute
Hach 1720e Turbidimeter - Checkflow									(X) If done	Flow should be 500 to 750 ml/minute
Hach EC1000 - Check Fluid level and flow									(X) If done	Flow should be 500 to 750 ml/minute
Well Heads										
Visibly check well heads for flooding, vandalism or damage									(X) If done	Drive by Well heads
Comments									RECEIVED JUN 22 2005 WATER RESOURCES DEPT SALEM, OREGON	

Chemical Use Summary

Ground Water - Well Site Totals															
Month	Total flow well site only	Comments	% flow to Manzanita	% flow to Wheeler	% flow to Zaddack	Salt Cost	Soda Ash Cost	Salt used	Soda Ash used	Manzanita \$ Cost Salt Soda Ash	Wheeler \$ Cost Salt Soda Ash	Zaddack \$ Cost Salt Soda Ash			
		Well site online 11/15/2002						Initial 500 gal tank fills and 11/15/02							
Nov 2002	215.204	Well tests	50.0%	50.0%	0.0%										
Dec 2002	395.014	Well tests	50.0%	50.0%	0.0%										
Jan 2003	0	not used	0.0%	0.0%	0.0%										
Feb 2003	20.155	Manz basin fill	100.0%	0.0%	0.0%			thru							
Mar 2003	141	test	50.0%	50.0%	0.0%										
Apr 2003	181.929	Wheeler online	0.5%	99.5%	0.0%										
May 2003	294.374	Manz & Wheeler	2.8%	97.2%	0.0%			06/30/03							
Jun 2003	1,547.813	Wheeler only	0.0%	100.0%	0.0%										
Summary	2,654.630	Nov thru Jun totals	13.0%	81.2%	0.0%	\$4.00	\$10.65	49	49	\$25.48	\$67.84	\$170.52 \$454.01	\$0.00 \$0.00		
Jul 2003	3,591.109	Wheeler only	0.0%	100.0%	0.0%	\$4.00	\$10.65	2	3	\$0.00	\$0.00	\$8.00 \$31.95	\$0.00 \$0.00		
Aug 2003	9,498.665	Manz & Wheeler	59.4%	40.6%	0.0%	\$4.00	\$10.65	5	39	\$11.88	\$246.72	\$8.00 \$168.63	\$0.00 \$0.00		
Sep 2003	3,429.639	Manz & Wheeler	21.0%	79.0%	0.0%	\$4.00	\$10.65	2	20	\$1.68	\$44.73	\$8.00 \$168.27	\$0.00 \$0.00		
Oct 2003	4,390.349	Manz & Wheeler	1.0%	99.0%	0.0%	\$4.00	\$10.65	7	22	\$0.28	\$2.34	\$27.71 \$231.96	\$0.00 \$0.00		
Nov 2003	4,144.064	Manz & Wheeler	1.6%	98.4%	0.0%	\$4.00	\$10.65	2	21	\$0.13	\$3.58	\$7.87 \$230.07	\$0.00 \$0.00		
Dec 2003	4,642.155	Wheeler only	0.0%	100.0%	0.0%	\$4.00	\$10.65	3	24	\$0.00	\$0.00	\$12.00 \$255.80	\$0.00 \$0.00		
Jan 2004										\$0.00	\$0.00	\$0.00 \$0.00	\$0.00 \$0.00		
Feb 2004										\$0.00	\$0.00	\$0.00 \$0.00	\$0.00 \$0.00		
Mar 2004										\$0.00	\$0.00	\$0.00 \$0.00	\$0.00 \$0.00		
Total	32,350.611					Well subtotal, bags		70	178	\$39.45	\$365.21	\$240.55 \$1,530.49	\$0.00 \$0.00		
						Finish gallons per bag		462.152	181.745	\$404.66		\$1,771.04	\$0.00		
										Wells only totals					

Surface Water - Treatment Plant Totals															
	Total flow	Comments	% flow to	% flow to	% flow to	Salt	Soda	Salt	Soda	Manzanita \$ Cost		Wheeler \$ Cost		Zaddack \$ Cost	
Month	surface source only		Manzanita	Wheeler	Zaddack	Cost	Cost	used	used	Salt	Soda Ash	Salt	Soda Ash	Salt	Soda Ash
Jan 2003	3,604.037	Initial chem tank fill	100.0%	0.0%	0.0%	\$4.00	\$10.65	10	5	\$40.00	\$53.25	\$0.00	\$0.00	\$0.00	\$0.00
Feb 2003	4,036.575	Fill Wheeler pipes	98.6%	1.4%	0.0%	\$4.00	\$10.65	0	0	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Mar 2003	3,793.000	Plant online 3/6/03	100.0%	0.0%	0.0%	\$4.00	\$10.65	4	0	\$16.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Apr 2003	3,669.000		100.0%	0.0%	0.0%	\$4.00	\$10.65	9	0	\$36.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
May 2003	4,086.000		100.0%	0.0%	0.0%	\$4.00	\$10.65	7	0	\$28.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Jun 2003	5,837.000		100.0%	0.0%	0.0%	\$4.00	\$10.65	7	0	\$28.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Jul 2003	9,095.000		100.0%	0.0%	0.0%	\$4.00	\$10.65	20	13	\$80.00	\$138.45	\$0.00	\$0.00	\$0.00	\$0.00
Aug 2003	4,319.000		100.0%	0.0%	0.0%	\$4.00	\$10.65	9	0	\$36.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Sep 2003	5,549.000		100.0%	0.0%	0.0%	\$4.00	\$10.65	5	0	\$20.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Oct 2003	4,343.000		100.0%	0.0%	0.0%	\$4.00	\$10.65	6	0	\$24.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Nov 2003	4,167.000		100.0%	0.0%	0.0%	\$4.00	\$10.65	7	0.5	\$28.00	\$5.33	\$0.00	\$0.00	\$0.00	\$0.00
Dec 2003	4,861.000		100.0%	0.0%	0.0%	\$4.00	\$10.65	12	0	\$48.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Jan 2004										\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Feb 2004										\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Mar 2004										\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Total	53,755.575					T.P. Subtotal, bags		86	13.5	\$384.00	\$197.03	\$0.00	\$0.00	\$0.00	\$0.00
						Finish gallons per bag		625.065	3,981.894	\$581.03		\$0.00		\$0.00	
										Treatment Plant only totals					

Current flow, month-to-date 01/18/04		Chem use month-to-date	
		Salt	Soda
2,731,000	2,407,170	Well Site	
Surface source	Well site	1	10.0
only	only	Treat Plant	
		6	2.0

SUMMARY	City of Manzanita		City of Wheeler		Zaddack Creek	
	Salt	Soda Ash	Salt	Soda Ash	Salt	Soda Ash
Well subtotals	\$39.45	\$365.21	\$240.55	\$1,530.49	\$0.00	\$0.00
T P Subtotals	\$384.00	\$197.03	\$0.00	\$0.00	\$0.00	\$0.00
YTD Totals	\$423.45	\$562.23	\$240.55	\$1,530.49	\$0.00	\$0.00
	\$985.68		\$1,771.04		\$0.00	
Treatment Plant AND Wells totals						

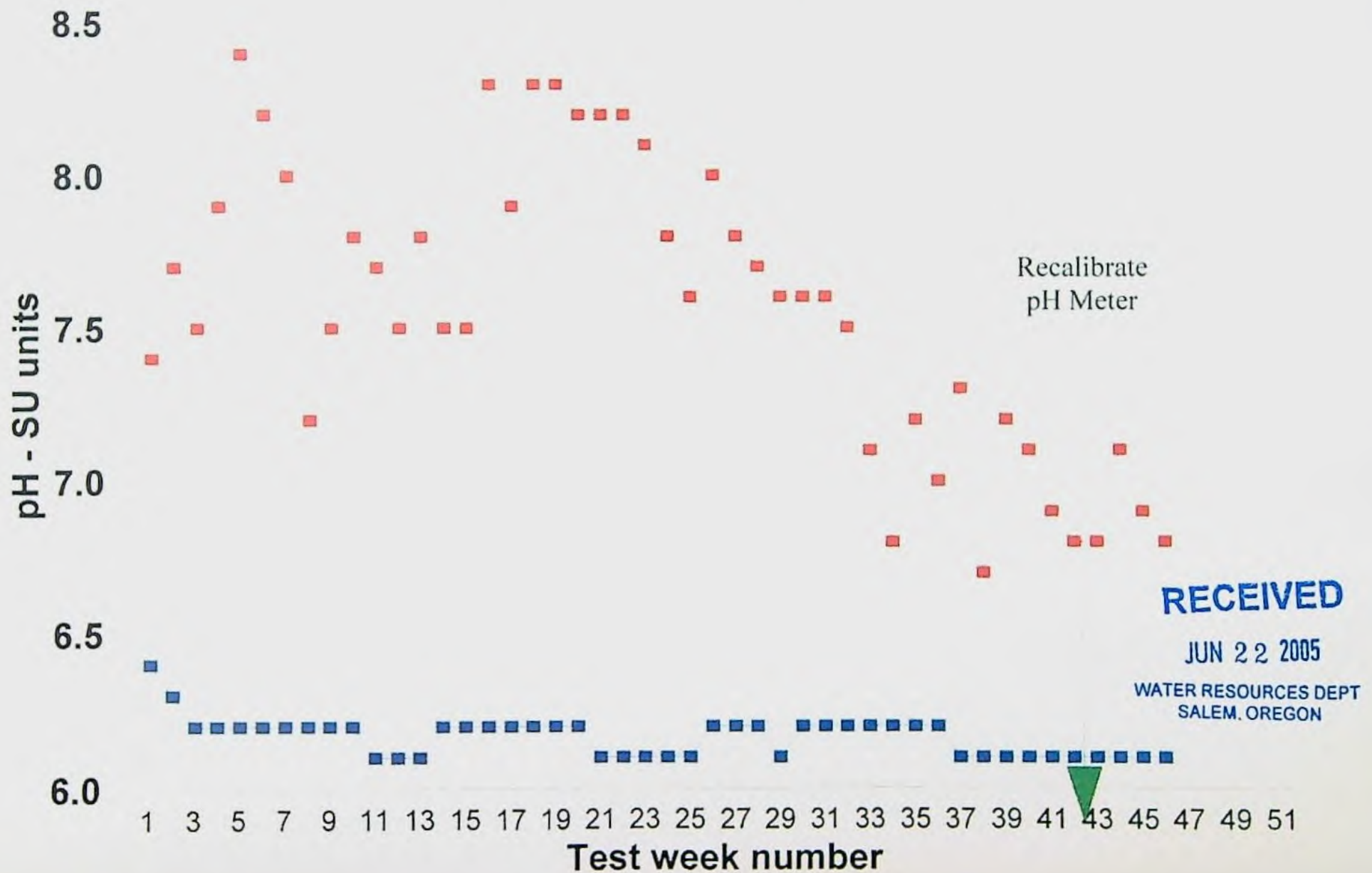
WATER RESOURCES DEPT
SALEM, OREGON

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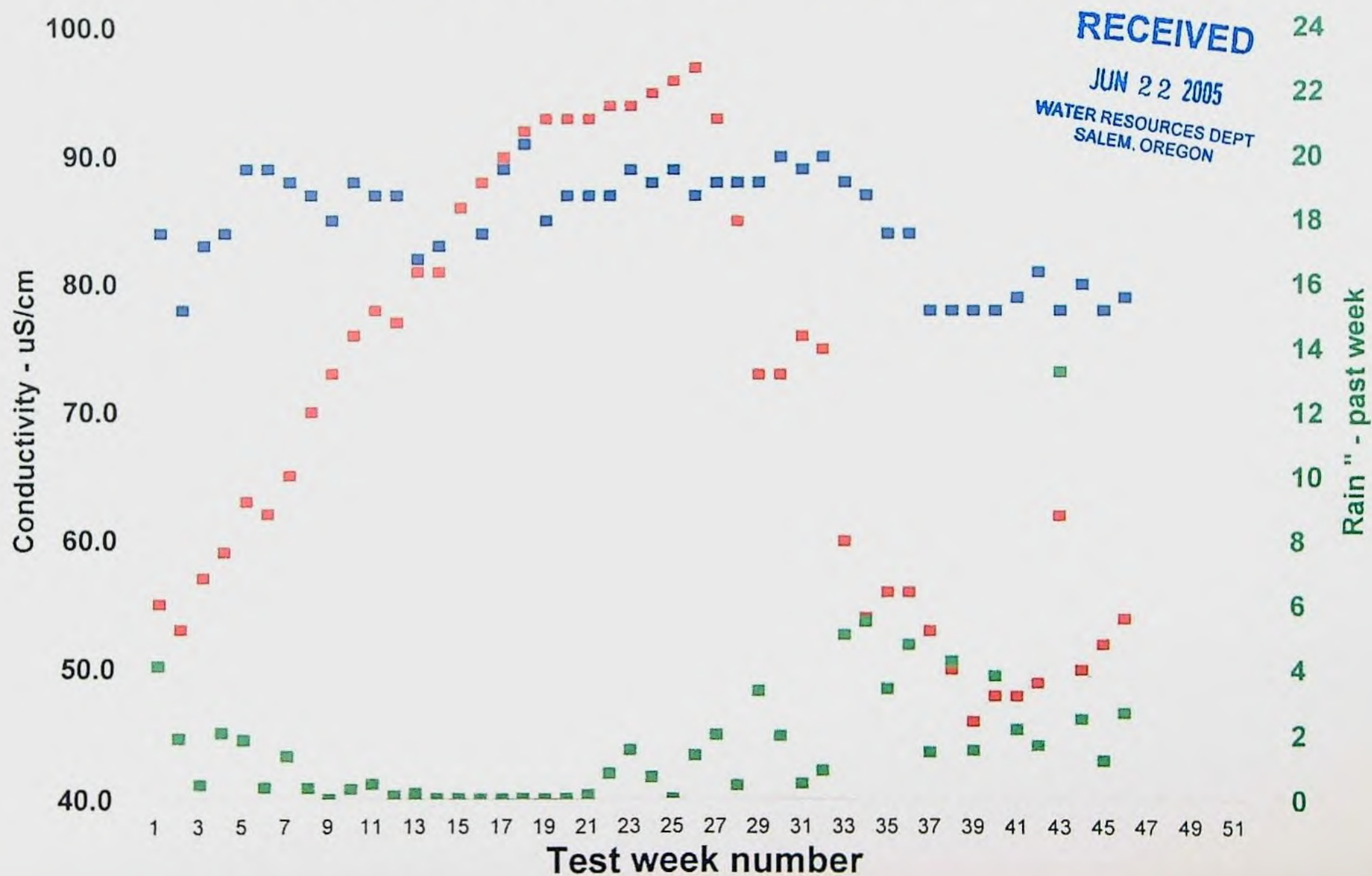
Manzanita Wheeler Well Site

pH Comparison



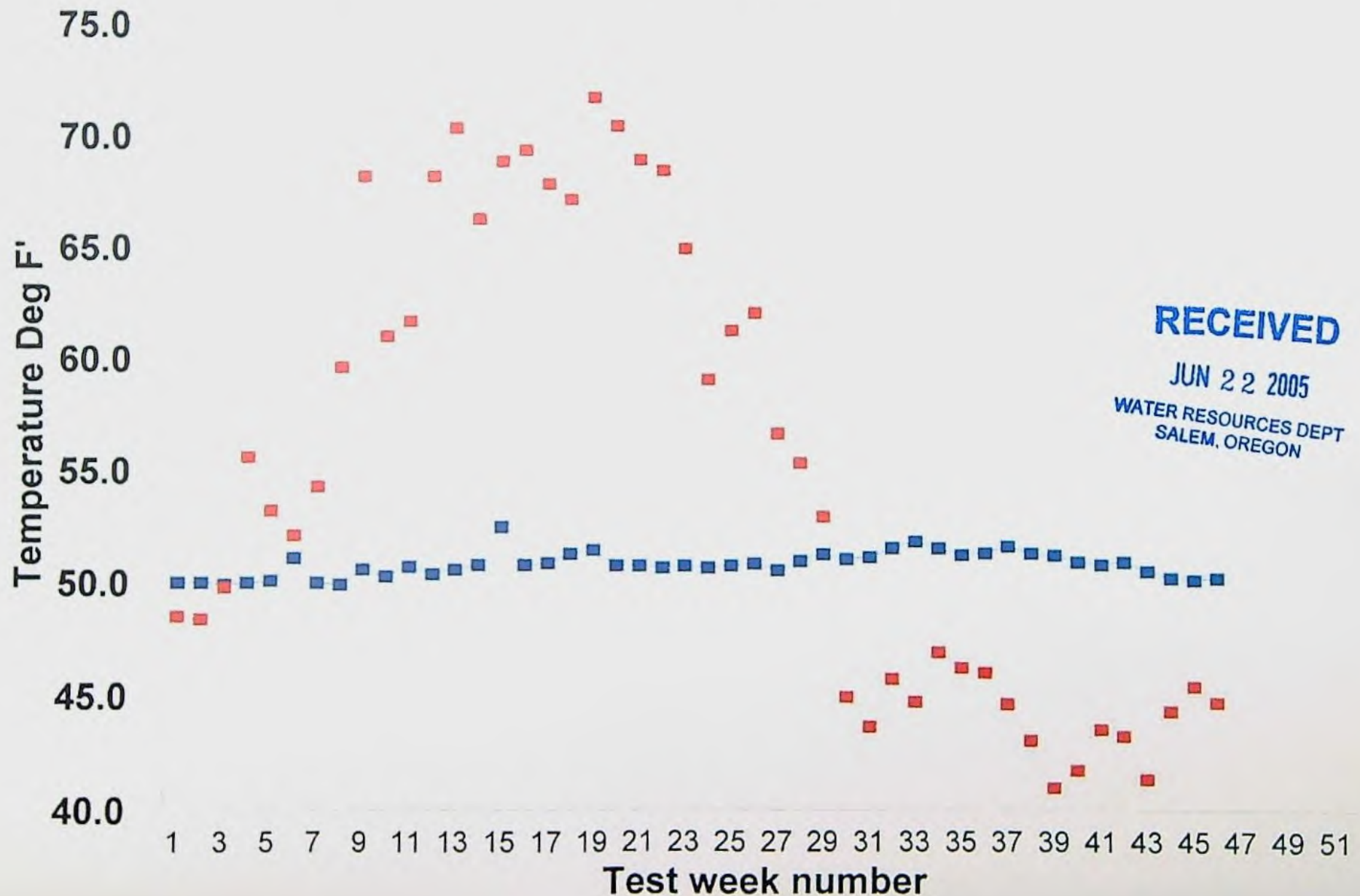
Manzanita Wheeler Well Site

Conductivity Comparison & Rain



Manzanita Wheeler Well Site

Temperature Comparison



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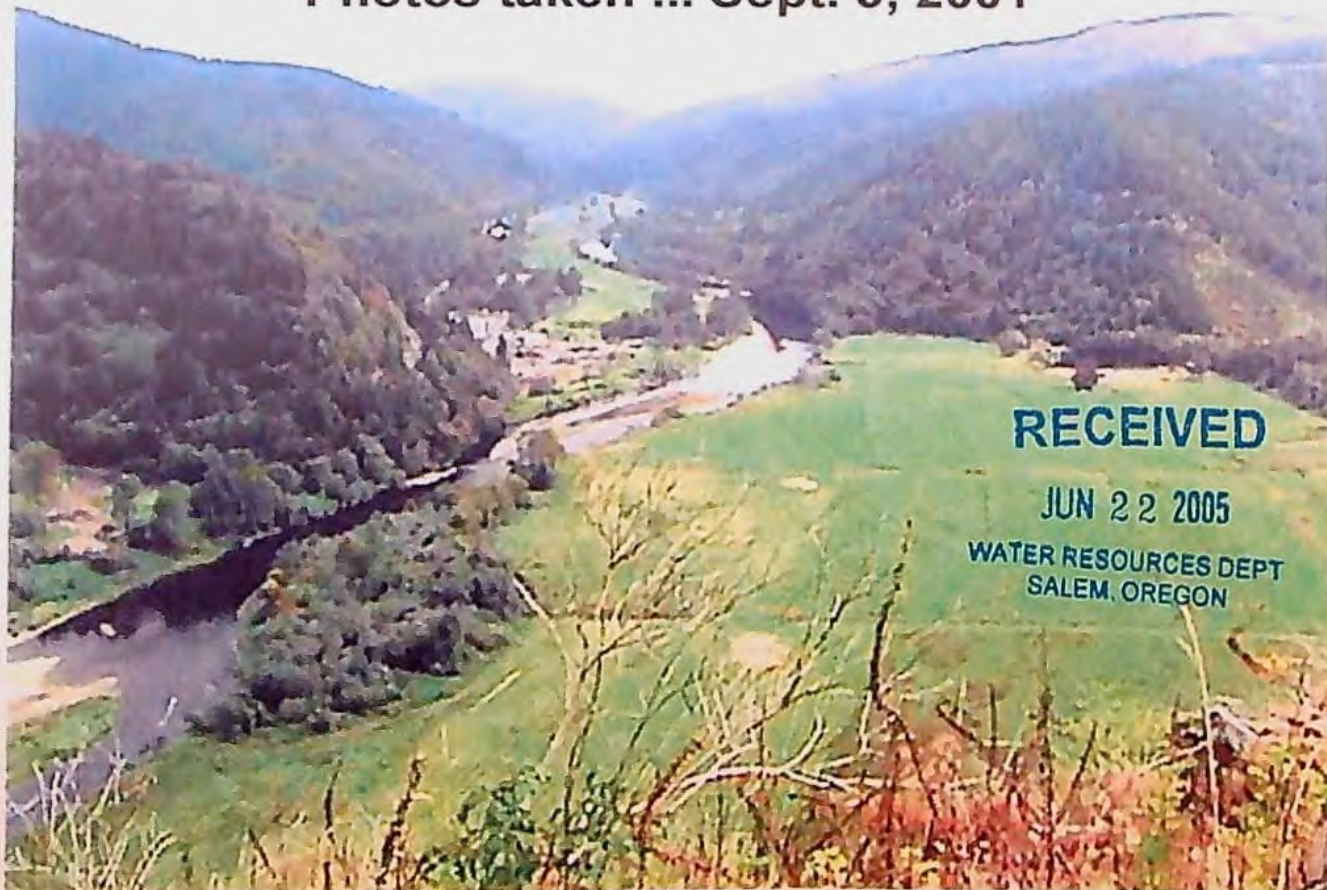
City of Manzanita Water System

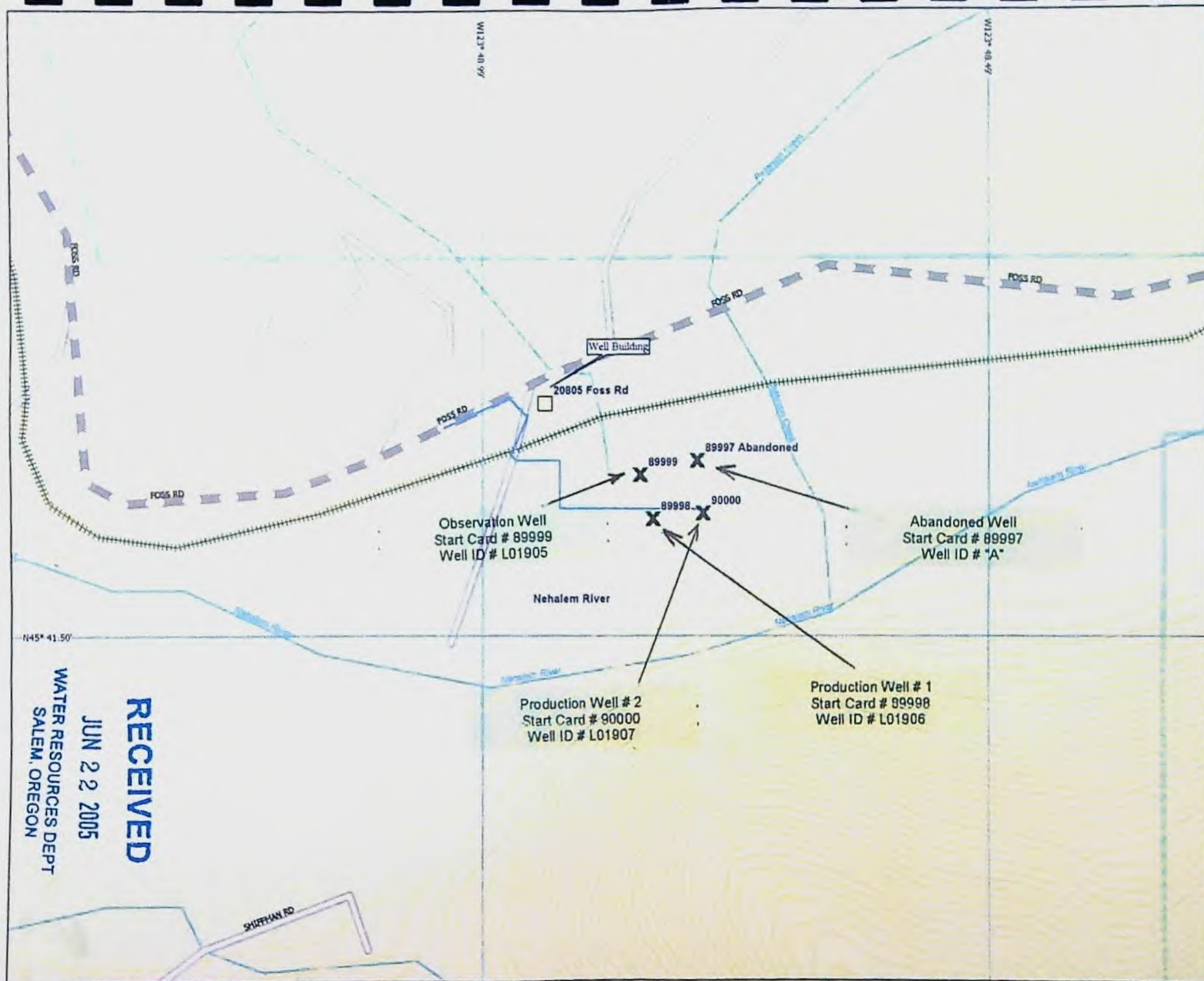
Water rights in City of Wheeler's Name

Operation & Maintenance by Both Cities



Photos taken ... Sept. 3, 2001





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SALEM, OREGON

500 ft



Well Site Info

Return to: John Handler
City of Manzanita
PO Box 129
Manzanita, OR 97130

Compiled by John Handler
City of Manzanita 12/15/2004



Foss Road Well Site

Foss Road Wells
20805 Foss Road
Nehalem, OR 97131

This is the Manzanita well control building ... located 1,100 ft from the well heads.

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**WATER RESOURCES DEPT
SALEM, OREGON**

Well Control and Records

At City of Manzanita
Treatment Plant
36730 Hwy 101 N
Manzanita, OR 97130



36730 Hwy 101 N.
P.O. Box 129
Manzanita, OR 97130

Phone: 503 368-3940
Fax: 503 368-5198
Email: ManzPW@nehalemtnet.net



Well Site - 20805 Foss Road

Manzanita & Wheeler OR

1/3/2005 - 11:00am

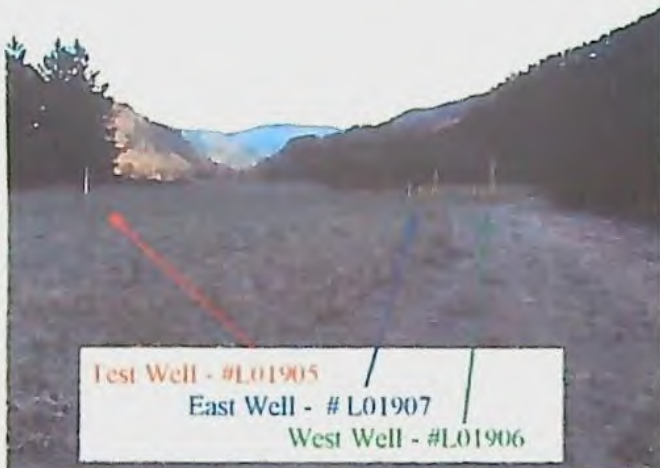


Manzanita Well Control Structure

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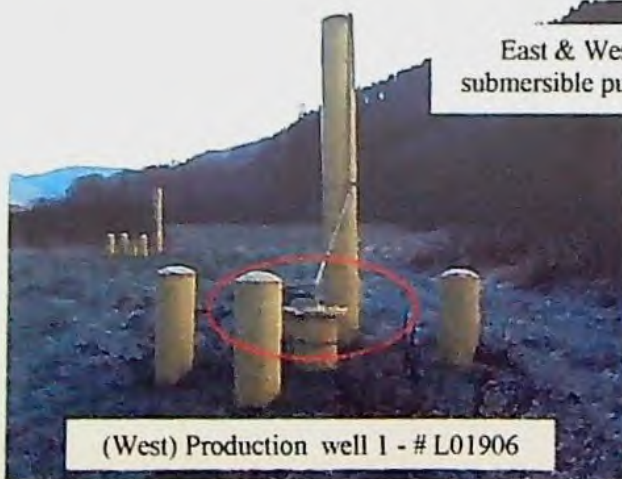
**WATER RESOURCES DEPT
SALEM, OREGON**



Test Well - #L01905
East Well - # L01907
West Well - #L01906

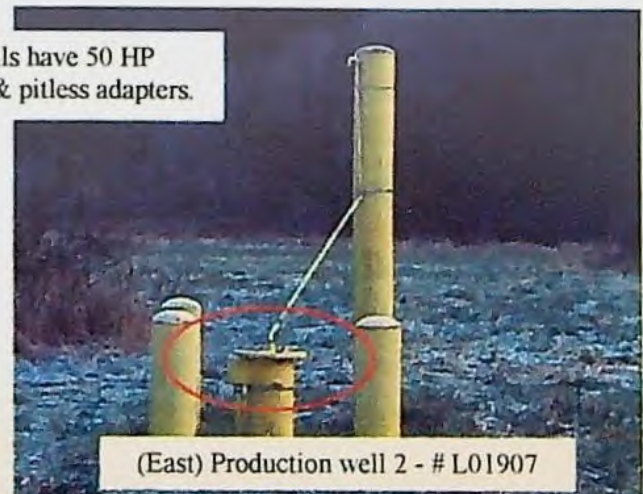


Test well - #L01905



(West) Production well 1 - # L01906

East & West Wells have 50 HP
submersible pumps & pitless adapters.



(East) Production well 2 - # L01907

Contact : John Handler
543 Laneda Ave
P.O. Box 129
Manzanita, OR 97130

Cell: 503 348-7734
Phone: 503 368-5347
Email: MarzPW@nehalemtnet.net



Well Site - 20805 Foss Road

Manzanita & Wheeler Oregon

1/3/2005 - 11:00am



Production well # 1 - # L01906

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WATER RESOURCES DEPT
SALEM, OREGON

The following pages are for the above Well

Start Card: # 89998

Well ID: # L01906

Description: Production Well # 1

Application: G 13479 ... dated 07/29/1993

Permit: G 12196 ... dated 11/06/1995

Contact : John Handler
543 Laneda Ave
P.O. Box 129
Manzanita, OR 97130

Cell: 503 348-7734
Phone: 503 368-5347
Email: ManzPW@nehalem.tel.net



Well Site - 20805 Foss Road

Manzanita & Wheeler Oregon

1/3/2005 - 11:00am



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**WATER RESOURCES DEPT
SALEM, OREGON**

The following pages are for the above Well

Start Card: # 90000

Well ID: # L01907

Description: Production Well # 2

Application: G 13479 ... dated 07/29/1993

Permit: G 12196 ... dated 11/06/1995

Contact : John Handler
543 Laneda Ave
P.O. Box 129
Manzanita, OR 97130

Cell: 503 348-7734
Phone: 503 368-5347
Email: ManzPW@nehalemtnet.net



Well Site - 20805 Foss Road

Manzanita & Wheeler Oregon

1/3/2005 - 11:00am



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The following pages are for the above Well

Start Card: # 89997

Well ID: # "A"

Description: Abandoned Well

Application: G 13479 ... dated 07/29/1993

Permit: G 12196 ... dated 11/06/1995

Contact : John Handler
543 Laneda Ave
P.O. Box 129
Manzanita, OR 97130

Cell: 503 348-7734
Phone: 503 368-5347
Email: MarzPW@nehalemtnet.net



Well Site - 20805 Foss Road

Manzanita & Wheeler Oregon

1/3/2005 - 11:00am



Test well - #L01905

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WATER RESOURCES DEPT
SALEM, OREGON

The following pages are for the above Well

Start Card: # 89999

Well ID: # L01905

Description: Observation / Test Well

Application: G 13479 ... dated 07/29/1993

Permit: G 12196 ... dated 11/06/1995

Contact : John Handler
543 Laneda Ave
P.O. Box 129
Manzanita, OR 97130

Cell: 503 348-7734
Phone: 503 368-5347
Email: ManzPW@nehalemtnet.net

APPENDIX 8

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WATER RESOURCES DEPT
SALEM, OREGON

TABLE 4.1

**N. TILLAMOOK CO. REGIONAL WATER SUPPLY MASTER PLAN
ESTIMATED PEAK WATER DEMAND PROJECTIONS - YEARS 2010 AND 2050**

Jurisdiction	No. Services in 1992	Ave. Demand 1992 (GPD)	Demand per Service	Estimated Values for 2010			Estimated Values for 2050		
				Services	Average Demand (GPD)	Peak Demand (GPD)	Services	Average Demand (GPD)	Peak Demand (GPD)
Ne'ah-kah-nie	225	54,000	240	281	67,500	168,750	340	81,540	203,850
Manzanita (UGB)*	1002	162,300	162	1,253	202,875	507,187	1,513	245,073	612,682
Nehalem Bay (Park)	302	24,000	79	378	30,000	75,000	456	36,240	90,600
Nehalem (UGB)*	450	135,100	300	563	168,875	422,188	680	204,001	510,003
Tideland Wat. Corp	20	24,500	1,225	25	30,625	76,563	30	36,995	92,488
Zaddack Creek	10	2,400	240	13	3,000	7,500	15	3,624	9,060
Wheeler (UGB)*	175	73,560	420	219	91,950	229,875	264	111,076	277,689
Brighton	12	3,000	250	15	3,750	9,375	18	4,530	11,325
Rockaway Beach (UGB)	1660	445,000	268	2,075	556,250	1,390,625	2,507	671,950	1,679,875
Watseco/Barview	129	24,945	193	161	31,181	77,953	195	37,667	94,167
TOTAL	3,985	948,805		4,981	1,186,006	2,965,016	6,017	1,432,696	3,581,739

UGB* URGAN GROWTH BOUNDARY OR SERVICE AREA, NOT JUST EXISTING CITY LIMITS.

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**WATER RESOURCES DEPT
SALEM, OREGON**

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SALEM, OREGON

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WATER RESOURCES DEPT
SALEM, OREGON

TABLE 3.2

NORTH TILLAMOOK COUNTY
REGIONAL WATER MASTER PLAN

SUMMARY OF EXISTING WATER RIGHTS

Jurisdiction and Source	Permit Date	Water Rights cfs.	Totals cfs.
Neahkahnie Water District			
1. Spring 1	12/7/70	0.01	
2. Spring 2	12/7/70	0.01	
3. Spring 3	12/7/70	0.15	
4. Pirate Spring	12/9/68	0.45	
			0.62
5. Spring 1	4/7/92	0.06	
6. Spring 2	4/7/92	0.06	
7. Spring 3	4/7/92	0.20	
			0.32
Neahkahnie Water Co.			
1. Spring 1	4/30/29	0.01	
2. Spring 2	4/30/29	0.01	
3. Spring 3	4/30/29	0.15	
			0.17
Manzanita			
1. W. Fork Anderson Creek	12/15/78	0.50	
2. Middle Fork Anderson Creek	12/10/45	0.50	
3. N. Fork Anderson Creek	12/10/45	0.50	
4. Neahkahnie Creek	8/14/50	0.87	
5. Alder Creek	9/14/48	0.50	
			2.87
Nehalem Bay State Park			
1. Well	6/5/86	0.06	
			0.06

NORTH TILLAMOOK COUNTY
REGIONAL WATER MASTER PLAN

SUMMARY OF EXISTING WATER RIGHTS
(Continued)

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WATER RESOURCES DEPT
SALEM, OREGON

Jurisdiction and Source	Permit Date	Water Rights cfs.	Totals cfs.
Nehalem			
1. Bob's Creek		2.0	
2. Coal Creek, West Branch	10/22/79	1.5	
3. Coal Creek, Main Branch	10/22/79	1.5	
			5.0
Tidewater - None			
Zaddack Creek - None			
Wheeler			
1. Jarvis Creek	1/24/13	3.00	
2. Jarvis Creek	3/14/30	0.28	
3. Vosberg	8/15/74	4.00	
			7.28
Brighton			
1. W. T. Edwards - Unnamed creek	8/14/46	0.05	
			0.05
Rockaway Beach			
1. Heitmiller Creek	2/16/62	0.50	
2. Heitmiller Creek	10/18/11	2.50	
3. Jetty Creek	12/8/69	1.00	
4. Jetty Creek	6/24/81	1.00	
5. Well No. 1	6/10/81	0.39	
6. Well No. 2	6/10/81	0.39	
7. McMillian Creek	3/17/58	0.26	
8. McMillian Creek	7/31/46	0.26	
9. McMillian Creek	7/30/59	0.50	
			6.80
Watseco-Barview - None			
	Total:		23.17
	3.17		

ATTACHMENT "A"

WHEELER, OR
EXISTING WATER RIGHTS AND PERMITS

GROUND WATER

APPLICATION/PERMIT NUMBER	CERTIFICATE NUMBER	SOURCE	USE	PRIORITY DATE	AUTHORIZED AMOUNT OF WATER	MAX. AMOUNT OF BENEFICAL WATER USE	USE LIMITATIONS
G13479/G12196	N/A	WELLS 1 & 2 (SEE NOTES)	MUNICIPAL	7/29/93	3.6 CFS	1.30 CFS	WELLS CURRENTLY DEVELOPED TO 1.30 CFS (LIMITED PUMPING CAP.)

SURFACE WATER

APPLICATION/PERMIT NUMBER	CERTIFICATE NUMBER	SOURCE	USE	PRIORITY DATE	AUTHORIZED AMOUNT OF WATER	MAX. AMOUNT OF BENEFICAL WATER USE	USE LIMITATIONS
S2754/S1455	2440	JARVIS CR. (JARRIS CR.)	MUNICIPAL	1/24/13	3.0 CFS	3.0 CFS	LIMITED FLOWS AUG. THROUGH OCT. DROUGHT YEARS NEEDS TREATMENT
S13321/S9558	9250	JARVIS CR. (JARRIS CR.)	MUNICIPAL	3/14/30	0.28 CFS	0.28 CFS	LIMITED FLOWS AUG. THROUGH OCT. DROUGHT YEARS NEEDS TREATMENT
S52321/S39355	N/A	VOSBERG CR.	MUNICIPAL	8/15/74	4.0 CFS	4.0 CFS	LIMITED FLOWS AUG. THROUGH OCT. DROUGHT YEARS NEEDS TREATMENT

NOTES: REFERENCE NUMBERS TO THE WELLS DO NOT CORRESPOND TO THE PERMIT WELL NUMBERS.
LOCATIONS AND REFERENCE NUMBERS WERE CHANGED DURING THE WELL DRILLING. THE NEW
NUMBERS ARE THE OWNERS REFERENCE NUMBERS AND APPROXIMATE THE LOCATIONS OF THE PERMIT
WELL NUMBERS.

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SALEM, OREGON**

Water Rights Information Query Results

Name	Application	Permit	Certificate	Decree	Claim	Transfer	Status
CITY OF WHEELER PO BOX 177 WHEELER OR 97147 (details)	G13479	G12196					NC
CITY OF WHEELER WHEELER OR 97147 (details)	S2754	S1455	2440				NC
CITY OF WHEELER WHEELER OR 97147 (details)	S13321	S9558	9250				NC
CITY OF WHEELER PO BOX 177 WHEELER OR 97147 (details)	S52321	S39355					NC

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WATER RESOURCES DEPT
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Water Rights Information Query Results

Name	Application	Permit	Certificate	Decree	Claim	Transfer	Status
CITY OF WHEELER PO BOX 177 WHEELER OR 97147 (details)	G13479	G12196					NC

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SALEM, OREGON

Use	P/S	Priority Date	Start Date	End Date	Acres	Rate/Acre	Duty	Max Rate	Rate	Max Acre Feet	Acre Feet	Status
MU	P	07/29/1993	1/1	12/31				3.6	0.0 (est)			NC
2.0N-9.0W-5-NENW			WELL 13	NEHALEM R	3.6				1055.75 FEET SOUTH & 2547.09 FEET EAST FROM CORNER, SECTION 5			
Uses from this Point of Diversion												
Use	P/S	Priority Date	Start Date	End Date	Acres	Rate/Acre	Duty	Max Rate	Rate	Max Acre Feet	Acre Feet	Status
MU	P	07/29/1993	1/1	12/31				3.6	0.0 (est)			NC
2.0N-9.0W-5-NENW			WELL 10	NEHALEM R	3.6				905.91 FEET SOUTH & 2543.69 FEET EAST FROM CORNER, SECTION 5			
Uses from this Point of Diversion												
Use	P/S	Priority Date	Start Date	End Date	Acres	Rate/Acre	Duty	Max Rate	Rate	Max Acre Feet	Acre Feet	Status
MU	P	07/29/1993	1/1	12/31				3.6	0.0 (est)			NC

Place of Use

Use	P/S	Priority Date	Location (T-R-S-QQ)	DLC/Lot	Acres	Status	Remarks
MU	P	07/29/1993	1.0N-10.0W- -			NC	WITHIN N TILLAMOOK CO RE SUPPLY AREA
MU	P	07/29/1993	2.0N-10.0W- -			NC	WITHIN N TILLAMOOK CO RE SUPPLY AREA
MU	P	07/29/1993	3.0N-10.0W- -			NC	WITHIN N TILLAMOOK CO RE SUPPLY AREA

Water Right Genealogy

No genealogy records available for this water right, try the family link below instead. If of the correct genealogy, please forward this information to [WRIS Genealogy](#)

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Water Rights Information Query Results

Name	Application	Permit	Certificate	Decree	Claim	Transfer	Status
CITY OF WHEELER WHEELER OR 97147	S2754	S1455	2440				NC

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WATER RESOURCES DEPT
SALEM, OREGON

Water Rights Information Query Results

Owner(s) Information

CITY OF WHEELER
WHEELER OR 97147

Application(s)

Application	Received	
S 2754		Map

Permit(s)

Permit	Signature	
S 1455	12/04/1919	Map

Certificate(s)

Certificate	Signature	Certificate Ty
2440	12/04/1919	Original

Claim(s)

n/a

Decree(s)

n/a

Order(s)

n/a

Transfer(s)

n/a

Misc. Info

Authority	File Location
	Salem

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SALEM, OREGON

Document Process

n/a

Point(s) of Diversion

Location (T-R-S-QQ)	DLC/Lot	Source	Tributary to	Max Rate	Rate	Max Acre Feet	Acre Feet	Legal Descripti
2.0N-10.0W-2-		JARRIS CR	NEHALEM BAY	3.0	3.0			

Uses from this Point of Diversion

Use	P/S	Priority Date	Start Date	End Date	Acres	Rate/Acre	Duty	Max Rate	Rate	Max Acre Feet	Acre Feet	Status
MU	P	01/24/1913	1/1	12/31				3.0	3.0			NC

Place of Use

Use	P/S	Priority Date	Location (T-R-S-QQ)	DLC/Lot	Acres	Status	Remarks
MU	P	01/24/1913	2.0N-10.0W-2-NENE			NC	CITY OF WHEELER
MU	P	01/24/1913	2.0N-10.0W-2-NWNE			NC	CITY OF WHEELER
MU	P	01/24/1913	2.0N-10.0W-2-SENE			NC	CITY OF WHEELER
MU	P	01/24/1913	2.0N-10.0W-2-NENW	/3		NC	CITY OF WHEELER
MU	P	01/24/1913	2.0N-10.0W-2-SWNW	/4		NC	CITY OF WHEELER
MU	P	01/24/1913	2.0N-10.0W-2-SENW			NC	CITY OF WHEELER
MU	P	01/24/1913	2.0N-10.0W-2-NESW			NC	CITY OF WHEELER

MU	P	01/24/1913	2.0N-10.0W-2-NWSW			NC	CITY OF WHEELER
MU	P	01/24/1913	2.0N-10.0W-2-SWSW			NC	CITY OF WHEELER
MU	P	01/24/1913	2.0N-10.0W-2-SESW			NC	CITY OF WHEELER
MU	P	01/24/1913	2.0N-10.0W-2-NESE			NC	CITY OF WHEELER
MU	P	01/24/1913	2.0N-10.0W-2-NWSE			NC	CITY OF WHEELER
MU	P	01/24/1913	2.0N-10.0W-2-SWSE			NC	CITY OF WHEELER
MU	P	01/24/1913	2.0N-10.0W-2-SESE			NC	CITY OF WHEELER

Water Right Genealogy

No genealogy records available for this water right, try the family link below instead. If of the correct genealogy, please forward this information to WRIS Genealogy

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Water Rights Information Query Results

Name	Application	Permit	Certificate	Decree	Claim	Transfer	Status
CITY OF WHEELER WHEELER OR 97147 (details)	S13321	S9558	9250				NC

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WATER RESOURCES DEPT
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Water Rights Information Query Results

Owner(s) Information

CITY OF WHEELER
WHEELER OR 97147

Application(s)

Application	Received	
S 13321		Map

Permit(s)

Permit	Signature	
S 9558	10/28/1931	Map

Certificate(s)

Certificate	Signature	Certificate Ty
9250	10/28/1931	Original

Claim(s)

n/a

Decree(s)

n/a

Order(s)

n/a

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Transfer(s)

n/a

Misc. Info

Authority	File Location
	Salem

JUN 22 2005
WATER RESOURCES DEPT
SALEM, OREGON

Document Process

n/a

Point(s) of Diversion

Location (T-R-S-QQ)	DLC/Lot	Source	Tributary to	Max Rate	Rate	Max Acre Feet	Acre Feet	Legal Descripti
2.0N-10.0W-2-NWSW		JARRIS CR	NEHALEM BAY	0.28	0.28			

Uses from this Point of Diversion

Use	P/S	Priority Date	Start Date	End Date	Acres	Rate/Acre	Duty	Max Rate	Rate	Max Acre Feet	Acre Feet	Status
DO	P	03/14/1930	1/1	12/31				0.28	0.14 (est)			NC
IM	P	03/14/1930	1/1	12/31				0.28	0.14 (est)			NC

Place of Use

Use	P/S	Priority Date	Location (T-R-S-QQ)	DLC/Lot	Acres	Status	Remarks
DO	P	03/14/1930	2.0N-10.0W-2-SWNW	/5		NC	
IM	P	03/14/1930	2.0N-10.0W-2-SWNW	/5		NC	

Water Right Genealogy

No genealogy records available for this water right, try the family link below instead. If

of the correct genealogy, please forward this information to WRIS Genealogy

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Water Rights Information Query Results

Name	Application	Permit	Certificate	Decree	Claim	Transfer	Status
CITY OF WHEELER PO BOX 177 WHEELER OR 97147 (details)	S52321	S39355					NC

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SALEM, OREGON

Owner(s) Information

 CITY OF WHEELER
PO BOX 177
WHEELER OR 97147

Application(s)

Application	Received	
S 52321		Map

Permit(s)

Permit	Signature	
S 39355		Map

Certificate(s)

n/a

Claim(s)

n/a

Decree(s)

n/a

Order(s)

n/a

Transfer(s)

n/a

Misc. Info

Authority	File Location
	Salem

Document Process

n/a

Point(s) of Diversion

Location (T-R-S-QQ)	DLC/Lot	Source	Tributary to	Max Rate	Rate	Max Acre Feet	Acre Feet	Legal Description
2.0N-10.0W-10-NENE		VOSBERG CR	NEHALEM R	4.0	4.0			1284 FEET SOUTH & FEET WEST FROM SW CORNER, SECTION 2

Uses from this Point of Diversion

Use	P/S	Priority Date	Start Date	End Date	Acres	Rate/Acre	Duty	Max Rate	Rate	Max Acre Feet	Acre Feet	Status
MU	P	08/15/1974	1/1	12/31				4.0	4.0			NC

Place of Use

Use	P/S	Priority Date	Location (T-R-S-QQ)	DLC/Lot	Acres	Status	Remarks
MU	P	08/15/1974	2.0N-10.0W-2-NENW			NC	
MU	P	08/15/1974	2.0N-10.0W-2-NWNW			NC	
MU	P	08/15/1974	2.0N-10.0W-2-SWNW			NC	
MU	P	08/15/1974	2.0N-10.0W-2-SENW			NC	
MU	P	08/15/1974	2.0N-10.0W-2-NESW			NC	
MU	P	08/15/1974	2.0N-10.0W-2-NWSW			NC	

MU	P	08/15/1974	2.0N-10.0W-2-SWSW			NC	
MU	P	08/15/1974	2.0N-10.0W-3-NESW			NC	
MU	P	08/15/1974	2.0N-10.0W-3-NWSW			NC	
MU	P	08/15/1974	2.0N-10.0W-3-NESE			NC	
MU	P	08/15/1974	2.0N-10.0W-3-NWSE			NC	
MU	P	08/15/1974	2.0N-10.0W-3-SWSE			NC	
MU	P	08/15/1974	2.0N-10.0W-3-SESE			NC	
MU	P	08/15/1974	2.0N-10.0W-10-NENE			NC	
MU	P	08/15/1974	2.0N-10.0W-10-NWNE			NC	

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WATER RESOURCES DEPT
SALEM, OREGON**Water Right Genealogy**

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SALEM, OREGON**Water Right Codes****Use Codes****Mining (0)**

- MI - Mining

Agriculture (1)

- AG - Agriculture
- CF - Supplemental Flood Harvesting
- CH - Harvesting of Cranberries
- CR - Cranberries
- DB - Dairy Barn
- FR - Frost Protection
- GH - Greenhouse
- MS - Mint Still
- NU - Nursery Uses
- TC - Temperature Control

Domestic (2)

- DI - Domestic Including Lawn & Garden
- DN - Domestic Expanded Including Non-Commercial Garden
- DO - Domestic
- DS - Domestic & Livestock
- GD - Group Domestic
- HC - Human Consumption
- RR - Restroom
- SC - School

Irrigation (3)

- CI - Irrigation of Cranberries
- I* - Irrigation, Livestock & Domestic
- IC - Primary & Supplemental Irrigation
- ID - Irrigation & Domestic
- IL - Irrigation & Livestock
- IR - Irrigation

Prefixes/Misc**Application Characters**

- E - Enlargement
- G - Groundwater
- IS - Instream
- MF - Minimum Flow (converted)
- P - Pond
- R - Reservoir
- S - Surface
- U - Underground

Permit Characters

- E - Enlargement
- G - Groundwater
- R - Reservoir
- S - Surface
- U - Underground

Claim Characters

- GR - Groundwater Registrations
- KL - Klamath Adjudications
- SW - Surface Water Registrations

Transfer Characters

- A - Z Transfer

Meridian

- BM - Boise - Idaho
- MDM - Mount Diablo - Northern California
- WM - Willamette - Oregon &

Status**Application**

- CN - Canceled
- MF - Misfiled
- NC - Non Canceled
- RJ - Rejected
- SU - Superseded
- WD - Withdrawn

Permit

- CN - Canceled
- NC - Non Canceled
- SU - Superseded

Certificate

- CN - Canceled
- NC - Non Canceled
- SP - Suspended
- SU - Superseded

Point of Diversion

- CN - Canceled
- MF - Misfiled
- NC - Non Canceled
- RJ - Rejected
- SP - Suspended
- SU -

- IS - Supplemental Irrigation
- OI - Out of Season Irrigation

Washington

- Superceded
- UK - Unknown
- UN - Unused
- WD - Withdrawn

Transfer Type

Commercial (4)

- CM - Commercial Uses
- GT - Geo-Thermal (Heating & Cooling)
- IM - Manufacturing
- LA - Laboratory
- LD - Log Deck Sprinkling
- SH - Shop
- SM - Sawmill

Recreation (5)

- CS - Campsite
- RC - Recreation
- SW - Swimming

Power (6)

- PW - Power Development

Fish (7)

- AQ - Aquaculture
- FI - Fish Culture
- FW - Fish & Wildlife

Livestock (8)

- LV - Livestock
- LW - Livestock & Wildlife

Municipal (9)

- MU - Municipal
- QM - Quasi-Municipal

Instream (I)

- F1 - Supporting Aquatic Life
- F2 - Best Use of Waters from Storage
- F3 - Anadromous & Resident Fish Habitat
- F4 - Instream
- F5 - Instream Fishery Enhancement
- F6 - Fisheries Enhancement
- F7 - Flow Augmentation for Fish Enhancement
- F8 - Anadromous & Resident Fish Rearing
- FE - Fish Habitat for Resident Borax Lake Chub
- PF - Supporting Aquatic & Minimizing Pollution
- R1 - Anadromous & Recreation Fish & Recreation
- R2 - Supporting Aquatic Life,

- 311 - HB3111
- ALT - District Temporary Transfers
- AMN - Permit Amendment
- DRO - Drought Transfer
- DST - Irrigation District Permit
- EXC - Exchange Transfer
- GVT - Government Action POD
- HST - Historic Pod
- IS - Instream Transfer
- REG - Normal Division 15
- SUB - Substitution Transfer
- TLI - Time Limited Instream Transfer
- TMP - Temporary Transfer

Place of use

- CN - Canceled
- MF - Misfiled
- NC - Non Canceled
- RJ - Rejected
- SP - Suspended
- SU - Superceded
- UK - Unknown
- UN - Unused
- WD - Withdrawn

Transfer

- IC - Inchoate
- MF - Misfiled
- OD - Order
- PN - Pending
- RJ - Rejected
- WD - Withdrawn
- XS - Exit System

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- Recreation & Aesthetics
- R3 - Supporting Recreation & Aesthetic Benefits
- RA - Supporting Recreational Boating
- RF - Supporting Aquatic Life & Recreation

Miscellaneous (M)

- AH - Air Conditioning or Heating
- AS - Aesthetics
- FM - Forest Management
- FP - Fire Protection
- GR - Groundwater Recharge
- MP - Multiple Purpose
- PA - Pollution Abatement
- PM - Pond Maintenance
- RW - Road Construction
- ST - Storage

Wildlife (W)

- WI - Wildlife

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SALEM, OREGON**

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ATTACHMENT "A-1"

MANZANITA, OR
EXISTING WATER RIGHTS AND PERMITS

GROUND WATER

APPLICATION/PERMIT NUMBER	CERTIFICATE NUMBER	SOURCE	USE	PRIORITY DATE	AUTHORIZED AMOUNT OF WATER	MAX. AMOUNT OF BENEFICAL WATER USE	USE LIMITATIONS
NONE							

SURFACE WATER

APPLICATION/PERMIT NUMBER	CERTIFICATE NUMBER	SOURCE	USE	PRIORITY DATE	AUTHORIZED AMOUNT OF WATER	MAX. AMOUNT OF BENEFICAL WATER USE	USE LIMITATIONS
R26028/R1455	21708	ALDER CR.	MUNICIPAL	6/12/51	1.23 AF	1.23 AF	NEEDS TREATMENT.
S21322/S17073	44775	ANDERSON CR.	MUNICIPAL	12/10/45	0.25 CFS	0.25 CFS	LOW STREAM FLOW DURING DROUGHT YRS. AUG. THROUGH OCT.
S23417/S18634	21684	ALDER CR.	MUNICIPAL	9/14/48	0.5 CFS	0.5 CFS	NEEDS TREATMENT. LOW STREAM FLOW DURING DROUGHT YRS. AUG. THROUGH OCT.
S25124/S21913	21707	NEAHKANIE CR.	MUNICIPAL	8/14/50	0.867 CFS	0.867 CFS	NEEDS TREATMENT. LOW STREAM FLOW DURING DROUGHT YRS. AUG. THROUGH OCT.
S57745/S43756	N/A	W.FK. ANDERSON CR.	MUNICIPAL	12/15/78	0.5 CFS	0.5 CFS	LOW STREAM FLOW DURING DROUGHT YRS. AUG. THROUGH OCT.

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Water Rights Information Query Results

Name	Application	Permit	Certificate	Decree	Claim	Transfer	Status
CITY OF MANZANITA MANZANITA OR 97130 (details)	R26028	R1455	21708				NC
CITY OF MANZANITA MANZANITA OR 97130 (details)	S21322	S17073	44775				NC
CITY OF MANZANITA MANZANITA OR 97130 (details)	S23417	S18634	21684				NC
CITY OF MANZANITA MANZANITA OR 97130 (details)	S25124	S21913	21707				NC
CITY OF MANZANITA PO BOX C MANZANITA OR 97130 (details)	S57745	S43756					NC

Page:1

[Download Place of Use Data](#), [Point of Diversion Data](#), or [Owner Data](#)[Definition of codes and abbreviations](#)[Return to the Water Right Information search screen](#)

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SALEM, OREGON

Water Rights Information Query Results

Owner(s) Information

CITY OF MANZANITA
MANZANITA OR 97130

Application(s)

Application	Received	
R 26028		Map

Permit(s)

Permit	Signature	
R 1455	11/28/1956	Map

Certificate(s)

Certificate	Signature	Certificate Ty
21708	11/28/1956	Original

Claim(s)

n/a

Decree(s)

n/a

Order(s)

n/a

Transfer(s)

n/a

Misc. Info

Authority	File Location
	Salem

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SALEM, OREGON

Document Process

n/a

Point(s) of Diversion

Location (T-R-S-QQ)	DLC/Lot	Source	Tributary to	Max Rate	Rate	Max Acre Feet	Acre Feet	Legal Descripti
3.0N-10.0W-21-NWSE		ALDER CR	NEHALEM BAY			1.23	1.23	

Uses from this Point of Diversion

Use	P/S	Priority Date	Start Date	End Date	Acres	Rate/Acre	Duty	Max Rate	Rate	Max Acre Feet	Acre Feet	Status
MU	P	06/12/1951	1/1	12/31				0.0	0.0	1.23	1.23	NC
3.0N-10.0W-21-NWSE								1.23		0.0		

Uses from this Point of Diversion

Use	P/S	Priority Date	Start Date	End Date	Acres	Rate/Acre	Duty	Max Rate	Rate	Max Acre Feet	Acre Feet	Status
MU	P	06/12/1951	1/1	12/31				0.0	0.0	1.23	0.0 (est)	NC

Place of Use

Use	P/S	Priority Date	Location (T-R-S-QQ)	DLC/Lot	Acres	Status	Remarks
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MU	P	06/12/1951	3.0N-10.0W-21-NWSE			NC	
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Water Right Genealogy

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SALEM, OREGON

Water Rights Information Query Results

Owner(s) Information

CITY OF MANZANITA
MANZANITA OR 97130

Application(s)

Application	Received	
S 21322		Map

Permit(s)

Permit	Signature	
S 17073	09/12/1977	Map

Certificate(s)

Certificate	Signature	Certificate Ty
44775	09/12/1977	Original

Claim(s)

n/a

Decree(s)

n/a

Order(s)

n/a

Transfer(s)

n/a

Misc. Info

Authority	File Location
	Salem

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SALEM, OREGON

Document Process

n/a

Point(s) of Diversion

Location (T-R-S-QQ)	DLC/Lot	Source	Tributary to	Max Rate	Rate	Max Acre Feet	Acre Feet	Legal Descri
3.0N-10.0W-15-NWNE		ANDERSON CR	N FK NEHALEM R	0.25	0.25			200 FT S & 340 FM SW COR, S:

Uses from this Point of Diversion

Use	P/S	Priority Date	Start Date	End Date	Acres	Rate/Acre	Duty	Max Rate	Rate	Max Acre Feet	Acre Feet	Status
MU	P	12/10/1945	1/1	12/31				0.25	0.25			NC
MU	P	12/10/1945	1/1	12/31				0.25	0.0 (est)			NC

3.0N-10.0W-15-NWNE		ANDERSON CR	N FK NEHALEM R	0.25	0.25			300 FT S & 310 FM SW COR, S:
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Uses from this Point of Diversion

Use	P/S	Priority Date	Start Date	End Date	Acres	Rate/Acre	Duty	Max Rate	Rate	Max Acre Feet	Acre Feet	Status
MU	P	12/10/1945	1/1	12/31				0.25	0.25			NC
MU	P	12/10/1945	1/1	12/31				0.25	0.0 (est)			NC

Place of Use

Use	P/S	Priority Date	Location (T-R-S-QQ)	DLC/Lot	Acres	Status	Remarks
MU	P	12/10/1945	2.0N-10.0W-4-NENW			NC	
MU	P	12/10/1945	2.0N-10.0W-4-NWNW			NC	
MU	P	12/10/1945	2.0N-10.0W-5-NENE			NC	
MU	P	12/10/1945	2.0N-10.0W-5-NWNE			NC	
MU	P	12/10/1945	2.0N-10.0W-5-NENW			NC	
MU	P	12/10/1945	3.0N-10.0W-29-NENE			NC	
MU	P	12/10/1945	3.0N-10.0W-29-NWNE			NC	
MU	P	12/10/1945	3.0N-10.0W-29-SWNE			NC	
MU	P	12/10/1945	3.0N-10.0W-29-SENE			NC	
MU	P	12/10/1945	3.0N-10.0W-29-NENW			NC	
MU	P	12/10/1945	3.0N-10.0W-29-NWNW			NC	
MU	P	12/10/1945	3.0N-10.0W-29-SWNW			NC	
MU	P	12/10/1945	3.0N-10.0W-29-SENW			NC	
MU	P	12/10/1945	3.0N-10.0W-29-NESW			NC	
MU	P	12/10/1945	3.0N-10.0W-29-NWSW			NC	
MU	P	12/10/1945	3.0N-10.0W-29-SWSW			NC	
MU	P	12/10/1945	3.0N-10.0W-29-SESW			NC	
MU	P	12/10/1945	3.0N-10.0W-29-NESE			NC	
MU	P	12/10/1945	3.0N-10.0W-29-NWSE			NC	
MU	P	12/10/1945	3.0N-10.0W-29-SWSE			NC	
MU	P	12/10/1945	3.0N-10.0W-29-SESE			NC	
MU	P	12/10/1945	3.0N-10.0W-32-NENE			NC	
MU	P	12/10/1945	3.0N-10.0W-32-NWNE			NC	
MU	P	12/10/1945	3.0N-10.0W-32-SWNE			NC	
MU	P	12/10/1945	3.0N-10.0W-32-SENE			NC	
MU	P	12/10/1945	3.0N-10.0W-32-NESW			NC	
MU	P	12/10/1945	3.0N-10.0W-32-SESW			NC	
MU	P	12/10/1945	3.0N-10.0W-32-NESE			NC	
MU	P	12/10/1945	3.0N-10.0W-32-NWSE			NC	
MU	P	12/10/1945	3.0N-10.0W-32-SWSE			NC	
MU	P	12/10/1945	3.0N-10.0W-32-SESE			NC	
MU	P	12/10/1945	3.0N-10.0W-33-SWNE			NC	
MU	P	12/10/1945	3.0N-10.0W-33-SWNW			NC	
MU	P	12/10/1945	3.0N-10.0W-33-SENW			NC	
MU	P	12/10/1945	3.0N-10.0W-33-NESW			NC	
MU	P	12/10/1945	3.0N-10.0W-33-NWSW			NC	
MU	P	12/10/1945	3.0N-10.0W-33-SWSW			NC	
MU	P	12/10/1945	3.0N-10.0W-33-SESW			NC	

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SALEM, OREGON

Water Right Genealogy

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SALEM, OREGON**

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 WATER RESOURCES DEPT
SALEM, OREGON

Owner(s) Information

 CITY OF MANZANITA
MANZANITA OR 97130

Application(s)

Application	Received	
S 23417		Map

Permit(s)

Permit	Signature	
S 18634	09/21/1956	Map

Certificate(s)

Certificate	Signature	Certificate Ty
21684	09/21/1956	Original

Claim(s)

n/a

Decree(s)

n/a

Order(s)

n/a

Transfer(s)

n/a

Misc. Info

Authority	File Location
	Salem

Document Process

n/a

Point(s) of Diversion

Location (T-R-S-QQ)	DLC/Lot	Source	Tributary to	Max Rate	Rate	Max Acre Feet	Acre Feet	Legal Descripti
3.0N-10.0W-21-NWSE		ALDER CR	NEHALEM BAY	0.5	0.5			

Uses from this Point of Diversion

Use	P/S	Priority Date	Start Date	End Date	Acres	Rate/Acre	Duty	Max Rate	Rate	Max Acre Feet	Acre Feet	Status
MU	P	09/14/1948	1/1	12/31				0.5	0.5			NC

Place of Use

Use	P/S	Priority Date	Location (T-R-S-QQ)	DLC/Lot	Acres	Status	Remarks
MU	P	09/14/1948	3.0N-10.0W-29-SWNE			NC	
MU	P	09/14/1948	3.0N-10.0W-29-SENE			NC	
MU	P	09/14/1948	3.0N-10.0W-29-SENW	/2		NC	
MU	P	09/14/1948	3.0N-10.0W-29-NESW	/3		NC	
MU	P	09/14/1948	3.0N-10.0W-29-SESW	/4		NC	
MU	P	09/14/1948	3.0N-10.0W-29-NESE			NC	
MU	P	09/14/1948	3.0N-10.0W-29-NWSE			NC	

MU	P	09/14/1948	3.0N-10.0W-29-SWSE			NC	
MU	P	09/14/1948	3.0N-10.0W-29-SESE			NC	
MU	P	09/14/1948	3.0N-10.0W-32-NENE			NC	
MU	P	09/14/1948	3.0N-10.0W-32-NWNE			NC	
MU	P	09/14/1948	3.0N-10.0W-32-NENW	/1		NC	

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WATER RESOURCES DEPT
SALEM, OREGON**Water Right Genealogy**

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SALEM, OREGON

Owner(s) Information

 CITY OF MANZANITA
MANZANITA OR 97130

Application(s)

Application	Received	
S 25124		Map

Permit(s)

Permit	Signature	
S 21913	11/28/1956	Map

Certificate(s)

Certificate	Signature	Certificate Ty
21707	11/28/1956	Original

Claim(s)

n/a

Decree(s)

n/a

Order(s)

n/a

Transfer(s)

n/a

Misc. Info

Authority	File Location
	Salem

Document Process

n/a

Point(s) of Diversion

Location (T-R-S-QQ)	DLC/Lot	Source	Tributary to	Max Rate	Rate	Max Acre Feet	Acre Feet	Leg. Descrip
3.0N-10.0W-16-NWSW		NEAHKAHNIE CR	ALDER CR	0.867	0.867			

Uses from this Point of Diversion

Use	P/S	Priority Date	Start Date	End Date	Acres	Rate/Acre	Duty	Max Rate	Rate	Max Acre Feet	Acre Feet	Status
MU	P	08/14/1950	1/1	12/31				0.867	0.867			NC

3.0N-10.0W-21-NWSE		LANGE CR/RES	NEHALEM R	0.433	0.433							
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Uses from this Point of Diversion

Use	P/S	Priority Date	Start Date	End Date	Acres	Rate/Acre	Duty	Max Rate	Rate	Max Acre Feet	Acre Feet	Status
MU	P	08/14/1950	1/1	12/31				0.433	0.433			NC

Place of Use

Use	P/S	Priority Date	Location (T-R-S-QQ)	DLC/Lot	Acres	Status	Remarks
MU	P	08/14/1950	3.0N-10.0W-29-SWNE			NC	

MU	P	08/14/1950	3.0N-10.0W-29-SENE			NC	
MU	P	08/14/1950	3.0N-10.0W-29-SENW	/2		NC	
MU	P	08/14/1950	3.0N-10.0W-29-NESW	/3		NC	
MU	P	08/14/1950	3.0N-10.0W-29-SESW	/4		NC	
MU	P	08/14/1950	3.0N-10.0W-29-NESE			NC	
MU	P	08/14/1950	3.0N-10.0W-29-NWSE			NC	
MU	P	08/14/1950	3.0N-10.0W-29-SWSE			NC	
MU	P	08/14/1950	3.0N-10.0W-29-SESE			NC	
MU	P	08/14/1950	3.0N-10.0W-32-NENE			NC	
MU	P	08/14/1950	3.0N-10.0W-32-NWNE			NC	
MU	P	08/14/1950	3.0N-10.0W-32-NENW	/1		NC	

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SALEM, OREGON**Water Right Genealogy**

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 WATER RESOURCES DEPT
SALEM, OREGON

Owner(s) Information

 CITY OF MANZANITA
PO BOX C
MANZANITA OR 97130

Application(s)

Application	Received	
S 57745		Map

Permit(s)

Permit	Signature	
S 43756		Map

Certificate(s)

n/a

Claim(s)

n/a

Decree(s)

n/a

Order(s)

n/a

Transfer(s)

n/a

Misc. Info

Authority	File Location
	Salem

Document Process

Action	Completed Date	Staff Person	Proposed Action
Permit S 43756			
Claim of Beneficial Use Received	05/05/1994	RUSS KLASSEN	

Point(s) of Diversion

Location (T-R-S-QQ)	DLC/Lot	Source	Tributary to	Max Rate	Rate	Max Acre Feet	Acre Feet	Legal Descript
3.0N-10.0W-15-NENW		W FK ANDERSON CR	N FK NEHALEM R	0.5	0.5			450 FEET SOUTH & FEET WEST FROM I CORNER, SECTION

Uses from this Point of Diversion

Use	P/S	Priority Date	Start Date	End Date	Acres	Rate/Acre	Duty	Max Rate	Rate	Max Acre Feet	Acre Feet	Status
MU	P	12/15/1978	1/1	12/31				0.5	0.5			NC

Place of Use

Use	P/S	Priority Date	Location (T-R-S-QQ)	DLC/Lot	Acres	Status	Remarks
MU	P	12/15/1978	3.0N-10.0W-28-NESW			NC	
MU	P	12/15/1978	3.0N-10.0W-28-NWSW			NC	

MU	P	12/15/1978	3.0N-10.0W-28-SWSW			NC	
MU	P	12/15/1978	3.0N-10.0W-28-SESW			NC	
MU	P	12/15/1978	3.0N-10.0W-29-NENE			NC	
MU	P	12/15/1978	3.0N-10.0W-29-NWNE			NC	
MU	P	12/15/1978	3.0N-10.0W-29-SWNE			NC	
MU	P	12/15/1978	3.0N-10.0W-29-SENE			NC	
MU	P	12/15/1978	3.0N-10.0W-29-NENW			NC	
MU	P	12/15/1978	3.0N-10.0W-29-NWNW			NC	
MU	P	12/15/1978	3.0N-10.0W-29-SWNW			NC	
MU	P	12/15/1978	3.0N-10.0W-29-SENW			NC	
MU	P	12/15/1978	3.0N-10.0W-29-NESW			NC	
MU	P	12/15/1978	3.0N-10.0W-29-NWSW			NC	
MU	P	12/15/1978	3.0N-10.0W-29-SWSW			NC	
MU	P	12/15/1978	3.0N-10.0W-29-SESW			NC	
MU	P	12/15/1978	3.0N-10.0W-29-NESE			NC	
MU	P	12/15/1978	3.0N-10.0W-29-NWSE			NC	
MU	P	12/15/1978	3.0N-10.0W-29-SWSE			NC	
MU	P	12/15/1978	3.0N-10.0W-29-SESE			NC	
MU	P	12/15/1978	3.0N-10.0W-32-NENE			NC	
MU	P	12/15/1978	3.0N-10.0W-32-NWNE			NC	
MU	P	12/15/1978	3.0N-10.0W-32-SWNE			NC	
MU	P	12/15/1978	3.0N-10.0W-32-SENE			NC	
MU	P	12/15/1978	3.0N-10.0W-32-NENW			NC	
MU	P	12/15/1978	3.0N-10.0W-32-NWNW			NC	
MU	P	12/15/1978	3.0N-10.0W-32-SWNW			NC	
MU	P	12/15/1978	3.0N-10.0W-32-SENW			NC	
MU	P	12/15/1978	3.0N-10.0W-32-NESW			NC	
MU	P	12/15/1978	3.0N-10.0W-32-NWSW			NC	
MU	P	12/15/1978	3.0N-10.0W-32-SWSW			NC	
MU	P	12/15/1978	3.0N-10.0W-32-SESW			NC	
MU	P	12/15/1978	3.0N-10.0W-32-NESE			NC	
MU	P	12/15/1978	3.0N-10.0W-32-NWSE			NC	
MU	P	12/15/1978	3.0N-10.0W-32-SWSE			NC	
MU	P	12/15/1978	3.0N-10.0W-32-SESE			NC	
MU	P	12/15/1978	3.0N-10.0W-33-NENW			NC	
MU	P	12/15/1978	3.0N-10.0W-33-NWNW			NC	
MU	P	12/15/1978	3.0N-10.0W-33-SWNW			NC	
MU	P	12/15/1978	3.0N-10.0W-33-SENW			NC	

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WATER RESOURCES DEPT
SALEM, OREGON**Water Right Genealogy**

No genealogy records available for this water right, try the family link below instead. If of the correct genealogy, please forward this information to WRIS Genealogy

[View Water Rights in same Family](#)

[Definition of codes and abbreviations](#)

[Report Errors with Water Right Data](#)

[Return to the Water Right Information search screen](#)

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**WATER RESOURCES DEPT
SALEM, OREGON**

APPENDIX 10

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WATER RESOURCES DEPT
SALEM, OREGON

TABLE 3.1

CITIES OF WHEELER AND MANZANITA
WATER MASTER PLAN UPDATE
ESTIMATED WATER DEMAND PROJECTIONS
FOR YEARS 2010 AND 2050

Jurisdiction	No. Services 1994	Avg. Day Demand 1994	ESTIMATED VALUES					
			2010			2050		
			No. Services.	Avg. Day Demand GPD	Peak Day Demand GPD	No. Services	Avg. Day Demand GPD	Peak Day Demand GPD
Wheeler	*185	**163,655	288	***99,174	193,348	636	177,282	354,564
Manzanita	1,085	167,000	1,818	318,107	795,267	4,014	702,393	1,545,264
Nehalem Bay St. Park	302	24,000	378	30,040	60,079	456	36,480	72,960
Tideland	20	25,000	25	31,250	62,500	30	37,500	75,000
Zadduck Creek	10	2,400	13	3,120	6,240	15	3,600	7,200
Brighton	12	3,000	15	3,750	7,500	18	3,600	7,200
Misc.	0	0	30	9,000	18,000	50	15,000	30,000
TOTALS	1,614	385,055	2,567	494,440	1,147,934	5,219	975,855	2,092,188

* Paradise Cove not included.

** Paradise Cove use is included plus unaccounted water use.

*** Unaccounted water use is reduced.

table3.1

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**WATER RESOURCES DEPT
SALEM OREGON**

APPENDIX 11

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WATER RESOURCES DEPT
SALEM, OREGON

STATE OF OREGON
WATER SUPPLY WELL REPORT
(as required by ORS 537.765)

WELL I.D.# L01906

(START CARD) # 89998

Instructions for completing this report are on the last page of this form.

OWNER: Well Number 1
Name CITY OF WHEELER L01906
Address P.O. BOX 177
City WHEELER State OR Zip 97147

(2) TYPE OF WORK

☒ New Well ☐ Deepening ☐ Alteration (repair/recondition) ☐ Abandonment

(3) DRILL METHOD:

☐ Rotary Air ☐ Rotary Mud ☒ Cable ☐ Auger
☐ Other

(4) PROPOSED USE:

☐ Domestic ☐ Community ☐ Industrial ☐ Irrigation
☐ Thermal ☐ Injection ☐ Livestock ☒ Other MUNICIPAL

(5) BORE HOLE CONSTRUCTION:

Special Construction approval ☐ Yes ☒ No Depth of Completed Well 63 ft.
Explosives used ☐ Yes ☒ No Type Amount

HOLE

SEAL

Diameter	From	To	Material	From	To	Sacks or pounds
18	0	8"				
16	8	63				
			NEAT CEMENT	33.5	0	59 SACKS

How was seal placed: Method ☐ A ☐ B ☒ C ☐ D ☐ E

☐ Other

Backfill placed from 33.5 ft. to 35 ft. Material SAND & BENT

Gravel placed from 35 ft. to 55 ft. Size of gravel PEA ROCK

(6) CASING/LINER: 55 63 DRAIN ROCK

Diameter	From	To	Gauge	Steel	Plastic	Welded	Threaded
12	+3	43	250	☒	☐	☒	☐
12	50	55		☒	☐	☒	☐

Final location of shoe(s) NONE

(7) PERFORATIONS/SCREENS:

☐ Perforations Method ☐ Screens Type JOHNSON V-WIRE Material SS

From	To	Slot size	Number	Diameter	Tele/pipe size	Casing	Liner
43	53	100		12" p/a		☒	☐

(8) WELL TESTS: Minimum testing time is 1 hour

☒ Pump ☐ Baller ☐ Air ☐ Flowing
Yield gal/min Drawdown Drill stem at Time

1012	3.5		24
------	-----	--	----

Temperature of water 49 Depth Artesian Flow Found

Was a water analysis done? ☒ Yes By whom AGI TECHNOLOGIES

Did any strata contain water not suitable for intended use? ☐ Too little

(9) LOCATION OF WELL by legal description:

County TILLAMOOK Latitude Longitude
Township 2N N or S Range 9W B or W. WM.
Section 5 1/4 1/4
Tax Lot Lot Block Subdivision
Street Address of Well (or nearest address)
22095 FOSS RD., WHEELER, OR

(10) STATIC WATER LEVEL:

14 ft. below land surface. Date 7-24-96
Artesian pressure 0 lb. per square inch. Date

(11) WATER BEARING ZONES:

Depth at which water was first found 9'

From	To	Estimated Flow Rate	SWL
9	16	15	
16	23	50	14
42.5	50	500	14

(12) WELL LOG:

Ground Elevation

CHIPS	Material	From	To	SWL
SAND GREY LOOSE (overbank dep)		0	2	
SAND GREY SILTY		2	9	
SAND & GRAVEL MED SILTY		9	11	
SAND & GRAVEL COARSE SILTY		11	16	
SAND GRAVEL COBBLES 10" MINUS		16		
BRN LOOSE (semi clean)			23	
COBBLES SAND & GRAVEL 10"		23		
MINUS PACKED BRN SOME SILT BRN			27	
SILT BROWN GRAVELY		27	28	
SAND & GRAVEL SILTY BRN 5"		28		
MINUS SOME COBBLES			31	
GRAVEL BRN COARSE TO FINE		31		
SOME SAND SEMI LOOSE			32.5	
SAND GRAVEL COBBLES 10"		32.5		
MINUS PACKED BRN			34.5	
GRAVEL & COBBLES 8" MINUS		34.5		
BROWN LESS SAND			39	
SAND GRAVEL COBBLES BRN 8"		39		
MINUS MORE SAND SEMI TIGHT			42.5	

Date started 6-21-96 Completed 7-24-96

(unbonded) Water Well Constructor Certification:

I certify that the work I performed on the construction, alteration, or abandonment of this well is in compliance with Oregon water supply well construction standards. Materials used and information reported above are true to the best of my knowledge and belief.

Signed WWC Number 1487
(unbonded) Water Well Constructor Certification Date 7-29-96

(unbonded) Water Well Constructor Certification:

I accept responsibility for the construction, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon water supply well

STATE OF OREGON
WATER SUPPLY WELL REPORT
(as required by ORS 537.765)

WELL I.D.# L01906

(START CARD) # 89998

Instructions for completing this report are on the last page of this form.

OWNER:

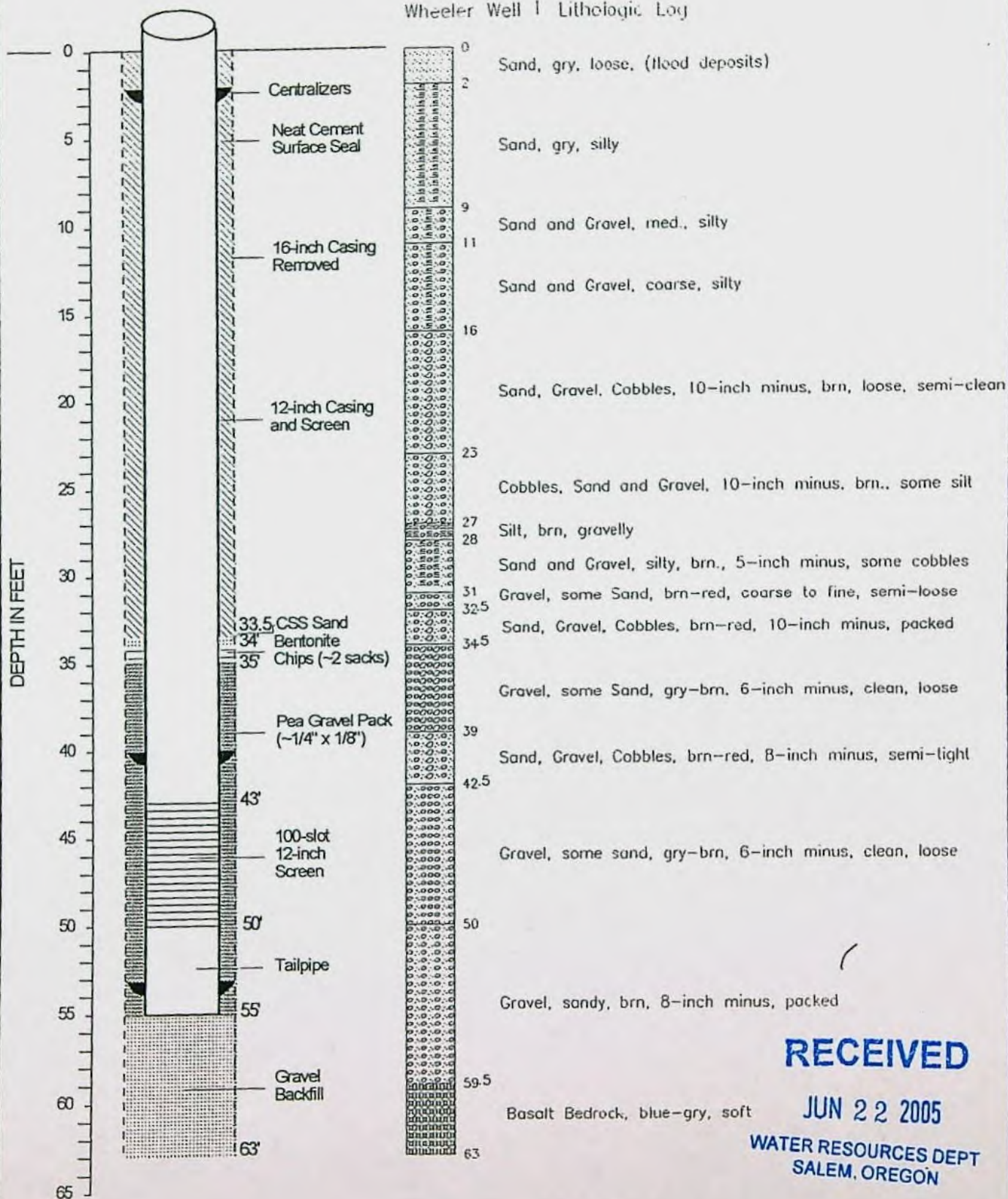
Well Number

(9) LOCATION OF WELL by legal description:

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SALEM OREGON

1992

Wheeler Well 1 Lithologic Log



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SALEM, OREGON

L01906

AGI
IT CONSULTANTS

Lee Engineering
Wheeler Oregon
Project #15,792.005
E:\23\agf\wheeler\15792\15792.dwg

Well 1 Completion

Figure 2

Date: 7/31/96

STATE OF OREGON
WATER SUPPLY WELL REPORT

WELL I.D.# 101907

(START CARD) # 90000

Instructions for completing this report are on the last page of this form.

OWNER:

Well Number #2

CITY OF WHEELER

P.O. BOX 177

WHEELER

State OR

Zip 97147

TYPE OF WORK

New Well ☐ Deepening ☐ Alteration (repair/recondition) ☐ Abandonment

DRILL METHOD:

Rotary Air ☐ Rotary Mud ☐ Cable ☒ Auger

Other

PROPOSED USE:

Domestic ☐ Community ☐ Industrial ☐ Irrigation

Thermal ☐ Injection ☐ Livestock ☒ Other MUNICIPAL

BORE HOLE CONSTRUCTION:

Special Construction approval ☐ Yes ☒ No Depth of Completed Well 63 ft.

Explosives used ☐ Yes ☒ No Type Amount

HOLE

SEAL

Diameter From To Material From To Sacks or pounds

18 0 8

16 8 63

NEAT CEMENT 32.5 0 42 SACKS

How was seal placed: Method ☐ A ☐ B ☒ C ☐ D ☐ E

Other

Backfill placed from 33.5 ft. to 35 ft. Material BENT. CHIPS

Gravel placed from 35 ft. to 63 ft. Size of gravel PEA ROCK

CASING/LINER:

Diameter	From	To	Gauge	Steel	Plastic	Welded	Threaded
12	4.3	45	250	☒	☐	☒	☐
12	60	63	250	☒	☐	☒	☐
				☐	☐	☐	☐
				☐	☐	☐	☐
				☐	☐	☐	☐

Final location of shoe(s)

PERFORATIONS/SCREENS:

Perforations Method

☒ Screens

Type JOHNSON V-WIRE Material SS

From	To	Slot size	Number	Diameter	Tels/pls size	Casing	Liner
45	60	100		12p/s		☒	☐
						☐	☐
						☐	☐
						☐	☐

WELL TESTS: Minimum testing time is 1 hour

☒ Pump

☐ Bailor

☐ Air

Flowing ☐ Artesian

Yield gal/min

Drawdown

Drill stem at

Time

1025 3.5 24 HOUR

Temperature of water 49° Depth Artesian Flow Found

Was a water analysis done? ☐ Yes By whom

Did any strata contain water not suitable for intended use? ☐ Too little

Salty ☐ Muddy ☐ Odor ☐ Colored ☐ Other

h of strata:

LOCATION OF WELL by legal description:

County TILLAMOOK Latitude Longitude

Township 2N N or S Range 4W E or W. WM.

Section 5 1/4 1/4

Tax Lot Lot Block Subdivision

Street Address of Well (or nearest address)

22095 FOSS RD., WHEELER, OR

STATIC WATER LEVEL:

14 ft. below land surface.

Date 7-28-96

Artesian pressure lb. per square inch. Date

WATER BEARING ZONES:

Depth at which water was first found 16'

From	To	Estimated Flow Rate	SWL
16	32.5	< 15 GPM	14
32.5	44.5	< 100 GPM	14
44.5	63	> 400 GPM	14

WELL LOG:

Ground Elevation

SAND	Material	From	To	SWL
SAND GREY LOOSE FLOOD DEPOSIT		0	2	
SAND GREY SILTY		2	7	
SAND & GRAVEL SILTY		7	9	
SAND & GRAVEL LESS SILT		9	16	
GRAVEL GREY BRN RED W/SILT		16		
BROWN			19	
GRAVEL & SAND SOME COBBLES		19	26	
GREY BRN 2" MINUS PACKED		26		
GRAVEL BROWN SILTY			30	
GRAVEL COURSE BRN 8" MINUS		30		
SOME SILT SOME SAND			32.5	
GRAVEL RED BRN SEMI CLEAN		32.5	44.5	
GRAVEL GREY BRN 6" MINUS		44.5		
CLEAN LOOSE SOME SAND			50.5	
GRAVEL GREY COURSE 10"		50.5		
MINUS CLEAN LOOSE SOME SAND			58.5	
GRAVEL GREY COURSE TRACE OF		58.5		
SILT			59.0	
GRAVEL GREY COURSE 10" MINUS		59.0		
SEMI LOOSE MORE SAND			63.0	

Date started 7-1-96

Completed 7-25-96

(unbonded) Water Well Constructor Certification:

I certify that the work I performed on the construction, alteration, or abandonment of this well is in compliance with Oregon water supply well construction standards. Materials used and information reported above are true to the best of my knowledge and belief.

Signed [Signature] WWC Number 1487

Date 7-29-96

(bonded) Water Well Constructor Certification:

I accept responsibility for the construction, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon water supply well construction standards. This report is true to the best of my knowledge and belief.

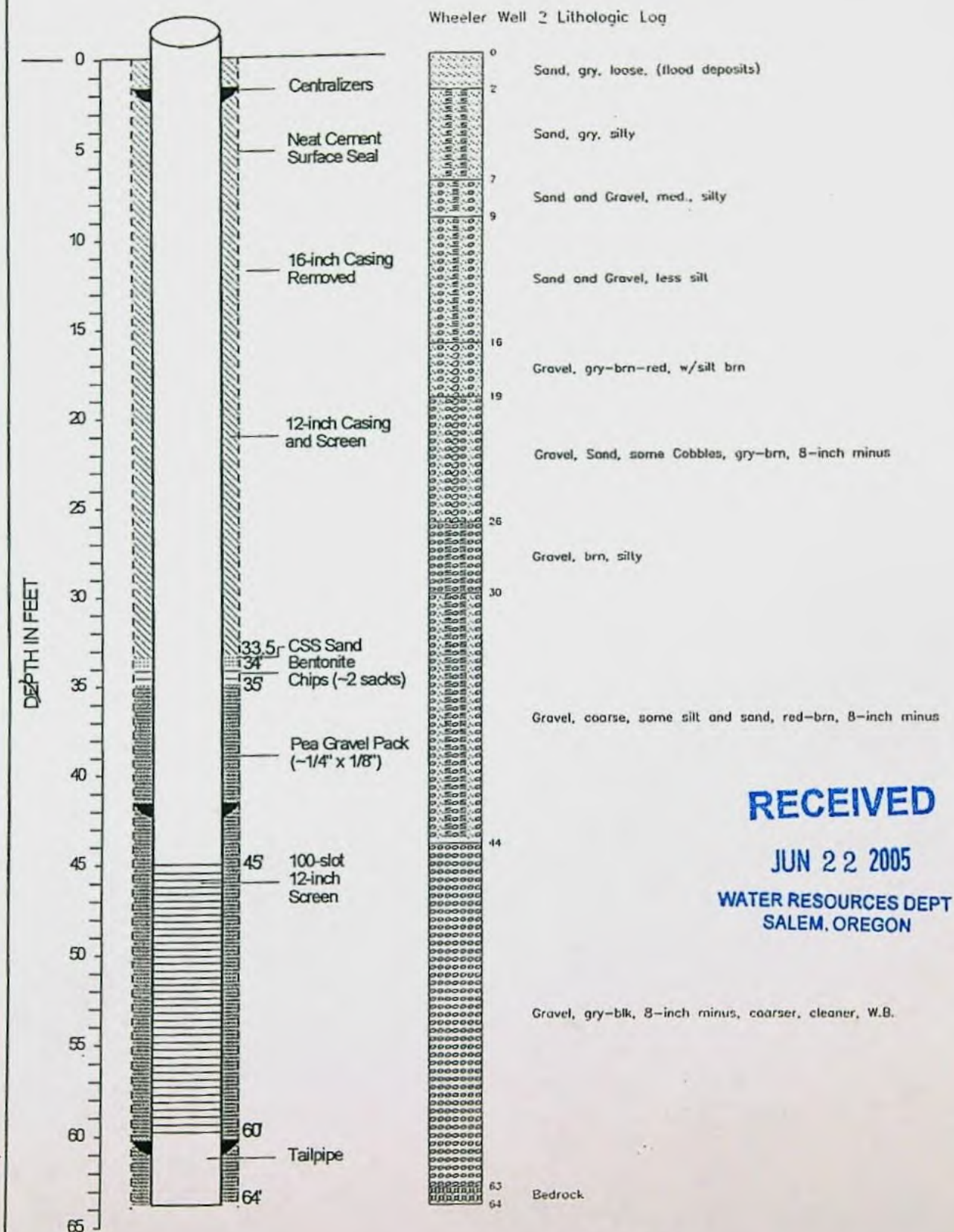
Signed [Signature] WWC Number 688

Date 7-29-96

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(START CARD) # 89997

Signed [Signature] Date 7-29-6

ABANDONED

TILL 50078

WELL I.D.#

STATE OF OREGON
WATER SUPPLY WELL REPORT

(as required by ORS 537.765)

Instructions for completing this report are on the last page of this form.

(START CARD) # 89997

OWNER:

Well Number Well AName CITY OF WHEELERAddress P.O. BOX 177City WHEELER State OR Zip 97147

(2) TYPE OF WORK

☒ New Well ☐ Deepening ☐ Alteration (repair/recondition) ☒ Abandonment

(3) DRILL METHOD:

☐ Rotary Air ☐ Rotary Mud ☒ Cable ☐ Auger☐ Other

(4) PROPOSED USE:

☐ Domestic ☐ Community ☐ Industrial ☐ Irrigation
☐ Thermal ☐ Injection ☐ Livestock ☒ Other MUNICIPAL

(5) BORE HOLE CONSTRUCTION:

Special Construction approval ☐ Yes ☒ No Depth of Completed Well 0 ft.Explosives used ☐ Yes ☒ No Type _____ Amount _____

HOLE

SEAL

Diameter From To Material From To Sacks or pounds

18 0 8 _____

16 8 49 _____

NEAT CEMENT 49 0 100 SACKS

How was seal placed: Method ☐ A ☐ B ☒ C ☐ D ☐ E☐ Other

Backfill placed from _____ ft. to _____ ft. Material _____

Gravel placed from _____ ft. to _____ ft. Size of gravel _____

(6) CASING/LINER:

Diameter From To Gauge Steel Plastic Welded Threaded

ALL CASING WAS REMOVED

& WELL BORE WAS DISPLACED

WITH NEAT CEMENT GROUT

Liner: _____

Final location of shoe(s)

(7) PERFORATIONS/SCREENS:

☐ Perforations Method _____☐ Screens Type _____ Material _____

From To Slot size Number Diameter Tele/plpe size Casing Liner

(8) WELL TESTS: Minimum testing time is 1 hour

☐ Pump ☐ Bailor ☐ Air ☐ Flowing

Yield gal/min Drawdown Drill stem at Time

Temperature of water _____ Depth Artesian Flow Found _____

Was a water analysis done? ☐ Yes By whom _____Did any strata contain water not suitable for intended use? ☐ Too little☐ Salty ☐ Muddy ☐ Odor ☐ Colored ☐ Other _____

Depth of strata: _____

(9) LOCATION OF WELL by legal description:

County TILLAMOOK Latitude _____ Longitude _____Township 2N N or S Range 9W E or W. WM.Section 5 1/4 1/4

Tax Lot _____ Lot _____ Block _____ Subdivision _____

Street Address of Well (or nearest address) _____

22095 FOSS RD. WHEELER, OR

(10) STATIC WATER LEVEL:

14 ft. below land surface. Date 6-28-96Artesian pressure 0 lb. per square inch. Date _____

(11) WATER BEARING ZONES:

Depth at which water was first found 0

From	To	Estimated Flow Rate	SWL
0	19	15 GPM	
19	26.5	<100 GPM	
27.5	33.5	>100 GPM	

(12) WELL LOG:

Ground Elevation _____

Material	From	To	SWL
SAND SILTY GREY	0	7	
SAND SILTY SOME GRAVEL MED	7	9	
GRAVEL MED TO COURSE SILTY	9		
BRN		19	
COBBLES GRAVEL SAND 10"	19		
MINUS GREY		20.5	
COBBLES GRAVEL SAND 10" MINUS	20.5		
GREY VERY LITTLE SILT SEMI	23.0	23.0	
LOOSE		23.0	
COBBLES GRAVEL SAND 10" MINUS	23.0		
BRN VERY LITTLE SILT SEMI			
LOOSE		26.5	
SILT BRN SOFT GRAVELY	26.5	27.5	
COBBLES GRAVEL SAND 6" MINUS	27.5		
CLEAN LOOSE GREY BRN		33.5	
GRAVEL BRN COURSE CEMENTED	33.5		
SOME SILT BRN		37.0	
SAME AS ABOVE (MORE SILT)	37.0	40.0	
SAND & GRAVEL COURSE CMTD	40.0		
TIGHT BRN DIRTY		44.0	

Date started _____ Completed _____

(unbonded) Water Well Constructor Certification:

I certify that the work I performed on the construction, alteration, or abandonment of this well is in compliance with Oregon water supply well construction standards. Materials used and information reported above are true to the best of my knowledge and belief.

Signed _____ WWC Number 1487 Date 7-29-96

(bonded) Water Well Constructor Certification:

I accept responsibility for the construction, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon water supply well construction standards. This report is true to the best of my knowledge and belief.

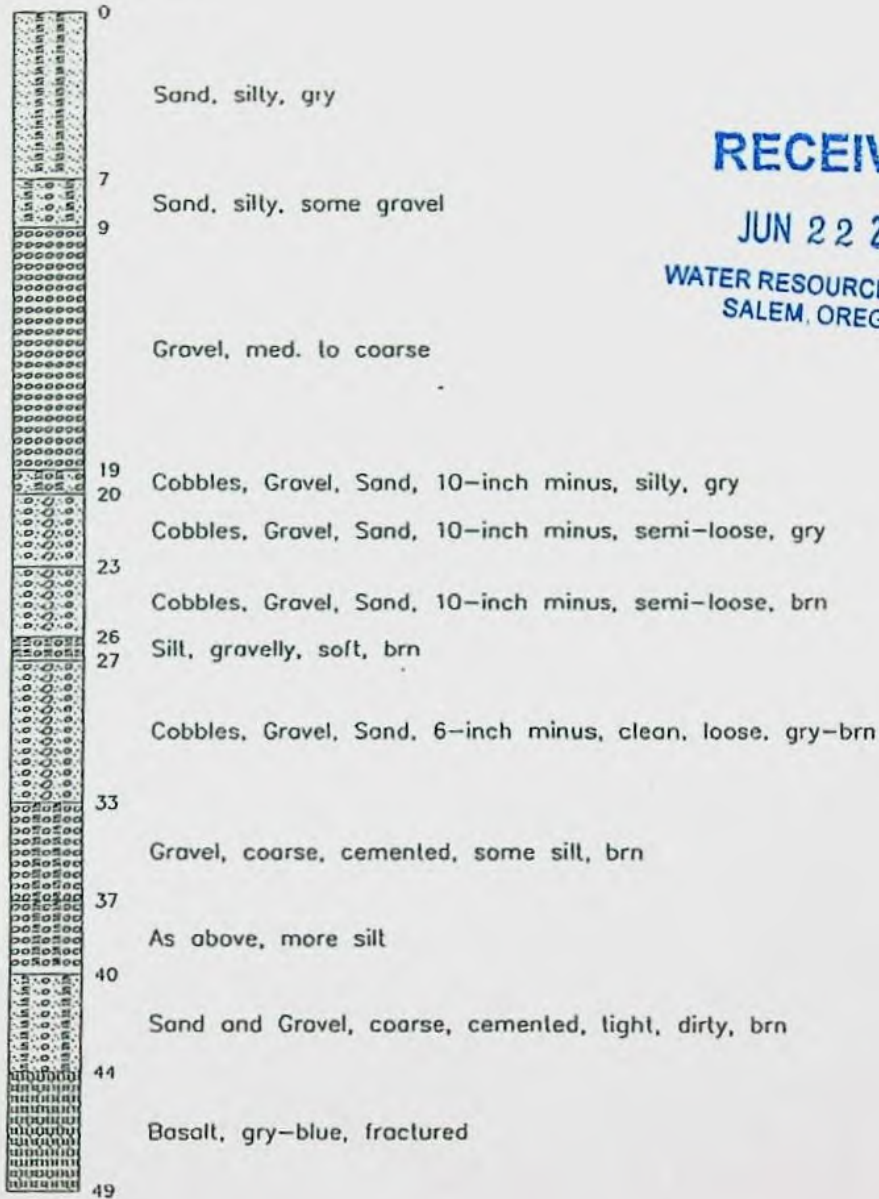
Signed _____ WWC Number 688 Date 7-29-96

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Wheeler - Well A
Lithologic Log



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WATER RESOURCES DEPT
SALEM, OREGON

Well Abandoned
7/1/96

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WATER RESOURCES DEPT
SALEM, OREGON

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WATER RESOURCES DEPT
SALEM, OREGON

INTERGOVERNMENTAL AGREEMENT
BETWEEN
THE CITY OF WHEELER AND THE CITY OF MANZANITA
(PERSON IN DIRECT-RESPONSIBLE-CHARGE)

This AGREEMENT is between the CITY OF WHEELER, an Oregon Municipal Corporation (hereinafter "Wheeler"), and the CITY OF MANZANITA, an Oregon Municipal Corporation (hereinafter "Manzanita").

RECITALS:

1. The City of Manzanita and the City of Wheeler entered into an Intergovernmental Cooperative Agreement (IGA) dated October 24, 2000 for the operation and maintenance of a jointly operated well water system.
2. Pursuant to OAR 333-061-0225 "General Requirements Applying to Water Systems", each water system owner delegates the responsibility of operating the water system to a certified operator known as the person in direct responsible charge.
3. The Oregon Department of Health Services/Drinking Water Program (DHS/DWP) interprets "system owner" for the purpose of delegating a person in direct responsible charge, to be the "Holder on Record" of the Water Right.
4. The Water Rights for the jointly operated well field are listed under the City of Wheeler's name.
5. Wheeler wishes to comply with requirements of OAR 333-061-0225 for employing, contracting with and designating an operator to be in Direct Responsible Charge - (DRC Treatment) of the water system.
6. The design of the recently completed system is such that, any changes at the well site also affects the operation of the City of Manzanita Treatment Plant.
7. Manzanita employs staff persons who are qualified to serve as the person in direct responsible charge of the treatment system (DRC -Treatment)

NOW, THEREFORE, IT IS AGREED BY AND BETWEEN THE PARTIES HERETO AS FOLLOWS:

1. DRC (DIRECT RESPONSIBLE CHARGE) DELEGATION. Manzanita will make available a City staff person who will be designated by Wheeler as the Person in Direct Responsible Charge (DRC - Treatment) of the jointly operated well system. Such staff person shall possess the certifications at or above the level required by the State of Oregon for the operation of the ground water well portion of the system. The Person in Direct Responsible Charge will supervise the technical operations of the system, establish and execute specific practices and policies for operating the system in accordance with policies and practices of the Cities and the requirements of the public water system rules, and will be engaged in the actual day-to-day operation and/or supervision of the system.
2. DURATION: This agreement shall be effective upon approval and execution by both City of Wheeler and City of Manzanita. The initial term of this agreement shall be from February 1, 2005 to January 31, 2006 and shall be automatically renewed for one year on

February 1 of each year thereafter unless either Wheeler or Manzanita provides to the other written notice of intent not to renew at least sixty (60) days prior to the annual renewal date.

3. TERMINATION: This agreement may be terminated by mutual consent of both parties; ~~or by either party at any time~~, upon sixty days (60) notice in writing and delivered by certified mail or personal service.
4. DISPUTE RESOLUTION: If a dispute arises as to the operation of the joint system by the Person in Direct Responsible Charge, the two City Administrators shall first attempt to develop a solution. If both City Councils do not approve of the solution, the Mayors of both Cities shall call a special joint meeting of the two City Councils to discuss the dispute and attempt to reach a solution. In the event the City Councils cannot reach an agreement on the dispute, both City Councils agree to mediate the dispute. A mediator, agreeable to both City Councils, shall be selected. If mediation fails, the two Cities may pursue judicial resolution through the court system.
5. WRITTEN NOTICE ADDRESS: All written notices required under this Agreement shall be sent to:

WHEELER: City Manager
City of Wheeler
P.O. Box 177
Wheeler, OR. 97147

MANZANITA: City Manager
City of Manzanita
P.O. Box 129
Manzanita, OR. 97130-0129

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**WATER RESOURCES DEPT
SALEM, OREGON**

IN WITNESS WHEREOF, the parties have caused this instrument to be executed in two (2) duplicate originals, either as individuals, or by their officers, thereunto duly authorized.

Dated this 9th day of March, 2005.

CITY OF MANZANITA

CITY OF WHEELER

By: [Signature]
Mayor

By: [Signature]
Mayor

By: [Signature]
City Manager

By: [Signature]
City Manager



Water System Operator Designation DRC Form

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WATER RESOURCES DEPT
SALEM, OREGON

If you need this information in an alternate format, please call Operator Certification at (503) 731-4899

System Name & Address:

CITY OF WHEELER
P.O. Box 177
WHEELER, OR 97147

PWS: 4100952

Required Certifications:

Distribution Level 1
Treatment Level 1
Filtration Endorsement N[^]
N= None Required

Pursuant to OAR 333-061-0225 the water system owner or authorized agent delegates the responsibility to the certified operator(s) listed below of:

- Supervising the technical operations of the system, and
- Establishing and executing specific practices and policies for operating the system in accordance with policies and practices of the owner and the requirements of public water system rules, and
- Are engaged in the actual day-to-day operation and/or supervision of the system.

The principal operator must hold a current, valid Oregon certificate at a grade level equal to or greater than the system's classification level.

Water systems contracting with a certified operator must include name and address of company/individual the contract is with. A copy of the contract must be submitted with this form.

List One Direct Responsible Charge Operator for:		Please Print	
<u>DISTRIBUTION</u>		<u>TREATMENT</u>	
Name: KENNETH C. HILL		Name: JOHN T. HANDLER	
Cert #: 6901	Level: WD2/WT1	Cert #: 3358	Level: WT2 - WD2
Signature:		Signature: John T. Handler	
Does this system contract for a certified operator? YES ☒ NO ☐			
If YES complete the information below			
Name of Business and/or operator: CITY OF MANZANITA			
Address: P.O. Box 129 MANZANITA, OR 97130			
Phone: 503 368-5347		Signature: John T. Handler	
This contract is for: Distribution ☐ Treatment ☒ Both ☐ (submit a copy of the contract)			

I am the owner or legal representative for the water system. I have reviewed the information on this form and verify that it is true, complete, and accurate to the best of my knowledge.

Signature: _____

Title: _____

Printed Name: _____

Date: _____

Send completed form(with copy of contract, when required) to:

Operator Certification • DHS-Drinking Water Program • PO Box 14450 • Portland, OR 97293-0450

APPENDIX 13

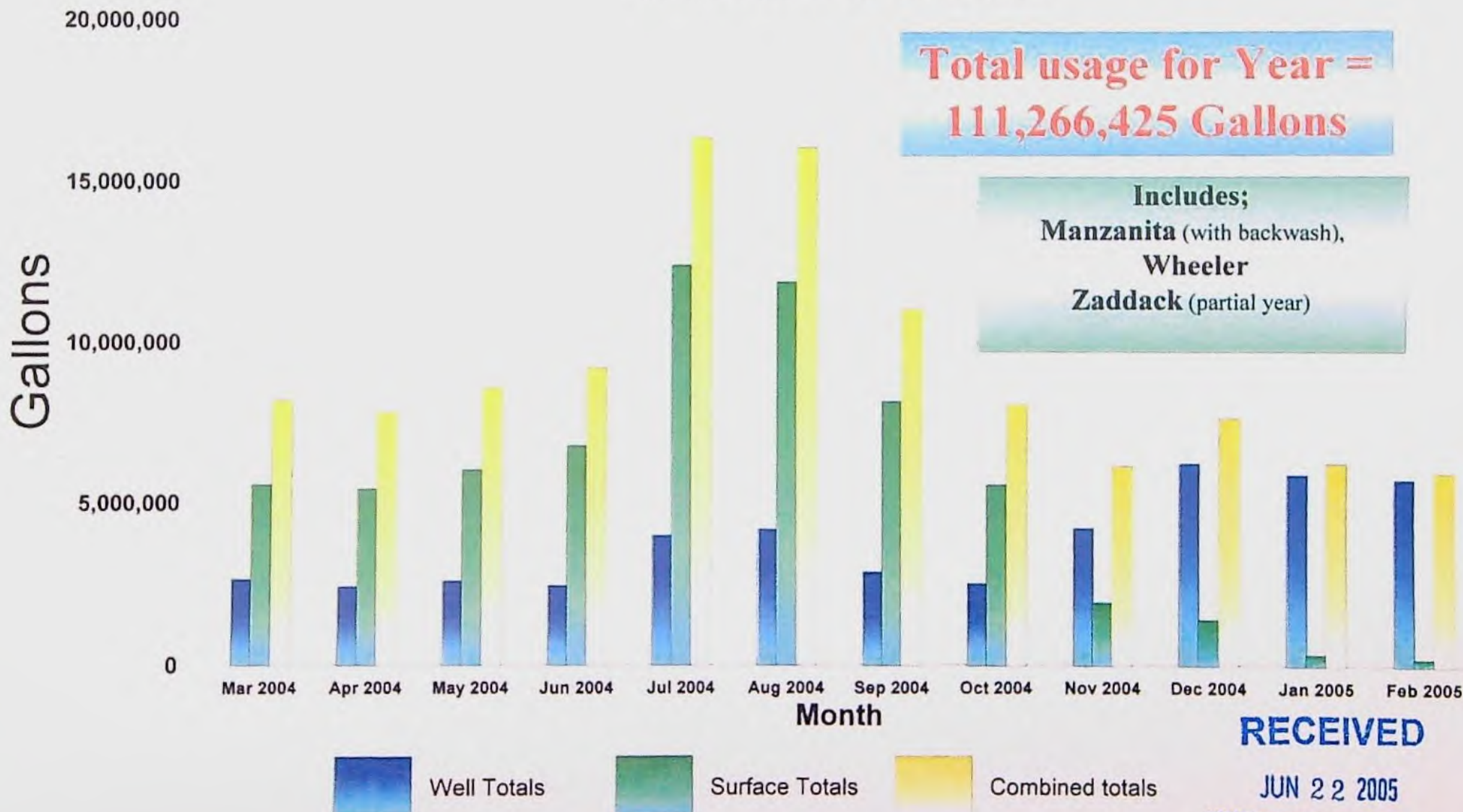
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Total Area Monthly usage

with Source breakdowns



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This data is to be used for Engineering and InterGovernmental Agreement (IGA) reporting requirements
And for future reference of source usages

	Current Mo.	Mar 2005	Apr 2005	May 2005	Jun 2005	Jul 2005	Aug 2005	Sep 2005	Oct 2005	Nov 2005	Dec 2005	Jan 2006	Feb 2006	Totals
Foss Road Wells - Groundwater														
A	Total Well site flow - (from items 1, 2, 3, 4, & 5 below)	6,914,677	auto fill	auto fill	auto fill	auto fill	auto fill	auto fill	auto fill	auto fill	auto fill	auto fill	auto fill	6,914,677
1	Well water to Manzanita - (Calculated from daily's)	4,561,000												4,561,000
	Manzanita Usage %	66.0%	auto calc	auto calc	auto calc	auto calc	auto calc	auto calc	auto calc	auto calc	auto calc	auto calc	auto calc	66.0%
2	Well water to Wheeler - (from Wheeler computer - monthly)	2,314,729												2,314,729
	Wheeler Usage %	33.5%	auto calc	auto calc	auto calc	auto calc	auto calc	auto calc	auto calc	auto calc	auto calc	auto calc	auto calc	33.5%
3	Well Water to Zadduck - (Calculated for wells only from well daily 55)	21,588												21,588
	Zadduck Usage %	0.3%	auto calc	auto calc	auto calc	auto calc	auto calc	auto calc	auto calc	auto calc	auto calc	auto calc	auto calc	0.3%
4	Water used in Foss Road Building - (from meter, inc wells & Manzanita)	12,420												12,420
	Building Usage %	0.2%	auto calc	auto calc	auto calc	auto calc	auto calc	auto calc	auto calc	auto calc	auto calc	auto calc	auto calc	0.2%
5	Emergency conn. to Mohler S&G - (from meter, inc wells & Manzanita)	4,940												4,940
	Mohler Sand & Gravel Usage %	0.1%	auto calc	auto calc	auto calc	auto calc	auto calc	auto calc	auto calc	auto calc	auto calc	auto calc	auto calc	0.1%
		100%												
Anderson Creek - Surface Water														
B	Total Surface Water - (Total of items 4, 5, & 6 below)	267,334	Auto calc	Auto calc	Auto calc	Auto calc	Auto calc	Auto calc	Auto calc	Auto calc	Auto calc	Auto calc	Auto calc	267,334
4	Treatment Plant - Raw surface water used for backwash	51,334												51,334
	Backwash Usage %	17.9%	auto calc	auto calc	auto calc	auto calc	auto calc	auto calc	auto calc	auto calc	auto calc	auto calc	auto calc	17.9%
5	Finish surface water to Manzanita	236,000												236,000
	Manzanita Finish Usage %	82.1%	auto calc	auto calc	auto calc	auto calc	auto calc	auto calc	auto calc	auto calc	auto calc	auto calc	auto calc	82.1%
6	Raw surface water to Nehalem - (Flows vary depending on dam levels)	0												0
	Nehalem (Raw) Usage %	0.0%	auto calc	auto calc	auto calc	auto calc	auto calc	auto calc	auto calc	auto calc	auto calc	auto calc	auto calc	0.0%
	Manzanita distribution flows to others	127,692	Auto calc	Auto calc	Auto calc	Auto calc	Auto calc	Auto calc	Auto calc	Auto calc	Auto calc	Auto calc	Auto calc	127,692
7	Finish surface water to Nehalem	0												0
	Nehalem (Finish) Usage %	0.0%	auto calc	auto calc	auto calc	auto calc	auto calc	auto calc	auto calc	auto calc	auto calc	auto calc	auto calc	0.0%
8	Finish surface water to Zadduck Creek	127,692												127,692
	Zadduck Usage %	44.4%	auto calc	auto calc	auto calc	auto calc	auto calc	auto calc	auto calc	auto calc	auto calc	auto calc	auto calc	44.4%
9	Finish surface water to Wheeler	0												0
	Wheeler Usage %	0.0%	auto calc	auto calc	auto calc	auto calc	auto calc	auto calc	auto calc	auto calc	auto calc	auto calc	auto calc	0.0%
TOTAL AREA WIDE WATER USAGE		7,202,011	autocalc	autocalc	autocalc	autocalc	autocalc	autocalc	autocalc	autocalc	autocalc	autocalc	autocalc	7,202,011
Includes Total Well Site Flow, & Surface Source Flow														
Area Served includes: Manzanita, Wheeler, Zadduck Coop, Well Site Building, Mohler S&G Emerg Conn, & Raw to Nehalem														

City of Manzanita

Water Use History

C:\Data Public Works\Spreadsheets\City1 wb3 9 History

Month	Actual gallons used during month							
	1989	1990	1991	1992	1993	1994	1995	1996
		Start meter install	Meter install finish			Rate increase to \$15/mg		
Jan	4,649,000	3,989,000	4,500,000	4,703,000	5,633,000	3,694,860	3,666,000	3,160,000
Feb	7,431,000	3,688,000	4,719,000	3,023,000	5,538,000	2,881,710	3,120,000	3,500,000
Mar	5,156,000	3,851,000	4,498,000	4,037,000	5,931,000	4,112,550	3,760,000	3,540,000
Apr	4,198,000	4,425,000	3,480,000	3,572,000	5,124,000	3,969,810	3,450,000	3,350,000
May	5,561,000	4,389,000	4,625,000	4,611,000	5,282,000	4,338,360	4,370,000	3,740,000
June	5,708,000	4,729,000	4,112,000	5,199,000	5,268,510	4,210,830	4,630,000	4,910,000
July	6,513,000	8,231,000	6,007,000	6,191,000	7,158,060	6,702,930	7,060,000	7,180,000
Aug	6,741,000	8,490,000	6,369,000	6,612,000	7,369,830	7,030,160	7,630,000	6,930,000
Sept	6,981,000	5,848,000	5,782,000	5,390,000	5,433,480	4,978,785	5,380,000	4,390,000
Oct	4,016,000	4,992,000	4,235,000	5,392,000	4,463,550	3,998,528	4,040,000	3,830,000
Nov	3,678,000	4,900,000	4,343,000	7,216,000	3,713,580	3,626,000	5,470,000	3,520,000
Dec	3,389,000	4,900,000	4,403,000	5,301,000	3,735,810	3,317,000	3,640,000	5,310,000
YEARLY TOTALS -->	64,021,000	62,432,000	57,073,000	61,247,000	64,650,820	52,861,523	56,216,000	53,360,000
Total water services .. Dec 31	891	930	968	1,004	1,027	1,100	1,133	1,160
Average gallons per day ----->	175,404	171,050	156,368	167,804	177,129	144,829	154,020	146,195
Average GPD per connection >	197	184	162	167	172	132	136	126

Month	Actual Finish Water (gallons) used during month (Stating in 2004, includes wells ... but NO Backwash)							
	1997	1998	1999	2000	2001	2002	2003	2004
			Rate increase 7/99 to \$30/mg		Filter units out to bid	Water project to bid H2O project started	TP & Wells online 3/2003 Rates> Oct 1 to \$34/mg	Zadack Coop on system Primary on wells 11/15
Jan	3,800,000	5,058,833	4,790,590	3,738,462	3,634,352	4,714,565	3,604,037	5,402,075
Feb	3,420,000	4,353,050	3,248,149	3,121,896	3,322,644	4,714,565	4,036,575	3,995,318
Mar	4,800,000	5,041,943	4,176,661	3,437,252	4,620,200	4,714,565	3,793,000	5,062,944
Apr	3,990,000	5,005,041	3,595,853	3,552,581	3,903,491	4,714,565	3,669,000	4,937,201
May	6,830,000	6,085,700	4,056,778	3,818,547	5,012,088	4,714,565	4,086,000	4,965,000
June	5,217,000	6,542,107	4,052,173	4,926,570	5,107,749	6,428,267	5,837,000	5,672,000
July	7,701,231	8,584,111	7,321,938	7,658,268	7,699,174	8,944,987	9,095,000	9,919,000
Aug	10,248,663	9,654,372	8,114,114	7,474,519	7,000,446	10,651,842	9,958,000	9,378,000
Sept	5,900,591	5,680,613	5,957,905	4,863,977	4,819,039	7,625,218	6,270,000	6,992,000
Oct	4,160,706	3,802,288	4,501,300	3,675,196	4,178,674	5,261,656	4,386,000	4,795,000
Nov	6,038,880	3,675,903	5,056,028	3,131,324	3,862,226	4,968,752	4,235,000	3,776,000
Dec	5,401,104	4,740,235	4,789,295	3,176,722	4,159,498	4,352,698	4,861,000	4,442,000
YEARLY TOTAL (finish only) -->	67,508,175	68,224,196	59,660,784	52,575,314	57,319,581	71,806,245	63,830,612	69,336,538
YEARLY TOTAL (inc BW) -->								74,476,020
Total water services .. Dec 31	1,196	1,231	1,265	1,292	1,316	1,343	1,393	1456
Average gallons per day ----->	184,958	186,920	163,458	144,045	157,043	196,734	174,882	189,967
Average GPD per connection >	155	152	129	111	119	146	126	130

Original spreadsheet setup date: 1992 file c:\City1\Yearly_Readings

Yearly Readings and Projections

Last update Jan 2, 2005

Year	Actual services		Projected in "89" services at 3% growth Start @ \$91	Comments	Yearly Total water usage	Year	Actual Peak Gal Day
	on Dec 31st	Growth					
1989	891			No meters	64,021,000	1989	no records
1990	930	4.4%	918	No meters	62,432,000	1990	no records
1991	968	4.1%	945	meters being installed	57,073,000	1991	no records
1992	1,004	3.7%	974	Started water project planning	61,247,000	1992	no records
1993	1,027	2.3%	1,003	meters being installed	64,650,820	1993	no records
1994	1,100	7.1%	1,033	meters being installed	52,861,523	1994	no records
1995	1,133	3.0%	1,064	meters + rate increase	56,216,000	1995	480,000
1996	1,160	2.4%	1,096	Roads closed & major floods	53,360,000	1996	460,000
1997	1,196	3.1%	1,129	Floods in Jan & Mar	67,508,175	1997	486,000
1998	1,231	2.9%	1,163	Min Sept intake flow 109 GPM	68,224,196	1998	509,000
1999	1,265	2.8%	1,197	Tested Microfiltration plants	59,660,784	1999	434,000
2000	1,292	2.1%	1,233	Pre purchase of Filters	52,575,314	2000	363,000
2001	1,316	1.9%	1,270	Filter units out to bid & purchase	57,319,581	2001	414,000
2002	1,343	2.1%	1,308	Water Project out to bid & Const	69,619,223	2002	479,000
2003	1,393	3.7%	1,348	Project online 3/14/2003	63,830,612	2003	499,000
2004	1,456	4.5%	1,388	Primarily on wells 11/15/04	74,476,020	2004	520,000
2005			1,430				
2006			1,473				
2007			1,517				
Average>		3.3%					

* NOTE: After 1997 ... peak usage exceeds pipeline capacity and we can no longer accurately record peak usage ----> Pipeline capacity = 504,000 gpd

Notes

- * Winter - due to broken pipes
- * Winter - due to broken pipes
- * Winter - due to broken pipes
- * Winter - due to broken pipes
- * Winter - due to broken pipes
- * Summer due to hot weather & crowds
- * Winter - due to broken pipes
- * Summer due to hot weather & crowds
- * Summer due to hot weather & crowds
- * Summer due to hot weather & crowds
- * Summer due to hot weather & crowds
- * Lower due to rain near holidays
- * Lower due to rain near holidays
- Max Well to TP = 576,000 gpd
- Max TP to Resv = 504,000 gpd
- * Holiday weekends

PROJECTIONS ... (Based on growth of 32 new homes per year. - base year 1997)

YEAR	SERVICES		Percent Increase	New Services	YEAR	Peak Daily Use		(serv x 30 days) x (250 gpd) Estimate at 250 gpd Monthly peak use gallons per month	(serv x 30 days) x (250 gpd) Estimate at 300 gpd Monthly peak use
	on Dec 31st	Actuals are Bold				Projected (serv*300gpd) gpd	Projected (serv*400gpd) gpd		
1998	1,231			Actual services	1998	369,300	492,400	9,232,500	11,079,000
1999	1,265	2.76%		Actual services 34	1999	379,500	506,000	9,487,500	11,385,000
2000	1,292	2.13%		Actual services 27	2000	387,600	516,800	9,690,000	11,628,000
2001	1,316	1.86%		Actual services 24	2001	394,800	526,400	9,870,000	11,844,000
2002	1,343	2.06%		Actual services 27	2002	402,900	537,200	10,072,500	12,087,000
2003	1,393	3.72%		Actual services 50	2003	417,900	557,200	10,447,500	12,537,000
2004	1,456	4.52%		Actual services 63	2004	436,800	582,400	10,920,000	13,104,000
2005	1,488	2.20%		Projected @ 32 new services per year	2005	446,400	595,200	11,160,000	13,392,000
2006	1,520	2.15%		Projected @ 32 new services per year	2006	456,000	608,000	11,400,000	13,680,000
2007	1,552	2.11%		Projected @ 32 new services per year	2007	465,600	620,800	11,640,000	13,968,000
2008	1,584	2.06%		Projected @ 32 new services per year	2008	475,200	633,600	11,880,000	14,256,000
2009	1,616	2.02%		Projected @ 32 new services per year	2009	484,800	646,400	12,120,000	14,544,000
2010	1,648	1.98%		Projected @ 32 new services per year	2010	494,400	659,200	12,360,000	14,832,000
2011	1,680	1.94%		Projected @ 32 new services per year	2011	504,000	672,000	12,600,000	15,120,000
2012	1,712	1.90%		Projected @ 32 new services per year	2012	513,600	684,800	12,840,000	15,408,000
2013	1,744	1.87%		Projected @ 32 new services per year	2013	523,200	697,600	13,080,000	15,696,000
2014	1,776	1.83%		Projected @ 32 new services per year	2014	532,800	710,400	13,320,000	15,984,000
2015	1,808	1.80%		Projected @ 32 new services per year	2015	542,400	723,200	13,560,000	16,272,000
2016	1,840	1.77%		Projected @ 32 new services per year	2016	552,000	736,000	13,800,000	16,560,000
2017	1,872	1.74%		Projected @ 32 new services per year	2017	561,600	748,800	14,040,000	16,848,000
2018	1,904	1.71%		Projected @ 32 new services per year	2018	571,200	761,600	14,280,000	17,136,000
2019	1,936	1.68%		Projected @ 32 new services per year	2019	580,800	774,400	14,520,000	17,424,000
2020	1,968	1.65%		Projected @ 32 new services per year	2020	590,400	787,200	14,760,000	17,712,000

Note Projected peak water use, (gpd) equals (# of services) times (300 gpd) <daily usage per residence> (< AWWA nation wide average)

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City of Manzanita
Buildable Lot Availability - Based on Actual
 Updated April 3, 2005

FILE: WTP/My Documents/Spreadsheets other/CITY3 wb3

Map	T / R / Sec	Description	Area	Total Available Lots		Total Buildings served				Current lots left	Percent left	Current lots left	Percent left
				Nov 2000	April 2005	May 1997	Jan 1999	Nov 2000	Apr 2005	Nov 2000		Apr 2005	
Manzanita City Limits													
Map 3N - 10W - Sec 29AA		Far Northeast Manzanita	Both	54	64	19	19	23	27	31	57.4%	37	57.8%
Map 3N - 10W - Sec 29AB		Northeast Manzanita	City	151	170	94	100	104	122	47	31.1%	48	28.2%
Map 3N - 10W - Sec 29AC		NE & SE Manzanita	City	188	227	149	151	161	182	27	14.4%	45	19.8%
Map 3N - 10W - Sec 29AD		Southeast Manzanita	City	48	66	29	29	34	43	14	29.2%	23	34.8%
Map 3N - 10W - Sec 29BA		Classic Ridge	City	188	188	132	144	148	157	40	21.3%	31	16.5%
Map 3N - 10W - Sec 29BD		Northwest Manzanita	City	194	195	162	160	177	183	17	8.8%	12	6.2%
Map 3N - 10W - Sec 29CA		Southwest Manzanita	City	164	164	133	145	145	149	19	11.6%	15	9.1%
Map 3N - 10W - Sec 29CD		Southwest Manzanita	City	100	100	76	76	78	84	22	22.0%	16	16.0%
Map 3N - 10W - Sec 29DB		South Manzanita & Golf Course	City	109	113	70	81	81	93	28	25.7%	20	17.7%
Map 3N - 10W - Sec 29DC		Golf Course Area	City	66	70	32	34	35	48	31	47.0%	22	31.4%
Map 3N - 10W - Sec 32BA		Northwest Necamey City area	City	94	94	67	70	71	77	23	24.5%	17	18.1%
Map 3N - 10W - Sec 32BD		Southwest Necamey City area	City	111	111	64	66	72	81	39	35.1%	30	27.0%
Total in City Limits				1467	1562	1027	1084	1129	1246	338	23.0%	316	30.8%
Manzanita Urban Growth Boundary													
Map 3N - 10W - Sec 20CD		Classic Ridge	UGB	7	9	5	5	5	5	2	28.6%	4	44.4%
Map 3N - 10W - Sec 20DC		Classic Ridge	UGB	9	9	3	4	4	6	5	55.6%	3	33.3%
Map 3N - 10W - Sec 28B		Highway 101 Park Bend Stephens	UGB	10	15	5	8	8	9	2	20.0%	6	40.0%
Map 3N - 10W - Sec 28CA		Sea Forest	UGB	58	58	43	43	43	44	15	25.9%	14	24.1%
Map 3N - 10W - Sec 28CC		Pine Ridge - Phase 1	UGB	70	73	2	16	22	30	48	68.6%	43	58.9%
Map 3N - 10W - Sec 28CD		The Glade & Cemetery Area	UGB	48	53	44	44	45	45	3	6.3%	8	15.1%
Map 3N - 10W - Sec 32AB		East Necamey City area	UGB	130	130	44	52	81	77	69	53.1%	53	40.8%
Map 3N - 10W - Sec 33BB		Pine Ridge - Phase 2	UGB	91	105	0	0	0	35	91	100.0%	70	66.7%
Total in UGB Area				332	452	146	172	188	261	144	43.4%	201	137.7%
CURRENT LOTS IN DEVELOPED AREAS						Total Buildings served				Developed Areas			
Total Available Lots				Total Developed lots - City & UGB		Total Buildings served				Lots left	Percent left	Lots left	Percent left
				1799	2014	1173	1266	1317	1497	482	26.6%	517	26.7%
				Nov 2000	April 2005	May 1997	Jan 1999	Nov 2000	Apr 2005	Nov 2000		Apr 2005	
FUTURE LOTS IN UN-DEVELOPED AREAS						Total Buildings served				Un-Developed Areas			
Total Available Lots				Total Un-Developed area lots		Total Buildings served				Current lots left	Percent left	Current lots left	Percent left
				110	110	0	0	0	1	110	100.0%	109	99.1%
				Nov 2000	April 2005	May 1997	Jan 1999	Nov 2000	Apr 2005	Nov 2000		Apr 2005	
TOTAL Building Lots Available						ALL AREAS				ALL Areas			
Including all areas				1909	2124	1173	1266	1317	1498	692	32.9%	626	29.6%
				Nov 2000	April 2005	May 1997	Jan 1999	Nov 2000	Apr 2005	Nov 2000		Apr 2005	
Summary						Note 1 - Apr 2005: Increase in lots due to subdividing of earlier large plots into smaller, buildable, building size lots!							
Total available lots, including all areas - (1799 + 110) =				1909	2124	* Note 2 - Apr 2005: Estimate for lots in second nine of golf course area based on golf course owner (Ted Erickson) future plans							
Available lots, all areas - (1909 - 1317) =				592	626	Note 3 - Apr 2005: All totals are from constantly updated maps located in the Public Works Shop!							
Years to max build out of all areas at growth rate of 35 homes per year				16.9	17.9	Note 4 - Apr 2005: Buildings Served Residences = 1 Businesses = 1 Duplexes = 2 Triplexes = 3 ... etc							
				(592 divided by 35)	(626 divided by 35)								

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APPENDIX 14

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PEAK DEMAND ESTIMATES

WHEELER

PEAKING FACTOR 2.19
ASSUMED GROWTH RATE 0.9 %/YR

YEAR	AVERAGE DAY DEMAND	PEAK DAY DEMAND	NUMBER EDU'S	EST'D DAILY USE GPD/EDU
2004	48,000	105,120	286	168
2005	48,432	106,066	288	168
2006	48,868	107,021	291	168
2007	49,308	107,984	293	168
2008	49,751	108,956	296	168
2009	50,199	109,936	299	168
2010	50,651	110,926	301	168
2011	51,107	111,924	304	168
2012	51,567	112,931	307	168
2013	52,031	113,948	309	168
2014	52,499	114,973	312	168
2015	52,972	116,008	315	168
2016	53,448	117,052	318	168
2017	53,930	118,106	321	168
2018	54,415	119,169	324	168
2019	54,905	120,241	327	168
2020	55,399	121,323	330	168
2021	55,897	122,415	332	168
2022	56,400	123,517	335	168
2023	56,908	124,629	338	168
2024	57,420	125,750	342	168
2025	57,937	126,882	345	168
2026	58,458	128,024	348	168
2027	58,985	129,176	351	168
2028	59,515	130,339	354	168
2029	60,051	131,512	357	168
2030	60,591	132,695	360	168
2031	61,137	133,890	364	168
2032	61,687	135,095	367	168
2033	62,242	136,310	370	168
2034	62,802	137,537	374	168
2035	63,368	138,775	377	168
2036	63,938	140,024	380	168
2037	64,513	141,284	384	168
2038	65,094	142,556	387	168
2039	65,680	143,839	391	168
2040	66,271	145,133	394	168
2041	66,867	146,440	398	168
2042	67,469	147,758	401	168
2043	68,076	149,087	405	168
2044	68,689	150,429	409	168
2045	69,307	151,783	412	168
2046	69,931	153,149	416	168
2047	70,560	154,527	420	168

MANZANITA

PEAKING FACTOR 2.20
ASSUMED GROWTH RATE 3.3 %/YR

AVERAGE DAY DEMAND	PEAK DAY DEMAND	NUMBER EDU'S	EST'D DAILY USE GPD/EDU
187,194	411,828	1,466	128
193,372	425,418	1,514	128
199,753	439,457	1,564	128
206,345	453,959	1,616	128
213,154	468,939	1,669	128
220,188	484,414	1,724	128
227,455	500,400	1,781	128
234,961	516,913	1,840	128
242,714	533,971	1,901	128
250,724	551,592	1,964	128
258,998	569,795	2,028	128
267,545	588,598	2,095	128
276,374	608,022	2,164	128
285,494	628,087	2,236	128
294,915	648,814	2,310	128
304,647	670,224	2,386	128
314,701	692,342	2,465	128
325,086	715,189	2,546	128
335,814	738,790	2,630	128
346,896	763,170	2,717	128
358,343	788,355	2,806	128
370,168	814,371	2,899	128
382,384	841,245	2,995	128
395,003	869,006	3,093	128
408,038	897,683	3,196	128
421,503	927,307	3,301	128
435,413	957,908	3,410	128
449,781	989,519	3,522	128
464,624	1,022,173	3,639	128
479,957	1,055,905	3,759	128
495,795	1,090,750	3,883	128
512,156	1,126,744	4,011	128
529,058	1,163,927	4,143	128
546,517	1,202,336	4,280	128
564,552	1,242,013	4,421	128
583,182	1,283,000	4,567	128
602,427	1,325,339	4,718	128
622,307	1,369,075	4,874	128
642,843	1,414,255	5,034	128
664,057	1,460,925	5,201	128
685,971	1,509,136	5,372	128
708,608	1,558,937	5,549	128
731,992	1,610,382	5,733	128
756,148	1,663,525	5,922	128

BOTH

PEAK DAY DEMAND GPD/BOTH	PEAK DAY DEMAND CFS/BOTH
516,948	0.80
531,484	0.82
546,477	0.85
561,943	0.87
577,895	0.90
594,351	0.92
611,326	0.95
628,837	0.97
646,903	1.00
665,540	1.03
684,768	1.06
704,606	1.09
725,074	1.12
746,192	1.16
767,982	1.19
790,465	1.23
813,665	1.26
837,604	1.30
862,307	1.34
887,799	1.38
914,105	1.42
941,253	1.46
969,269	1.50
998,182	1.55
1,028,022	1.59
1,058,818	1.64
1,090,603	1.69
1,123,408	1.74
1,157,268	1.79
1,192,215	1.85
1,228,287	1.90
1,265,519	1.96
1,303,951	2.02
1,343,621	2.08
1,384,569	2.15
1,426,839	2.21
1,470,472	2.28
1,515,515	2.35
1,562,012	2.42
1,610,012	2.50
1,659,565	2.57
1,710,720	2.65
1,763,531	2.73
1,818,052	2.82

INSTALL NEW PUMPS
ADD NEHALEM 1.13 CFS

FILE FOR ADDITIONAL WATER RIGHT

ADD NEW WELL(S) AND PIPELINE
ADD ROCKAWAY BEACH 1.1 CFS

RECEIVED

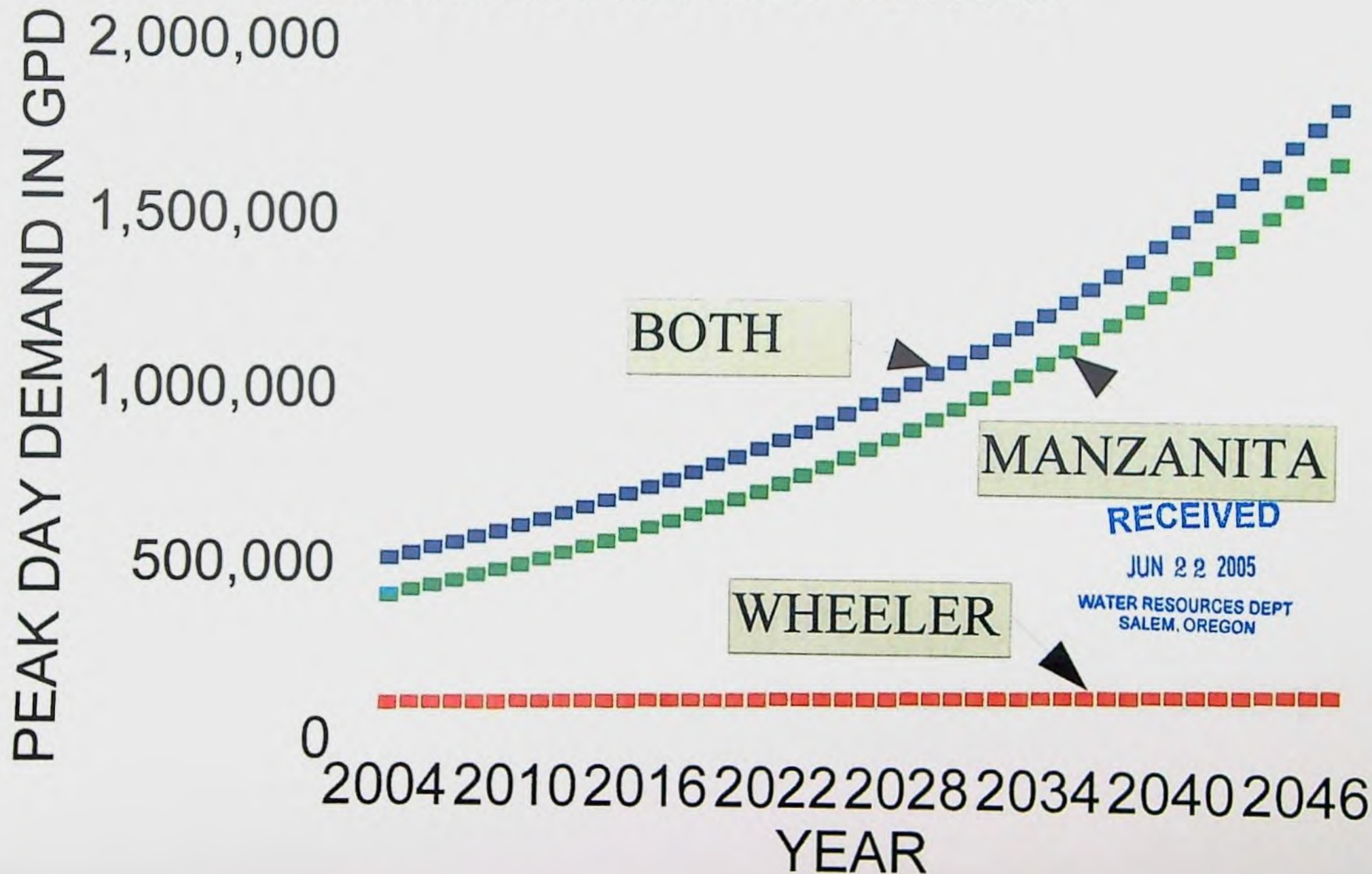
JUN 22 2005

WATER RESOURCES DEPT
SALEM, OREGON

TOTALS APPROX. 5.05 CFS
PEAK DAY DEMANDS

WHEELER AND MANZANITA

ESTIMATED PEAK DAY DEMAND



RECEIVED

MAY 27 2005

WATER RESOURCES DEPT
SALEM, OREGON

F. DUANE LEE, P. E.

CONSULTING ENGINEER

Civil
Environmental
Structural

Lisa J. Juul
Water Rights Specialist
Water Resource Department
725 Summer St. N.E. Suite A
Salem, OR 97301-1271

Re: City of Wheeler Water Right Application #G-13479 (Permit #G-12196)

Dear Lisa:

When we met in late April I thought I would have time to complete the application revisions we discussed by the end of May. However, my cancer surgery set me back a couple of week more than I anticipated. Therefore, I would like to request an additional 30 days to complete the application as we discussed. Surgery went fine. The doctor says he thinks all of the cancer was removed. So I should be back to full throttle by the middle of June. I'll do what I can to get the revisions to you before the end of June.

Please call me at 503-913-6098 if you need anything more. Thanks in advance for your courtesy.

Sincerely,

F. Duane Lee

F. Duane Lee, P. E., CWRE.

Cc: John Handler

✓ OK - Additional time
through June 30,
2005 granted.
[Signature]
6-2-05



Oregon

Theodore R. Kulongoski, Governor

Water Resources Department
North Mall Office Building
725 Summer Street NE, Suite A
Salem, OR 97301-1271
503-986-0900
FAX 503-986-0904

CERTIFIED MAIL
Return Receipt Requested

February 28, 2005

City of Wheeler
Attn: Ken Hill
PO Box 177
Wheeler, OR 97147

REFERENCE: Pending Application for Extension of Time
Water Right Application #G-13479 (Permit #G-12196)

Dear Municipal Water Right Permit Holder:

The Department is currently evaluating your request for an extension of time on the above referenced municipal water use permit. We have determined that your extension application does not provide sufficient detail necessary to fully evaluate your request. The information and materials that need clarification are listed below and must be submitted before evaluation can continue.

NOTE: *If you make reference to other documents, reports and/or plans, you must provide copies with your responses and make specific references to the pages, tables and/or charts.*

Copies of your pending application received May 3, 2004, and your original permit are enclosed for reference.

- Your Application for Extension of Time for Permit #G-12196, requests until October 1, 2049, to fully apply water to beneficial use. Your response to Question #8 indicates that additional improvements will occur to fully apply water to beneficial use. If any improvements are to occur please amend your application to request additional time in which to complete construction. The previous timeline under Permit #G-12196, in which to complete construction was October 1, 1997. Please note that if your requested extension date for completion of construction exceeds October 1, 2047, then you will

need to provide sufficient documentation (under Question #10-B) demonstrating that the permit holder's potential for future growth and expansion is feasible and consistent with the amounts and types of lands and uses proposed to be served. Information that may be addressed includes, but is not limited to: land use plan(s); current service area(s) in relation to the urban growth boundary; amounts of lands currently unserved and available for future development; and/or low-density vs. high-density areas.

***Question #6 - OAR 690-315-0070(3)(g):** Provide an estimate of the population served under this permit and a description of the methodology(ies) used to make this estimate.*

- Your response to Question #6 of the Application for Extension of Time does not indicate the total **current** population served under this permit, being the City of Wheeler and City of Manzanita service areas. Please estimate the **current** population to which water is supplied under this permit and describe how that figure was derived or identify the source from which the data was obtained. Include any calculations, formulas, supporting documentation, and/or reference page numbers of information sources.

Question #10 - OAR 690-315-0070(3)(k):

***A.** Provide an estimated demand projection and a description of the methodology(ies) used for the subject water right permit, considering the other water rights and contracts held by the municipal or quasi-municipal water use permit holder, and a date by which the water development is anticipated to be completed and water put to full beneficial use.*

Prepare a qualitative analysis indicating the date by which you anticipate to fully develop the water right permit being extended (i.e., the date requested in your extension application). In developing your estimated demand projections for the permit being extended, you should describe the following:

- 1) Current Peak Water Demands
Describe the current demands for water. Indicate annual average, peak season, and peak day water demand figures.
- 2) Projected Population - **Your application contains sufficient information.**
- 3) Potential Growth
Describe the potential for growth of the service area (such as the annexation of lands or new industrial and/or commercial ventures locating within the service area) and describe how those projects are expected to affect future water demands.

4) Inventory of Water Rights Held

List all water rights held. The Department's website (www.wrd.state.or.us) may be a helpful source for compiling this information.

This information is not clearly stated in your extension application. See enclosed Attachment "A" and "Water Rights Information Query Results" to assist you in providing a list of all water rights held by the City of Wheeler.

Indicate which water rights are used to meet current water demands.

Additionally, describe the manner in which the subject permit, other water rights and/or any water supply contracts you may hold are utilized to meet these present water needs. Identify any water rights not currently utilized, or used only in a limited capacity, and explain the reason(s) why. Describe any factors affecting use of the water rights, such as: system redundancy; emergency back-up water supply; climate patterns resulting in seasonal unavailability or high turbidity issues; reliability or quality of existing water supplies; and/or agreements to supply water to other entities.

Describe how the subject permit, other water rights and/or any water supply contracts you may hold are planned or expected to be used to meet anticipated future water needs.

5) Other Justification

Provide any other information that justifies your current and future need for the water under the subject permit.

B. Extension requests for greater than 50 years must include documentation that the demand projection is consistent with the amount and types of lands and uses proposed to be served by the permit holder.

- If your requested extension date for completion of construction exceeds October 1, 2047, then you will need to provide sufficient documentation demonstrating that the permit holder's potential for future growth and expansion is feasible and consistent with the amounts and types of lands and uses proposed to be served. Information that may be addressed includes, but is not limited to: land use plan(s); current service area(s) in relation to the urban growth boundary; amounts of lands currently unserved and available for future development; and/or low-density vs. high-density areas.

Question #11 - OAR 690-315-0070(3)(l): Please provide a summary of the plan and schedule to complete construction and/or perfect the water right.

Considering your demand projections in Item #10-A, and the items listed in your response to Question #8, please describe major future projects, if any, that must be

completed in order to fully develop and perfect the subject permit. **If any of the items under Question #8 are inaccurate please amend and make consistent with your response to Question #11.** Provide a list of the planning, work and/or actions that must occur and identify the projected time schedule (approximate dates) within which you anticipate they will be accomplished. You may wish to review Capital Improvement Plans (CIP) or other system infrastructure improvement plans to help formulate your response.

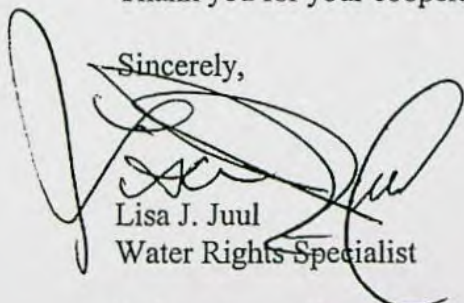
NOTE: You may wish to formulate your response to Question #11 in conjunction with your response to Question #8.

Please submit this information to the Department by **May 31, 2005**. If you cannot provide the requested information by this deadline, you must notify the Department in writing, explaining the reason(s) why, and indicate a date certain by which you anticipate the requested information can be supplied.

If the Department has not received the requested information by **May 31, 2005**, and has not received written notification explaining why the deadline for submittal cannot be met, the Department **will** return your "Application for Extension of Time for Quasi-Municipal and Municipal Water Use Permits" as incomplete and refund all fees paid toward the extension of time request.

If you have any questions concerning your extension request or completion of the required materials, please contact Jonathan Unger at (503) 986-0802, or Lisa Juul at (503) 986-0808. Thank you for your cooperation and attention to this matter.

Sincerely,



Lisa J. Juul
Water Rights Specialist

Enclosures: Copy of pending Application for Extension of Time, received May 3, 2004
Copy of Permit #G-12196
Sample copy of "Attachment A"
Water Rights Information Query Results

cc: Appl #G-13479 (Permit #G-12196)
Greg Beaman, Watermaster District #01

Appl G-13479 / Permit G-12196

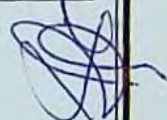
Municipal/Quasi-Municipal Permit Extension Application

❖ Published on the Department's Public Notice, dated: _____

After published on the Public Notice, please.....

- ☐ Enter/Update the date published on the public notice in the "PNotice Date" field in the "cdatewext.DB" database
- ☐ Verify the "Ext Filed" field in the "cdatewext.DB" database is accurate.

The "filed" date for this extension should be: 5-3-2004



PUBLIC NOTICE INFORMATION

Permit Holder: _____

Mailing Address: _____

County: _____

Quantity of Water: _____

Source of Water: _____

Application #: _____

Permit #: _____

Permitted Use: _____

Proposed Date for Extension: _____

*See Ext PFO
Checklist*

Application # G-13479 / Permit # G-12196

Route Slip ... Extension of Time

per Division 315 Rules... (Extensions received on July 1, 2001 or after)

♦ WRIG...
Money Received on: \$250.⁰⁰ on 5-3-04

♦ Lisa Juul...
Extension Completeness: OK
(If NOT complete, send certified letter requesting additional information.)

If Extension Appl complete and \$250 fee submitted, route to...

♦ Jonnine Fuss...
☒ Publish on Public Notice (initial 30-day comment): 7/5/10/04
Update "cdatewext.DB" Database:
☒ In the "PNotice Date" field... Enter the date the Extension Application was published on the Public Notice.
☒ In the "Ext Filed" field... Enter the date the Extension Application was received.

At the close of the Initial 30-day Comment Period...

♦ Lisa Juul...
Pull files for Ext PFO review: _____
Extension PFO completed: _____

Once Extension PFO signed by Dwight French...

♦ Jonnine Fuss...
Prepare Ext PFO for mailing to applicant: _____
Mail to those who commented and paid copy fee: _____
Include Ext PFO on weekly Public Notice: _____

Municipal or Quasi-Municipal

EXTENSION REVIEW CHECKLIST for PFO... per Div. 315 Rules

Application #: G-13479 / Permit #: G-12196

Permittee's Name: City of Wheeler

Permittee's Mailing Address: PO Box 177, Wheeler, OR 97147

POD Location: Township 2-N Range 9-W Section 5 $\frac{1}{4}$ $\frac{1}{4}$ NE NW

Stream Basin: _____ County: Tillamook

✓ 1. Has the applicant completely filled out the updated Extension Application form? Yes / No

***If "No" has certified request for the new extension form been sent? Yes / No

✓ \$250.00
on 5-3-04

2. Shortcomings of Extension Request..... based upon review of updated extension form Yes / No

*** (NOTE: Any missing Extension information that is needed before an Extension PFO can be completed???)

✓ 3. Date Permit was issued: 11-6-95 Priority Date: 7-29-93

✓ 4. Source: Four Wells (#4, #6, #13 & #10) in Nehalem River Basin

✓ 5. Use: Municipal

✓ 6. "Q": 3.6 cfs

✓ 7. Orig "A" Date: 11-6-96 Orig "B" Date: 10-1-97 Orig "C" Date: 10-1-99

✓ 8. Conditions of Permit:

• Before Use Begins → shall install meter or other suitable meas. device.
• shall keep monthly water use records & submit annually to WRD.

• Within one year of formation of the Regional Water Supply Authority, permittee shall submit a water management & conservation plan consistent with OAR Chap. 690, Div 86.

✓ 9. Extension request received: 5-3-04 Request Number (...1st 2nd, 3rd): 1st

✓ 10. Last Authorized "B" Date: 10-1-97 Last Authorized "C" Date: 10-1-99

✓ 11. Proposed "B" Date: _____ Proposed C Date: 10-1-2049

- ___12. Amount Invested to date: _____ Estimated Total Cost: _____
(***Estimated Remaining Cost: _____)
- ___13. The water project development made to date has been accomplished in accordance with the terms and conditions contained in the permit. Yes / No ***If "No"..... What permit terms and/or conditions have not been met?
- ___14. Work on the water development project completed to date includes: _____
- ___15. The work remaining to be completed consists of: _____
- ___16. Progress in perfecting the permit is being held up by: _____
- ___17. Has the applicant pursued perfection of the right in good faith and with reasonable diligence? Yes / No
- ___18. Determination of the market and the present demand for water or power to be supplied: _____
- ___19. Based on the written record, can the Department make a finding of "Good Cause" to approve the extension request?
Yes... "Good Cause" can be found. → Approval of Extension Request
No ... "Good Cause" cannot be found. → Denial of Extension Request
- ___20. Conditions to be included on Extension PFO: _____

Extension "PFO" Dates

Checklist Last Revised: 1 / 31 / 2003

Mailing / Issuance Date: _____ Reviewer's Name: _____

Protest Deadline Date: _____ Date: _____



CITY OF WHEELER

P.O. BOX 177 • WHEELER, OR 97147 • (503) 368-3767 • FAX (503) 368-4273
OREGON TDD RELAY 800-735-2900 • EMAIL cityofwheeler@nehalemtnet.net

February 7, 2005

To: John Unger
Dept. of Water Resources
Fax: 503-986-0901 Tel: 503-986-0901

From: Kenneth C. Hill
City of Wheeler Water System, DRC
P.O. Box 177
Wheeler, OR 97147

John,

This letter is in response to our phone conversation Thursday, February 3rd, 2005 about our water rights permit, #G12196.

Duane Lee, of Lee Engineering is our Engineer of Record. Please accept the application for water rights extension he filed in our behalf.

Thank- you,

Kenneth C. Hill, DRC



CITY OF WHEELER

P.O. BOX 177 • WHEELER, OR 97147 • (503) 368-5767 • FAX (503) 368-4273
OREGON TDD RELAY 800-735-2900 • EMAIL cityofwheeler@nehalemtnet.net

February 7, 2005

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Oregon

Theodore R. Kulangoski, Governor

Water Resources Department
North Mall Office Building
725 Summer Street NE, Suite A
Salem, OR 97301-1271
503-986-0900
FAX 503-986-0904

CERTIFIED MAIL
Return Receipt Requested

February 28, 2005

City of Wheeler
Attn: Ken Hill
PO Box 177
Wheeler, OR 97147

REFERENCE: Pending Application for Extension of Time
Water Right Application #G-13479 (Permit #G-12196)

Dear Municipal Water Right Permit Holder:

The Department is currently evaluating your request for an extension of time on the above referenced municipal water use permit. We have determined that your extension application does not provide sufficient detail necessary to fully evaluate your request. The information and materials that need clarification are listed below and must be submitted before evaluation can continue.

NOTE: *If you make reference to other documents, reports and/or plans, you must provide copies with your responses and make specific references to the pages, tables and/or charts.*

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Question #10 - OAR 690-315-0070(3)(k):

A. Provide an estimated demand projection and a description of the methodology(ies) used for the subject water right permit, considering the other water rights and contracts held by the municipal or quasi-municipal water use permit holder, and a date by which the water development is anticipated to be completed and water put to full beneficial use.

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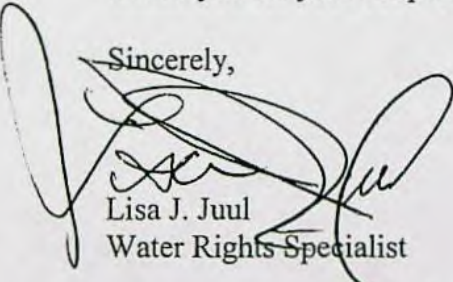
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If you have any questions concerning your extension request or completion of the required materials, please contact Jonathan Unger at (503) 986-0802, or Lisa Juul at (503) 986-0808. Thank you for your cooperation and attention to this matter.

Sincerely,



Lisa J. Juul
Water Rights Specialist

Enclosures: Copy of pending Application for Extension of Time, received May 3, 2004
 Copy of Permit #G-12196
 Sample copy of "Attachment A"
 Water Rights Information Query Results

cc: Appl #G-13479 (Permit #G-12196)
 Greg Beaman, Watermaster District #01

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

G-13479
CITY OF WHEELER
ATTN: KEN HILL
P. O. BOX 177
WHEELER OR 97147

2. Article Number

(Transfer from service label)

7004 1160 0000 3333 3703

COMPLETE THIS SECTION ON DELIVERY

A. Signature

X

Ann Morgan

☒ Agent

☐ Addressee

B. Received by (Printed Name)

Ann Morgan

C. Date of Delivery

3/1/05

D. Is delivery address different from item 1? ☐ Yes

If YES, enter delivery address below: ☐ No

3. Service Type

☒

Certified Mail

☐ Express Mail

☐

Registered

☐

Return Receipt for Merchandise

☐

Insured Mail

☐

C.O.D.

4. Restricted Delivery? (Extra Fee)

☐ Yes

UNITED STATES POSTAL SERVICE



First-Class Mail
Postage & Fees Paid
USPS
Permit No. G-10

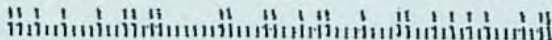
RECEIVED

Sender: Please print your name, address, and ZIP+4 in this box

MAR 02 2005

**WATER RESOURCES DEPT
SALEM, OREGON**

WATER RESOURCES DEPARTMENT
725 SUMMER STREET NE SUITE A
SALEM OR 97301-1271



Water Right Owner
City of Wheeler
P.O. Box 177
Wheeler, OR 97147-0177

To Water
Rights -

anita - 4100505 and Wheeler - 4100952.

Fyi

in Direct Responsible Charge for

herefore directed this letter and packet of

he online data for the City of Wheeler,
that the start card numbers and Well ID

p straighten out and correct, if needed, the
the following groundwater rights;

no, the
fine -
jh

Janet

Start Card # 89998
Well ID # L01906
Our Current Designator: Production Well # 1
Original Designator: Well # 6

Start Card # 90000
Well ID # L01907
Our Current Designator: Production Well # 2
Original Designator: Well # 13

Start Card # 89999
Well ID # L01905
Our Current Designator: Observation / Test Well
Original Designator: Well # 4

Start Card # 89997
Well ID # "A"
Our Current Designator: "A" - Abandoned Well
Original Designator: Well # 10



System Owner

City of Manzanita
P.O. Box 129
Manzanita, OR 97130-0129

Water Right Owner

City of Wheeler
P.O. Box 177
Wheeler, OR 97147-0177

Feb 16, 2005

TO: Oregon Water Resources Department
Attn: Janet Halladey
725 Summer Street NE, Suite "A"
Salem, OR 301-1271

RE: **DATA CORRECTIONS** for Wells serving Cities of Manzanita - 4100505 and Wheeler - 4100952.

Subject: Permit # G12196 - Corrected Data for Well field

Dear Janet:

My name is John Handler, and I am the Treatment DRC (Person in Direct Responsible Charge for Treatment) for the cities of Manzanita and Wheeler.

I have been given your name by Laurie in your office and have therefore directed this letter and packet of information to you.

I am writing to you in regard to discrepancies we have noted in the online data for the City of Wheeler, groundwater "Water Well Reports". More specifically, it appears that the start card numbers and Well ID #'s may have been mixed up.

I have therefore attached a packet of complete information to help straighten out and correct, if needed, the online data. This packet includes; pictures, maps, and reports for the following groundwater rights;

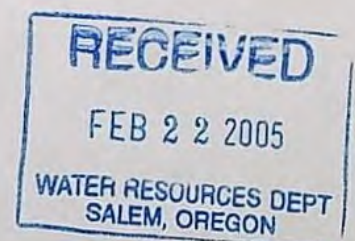
(The numbers below are the correct matches!)

Start Card # 89998
Well ID # L01906
Our Current Designator: Production Well # 1
Original Designator: Well # 6

Start Card # 90000
Well ID # L01907
Our Current Designator: Production Well # 2
Original Designator: Well # 13

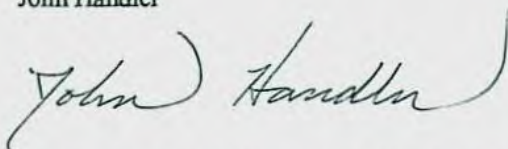
Start Card # 89999
Well ID # L01905
Our Current Designator: Observation / Test Well
Original Designator: Well # 4

Start Card # 89997
Well ID # "A" *no, they're fine - JH*
Our Current Designator: "A" - Abandoned Well
Original Designator: Well # 10



If you need additional information, or to contact me about this, please feel free to call...
My cell phone is 503 348-7734
Our office phone is ... 503 368-5347

Sincerely,
John Handler

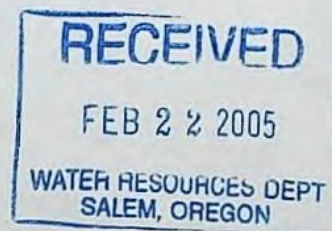


Treatment DRC for Manzanita 4100505 & Wheeler 4100952

Enclosures

- Well Site Overview photos
- Well Site Topo Map
- Well Head Photos
- Copy of Water Supply Well Reports x 4
- Well Lithologic Logs x 4

cc: John Williams, Wheeler City Manager
Jerald Taylor, Manzanita City Manager
Bret Siler, Manzanita Dir of Public Works
Ken Hill, Wheeler Distribution DRC



City of Manzanita Water System

Water rights in City of Wheeler's Name

Operation & Maintenance by Both Cities



Well Site Area
Sept. 3, 2001





Well Site - 20805 Foss Road Manzanita & Wheeler OR

1/3/2005 - 11:00am

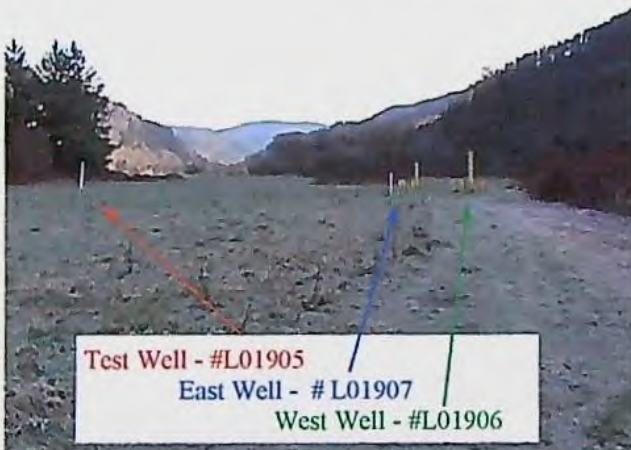


Manzanita Well Control Structure

RECEIVED

FEB 22 2005

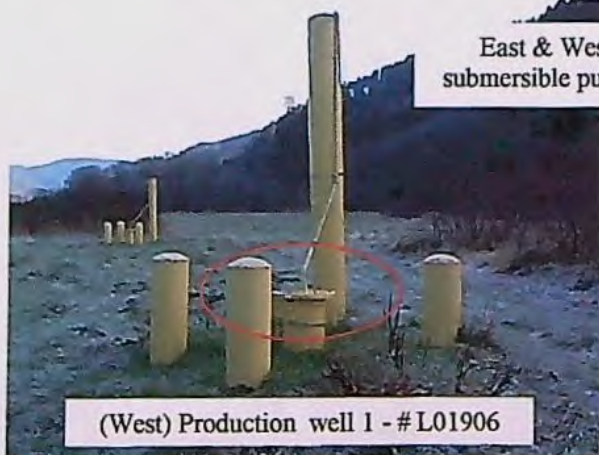
WATER RESOURCES DEPT
SALEM, OREGON



Test Well - #L01905
East Well - # L01907
West Well - #L01906

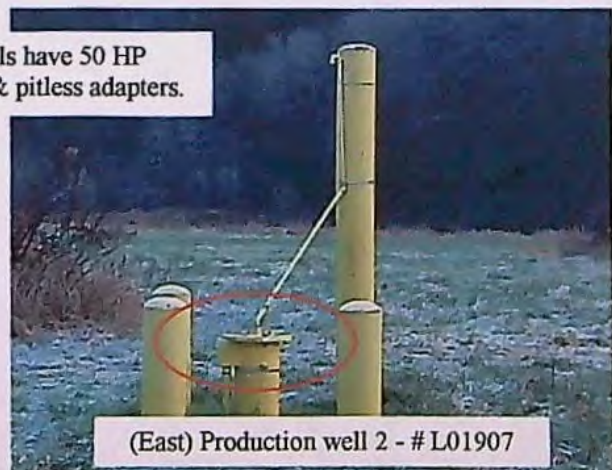


Test well - #L01905



(West) Production well 1 - # L01906

East & West Wells have 50 HP
submersible pumps & pitless adapters.



(East) Production well 2 - # L01907

Contact : John Handler
543 Laneda Ave
P.O. Box 129
Manzanita, OR 97130

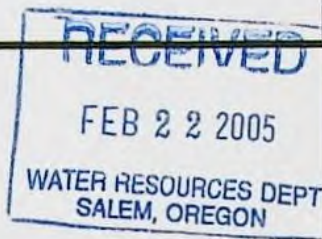
Cell: 503 348-7734
Phone: 503 368-5347
Email: ManzPW@nehalemtnet.net



Well Site Info

John Handler
City of Manzanita
PO Box 129
Manzanita, OR 97130

Compiled by John Handler
City of Manzanita 12/15/2004



Foss Road Well Site

Foss Road Wells
20805 Foss Road
Nehalem, OR 97131

This is the Manzanita well control
building ... located 1,100 ft
from the well heads.

Well Control and Records

At City of Manzanita
Treatment Plant
36730 Hwy 101 N
Manzanita, OR 97130



36730 Hwy 101 N.
P.O. Box 129
Manzanita, OR 97130

Phone: 503 368-3940
Fax: 503 368-5198
Email: ManzPW@nehalemtnet.net



Well Site - 20805 Foss Road

Manzanita & Wheeler Oregon

1/3/2005 - 11:00am



The following pages are for the above Well

Start Card: # 89997

Well ID: # "A"

Description: Abandoned Well

Application: G 13479 ... dated 07/29/1993

Permit: G 12196 ... dated 11/06/1995

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FEB 22 2005

WATER RESOURCES DEPT
SALEM, OREGON

Contact : John Handler
543 Laneda Ave
P.O. Box 129
Manzanita, OR 97130

Cell: 503 348-7734
Phone: 503 368-39403
Email: ManzPW@nehalemtnet.net

ABANDONED

STATE OF OREGON
WATER SUPPLY WELL REPORT
(as required by ORS 537.765)

WELL I.D.#

(START CARD) # 89997

Instructions for completing this report are on the last page of this form.

OWNER:

Well Number Well AName CITY OF WHEELERAddress P.O. BOX 177City WHEELER State OR Zip 97147

(2) TYPE OF WORK

☒ New Well ☐ Deepening ☐ Alteration (repair/recondition) ☒ Abandonment

(3) DRILL METHOD:

☐ Rotary Air ☐ Rotary Mud ☒ Cable ☐ Auger☐ Other

(4) PROPOSED USE:

☐ Domestic ☐ Community ☐ Industrial ☐ Irrigation
☐ Thermal ☐ Injection ☐ Livestock ☒ Other MUNICIPAL

(5) BORE HOLE CONSTRUCTION:

Special Construction approval ☐ Yes ☒ No Depth of Completed Well 0 ft.Explosives used ☐ Yes ☒ No Type _____ Amount _____

HOLE

SEAL

Diameter From To Material From To Sacks or pounds

18 0 8 _____ _____ _____16 8 49 _____ _____ _____NEAT CEMENT 49 0 100 SACKSHow was seal placed: Method ☐ A ☐ B ☒ C ☐ D ☐ E☐ Other

Backfill placed from _____ ft. to _____ ft. Material _____

Gravel placed from _____ ft. to _____ ft. Size of gravel _____

(6) CASING/LINER:

Diameter	From	To	Gauge	Steel	Plastic	Welded	Threaded
Casing:	ALL CASING WAS REMOVED & WELL BORE WAS DISPLACED WITH NEAT CEMENT GROUT						
Liner:							

Final location of shoe(s)

(7) PERFORATIONS/SCREENS:

From	To	Slot size	Number	Diameter	Tele/pole size	Casing	Liner
						☐	☐
						☐	☐
						☐	☐
						☐	☐

(8) WELL TESTS: Minimum testing time is 1 hour

Yield gal/min	Drawdown	Drill stem at	Time
			1 hr.

Temperature of water _____ Depth Artesian Flow Found _____

Was a water analysis done? ☐ Yes By whom _____Did any strata contain water not suitable for intended use? ☐ Too little☐ Salty ☐ Muddy ☐ Odor ☐ Colored ☐ Other

Depth of strata: _____

(9) LOCATION OF WELL by legal description:

County TILLAMOOK Latitude _____ Longitude _____Township 2N N or S Range 9W E or W. WM.Section 5 1/4 1/4

Tax Lot _____ Lot _____ Block _____ Subdivision _____

Street Address of Well (or nearest address) _____

22095 FOSS RD. WHEELER, OR

(10) STATIC WATER LEVEL:

14 ft. below land surface.Date 6-28-96Artesian pressure 0 lb. per square inch.

Date _____

(11) WATER BEARING ZONES:

Depth at which water was first found 0

From	To	Estimated Flow Rate	SWL
<u>0</u>	<u>19</u>	<u>15 GPM</u>	
<u>19</u>	<u>26.5</u>	<u><100 GPM</u>	
<u>27.5</u>	<u>33.5</u>	<u>>100 GPM</u>	

(12) WELL LOG:

Ground Elevation _____

Material	From	To	SWL
SAND SILTY GREY	0	7	
SAND SILTY SOME GRAVEL MED	7	9	
GRAVEL MED TO COARSE SILTY	9		
BRN		19	
COBBLES GRAVEL SAND 10"	19		
MINUS GREY		20.5	
COBBLES GRAVEL SAND 10" MINUS	20.5		
GREY VERY LITTLE SILT SEMI	23.0	23.0	
LOOSE		23.0	
COBBLES GRAVEL SAND 10" MINUS	23.0		
BRN VERY LITTLE SILT SEMI			
LOOSE		26.5	
SILT BRN SOFT GRAVELY	26.5	27.5	
COBBLES GRAVEL SAND 6" MINUS	27.5		
CLEAN LOOSE GREY BRN		33.5	
GRAVEL BRN COARSE CEMENTED	33.5		
SOME SILT BRN		37.0	
SAME AS ABOVE (MORE SILT)	37.0	40.0	
SAND & GRAVEL COARSE CMTD	40.0		
TIGHT BRN DIRTY		44.0	

Date started _____

Completed _____

(unbonded) Water Well Constructor Certification:

I certify that the work I performed on the construction, alteration, or abandonment of this well is in compliance with Oregon water supply well construction standards. Materials used and information reported above are true to the best of my knowledge and belief.

Signed [Signature] WWC Number 1487 Date 7-29-96

(bonded) Water Well Constructor Certification:

I accept responsibility for the construction, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon water supply well construction standards. This report is true to the best of my knowledge and belief.

Signed [Signature] WWC Number 688 Date 7-29-96

RECEIVED

FEB 22 2005

WATER RESOURCES DEPT
SALEM, OREGON

07/30/96 12:00

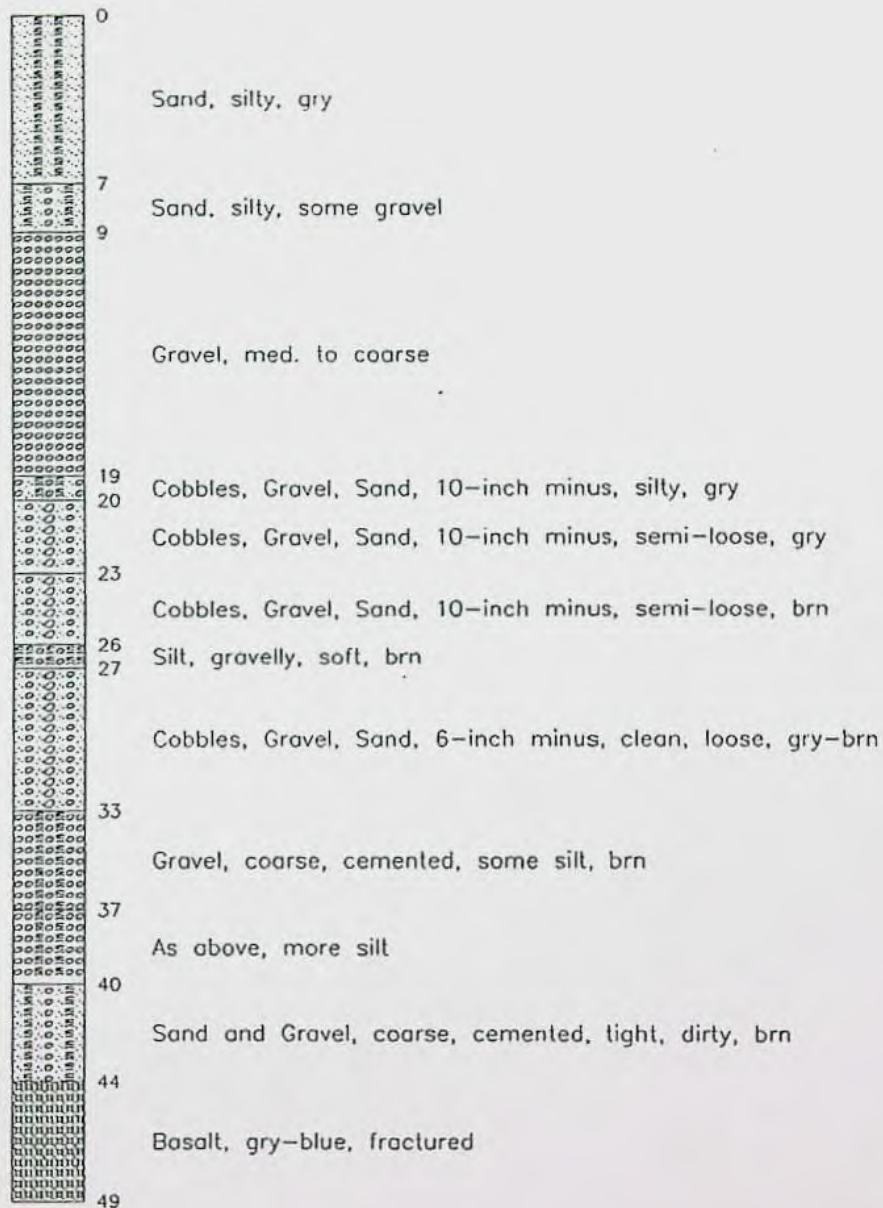
TX/RX NO.0488

P.002

(START CARD) # 89997

P.003

Wheeler - Well A
Lithologic Log



Well Abandoned
7/1/96

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FEB 22 2005

WATER RESOURCES DEPT
SALEM, OREGON

AGI
TECHNOLOGIES

Lee Engineering
Wheeler Oregon
Project # 15,792,005
E:\ag\Wheeler\wheeler.glt

Well A Lithologic Log

Figure 5
Date: 7/31/96



Well Site - 20805 Foss Road

Manzanita & Wheeler Oregon

1/3/2005 - 11:00am



Test well - #L01905

The following pages are for the above Well

Start Card: # 89999

Well ID: # L01905

Description: Observation / Test Well

Application: G 13479 ... dated 07/29/1993

Permit: G 12196 ... dated 11/06/1995

Contact : John Handler
543 Laneda Ave
P.O. Box 129
Manzanita, OR 97130

RECEIVED

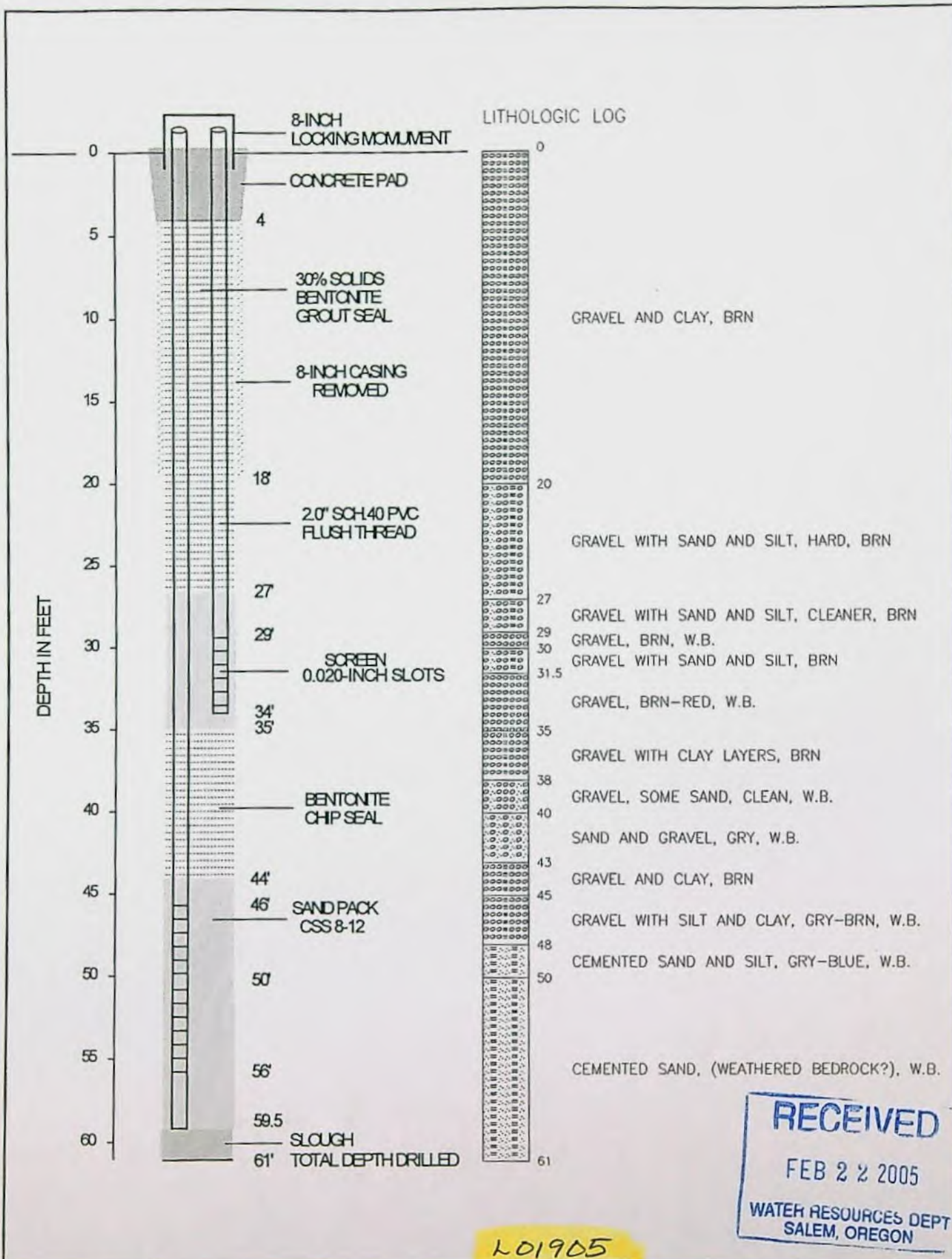
FEB 22 2005

WATER RESOURCES DEPT
SALEM, OREGON

Cell: 503 348-7734
Phone: 503 368-39403
Email: ManzPW@nehalem.tel.net

Instructions for completing this report are on the last page of this form.

P.006





Well Site - 20805 Foss Road

Manzanita & Wheeler Oregon

1/3/2005 - 11:00am



Production Well # 2 - # L01907

The following pages are for the above Well

Start Card: # 90000

Well ID: # L01907

Description: Production Well # 2

Application: G 13479 ... dated 07/29/1993

Permit: G 12196 ... dated 11/06/1995

RECEIVED

FEB 2 2 2005

WATER RESOURCES DEPT
SALEM, OREGON

Contact : John Handler
543 Laneda Ave
P.O. Box 129
Manzanita, OR 97130

Cell: 503 348-7734
Phone: 503 368-39403
Email: ManzPW@nehalemtnet.net

STATE OF OREGON
WATER SUPPLY WELL REPORT
(as required by ORS 537.765)

WELL I.D.# L01907(START CARD) # 90000

Instructions for completing this report are on the last page of this form.

OWNER:

Well Number #2Name CITY OF WHEELERAddress P.O. BOX 177City WHEELER State OR Zip 97147

(2) TYPE OF WORK

☒ New Well ☐ Deepening ☐ Alteration (repair/recondition) ☐ Abandonment

(3) DRILL METHOD:

☐ Rotary Air ☐ Rotary Mud ☒ Cable ☐ Auger☐ Other

(4) PROPOSED USE:

☐ Domestic ☐ Community ☐ Industrial ☐ Irrigation
☐ Thermal ☐ Injection ☐ Livestock ☒ Other MUNICIPAL

(5) BORE HOLE CONSTRUCTION:

Special Construction approval ☐ Yes ☒ No Depth of Completed Well 63 ft.Explosives used ☐ Yes ☒ No Type _____ Amount _____

HOLE

SEAL

Diameter	From	To	Material	From	To	Sacks or pounds
18	0	8				
16	8	63				
			NEAT CEMENT	33.5	0	42 SACKS

How was seal placed: Method ☐ A ☐ B ☒ C ☐ D ☐ E☐ OtherBackfill placed from 33.5 ft. to 35 ft. Material BENT. CHIPSGravel placed from 35 ft. to 63 ft. Size of gravel PEA ROCK

(6) CASING/LINER:

	Diameter	From	To	Gauge	Steel	Plastic	Welded	Threaded
Casing:	12	43	45	250	☒	☐	☒	☐
	12	60	63	250	☒	☐	☒	☐
Liner:					☐	☐	☐	☐

Final location of shoe(s)

(7) PERFORATIONS/SCREENS:

☐ Perforations Method _____☒ Screens Type JOHNSON V-WIRE Material SS

From	To	Slot size	Number	Diameter	Telephone size	Casing	Liner
45	60	100		12p/s		☒	☐
						☐	☐
						☐	☐
						☐	☐

(8) WELL TESTS: Minimum testing time is 1 hour

☒ Pump ☐ Bailor ☐ Air ☐ Flowing
Yield gal/min Drawdown Drill stem at Time

1025	3.5		24 HOUR
------	-----	--	---------

Temperature of water 49° Depth Artesian Flow Found _____Was a water analysis done? ☐ Yes By whom _____Did any strata contain water not suitable for intended use? ☐ Too little☐ Salty ☐ Muddy ☐ Odor ☐ Colored ☐ Other

Depth of strata: _____

(9) LOCATION OF WELL by legal description:

County TILLAMOOK Latitude _____ Longitude _____Township 2N N or S Range 4W E or W. WM.Section 5 1/4 1/4

Tax Lot _____ Lot _____ Block _____ Subdivision _____

Street Address of Well (or nearest address) _____

22095 FOSS RD., WHEELER, OR

(10) STATIC WATER LEVEL:

14 ft. below land surface.Date 7-28-96

Artesian pressure _____ lb. per square inch.

Date _____

(11) WATER BEARING ZONES:

Depth at which water was first found 16'

From	To	Estimated Flow Rate	SWL
16	32.5	< 15 GPM	14
32.5	44.5	< 100 GPM	14
44.5	63	> 400 GPM	14

(12) WELL LOG:

Ground Elevation _____

SAND	Material	From	To	SWL
SAND GREY LOOSE FLOOD DEPOSIT		0	2	
SAND GREY SILTY		2	7	
SAND & GRAVEL SILTY		7	9	
SAND & GRAVEL LESS SILT		9	16	
GRAVEL GREY BRN RED W/SILT		16		
BROWN			19	
GRAVEL & SAND SOME COBBLES		19	26	
GREY BRN 2" MINUS PACKED		26		
GRAVEL BROWN SILTY			30	
GRAVEL COURSE BRN 8" MINUS		30		
SOME SILT SOME SAND			32.5	
GRAVEL RED BRN SEMI CLEAN		32.5	44.5	
GRAVEL GREY BRN 6" MINUS		44.5		
CLEAN LOOSE SOME SAND			50.5	
GRAVEL GREY COURSE 10"		50.5		
MINUS CLEAN LOOSE SOME SAND			58.5	
GRAVEL GREY COURSE TRACE OF		58.5		
SILT			59.0	
GRAVEL GREY COURSE 10" MINUS		59.0		
SEMI LOOSE MORE SAND			63.0	

Date started 7-1-96Completed 7-25-96

(unbonded) Water Well Constructor Certification:

I certify that the work I performed on the construction, alteration, or abandonment of this well is in compliance with Oregon water supply well construction standards. Materials used and information reported above are true to the best of my knowledge and belief.

Signed _____ WWC Number 1487Date 7-29-96

(bonded) Water Well Constructor Certification:

I accept responsibility for the construction, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon water supply well construction standards. This report is true to the best of my knowledge and belief.

Signed Steve N. Stahl WWC Number 688Date 7-29-96

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FEB 22 2005

WATER RESOURCES DEPT
SALEM, OREGON

07/30/96 12:00

TX/RX NO.0488

P.004

STATE OF OREGON
WATER SUPPLY WELL REPORT
(as required by ORS 537.765)

WELL I.D.# LQ1907

(START CARD) # 90000

Instructions for completing this report are on the last page of this form.

OWNER: Well Number _____
Name CITY OF WHEELER
Address P.O. BOX 177
City WHEELER State OR Zip 97147

(2) TYPE OF WORK

☒ New Well ☐ Deepening ☐ Alteration (repair/recondition) ☐ Abandonment

(3) DRILL METHOD:

☐ Rotary Air ☐ Rotary Mud ☒ Cable ☐ Auger
☐ Other _____

(4) PROPOSED USE:

☐ Domestic ☐ Community ☐ Industrial ☐ Irrigation
☐ Thermal ☐ Injection ☐ Livestock ☒ Other MUNICIPAL

(5) BORE HOLE CONSTRUCTION:

Special Construction approval ☐ Yes ☒ No Depth of Completed Well 63 ft.
Explosives used ☐ Yes ☒ No Type _____ Amount _____

HOLE				SEAL			
Diameter	From	To	Material	From	To	Sacks or pounds	

How was seal placed: Method ☐ A ☐ B ☐ C ☐ D ☐ E
☐ Other _____

Backfill placed from _____ ft. to _____ ft. Material _____
Gravel placed from _____ ft. to _____ ft. Size of gravel _____

(6) CASING/LINER:

	Diameter	From	To	Gauge	Steel	Plastic	Welded	Threaded
Casing:					☐	☐	☐	☐
					☐	☐	☐	☐
					☐	☐	☐	☐
					☐	☐	☐	☐
Liner:					☐	☐	☐	☐
					☐	☐	☐	☐

Final location of shoe(s)

(7) PERFORATIONS/SCREENS:

		Method		Type		Material	
From	To	Slot size	Number	Diameter	Tele/pipe size	Casing	Liner
						☐	☐
						☐	☐
						☐	☐
						☐	☐

(8) WELL TESTS: Minimum testing time is 1 hour

☐ Pump	☐ Bailer	☐ Air	☐ Flowing Artesian
Yield gal/min	Drawdown	Drill stem at	Time
			1 hr.

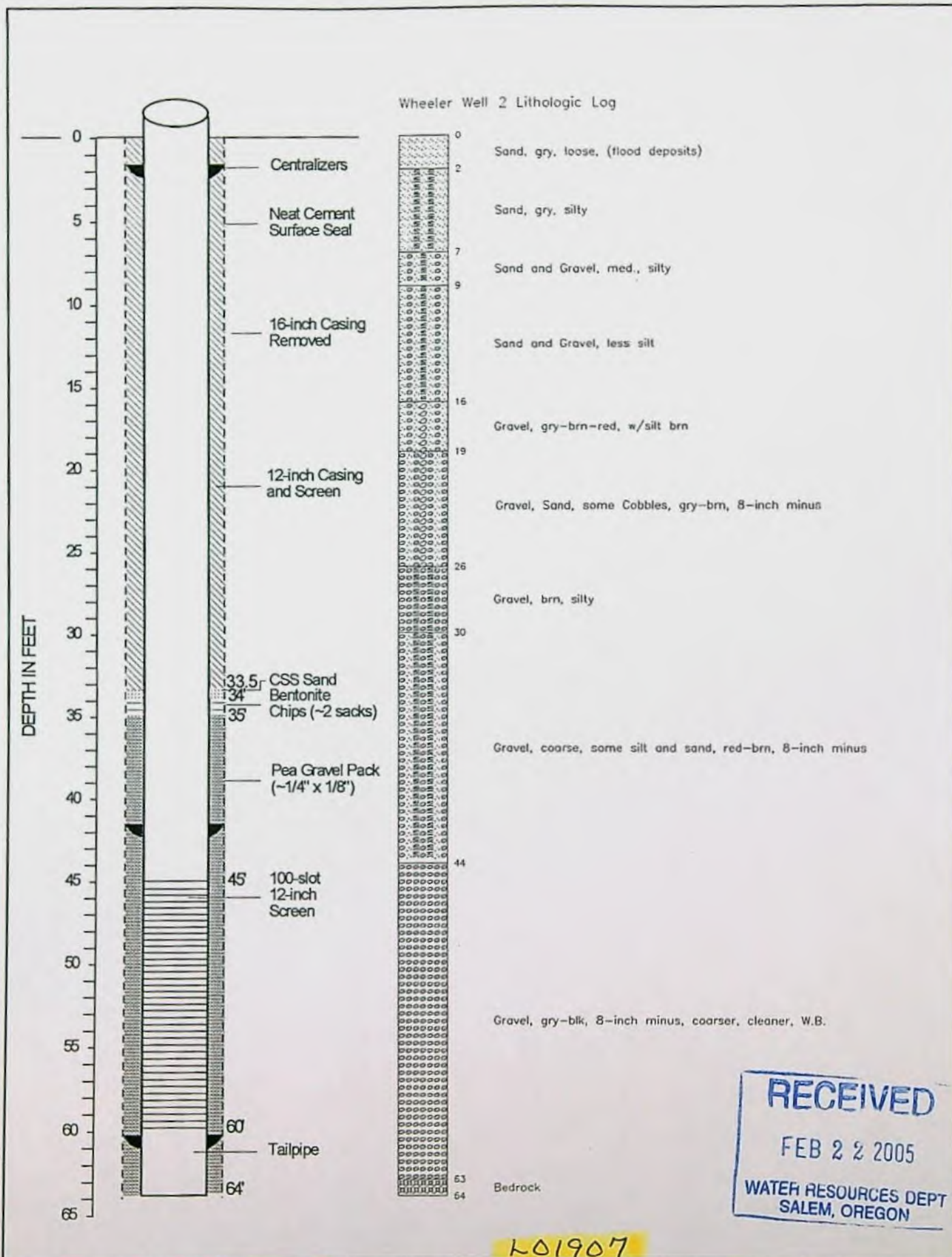
Temperature of water _____ Depth Artesian Flow Found _____

Was a water analysis done? ☐ Yes By whom _____

Did any strata contain water not suitable for intended use? ☐ Too little

☐ Salty ☐ Muddy ☐ Odor ☐ Colored ☐ Other _____

Depth of strata: _____



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FEB 22 2005
WATER RESOURCES DEPT
SALEM, OREGON

L01907

AGI
TECHNOLOGIES

Lee Engineering
Wheeler Oregon
Project # 15,792.005
E:\Chg\Wheeler\wheeler.grf

Well 2 Completion

Figure 3
Date: 7/31/96



Well Site - 20805 Foss Road

Manzanita & Wheeler Oregon

1/3/2005 - 11:00am



Production well # 1 - # L01906

The following pages are for the above Well

Start Card: # 89998

Well ID: # L01906

Description: Production Well # 1

Application: G 13479 ... dated 07/29/1993

Permit: G 12196 ... dated 11/06/1995

RECEIVED

FEB 2 2 2005

WATER RESOURCES DEPT
SALEM, OREGON

Contact : John Handler
543 Laneda Ave
P.O. Box 129
Manzanita, OR 97130

Cell: 503 348-7734
Phone: 503 368-39403
Email: ManzPW@nehalemtnet.net

STATE OF OREGON
WATER SUPPLY WELL REPORT
(as required by ORS 537.765)

WELL I.D.# LO1906

(START CARD) # 89998

Instructions for completing this report are on the last page of this form.

OWNER: CITY OF WHEELER Well Number 1
Name CITY OF WHEELER Address P.O. BOX 177
City WHEELER State OR Zip 97147

(2) TYPE OF WORK
☒ New Well ☐ Deepening ☐ Alteration (repair/recondition) ☐ Abandonment

(3) DRILL METHOD:
☐ Rotary Air ☐ Rotary Mud ☒ Cable ☐ Auger
☐ Other

(4) PROPOSED USE:
☐ Domestic ☐ Community ☐ Industrial ☐ Irrigation
☐ Thermal ☐ Injection ☐ Livestock ☒ Other MUNICIPAL

(5) BORE HOLE CONSTRUCTION:
Special Construction approval ☐ Yes ☒ No Depth of Completed Well 63 ft.
Explosives used ☐ Yes ☒ No Type _____ Amount _____

HOLE SEAL
Diameter From To Material From To Sacks or pounds
18 0 8" _____
16 8 63 NEAT CEMENT 33.5 0 59 SACKS

How was seal placed: Method ☐ A ☐ B ☒ C ☐ D ☐ E

☐ Other
Backfill placed from 33.5 ft. to 35 ft. Material SAND & BENT
Gravel placed from 35 ft. to 55 ft. Size of gravel PEA ROCK

(6) CASING/LINER: 55 63 DRAIN RO
Diameter From To Gauge Steel Plastic Welded Threaded
Casing: 12 +3 43 250 ☒ ☐ ☒ ☐
12 50 55 ☒ ☐ ☒ ☐
Liner: ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

Final location of shoe(s) NONE

(7) PERFORATIONS/SCREENS:
☐ Perforations Method _____
☒ Screen Type JOHNSON V-WIRE Material SS
From To Slot Number Diameter Telephone Casing Liner
43 53 100 _____ 12" p/s ☒ ☐
☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

(8) WELL TESTS: Minimum testing time is 1 hour

☒ Pump ☐ Baller ☐ Air ☐ Flowing
Yield gal/min Drawdown Drill stem at Time
1012 3.5 _____ 24 1 hr.

Temperature of water 49 Depth Artesian Flow Found _____

Was a water analysis done? ☒ Yes By whom AGI TECHNOLOGIES

Did any strata contain water not suitable for intended use? ☐ No ☐ Too little

FEB 22 2005

STATE OF OREGON
WATER SUPPLY WELL REPORT
(as required by ORS 537.765)

WATER RESOURCES DEPT
OREGON, OREGON

WELL I.D.# LO1906

(START CARD) # 89998

Instructions for completing this report are on the last page of this form.

(9) LOCATION OF WELL by legal description:

County TILLAMOOK Latitude _____ Longitude _____
Township 2N N or S Range 9W B or W. WM.
Section 5 1/4 1/4
Tax Lot _____ Loc _____ Block _____ Subdivision _____
Street Address of Well (or nearest address) _____
22095 FOSS RD., WHEELER, OR

(10) STATIC WATER LEVEL:
14 ft. below land surface. Date 7-24-96
Artesian pressure 0 lb. per square inch. Date _____

(11) WATER BEARING ZONES:

Depth at which water was first found 9'

From	To	Estimated Flow Rate	SWL
<u>9</u>	<u>16</u>	<u>15</u>	
<u>16</u>	<u>23</u>	<u>50</u>	<u>14</u>
<u>42.5</u>	<u>50</u>	<u>500</u>	<u>14</u>

(12) WELL LOG:
Ground Elevation _____

CHIPS	Material	From	To	SWL
<u>SAND GREY LOOSE (overhank dep)</u>	<u>0</u>	<u>2</u>		
<u>SAND GREY SILTY</u>	<u>2</u>	<u>9</u>		
<u>SAND & GRAVEL MED SILTY</u>	<u>9</u>	<u>11</u>		
<u>SAND & GRAVEL COARSE SILTY</u>	<u>11</u>	<u>16</u>		
<u>SAND GRAVEL COBBLES 10" MINUS</u>	<u>16</u>			
<u>BRN LOOSE (semi clean)</u>		<u>23</u>		
<u>COBBLES SAND & GRAVEL 10"</u>	<u>23</u>			
<u>MINUS PACKED BRN SOME SILT BRN</u>		<u>27</u>		
<u>SILT BROWN GRAVELY</u>	<u>27</u>	<u>28</u>		
<u>SAND & GRAVEL SILTY BRN 5"</u>	<u>28</u>			
<u>MINUS SOME COBBLES</u>		<u>31</u>		
<u>GRAVEL BRN COARSE TO FINE</u>	<u>31</u>			
<u>SOME SAND SEMI LOOSE</u>		<u>32.5</u>		
<u>SAND GRAVEL COBBLES 10"</u>	<u>32.5</u>			
<u>MINUS PACKED BRN</u>		<u>34.5</u>		
<u>GRAVEL & COBBLES 8" MINUS</u>	<u>34.5</u>			
<u>BROWN LESS SAND</u>		<u>39</u>		
<u>SAND GRAVEL COBBLES BRN 8"</u>	<u>39</u>			
<u>MINUS MORE SAND SEMI TIGHT</u>		<u>42.5</u>		

Date started 6-21-96 Completed 7-24-96

(unbonded) Water Well Constructor Certification:

I certify that the work I performed on the construction, alteration, or abandonment of this well is in compliance with Oregon water supply well construction standards. Materials used and information reported above are true to the best of my knowledge and belief.

Signed _____ WWC Number 1487
Date 7-29-96

(bonded) Water Well Constructor Certification:

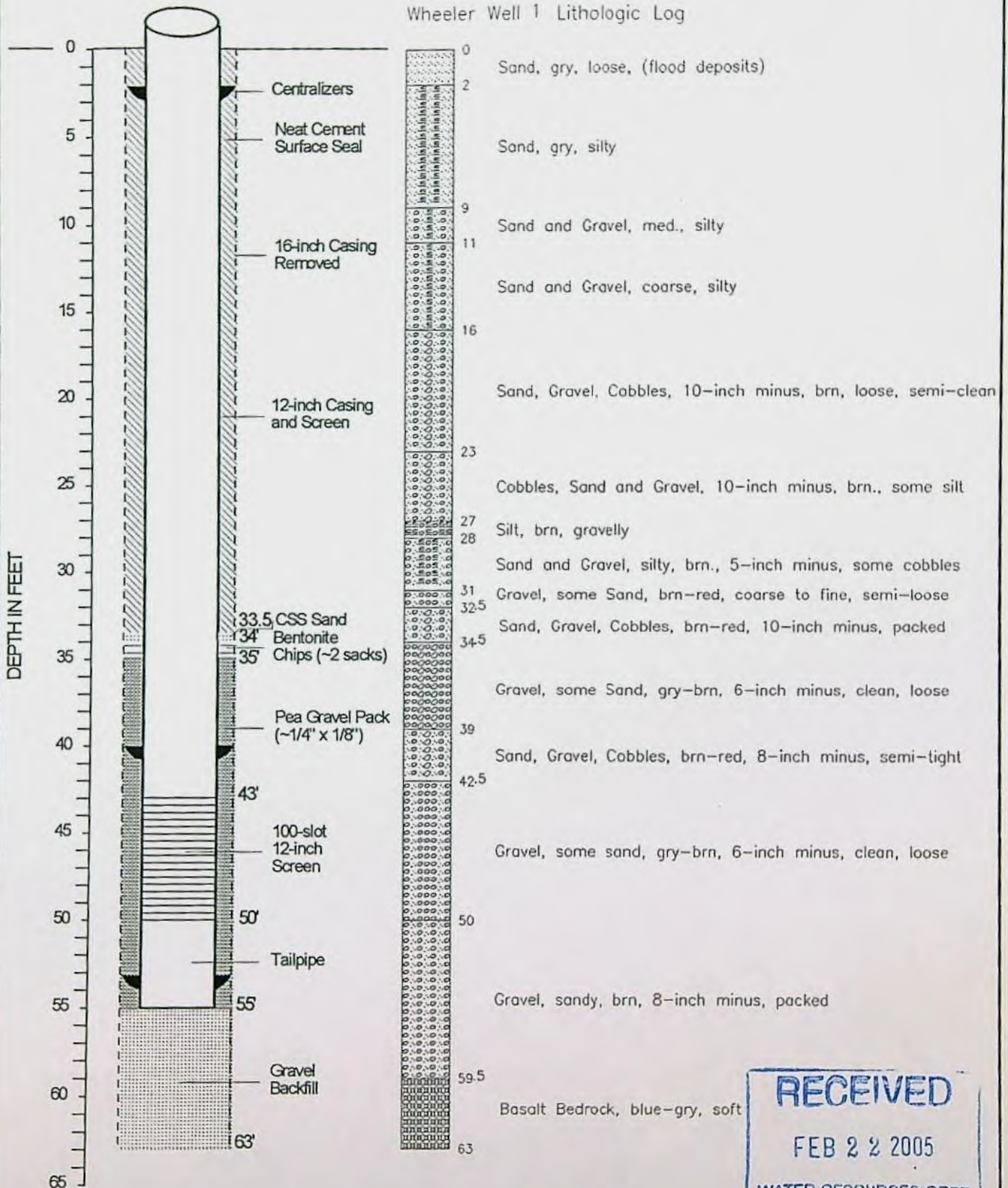
I accept responsibility for the construction, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon water supply well

07/30/96 12:00

TX/RX NO.0488

P.010

Wheeler Well 1 Lithologic Log



RECEIVED

FEB 22 2005

WATER RESOURCES DEPT
SALEM, OREGON

LD1906

AGI
TECHNOLOGIES

Lee Engineering
Wheeler Oregon
Project #15,792.005
E:\Ogish\Wheeler\logstrng

Well 1 Completion

Figure 2

Date: 7/31/96

Application # G-13479 / Permit # G-12196

Permit Holder: City of Wheeler

Use interactive mapping to check: Stream Basin

Greg Beaman #01

Add this information to the Checklist for PFO

NEED B DATE

**Division 315 - Municipal/Quasi-Municipal
Extension of Time - Completeness Checklist
OAR 690-315-0070(3)**

Place a (✓) in the box if the item is satisfied	
X	1. [OAR 690-315-0070(3)] The appropriate extension of time fee (as specified in ORS 536.050). \$100 - applications received by September 30, 2003 \$250 - applications received on or after October 1, 2003 DUPLICATE FEES? _____
X	* [OAR 690-315-0070(3)(a)] The name and mailing address of the water right permit holder(s);
x	* [OAR 690-315-0070(3)(b)] The application number and the permit number for which an extension is requested;
X	2. [OAR 690-315-0070(3)(c)] For quasi-municipal water use permit holders, evidence of the actions taken to begin actual construction on the project, as defined in 690-315-0020(3)(d), if required under the applicable statute; <u>NOTE:</u> ORS 537.230(1) [1997 edition] only exempts surface water municipal use permits from the "A" Date requirement. If you are reviewing a <u>ground water</u> municipal use permit, they must provide evidence that the "A" Date has been met. "Actual construction" means physical work performed towards completion of the water system, which demonstrates both the present good faith of the water right permit holder and the water right permit holder's intention to complete the project with reasonable diligence; "Actual construction" does not include planning a diversion system, formulating a business plan, securing financing, letting contracts, purchasing but not installing equipment, or surveying. "A" date met see well report well started 7/8/96
X	3. [OAR 690-315-0070(3)(d)] - This is extension request # 1 Evidence of actions taken to develop the right within the original permitted time period OR, during the most recent extension period from _____ to _____ This is first extension and the A date was met.
X	4. [OAR 690-315-0070(3)(e)] Evidence of compliance with conditions contained in the permit <u>and</u> any previous extension(s) or the reason the condition was not satisfied; meter installed, found one meter record submitted to the department- minimum compliance. WMCP - not submitted but they provide explanation and request until 10/1/05 to submit it.
X	5. [OAR 690-315-0070(3)(f)] Evidence of the maximum INSTANTANEOUS rate of diversion, if any, made to date; 525 gpm = 1.17 cfs
Ask	6. [OAR 690-315-0070(3)(g)] An estimate of the population served and a description of the methodology(ies) used to make the estimate; - In 2000? <u>none current note IGA between Wheeler & Manzanita</u>
X	7. [OAR 690-315-0070(3)(h)] A description of financial expenditures made toward completion of the water development; \$5,823,783 - pipeline, well sites, water treatment plant
X	8. [OAR 690-315-0070(3)(i)] An estimate of the cost to complete the water development;

**Division 315 - Municipal/Quasi-Municipal
Extension of Time - Completeness Checklist
OAR 690-315-0070(3)**

Place a (✓)
in the box
if the item
is satisfied

X	9. [OAR 690-315-0070(3)(j)] A summary of any events that delayed completion of the water development or application of water to full beneficial use, including other governmental requirements, if any, relating to the project that have significantly delayed completion of construction or perfection of the right;
	10. [OAR 690-315-0070(3)(k)] An estimated demand projection and a description of the methodology(ies) used for the subject water right permit, considering the other water rights held by the municipal or quasi-municipal water use permit holder, and a date by which the water development is anticipated to be completed and water put to full beneficial use. Extension requests for <u>greater than 50 years</u> must include documentation that the demand projection is consistent with the amount and types of lands and uses proposed to be served by the permit holder. Current Peak Water Demands <i>10k see q # 6 for LJJ</i> Projected Population <i>→</i> Potential Growth Inventory of Water Rights Held <i>→ City of Wheeler</i>
ASK	11. [OAR 690-315-0070(3)(l)] A summary of the applicant's plan and schedule to complete construction and/or perfect the water right;
X	12. [OAR 690-315-0070(3)(m)] Justification for the time requested to complete the project and/or apply the water to full beneficial use;
X	13. [OAR 690-315-0070(3)(n)] Any other information the applicant determines is relevant to evaluate the application in accordance with applicable statutes and rules;
X	* [OAR 690-315-0070(3)(o)] Any other information required by the Department that is necessary to evaluate the application in accordance with applicable statutory requirements.
X	* Signature(s) of the water right permit holder(s).

S:\groups\wr\extensions\Municipal\muni_ext_completeness checklist\g13479_City of Wheeler.wpd

Name of Reviewer: Jonathan Unger Date: 1/31/05

Permit Extension Ground Water Review

Date: May 19, 2004
To: Doug Woodcock, Ground Water Section Manager
From: Lisa Juul, Permit Extension Review
Subject: Ground Water Review Needed for File #G-13479 / Permit #G-12196

The above referenced permit is currently being reviewed for an extension of time. Before I can determine whether or not an extension of time should be granted, however, a Ground Water review for this file is necessary due to the following:

NOTE: Original Division 9 review completed by: ?

- ☐ No Division 9 Ground Water Review Done.... *please see below*
- ☐ Located within a **Critical** Ground Water Area
- ☐ Located within a Ground Water **Limited** Area
- ☐ Located within a Ground Water **Study** Area
- ☐ 5-Year Limited Permit

☒ Other: Please See Questions Below

For Ground Water / Hydrology Staff Use:

☒ YES

☐ NO

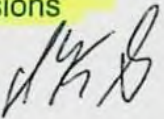
Please complete a Div. 9 and Scenic Waterway (SWW) Review for this file. Due to the early priority date associated with this permit, no prior Div. 9 or SWW review was ever done.

Please answer the following questions. If necessary, attach an additional sheet.

1. Should any additional conditions be added to this permit? See Attached
2. Should the extension of time request be further conditioned or **DENIED** due to ground water supply concerns?
3. Should the Department establish a new reference level for water level declines due to the failure of permittee to submit annual measurements?
4. Other issues or concerns?

Date: June 29, 2004

To: Lisa Juul – Permit Extensions

From: Ivan Gall – Groundwater 

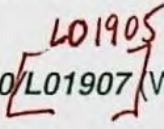
Subject: Groundwater Review for File G-13479 Permit G-12196

Discussion:

The City of Wheeler is requesting an extension of time on the above permit from 10-1-1999 to 10-1-2049. Well logs that have been filed (attached with maps):

TILL 1255, 60 feet deep, 100 gpm yield, completed in alluvium

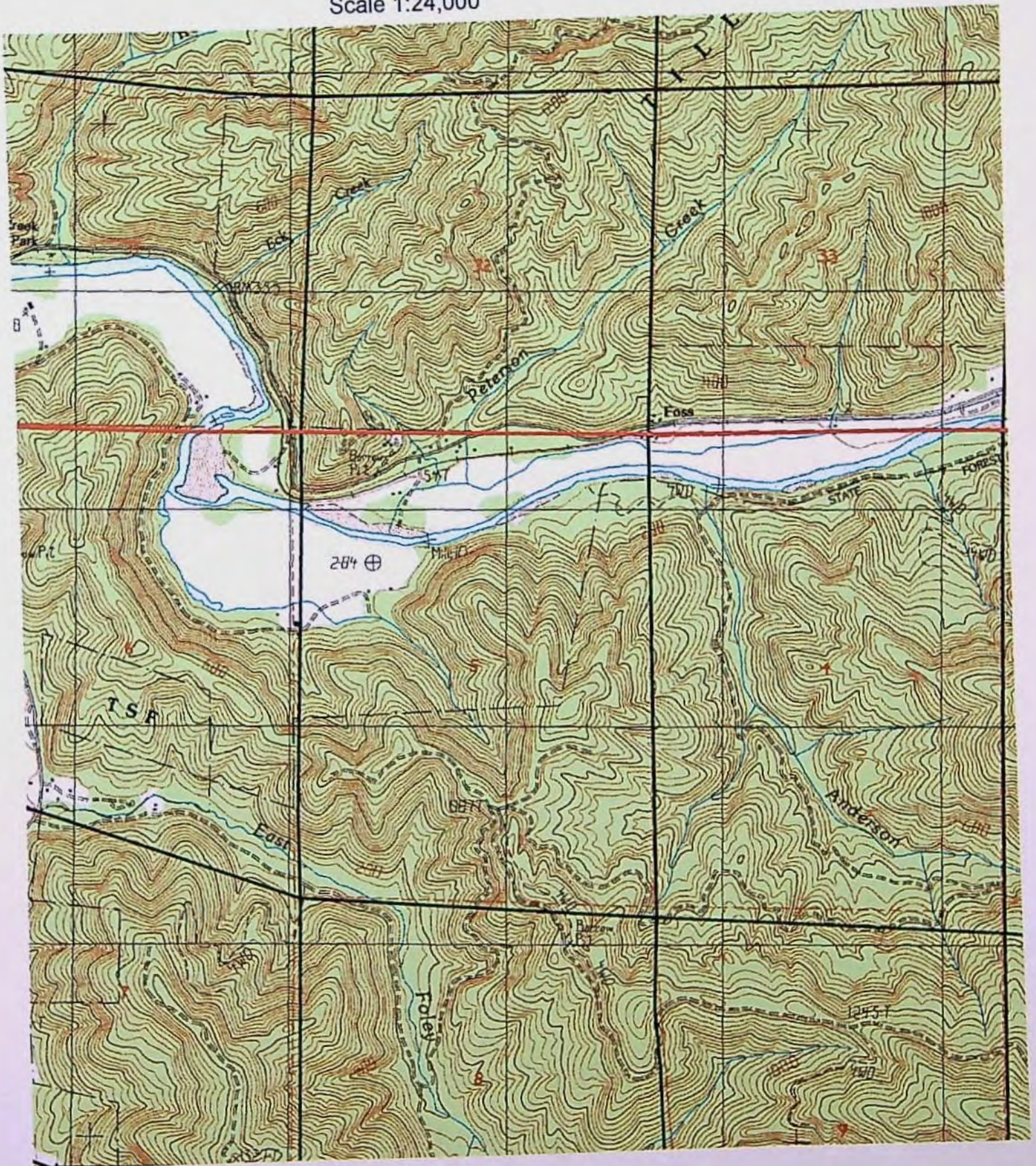
TILL 50078, abandonment of a 49 foot deep well completed in alluvium, yield > 100 gpm

TILL 50080/L01907 (Well #3), 64 feet deep, completed in alluvium, yield unknown 

TILL 50076/L01906 (Well #1), 63 feet deep, 500 gpm yield, completed in alluvium (see log **TILL 51052** for pitless adaptor installation)

1. Should any additional conditions be added to this permit?
No
2. Should the extension of time request be further conditioned or DENIED due to groundwater supply concerns?
No
3. Should the department establish a new reference level for water level declines due to the failure of the permittee to submit annual measurements?
No
4. Other issues or concerns?
None

02N - 09W - 5
City of Wheeler Permit G-12196
Foley Peak Quad
Scale 1:24,000



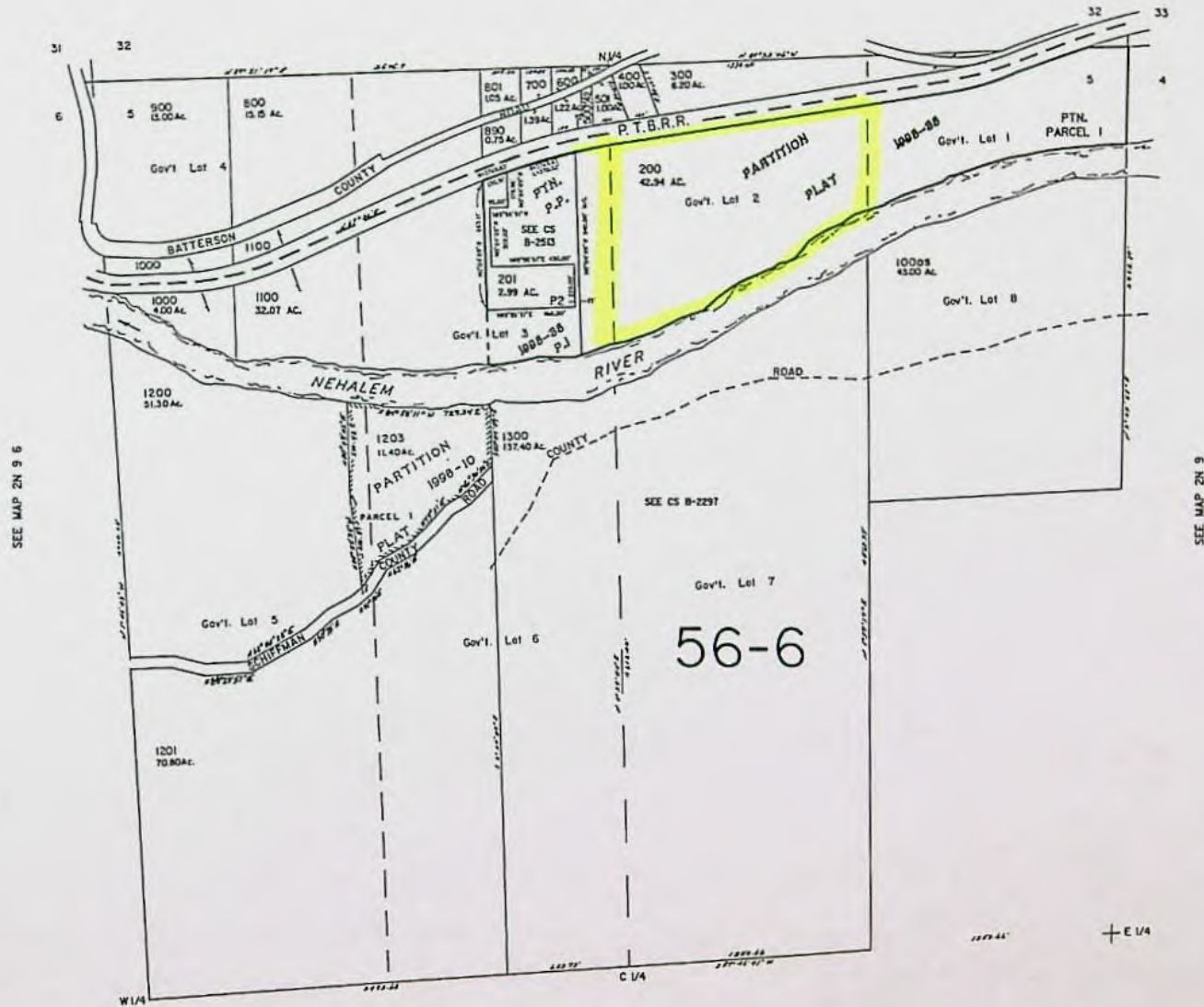
THIS MAP WAS PREPARED FOR
ASSESSMENT PURPOSE ONLY

SECTION 5 T.2N. R.9W. W.M.
TILLAMOOK COUNTY
1" = 400'

2N 09 05

CANCELLED NO.
1400

SEE MAP JN 9



SEE MAP 2N 9

2N 09 05

Revised 10/16/02, KA

STATE OF OREGON
WATER WELL REPORT
(as required by ORS 537.765)

TILL
1255

RECEIVED

2N/9W/5

AUG 31 1994

(START CARD) # XXXXX 68052

Instructions for completing this report are on the last page of this form.

(1) OWNER: Well Number 210
Name Lee Engineering Inc.
Address 1300 John Adams St.
City Oregon city State Or Zip 97045

(2) TYPE OF WORK
☒ New Well ☐ Deepening ☐ Alteration (repair/recondition) ☐ Abandonment

(3) DRILL METHOD:
☐ Rotary Air ☐ Rotary Mud ☒ Cable ☐ Auger
☐ Other

(4) PROPOSED USE:
☐ Domestic ☐ Community ☐ Industrial ☐ Irrigation
☐ Thermal ☐ Injection ☐ Livestock ☒ Other test well

(5) BORE HOLE CONSTRUCTION:
Special Construction approval ☐ Yes ☒ No Depth of Completed Well 60 ft.
Explosives used ☐ Yes ☒ No Type _____ Amount _____

HOLE			SEAL			Sacks or pounds
Diameter	From	To	Material	From	To	
<u>12</u>	<u>0</u>	<u>18</u>	<u>bentonite</u>	<u>0</u>	<u>18</u>	<u>10</u>
<u>8</u>	<u>18</u>	<u>60</u>				

How was seal placed: Method ☐ A ☐ B ☐ C ☐ D ☐ E
☒ Other poured from the top
Backfill placed from _____ ft. to _____ ft. Material _____
Gravel placed from _____ ft. to _____ ft. Size of gravel _____

(6) CASING/LINER:

Diameter	From	To	Gauge	Steel	Plastic	Welded	Threaded
Casing: <u>8</u>	<u>+2</u>	<u>50</u>	<u>1/4</u>	☒	☐	☒	☐
				☐	☐	☐	☐
				☐	☐	☐	☐
				☐	☐	☐	☐
Liner:				☐	☐	☐	☐
				☐	☐	☐	☐
				☐	☐	☐	☐

Final location of shoe(s) 50

(7) PERFORATIONS/SCREENS:

From	To	Slot size	Number	Diameter	Material	Casing	Liner
						☐	☐
						☐	☐
						☐	☐
						☐	☐
						☐	☐

(8) WELL TESTS: Minimum testing time is 1 hour

Yield gal/min	Drawdown	Drill stem at	Time
<u>100</u>	<u>4"</u>		<u>1 hr.</u>

Temperature of water 52 Depth Artesian Flow Found _____
Was a water analysis done? ☐ Yes By whom _____
Did any strata contain water not suitable for intended use? ☐ Too little
☐ Salty ☐ Muddy ☐ Odor ☐ Colored ☐ Other _____
Depth of strata: _____

(9) LOCATION OF WELL by legal description:

County Tillamook Latitude _____ Longitude _____
Township 2 N or S Range 9 E or W. WM.
Section 8 5 1/4 1/4
Tax Lot _____ Lot _____ Block _____ Subdivision _____
Street Address of Well (or nearest address) 22095 Foss Rd
Wheeler OR.

(10) STATIC WATER LEVEL:
15 ft. below land surface. Date 8/18/94
Artesian pressure _____ lb. per square inch. (b) Date _____

(11) WATER BEARING ZONES: 1994
Depth at which water was first found 34

From	To	Estimated Flow Rate	SWL
<u>xx 27</u>	<u>34</u>	<u>60</u>	<u>15</u>
<u>47</u>	<u>60</u>	<u>100</u>	<u>15</u>

(12) WELL LOG:
Ground Elevation _____

Material	From	To	SWL
<u>top soil</u>	<u>0</u>	<u>1</u>	
<u>clay brown</u>	<u>1</u>	<u>18</u>	
<u>clay/gravel gray/brown</u>	<u>18</u>	<u>19</u>	
<u>boulders cemented gray</u>	<u>19</u>	<u>22</u>	
<u>gravel/clay gray brown</u>	<u>22</u>	<u>27</u>	
<u>gravel gray</u>	<u>27</u>	<u>34</u>	<u>15</u>
<u>gravel/clay brown/gray</u>	<u>34</u>	<u>38</u>	
<u>gravel gray/ brown</u>	<u>38</u>	<u>40</u>	
<u>sand/gravel gray</u>	<u>40</u>	<u>43</u>	
<u>clay/gravel gray</u>	<u>43</u>	<u>45</u>	
<u>clay blue</u>	<u>45</u>	<u>47</u>	
<u>sand cemented blue</u>	<u>47</u>	<u>60</u>	<u>15</u>

Date started 8/15/94 Completed 8/18/94

(unbonded) Water Well Constructor Certification:
I certify that the work I performed on the construction, alteration, or abandonment of this well is in compliance with Oregon water supply well construction standards. Materials used and information reported above are true to the best of my knowledge and belief.

Signed _____ WWC Number _____
Date _____

(bonded) Water Well Constructor Certification:
I accept responsibility for the construction, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon water supply well construction standards. This report is true to the best of my knowledge and belief.

Signed Rodney C. Gil WWC Number 663
Date 8/19/94

RECEIVED

AUG 20 1996

WELL I.D.#

50078

STATE OF OREGON

WATER SUPPLY WELL REPORT

(as required by ORS 537.765)

WATER RESOURCES DEPT.

SALEM, OREGON

(START CARD) # 89997

Instructions for completing this report are on the last page of this form.

(1) OWNER:

Well Number _____

Name CITY OF WHEELER

Address P.O. BOX 177

City WHEELER

State OR

Zip 97147

(2) TYPE OF WORK

☒ New Well ☐ Deepening ☐ Alteration (repair/recondition) ☒ Abandonment

(3) DRILL METHOD:

☐ Rotary Air ☐ Rotary Mud ☒ Cable ☐ Auger☐ Other

(4) PROPOSED USE:

☐ Domestic ☐ Community ☐ Industrial ☐ Irrigation☐ Thermal ☐ Injection ☐ Livestock ☒ Other MUNICIPAL

(5) BORE HOLE CONSTRUCTION:

Special Construction approval ☐ Yes ☒ No Depth of Completed Well 0 ft.Explosives used ☐ Yes ☒ No Type _____ Amount _____

HOLE			SEAL			Sacks or pounds
Diameter	From	To	Material	From	To	
18	0	8				
16	8	49				
			NEAT CEMENT	49	0	100 SACKS

How was seal placed: Method ☐ A ☐ B ☒ C ☐ D ☐ E☐ Other

Backfill placed from _____ ft. to _____ ft. Material _____

Gravel placed from _____ ft. to _____ ft. Size of gravel _____

(6) CASING/LINER:

	Diameter	From	To	Gauge	Steel	Plastic	Welded	Threaded
Casing:	ALL CASING WAS REMOVED							
	& WELL BORE WAS DISPLACED							
	WITH NEAT CEMENT GROUT							
Liner:								

Final location of shoe(s) _____

(7) PERFORATIONS/SCREENS:

		Method				Material	
				Type			
From	To	Slot size	Number	Diameter	Tele/pipe size	Casing	Liner
						☐	☐
						☐	☐
						☐	☐
						☐	☐

(8) WELL TESTS: Minimum testing time is 1 hour

☐ Pump	☐ Bailer	☐ Air	☐ Flowing
Yield gal/min	Drawdown	Drill stem at	Time
			1 hr.

Temperature of water _____ Depth Artesian Flow Found _____

Was a water analysis done? ☐ Yes By whom _____Did any strata contain water not suitable for intended use? ☐ Too little☐ Salty ☐ Muddy ☐ Odor ☐ Colored ☐ Other _____

Depth of strata: _____

(9) LOCATION OF WELL by legal description:

County TILLAMOOK Latitude _____ Longitude _____

Township 2N N or S Range 9W E or W. WM.

Section 5 NE 1/4 NW 1/4

Tax Lot 200 Lot _____ Block _____ Subdivision _____

Street Address of Well (or nearest address) _____

22095 FOSS RD., WHEELER, OR

(10) STATIC WATER LEVEL:

14 ft. below land surface.

Date 6-28-96

Artesian pressure 0 lb. per square inch.

Date _____

(11) WATER BEARING ZONES:

Depth at which water was first found 9

From	To	Estimated Flow Rate	SWL
9	19	15 GPM	
19	26.5	< 100 GPM	
27.5	33.5	> 100 GPM	

(12) WELL LOG:

Ground Elevation _____

Material	From	To	SWL
SAND SILTY GREY	0	7	
SAND SILTY SOME GRAVEL MED	7	9	
GRAVEL MED TO COURSE SILTY	9		
BRN		19	
COBBLES GRAVEL SAND 10"	19		
MINUS GREY		20.5	
COBBLES GRAVEL SAND 10" MINUS		20.5	
GREY VERY LITTLE SILT SEMI			
LOOSE		23.0	
COBBLES GRAVEL SAND 10" MINUS		23.0	
BRN VERY LITTLE SILT SEMI			
LOOSE		26.5	
SILT BRN SOFT GRAVELY	26.5	27.5	
COBBLES GRAVEL SAND 6" MINUS	27.5		
CLEAN LOOSE GREY BRN		33.5	
GRAVEL BRN COURSE CEMENTED	33.5		
SOME SILT BRN		37.0	
SAME AS ABOVE (MORE SILT)	37.0	40.0	
SAND & GRAVEL COURSE CMTD	40.0		
TIGHT BRN DIRTY		44.0	

Date started _____ Completed _____

(unbonded) Water Well Constructor Certification:

I certify that the work I performed on the construction, alteration, or abandonment of this well is in compliance with Oregon water supply well construction standards. Materials used and information reported above are true to the best of my knowledge and belief.

Signed _____ WWC Number 1487 Date 7-29-96

(bonded) Water Well Constructor Certification:

I accept responsibility for the construction, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon water supply well construction standards. This report is true to the best of my knowledge and belief.

Signed _____ WWC Number 688 Date 7-29-96

AUG 20 1996

WELL I.D.#

(START CARD) # 89997

Instructions for completing this report are on the last page of this form.

one bag hole plug placed at surface of 16" borehole

Ir. Q. # ~~LO 1907~~

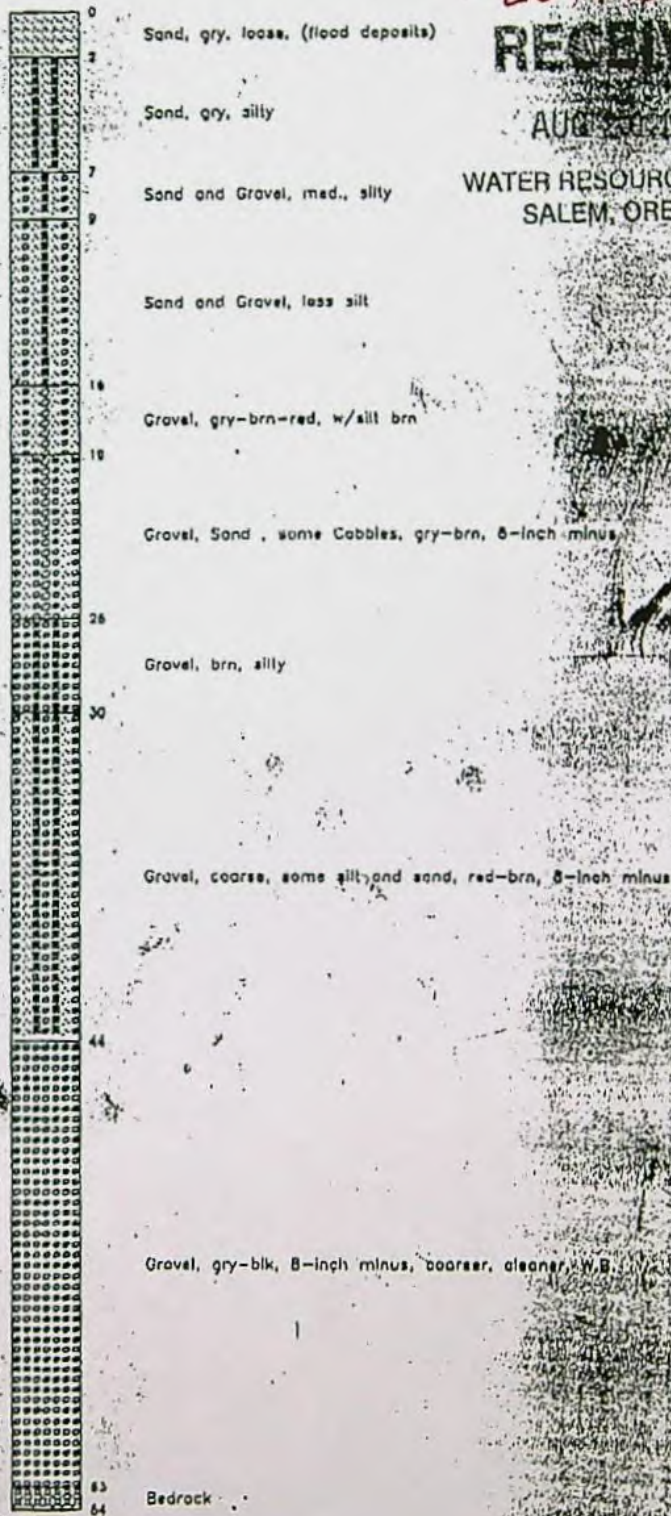
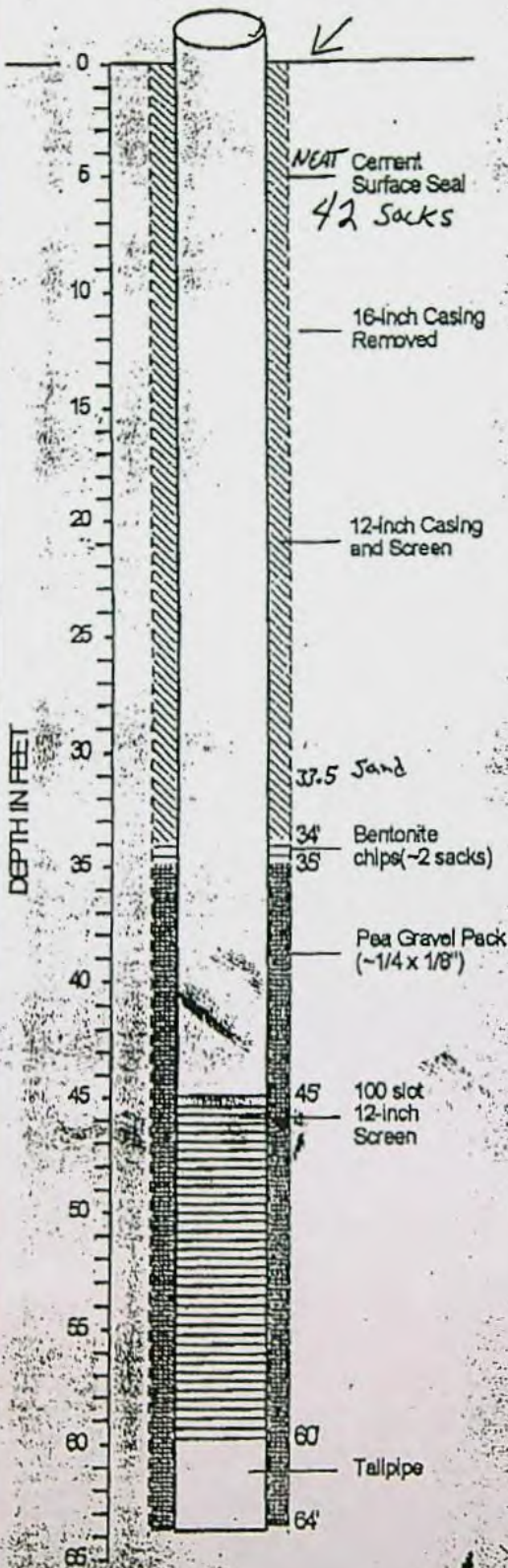
LO 1905

RECEIVED

AUG 31 1995

WATER RESOURCES DEPT
SALEM, OREGON

Wheeler Well 3 Lithologic Log



AGI

WHEELER OREGON
PROJECT: #15792.005

Well 3 Completion Design

Figure 1

RECEIVED

Till
50076

STATE OF OREGON
WATER SUPPLY WELL REPORT
(as required by ORS 537.765)
WATER RESOURCES DEPT.
Instructions for completing this report are on the back of this form.

AUG 20 1996

WELL I.D.# L01906

(START CARD) # 89998

(1) OWNER: Well Number 1
Name CITY OF WHEELER

Address P.O. BOX 177
City WHEELER State OR Zip 97147

(2) TYPE OF WORK
☒ New Well ☐ Deepening ☐ Alteration (repair/recondition) ☐ Abandonment

(3) DRILL METHOD:
☐ Rotary Air ☐ Rotary Mud ☒ Cable ☐ Auger
☐ Other

(4) PROPOSED USE:
☐ Domestic ☐ Community ☐ Industrial ☐ Irrigation
☐ Thermal ☐ Injection ☐ Livestock ☒ Other MUNICIPAL

(5) BORE HOLE CONSTRUCTION:
Special Construction approval ☐ Yes ☒ No Depth of Completed Well 63 ft.
Explosives used ☐ Yes ☒ No Type _____ Amount _____

HOLE			SEAL			Sacks or pounds
Diameter	From	To	Material	From	To	
18	0	8				
16	8	63				
			NEAT CEMENT	33.5	0	59 SACKS

How was seal placed: Method ☐ A ☐ B ☒ C ☐ D ☐ E
☐ Other

Backfill placed from 33.5 ft. to 35 ft. Material SAND & BENT.
Gravel placed from 35 ft. to 55 ft. Size of gravel PEA ROCK

(6) CASING/LINER: 55 63 DRAIN ROCK

Diameter	From	To	Gauge	Steel	Plastic	Welded	Threaded
Casing: 12	+3	43	.250	☒	☐	☒	☐
12	50	55		☒	☐	☒	☐
				☐	☐	☐	☐
				☐	☐	☐	☐
Liner:				☐	☐	☐	☐
				☐	☐	☐	☐

Final location of shoe(s) NONE

(7) PERFORATIONS/SCREENS:
☐ Perforations Method _____
☒ Screens Type JOHNSON V-WIRE Material SS

From	To	Slot size	Number	Diameter	Tele/pipe size	Casing	Liner
43	53	100		12" p/s		☒	☐
						☐	☐
						☐	☐
						☐	☐

(8) WELL TESTS: Minimum testing time is 1 hour

☒ Pump	☐ Bailer	☐ Air	☐ Flowing Artesian
Yield gal/min	Drawdown	Drill stem at	Time
1012	3.5		1 hr. 24

Temperature of water 49 Depth Artesian Flow Found _____

Was a water analysis done? ☒ Yes By whom AGT TECHNOLOGIES
Did any strata contain water not suitable for intended use? ☐ Too little

☐ Salty ☐ Muddy ☐ Odor ☐ Colored ☐ Other _____

Depth of strata: _____

(9) LOCATION OF WELL by legal description:
County TILLAMOOK Latitude _____ Longitude _____

Township 2N N or S Range 9W E or W. WM.
Section 5 NE 1/4 NW 1/4

Tax Lot 200 Lot _____ Block _____ Subdivision _____

Street Address of Well (or nearest address) _____

22095 FOSS RD., WHEELER, OR

(10) STATIC WATER LEVEL:
14 ft. below land surface. Date 7-24-96
Artesian pressure 0 lb. per square inch. Date _____

(11) WATER BEARING ZONES:
Depth at which water was first found 9'

From	To	Estimated Flow Rate	SWL
9	16	15	
16	23	50	14
42.5	50	500	14

(12) WELL LOG:
Ground Elevation _____

CHIPS	Material	From	To	SWL
SAND GREY LOOSE (overbank dep)		0	2	
SAND GREY SILTY		2	9	
SAND & GRAVEL MED SILTY		9	11	
SAND & GRAVEL COARSE SILTY		11	16	
SAND GRAVEL COBBLES 10" MINUS		16		
BRN LOOSE (semi clean)			23	
COBBLES SAND & GRAVEL 10"		23		
MINUS PACKED BRN SOME SILT	BRN	27		
SILT BROWN GRAVELY		27	28	
SAND & GRAVEL SILTY BRN 5"		28		
MINUS SOME COBBLES			31	
GRAVEL BRN COARSE TO FINE		31		
SOME SAND SEMI LOOSE			32.5	
SAND GRAVEL COBBLES 10"		32.5		
MINUS PACKED BRN			34.5	
GRAVEL & COBBLES 8" MINUS		34.5		
BROWN LESS SAND			39	
SAND GRAVEL COBBLES BRN 8"		39		
MINUS MORE SAND SEMI TIGHT			42.5	

Date started 6-21-96 Completed 7-24-96

(unbonded) Water Well Constructor Certification:
I certify that the work I performed on the construction, alteration, or abandonment of this well is in compliance with Oregon water supply well construction standards. Materials used and information reported above are true to the best of my knowledge and belief.

Signed _____ WWC Number 1487
Date 7-29-96

(bonded) Water Well Constructor Certification:
I accept responsibility for the construction, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon water supply well construction standards. This report is true to the best of my knowledge and belief.

Signed Steven N. Stahl WWC Number 688
Date 7-29-96

STATE OF OREGON
WATER SUPPLY WELL REPORT
(as required by ORS 537.765)

Instructions for completing this report are on the last page of this form.

WELL I.D. # L 01906
START CARD # W143371

(1) LAND OWNER Well Number 1
Name City of Wheeler
Address PO Box 177
City Wheeler State OR Zip 97147

(2) TYPE OF WORK
☐ New Well ☐ Deepening ☒ Alteration (repair/recondition) ☐ Abandonment

(3) DRILL METHOD:
☐ Rotary Air ☐ Rotary Mud ☐ Cable ☐ Auger
☐ Other NA

(4) PROPOSED USE:
☐ Domestic ☐ Community ☐ Industrial ☐ Irrigation
☐ Thermal ☐ Injection ☐ Livestock ☒ Other Municipal

(5) BORE HOLE CONSTRUCTION:
Special Construction approval ☐ Yes ☒ No Depth of Completed Well 63 ft.
Explosives used ☐ Yes ☐ No Type _____ Amount _____

HOLE			SEAL			Sacks or pounds
Diameter	From	To	Material	From	To	

How was seal placed: Method ☐ A ☐ B ☐ C ☐ D ☐ E
☐ Other _____

Backfill placed from _____ ft. to _____ ft. Material _____
Gravel placed from _____ ft. to _____ ft. Size of gravel _____

(6) CASING/LINER:

	Diameter	From	To	Gauge	Steel	Plastic	Welded	Threaded
Casing:					☐	☐	☐	☐
					☐	☐	☐	☐
					☐	☐	☐	☐
					☐	☐	☐	☐
Liner:					☐	☐	☐	☐
					☐	☐	☐	☐

Drive Shoe used ☐ Inside ☐ Outside ☐ None
Final location of shoe(s) _____

(7) PERFORATIONS/SCREENS: Not Changed
☐ Perforations Method _____
☐ Screens Type _____ Material _____

From	To	Slot size	Number	Diameter	Tele/pipe size	Casing	Liner
						☐	☐
						☐	☐
						☐	☐
						☐	☐

(8) WELL TESTS: Minimum testing time is 1 hour

	Yield gal/min	Drawdown	Drill stem at	Time
☐ Pump				
☐ Bailer				
☐ Air				
☐ Flowing				
☐ Artesian				

Temperature of water _____ Depth Artesian Flow Found _____
Was a water analysis done? ☐ Yes By whom _____
Did any strata contain water not suitable for intended use? ☐ Too little
☐ Salty ☐ Muddy ☐ Odor ☐ Colored ☐ Other _____
Depth of strata: _____

(9) LOCATION OF WELL by legal description:
County Tillamook Latitude _____ Longitude _____
Township 2N N or S Range 9W E or W. WM.
Section 5 NE 1/4 NW 1/4
Tax Lot 200 Lot _____ Block _____ Subdivision _____
Street Address of Well (or nearest address) 22095 Foss Rd
Wheeler, OR

(10) STATIC WATER LEVEL: 16'9" ft. below land surface. 16'9" Date _____
Artesian pressure _____ lb. per square inch Date _____

(11) WATER BEARING ZONES:
Depth at which water was first found NA

From	To	Estimated Flow Rate	SWL

(12) WELL LOG:
Ground Elevation _____

Material	From	To	SWL
*			
Installed a 12x6 pitless unit on the 12" well casing			
Removed 7' of 12" casing. Added 7' combined length of 14" Barrol & pitless unit.			
Top of casing remains the same above ground.			
Placed 3/8" hole plug around casing as excavated			
Hole was backfilled (12 ea 50lb bags)			

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SEP 23 2002

WATER RESOURCES DEPT.
SALEM, OREGON

Date started 7-19-02 Completed 8-23-02

(unbonded) Water Well Constructor Certification:
I certify that the work I performed on the construction, alteration, or abandonment of this well is in compliance with Oregon water supply well construction standards. Materials used and information reported above are true to the best of my knowledge and belief.

WWC Number 1578
Signed [Signature] Date 9/17/02

(bonded) Water Well Constructor Certification:
I accept responsibility for the construction, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon water supply well construction standards. This report is true to the best of my knowledge and belief.

WWC Number 673
Signed [Signature] Date 9/17/02

ORIGINAL - WATER RESOURCES DEPARTMENT FIRST COPY - CONSTRUCTOR SECOND COPY - CUSTOMER

2002-22



LEE ENGINEERING, INC.
CONSULTING ENGINEERS

Civil • Structural • Environmental

April 30, 2004
Project No. 3178.040

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MAY 04 2004

WATER RESOURCES DEPT
SALEM, OREGON

F. Duane Lee, P.E., W.R.E.
David A. Lee, P.E., P.L.S.
Richard P. (Phil) Beverly, P.E., W.R.E.
Joseph D. Eskew, P.E.
James R. Shaver, P.E.
Mark D. Nelson, P.E.
Brian D. Lee, P.E.
Patrick K. Murphy, P.E.

✓ Ms. Lisa Juul
Water Resource Department
725 Summer Street N.E., Suite A
Salem, OR 97301-1271

Re: City of Wheeler, Application for Extension of Time
Permit G-12196 (Application G-13479)

Dear Ms. Juul:

Enclosed herewith is a bound copy of our Application for an Extension of Time for the City of Wheeler and the regional water wells along the lower Nehalem River. I have attached a number of supplemental items which I think are beneficial to the overall application and have discussed them in the body of my report. If I have failed to provide you with any of the information that you may need in order to appropriately process this application, please contact me either at Lee Engineering, Inc.'s office number or on my cell phone, (503) 913-6098.

In the process of addressing the necessary paperwork for the above-referenced water rights application and permit, we had originally anticipated proceeding with a Beneficial Use Survey and the incremental perfection of a water right on the wells. However, in my discussions with you and others at the Water Resource Department, you have encouraged me to process the enclosed Application for an Extension of Time.

Since our original intent was to process a Beneficial Use Survey, I had already prepared a Beneficial Use map. We are transmitting under separate cover a copy of the map showing the current or future water users who will likely use water from the regional wells. We have not included any of the prospective users south of Nehalem Bay, since those entities have not yet committed to receiving water from the regional water supply. Please place this map on file and use it as needed. I am not submitting at this time an engineering report on the Beneficial Use Survey.

Sincerely,

LEE ENGINEERING, INC.

F. Duane Lee, P.E.

FDL:nj

Enclosures

cc: City of Manzanita w/map
City of Wheeler w/copy of map

P:\3178 - City of Manzanita - Water Rights\Word Processing\Juul.043004.doc

1300 John Adams Street • Oregon City, OR 97045 • office: 503.655.1342 • fax: 503.655.1360 • e-mail: general@lei-ce.com

**STATE OF OREGON
WATER RESOURCES DEPARTMENT**

RECEIPT # **67011**

725 Summer St. N.E. Ste. A
SALEM, OR 97301-4172
(503) 986-0900 / (503) 986-0904 (fax)

INVOICE # _____

RECEIVED FROM: Lee Engineering Inc
BY: _____

APPLICATION	G13479
PERMIT	G12196
TRANSFER	

CASH: ☐ CHECK: # 12672 OTHER: (IDENTIFY) ☐ _____

TOTAL REC'D \$ 250.00

1083 TREASURY 4170 WRD MISC CASH ACCT

0407	COPIES	\$
_____	OTHER: (IDENTIFY) _____	\$

0243 I/S Lease _____ 0244 Muni Water Mgmt. Plan _____ 0245 Cons. Water _____

4270 WRD OPERATING ACCT

MISCELLANEOUS

0407	COPY & TAPE FEES	\$
0410	RESEARCH FEES	\$
0408	MISC REVENUE: (IDENTIFY) _____	\$
TC162	DEPOSIT LIAB. (IDENTIFY) _____	\$
0240	EXTENSION OF TIME	\$ <u>250.00</u>

WATER RIGHTS:

0201	SURFACE WATER	EXAM FEE \$	0202	RECORD FEE \$
0203	GROUND WATER	\$	0204	\$

0205	TRANSFER	\$
------	----------	----

WELL CONSTRUCTION

0218	WELL DRILL CONSTRUCTOR	EXAM FEE \$	0219	LICENSE FEE \$
	LANDOWNER'S PERMIT		0220	\$

OTHER (IDENTIFY) _____

0536 TREASURY 0437 WELL CONST. START FEE

0211	WELL CONST START FEE	\$	CARD #	
0210	MONITORING WELLS	\$	CARD #	

OTHER (IDENTIFY) _____

0607 TREASURY 0467 HYDRO ACTIVITY LIC NUMBER

0233	POWER LICENSE FEE (FW/WRD)	\$
0231	HYDRO LICENSE FEE (FW/WRD)	\$
_____	HYDRO APPLICATION	\$

TREASURY OTHER / RDX

FUND _____ TITLE _____
OBJ. CODE _____ VENDOR # _____
DESCRIPTION _____ \$ _____

RECEIPT: **67011**

DATED: 5/3/04

BY: Linda Doe

DATE	INVOICE NO.	GL ACCT.	PROJ. NO.	PROJECT DESCRIPTION	AMOUNT
4/29/04	42904	5113	3178	MANZANITA\ WATER RIGHTS	250.00
RECEIVED MAY 3 2004 WATER RESOURCES DEPT SALEM, OREGON					
CHECK DATE	4/29/04	CHECK NUMBER	12672	TOTAL	250.00

PLEASE DETACH THIS PORTION AND RETAIN FOR YOUR RECORDS.



LEE ENGINEERING, INC.
CONSULTING ENGINEERS

*Superceded
by Ext Appl
Revd 6-22-05*
Civil • Structural • Environmental

April 30, 2004
Project No. 3178.040

Ms. Lisa Juul
Water Resource Department
725 Summer Street N.E., Suite A
Salem, OR 97301-1271

F. Duane Lee, P.E., W.R.E.
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Sincerely,

LEE ENGINEERING, INC.

F. Duane Lee

F. Duane Lee, P.E.

FDL:nj

Enclosures

cc: City of Manzanita w/map
City of Wheeler w/copy of map

RECEIVED

MAY 3 2004

**WATER RESOURCES DEPT
SALEM, OREGON**



LEE ENGINEERING, INC.
CONSULTING ENGINEERS

RECEIVED

FEB 21 2003

WATER RESOURCES DEPT.
SALEM, OREGON

Civil • Structural • Environmental

February 21, 2003

Project No. 1307.050

F. Duane Lee, P.E., W.R.E.
David A. Lee, P.E., P.L.S.
Richard P. (Phil) Beverly, P.E., W.R.E.
Joseph D. Eskew, P.E.
James R. Shaver, P.E.
Mark D. Nelson, P.E.
Brian D. Lee, P.E.

Water Resources Department
158 12th St. N.E.
Salem, Oregon 97301-4172

Attention: Ms. Lisa Juul

Re: City of Wheeler Permit No. G-12196: File No. G-13479

Dear Ms. Juul:

A review of my file indicates that the last correspondence I had with the Water Resources Department was a letter dated September 28, 1999, addressed to Mr. Dallas Miller. That letter indicates the City's intent to proceed with the proposed project. The Cities of Wheeler and Manzanita have gone forward, and the project is very near completion. Pumps and motors have been installed at the well site. The pipelines to Wheeler and Manzanita have been completed, and other facilities are soon to be completed within the next several months. Tentatively, the project will be finished sometime this summer.

I have talked two or three times over the past year informally with Bill Fujii of the Water Resources Department concerning the project. As the records indicate, this project began in the early 1990's and it has taken about 10 years to complete.

I am enclosing herewith the form recently sent to the City of Wheeler entitled "Quasi-Municipal/Municipal Water Use Permit Development Questionnaire." The City has requested that I provide the Beneficial Use Survey and Final Proof Survey map when the wells are in production sometime within the next month or two.

Another condition of the permit for this project was development of a Water Management and Conservation Plan. I will be working with both the Cities of Wheeler and Manzanita to develop this information in the next several weeks.

If additional paperwork is necessary for this project at this time, please contact me immediately. If the items I have listed above, including the Beneficial Use Survey and development of the Water Management Plan, are the major items necessary to perfect the City's water rights in this project, no additional communications will be necessary.

Water Resources Department
February 21, 2003
Page 2

RECEIVED

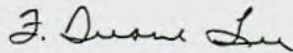
FEB 24 2003

WATER RESOURCES DEPT.
SALEM, OREGON

We look forward to working with you to complete the paperwork on this project.

Sincerely,

LEE ENGINEERING, INC.



F. Duane Lee, P.E., W.R.E.

FDL:nj

cc: Bill Fujii, Water Resources Department
City of Manzanita
City of Wheeler
Department of Human Services, Drinking Water Program
Rural Utilities Service

RECEIVED

FEB 24 2003

WATER RESOURCES DEPT.
SALEM, OREGON

Oregon Water Resources Department
Quasi-Municipal/Municipal Water Use Permit Development Questionnaire

Permit Holder: CITY OF WHEELER

Permit #G12196

Application File #G13479

Please indicate which of the following applies to the above referenced Quasi-Municipal or Municipal water use permit by checking the appropriate box:

1. The Permit is Ready for Final Proof and...



a Claim of Beneficial Use and Final Proof Survey map will be prepared and submitted by a Certified Water Rights Examiner;

- OR -



the Water Resources Department (WRD) has been notified that development of the permit is complete, and the permit holder is waiting for WRD to conduct the final proof survey.

2. Development of the Permit is Not Complete and...



the permit holder will submit a permit extension of time application to WRD no later than 90 days from the date of this letter (March 20, 2003).

3. The Permit is Not Needed and Wish to Authorize Cancellation...



the permit holder has determined that this permit is no longer needed and/or has chosen not to pursue development of the permit, and wishes to authorize its cancellation.

J. Duane Lee, CWRE

Signature of Authorized Personnel

2/21/03

Date

Please return completed form by March 20, 2003 to:

Water Resources Department

Attention: Lisa Juul

158 - 12th Street NE

Salem OR 97301-4172



LEE ENGINEERING, INC.
CONSULTING ENGINEERS

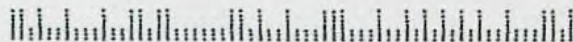
1300 John Adams Street • Oregon City, OR 97045



ATT: LISA JUUL

WATER RESOURCES DEPARTMENT
158 12TH N.E.
SALEM, OREGON 97031-4172

97301+4172 03



C99

Application No.

Permit No.

G13479
G12196

Name ... CITY OF WHEELER
Address PO BOX 177
WHEELER, OR

97147

Assigned

Address

Beginning construction

10-96

Completion of construction

10-1-97

Extended to

Complete application of water

10-1-98

Extended to

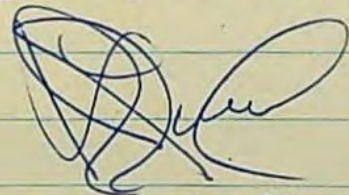
3-13-03

RE: Appl # G-13479
Permit # G-12196

I spoke with Duane Lee of Lee Engineering today concerning the City of Wheeler's permit & Mr. Lee's 2-21-03 letter.

→ We determined that construction work & use of water were not completed by "C" date 10-1-99, ~~so~~ so Mr. Lee will be preparing & submitting an extension of time application for Permit # G-12196.

- Lisa Juul



3-13-03

G-13479 WHEELER
MUNI. EXTENSION 02N/09W-5

OREGON WATER RESOURCES DEPARTMENT
GROUND WATER REVIEW: MUNICIPAL PERMIT EXTENSION OF TIME

Date: September 25, 2006

To: Water Rights Section

From: Ivan Gall, Staff Hydrogeologist

Extension Review for File # G- 13479 / Permit # G- 12196

The undeveloped portion of this permit has been evaluated under the Department's 690-09 rules and Was ☒ / was not ☐ found to have the Potential for Substantial Interference with surface water. The evaluation was conducted pursuant to OAR 690-315. Forward files found to have the potential for substantial interference to Oregon Department of Fish and Wildlife.

Undeveloped Portion of Permit in CFS: 2.43

Estimate of impact and location of evaluation (River mile or PLS)

Stream depletion occurs over a stream reach. Depletion can be variable due to the presence or absence of confining layers within the aquifer. The majority of the impact will extend over a reach twice the distance between the well and the stream.

Stream: Peterson Creek

Location 02N/09W-05 NW

Days of Pumping

30	60	90	120	150	180	210	240	270	300	330	360
0.463	0.502	0.521	0.532	0.542	0.600	0.600	0.600	0.601	0.602	0.602	0.602

Interference in CFS

Stream: Nehalem River

Location 02N/09W-05 NW

Days of Pumping

30	60	90	120	150	180	210	240	270	300	330	360
1.390	1.507	1.562	1.595	1.627	1.799	1.801	1.802	1.803	1.804	1.805	1.806

Interference in CFS

Stream: _____

Location _____

Days of Pumping

30	60	90	120	150	180	210	240	270	300	330	360

Interference in CFS

Municipal/Quasi-Municipal Extension of Time Review

TO: Water Rights Section Date September 25, 2006

FROM: Ground Water/Hydrology Section Ivan Gall
Reviewer's Name

SUBJECT: File G- 13479 Supersedes review of n/a
Date of Review(s)

Criteria for Department Review of Extension Applications for Municipal and Quasi-Municipal Water Use Permits (Ground Water)

OAR 690-315-0080 (2)(c): For ground water permits submitted to ODFW under this rule (permits determined to have the potential for substantial interference), the Department shall provide to ODFW and the applicant the Department's estimate of surface water impacts that would result from the use of the undeveloped portion of the ground water permit. This review is based upon available information and agency policies in place at the time of evaluation.

A. GENERAL INFORMATION: Applicant's Name: City of Wheeler County: TILL

Applicant(s) seek(s) 3.6*** cfs from 4 well(s) in the Nehalem River Basin,
Peterson Creek subbasin Quad Map: Foley Peak

Proposed use: Municipal Seasonality: Year-round

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	TILL 50076	1 (prev. 6)	Alluvial	3.6	02N/09W-05 NENW	1087' S, 2214' E fr NW cor S 5
2	TILL 50077	2 (prev. 13)	Alluvial	3.6	02N/09W-05 NENW	1055' S, 2547' E fr NW cor S 5
3	TILL 50080	4	Alluvial	3.6	02N/09W-05 NENW	989' S, 2204' E fr NW cor S 5
4	TILL 50078	10	Alluvial	3.6	02N/09W-05 NENW	905' S, 2544' E fr NW cor S 5
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	30	9	14	7/24/96	63	0-33.5	+3-55	na	43-53	1012	3.5	P *
2	30	16	14	7/28/96	63	0-33.5	+3-45	na	45-60	1025	3.5	P*
4	30	9	14	7/11/96	64	0-33.5	na	na	45-60	na	na	
10	30	na	14	6/28/96	49	na	ns	ns	ns	>100	ns	

Use data from application for proposed wells.

Comments: As of September 2006, it appears that only two wells have been drilled and are being used as municipal POAs. One well (TILL 50078) has been abandoned; one well (TILL 50080) was drilled as a test well.

*24-hour pump tests were conducted on each well.

*** Undeveloped portion of water right is 2.43 CFS.

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

GROUND WATER/SURFACE WATER CONSIDERATIONS, OAR 690-09-040

690-09-040 (1): Evaluation of aquifer confinement:

Well	Aquifer or Proposed Aquifer	Confined	Unconfined
1	alluvial	☐	☒
2	alluvial	☐	☒
4	alluvial	☐	☒
10	alluvial	☐	☒
		☐	☐

Basis for aquifer confinement evaluation: Shallow alluvial nature of aquifer with no evidence of continuous, thick clay layers at land surface that would act as a confining bed.

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	Peterson Creek	16	10	300	☐	☐	☒	☒	☐
2	1	Peterson Creek	16	10	300	☐	☐	☒	☒	☐
1	2	Nehalem River	16	10	450	☐	☐	☒	☒	☐
2	2	Nehalem River	16	10	450	☐	☐	☒	☒	☐
4	1	Peterson Creek	16	10	150	☐	☐	☒	☒	☐
10	1	Peterson Creek	16	10	100	☐	☐	☒	☒	☐
4	2	Nehalem River	16	10	560	☐	☐	☒	☒	☐
10	2	Nehalem River	16	10	600	☐	☐	☒	☒	☐
						☐	☐	☐	☐	☐

Basis for aquifer hydraulic connection evaluation: Proximity of wells to surface water, similar head in aquifer to surface water stage, surface water in direct connection with alluvial aquifer.

Water Availability Basin the well(s) are located within: Peterson Creek and Nehalem River

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	☒	☐	72503	.18	☒	.09	☒	>25%*	☒
2	1	☒	☐	72503	.18	☒	.09	☒	>25%	☒
4	1	☒	☐	72503	.18	☒	.09	☒	>25%	☒
10	1	☒	☐	72503	.18	☒	.09	☒	>25%	☒
1	2	☒	☐	59752	100	☒	121	☒	>25%	☒
2	2	☒	☐	59752	100	☒	121	☒	>25%	☒
4	2	☒	☐	59752	100	☒	121	☒	>25%	☒
10	2	☒	☐	59752	100	☒	121	☒	>25%	☒

- 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: *Use Hunt (1999) analytical model. Given DTW and bedrock occurrence between 44-64 feet bgs, assume aquifer thickness = 35 feet. Aquifer hydraulic conductivity range estimate for gravel from Freeze and Cherry (1979) and Domenico and Schwartz (1990). Took greatest distance of 600 feet (model not sensitive to distance given the high hydr. conductivity and aquifer storage values). Assume aq. storage = 15%, reasonable for a moderately-sorted gravel aquifer. Assume stream width = 60 ft and streambed thickness = 2 ft; took vertical streambed conductivity 3 orders of magnitude less than horizontal hydr. conductivity. Note that all model assumptions are not met, including presence of two streams.

- 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													
Total Interf. CFS													

Comments: _____

Extension Review Remarks / Conditions: The impact to surface water was estimated by taking an intermediate distance between Peterson Creek and the Nehalem River (330 feet) and assigning a 2.43 cfs rate to that point. I estimated a 75%-of-pumping impact to the Nehalem River and 25% to Peterson Creek. The Nehalem will take the greatest impact due to its greater width and incisement and subsequent greater degree of hydraulic connection with the alluvial aquifer.

The stream width of 60 feet is less than the Nehalem River and greater than Peterson Creek. The stream bed thickness estimate of 2 feet is probably reasonable for the Nehalem River and too thin for Peterson Creek. A short-coming of the analytical model is the difficulty of assessing a system with more than one hydraulic boundary.

Attach estimates of surface water impacts to this review

References Used: Hunt, B., 1999, Unsteady stream depletion from ground water pumping: Ground Water, v. 37, no. 1, p. 98-102.

Domenico, P.A., and F.W. Schwartz, 1990. Physical and Chemical Hydrogeology. John Wiley and Sons, New York.

Freeze, R.A., and J.A. Cherry, 1979. Groundwater. Prentice-Hall, Inc., New Jersey.

Water Availability as of 9/21/2006 for

PETERSON CR > NEHALEM R - AT MOUTH

Watershed ID #: 70958 Basin: NORTH COAST Exceedance Level: 80

Time: 11:02 Date: 09/21/2006

Select an Item Number for More Details

Item #	Watershed ID #	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Sto
1	36	YES	YES	YES	YES	YES	YES	YES	YES	YES	NO	YES	YES	YES
2	70958	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO

STREAM NAMES

Water Availability as of 9/21/2006 for

PETERSON CR > NEHALEM R - AT MOUTH

Watershed ID #: 70958 Basin: NORTH COAST Exceedance Level: 80

Time: 11:02 Date: 09/21/2006

Item Watershed ID Stream Name

1	36	NEHALEM R > NEHALEM BAY - AT MOUTH
2	70958	PETERSON CR > NEHALEM R - AT MOUTH

DETAILED REPORT ON THE WATER AVAILABILITY CALCULATION

Water Availability as of 9/21/2006 for

NEHALEM R > NEHALEM BAY - AT MOUTH

Watershed ID #: 36 Basin: NORTH COAST Exceedance Level: 80

Time: 11:02 Date: 09/21/2006

Month	Natural Stream Flow	Consumptive Use and Storage	Expected Stream Flow	Reserved Stream Flow	Instream Require- ments	Net Water Available
1	2580.00	8.54	2570.00	0.00	270.00	2300.00
2	3130.00	8.52	3120.00	0.00	270.00	2850.00
3	2600.00	8.50	2590.00	0.00	270.00	2320.00
4	1820.00	8.67	1810.00	0.00	270.00	1540.00
5	936.00	9.58	926.00	0.00	200.00	726.00
6	465.00	12.00	453.00	0.00	150.00	303.00
7	224.00	16.50	207.00	0.00	100.00	107.00
8	126.00	14.70	111.00	0.00	100.00	11.30
9	121.00	9.48	112.00	0.00	100.00	11.50
10	174.00	8.54	165.00	0.00	270.00	-105.00
11	1170.00	8.41	1160.00	0.00	270.00	892.00
12	3070.00	8.52	3060.00	0.00	270.00	2790.00
Stor-50%	1950000	7370	1940000	0	153000	1790000

DETAILED REPORT OF INSTREAM REQUIREMENTS

Water Availability as of 9/21/2006 for

NEHALEM R > NEHALEM BAY - AT MOUTH

Watershed ID #: 36 Basin: NORTH COAST Exceedance Level: 80

Time: 11:02 Date: 09/21/2006

ISWRs									
APP #	MF	36	0	0	0	0	0	0	MAXIMUM
Status	Cert.								
1	270.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	270.00
2	270.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	270.00
3	270.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	270.00
4	270.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	270.00

5	200.00	0.00	0.00	0.00	0.00	0.00	0.00	200.00
6	150.00	0.00	0.00	0.00	0.00	0.00	0.00	150.00
7	100.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00
8	100.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00
9	100.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00
10	270.00	0.00	0.00	0.00	0.00	0.00	0.00	270.00
11	270.00	0.00	0.00	0.00	0.00	0.00	0.00	270.00
12	270.00	0.00	0.00	0.00	0.00	0.00	0.00	270.00

DETAILED REPORT ON THE WATER AVAILABILITY CALCULATION

Water Availability as of 9/21/2006 for

PETERSON CR > NEHALEM R - AT MOUTH

Watershed ID #: 70958 Basin: NORTH COAST Exceedance Level: 80

Time: 11:02

Date: 09/21/2006

Month	Natural Stream Flow	Consumptive Use and Storage	Expected Stream Flow	Reserved Stream Flow	Instream Require- ments	Net Water Available
1	3.95	2.34	1.61	0.00	12.20	-10.60
2	5.32	2.34	2.98	0.00	10.80	-7.82
3	4.16	2.34	1.82	0.00	8.51	-6.69
4	2.30	2.34	-0.04	0.00	4.05	-4.09
5	0.88	2.34	-1.46	0.00	1.45	-2.91
6	0.46	0.11	0.35	0.00	1.13	-0.78
7	0.20	0.06	0.14	0.00	0.52	-0.38
8	0.10	0.03	0.07	0.00	0.23	-0.16
9	0.09	0.03	0.06	0.00	0.18	-0.12
10	0.14	0.05	0.09	0.00	0.45	-0.36
11	1.53	2.34	-0.81	0.00	5.98	-6.79
12	4.52	2.34	2.18	0.00	10.90	-8.72
Stor-50%	3390	1001	2440	0	3390	0

DETAILED REPORT OF INSTREAM REQUIREMENTS

Water Availability as of 9/21/2006 for

PETERSON CR > NEHALEM R - AT MOUTH

Watershed ID #: 70958 Basin: NORTH COAST Exceedance Level: 80

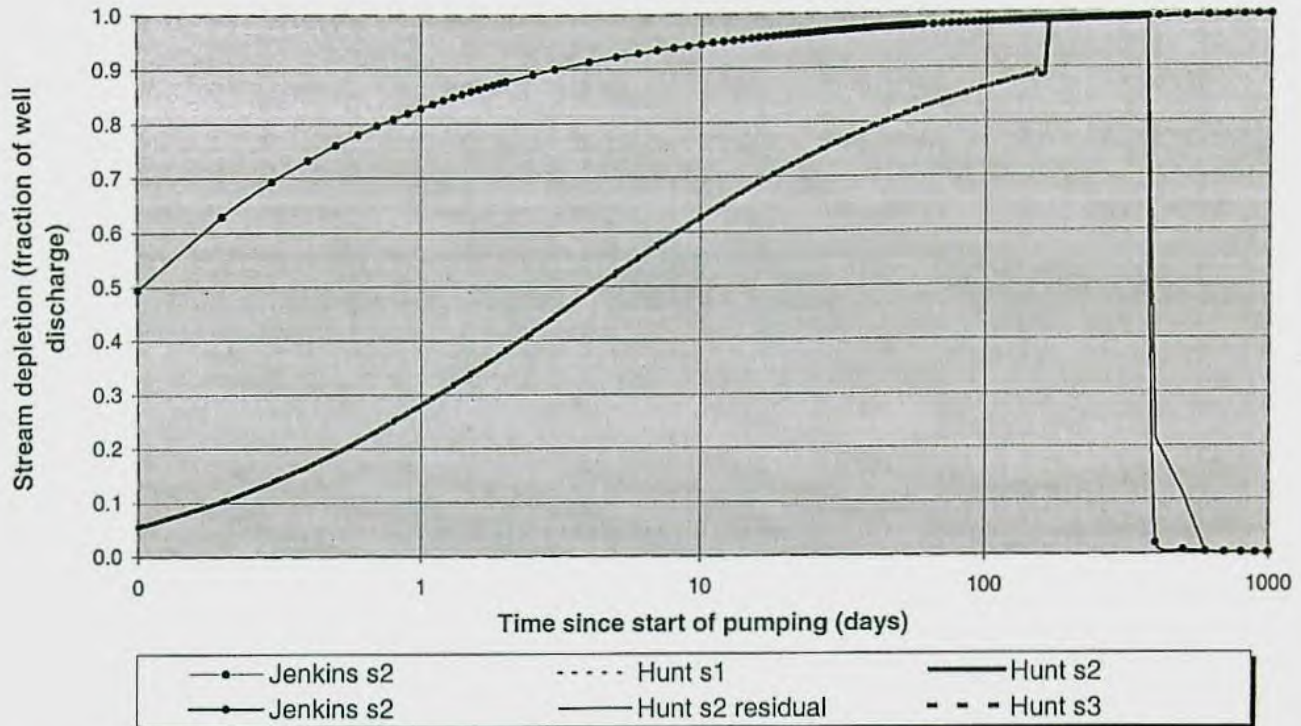
Time: 11:02

Date: 09/21/2006

ISWRs									
APP #	IS 70958	0	0	0	0	0	0	MAXIMUM	
Status	Cert.								
1	12.20	0.00	0.00	0.00	0.00	0.00	0.00	12.20	
2	10.80	0.00	0.00	0.00	0.00	0.00	0.00	10.80	
3	8.51	0.00	0.00	0.00	0.00	0.00	0.00	8.51	
4	4.05	0.00	0.00	0.00	0.00	0.00	0.00	4.05	
5	1.45	0.00	0.00	0.00	0.00	0.00	0.00	1.45	
6	1.13	0.00	0.00	0.00	0.00	0.00	0.00	1.13	
7	0.52	0.00	0.00	0.00	0.00	0.00	0.00	0.52	
8	0.23	0.00	0.00	0.00	0.00	0.00	0.00	0.23	
9	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.18	
10	0.45	0.00	0.00	0.00	0.00	0.00	0.00	0.45	
11	5.98	0.00	0.00	0.00	0.00	0.00	0.00	5.98	
12	10.90	0.00	0.00	0.00	0.00	0.00	0.00	10.90	

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

G-13479 Wheeler Extension



Output for Hunt Stream Depletion, Scenerio 2 (s2):

Days	30	60	90	120	150	180	210	240	270	300	330	360
Hunt SD s2	0.7625	0.8268	0.8569	0.8754	0.8927	0.9872	0.9881	0.9889	0.9895	0.9900	0.9905	0.9909
Qw, cfs	2.430	2.430	2.430	2.430	2.430	2.430	2.430	2.430	2.430	2.430	2.430	2.430
H SD s2, cfs	1.853	2.009	2.082	2.127	2.169	2.399	2.401	2.403	2.405	2.406	2.407	2.408

Parameters:		Scenario 1	Scenario 2	Scenario 3	Units
Net steady pumping rate	Qw	2.43	2.43	2.43	cfs
Distance to stream	a	330	330	330	ft
Aquifer hydraulic conductivity	K	5000	5000	5000	ft/day
Aquifer thickness	b	35	35	35	ft
Aquifer transmissivity	T	175000	175000	175000	ft*ft/day
Aquifer storage coefficient	S	0.15	0.15	0.15	
Stream width	ws	60	60	60	ft
Streambed hydraulic conductivity	Ks	5	5	5	ft/day
Streambed thickness	bs	2	2	2	ft
Streambed conductance	sbc	150	150	150	ft/day
Stream depletion factor (Jenkins)	sdf	0.093342857	0.093342857	0.093342857	days
Streambed factor (Hunt)	sbf	0.282857143	0.282857143	0.282857143	

RECEIVED

AUG 20 1996

Till 50078

rg 1042

STATE OF OREGON

WATER SUPPLY WELL REPORT

(as required by ORS 537.765)

WATER RESOURCES DEPT.

SALEM, OREGON

(START CARD) # 89997

Instructions for completing this report are on the last page of this form.

(1) OWNER:

Well Number _____

Name CITY OF WHEELERAddress P.O. BOX 177City WHEELERState ORZip 97147

(2) TYPE OF WORK

☒ New Well ☐ Deepening ☐ Alteration (repair/recondition) ☒ Abandonment

(3) DRILL METHOD:

☐ Rotary Air ☐ Rotary Mud ☒ Cable ☐ Auger☐ Other _____

(4) PROPOSED USE:

☐ Domestic ☐ Community ☐ Industrial ☐ Irrigation☐ Thermal ☐ Injection ☐ Livestock ☒ Other MUNICIPAL

(5) BORE HOLE CONSTRUCTION:

Special Construction approval ☐ Yes ☒ No Depth of Completed Well 0 ft.Explosives used ☐ Yes ☒ No Type _____ Amount _____

HOLE

SEAL

Diameter From To Material From To Sacks or pounds

18 0 8 _____

16 8 49 _____

NEAT CEMENT 49 0 100 SACKS

How was seal placed: Method ☐ A ☐ B ☒ C ☐ D ☐ E☐ Other _____

Backfill placed from _____ ft. to _____ ft. Material _____

Gravel placed from _____ ft. to _____ ft. Size of gravel _____

(6) CASING/LINER:

Diameter From To Gauge Steel Plastic Welded Threaded

Casing: ALL CASING WAS REMOVED ☐ ☐ ☐ ☐& WELL BORE WAS DISPLACED ☐ ☐ ☐ ☐WITH NEAT CEMENT GROUT ☐ ☐ ☐ ☐Liner: _____ ☐ ☐ ☐ ☐

Final location of shoe(s) _____

(7) PERFORATIONS/SCREENS:

☐ Perforations Method _____☐ Screens Type _____ Material _____

From To Slot size Number Diameter Tele/pipe size Casing Liner

_____ ☐ ☐

(9) LOCATION OF WELL by legal description:

County TILLAMOOK Latitude _____ Longitude _____Township 2N N or S Range 9W E or W. WM.Section 5 NE 1/4 NW 1/4Tax Lot 200 Lot _____ Block _____ Subdivision _____

Street Address of Well (or nearest address) _____

22095 FOSS RD., WHEELER, OR

(10) STATIC WATER LEVEL:

14 ft. below land surface.Date 6-28-96Artesian pressure 0 lb. per square inch.

Date _____

(11) WATER BEARING ZONES:

Depth at which water was first found 9

From	To	Estimated Flow Rate	SWL
9	19	15 GPM	
19	26.5	< 100 GPM	
27.5	33.5	> 100 GPM	

(12) WELL LOG:

Ground Elevation _____

Material	From	To	SWL
SAND SILTY GREY	0	7	
SAND SILTY SOME GRAVEL MED	7	9	
GRAVEL MED TO COURSE SILTY	9		
BRN		19	
COBBLES GRAVEL SAND 10"	19		
MINUS GREY		20.5	
COBBLES GRAVEL SAND 10" MINUS		20.5	
GREY VERY LITTLE SILT SEMI			
LOOSE		23.0	
COBBLES GRAVEL SAND 10" MINUS		23.0	
BRN VERY LITTLE SILT SEMI			
LOOSE		26.5	
SILT BRN SOFT GRAVELY	26.5	27.5	
COBBLES GRAVEL SAND 6" MINUS	27.5		
CLEAN LOOSE GREY BRN		33.5	
GRAVEL BRN COURSE CEMENTED	33.5		
SOME SILT BRN		37.0	
SAME AS ABOVE (MORE SILT)	37.0	40.0	
SAND & GRAVEL COURSE CMTD	40.0		
TIGHT BRN DIRTY		44.0	

Date started _____ Completed _____

(unbonded) Water Well Constructor Certification:

I certify that the work I performed on the construction, alteration, or abandonment of this well is in compliance with Oregon water supply well construction standards. Materials used and information reported above are true to the best of my knowledge and belief.

Signed [Signature] WWC Number 1487 Date 7-29-96

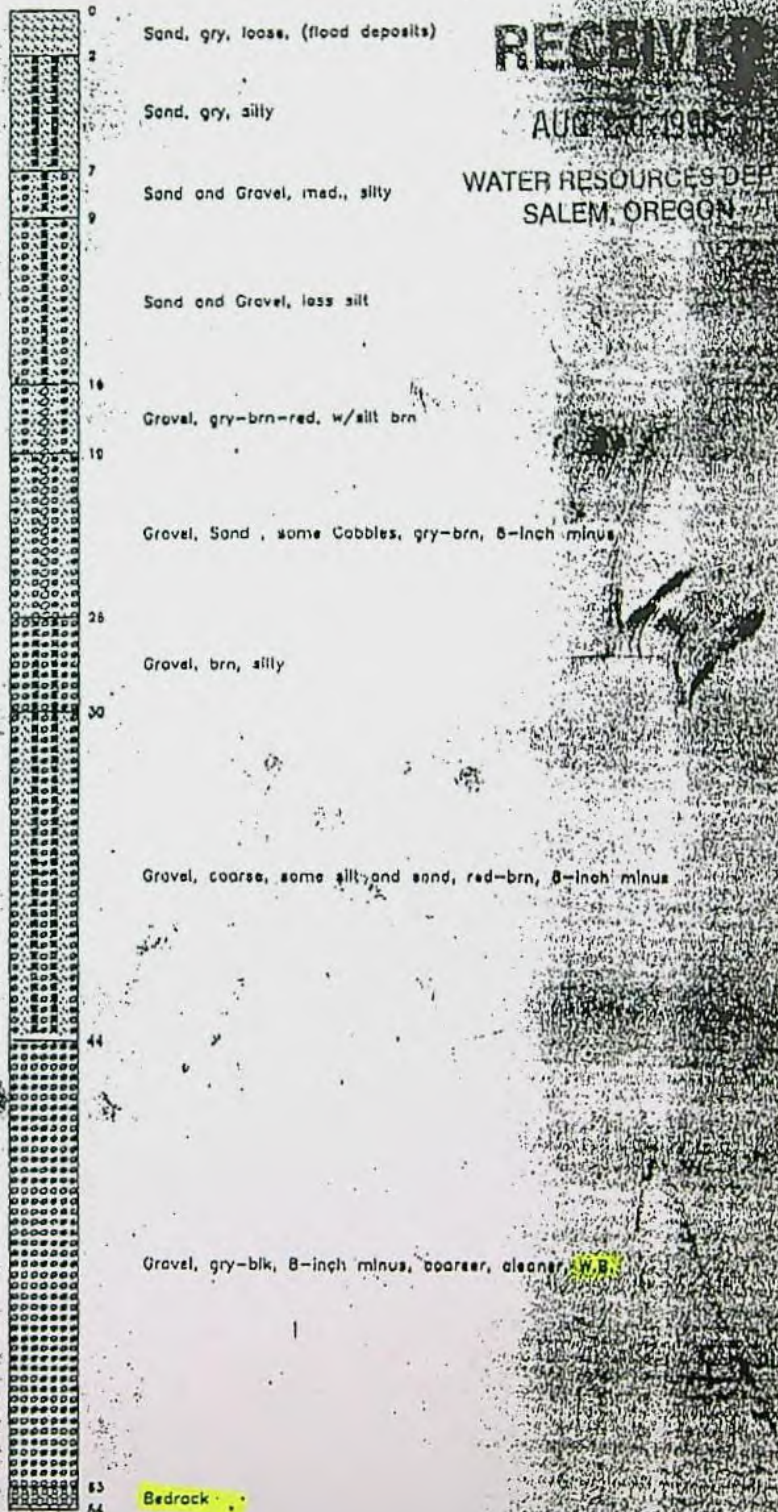
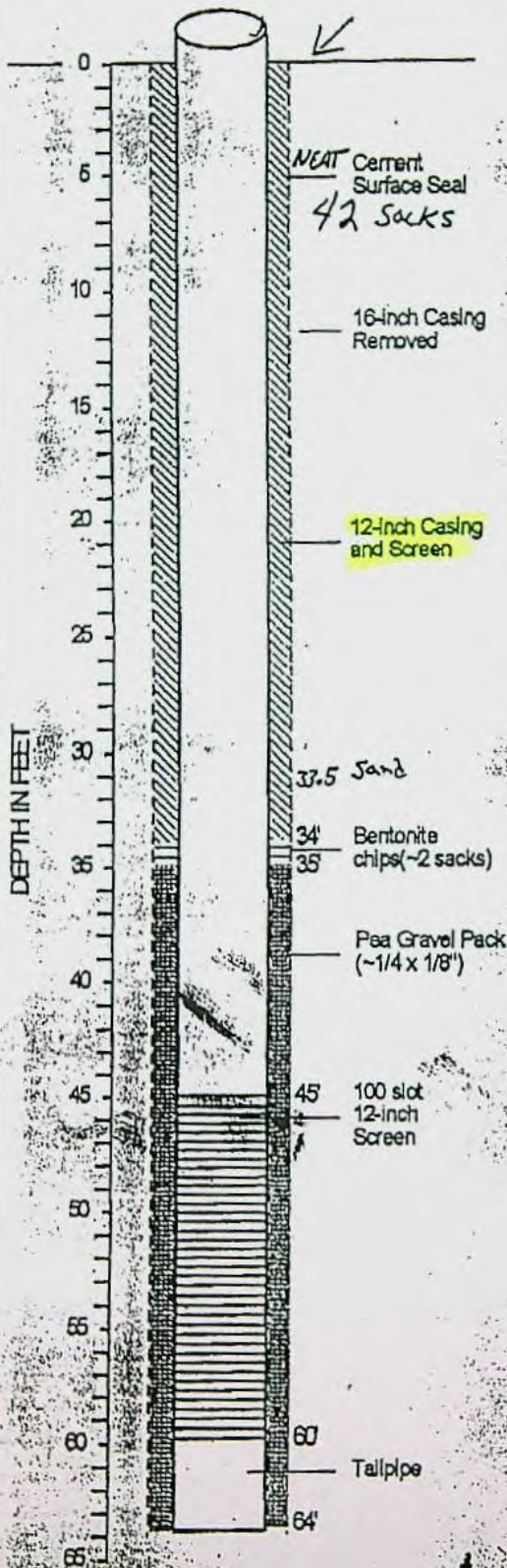
(bonded) Water Well Constructor Certification:

I accept responsibility for the construction, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon water supply well construction standards. This report is true to the best of my knowledge and belief.

Signed [Signature] WWC Number 688 Date 7-29-96

one bag hole plug placed at surface of 16" borehole
 Ir. Q. # LO 1907

Wheeler Well 3 Lithologic Log



RECEIVED

AUG 20 1995

WATER RESOURCES DEPT
 SALEM, OREGON

STATE OF OREGON
COUNTY OF TILLAMOOK

PERMIT TO APPROPRIATE THE PUBLIC WATERS

THIS PERMIT IS HEREBY ISSUED TO

CITY OF WHEELER
PO BOX 177
WHEELER, OREGON 97147

The specific limits for the use are listed below along with conditions of use.

APPLICATION FILE NUMBER: G-13479

SOURCE OF WATER: Wells #4, #6, #13, and #10 within the Nehalem River Basin

PURPOSE OR USE: Municipal use

Rate of use: 3.6 CFS

Period of allowed use: The period of allowed use under this permit is year round, however, if senior instream water rights are not met, water use will be curtailed for all use except human consumption and livestock watering until those instream water rights are met.

DATE OF PRIORITY: July 29, 1993.

POINTS OF DIVERSION LOCATION:

NE 1/4 NW 1/4, SECTION 5, T 2 N, R 9 W, W.M.: WELL #4 - 989.22 FEET SOUTH AND 2204.31 FEET EAST; WELL #6 - 1087.73 FEET SOUTH AND 2214.81 FEET EAST; WELL #13 - 1055.75 FEET SOUTH AND 2547.09 FEET EAST; WELL #10 - 905.91 FEET SOUTH AND 2543.69 FEET EAST; ALL FROM THE NW CORNER OF SECTION 5

THE PLACE OF USE IS LOCATED AS FOLLOWS:

WITHIN THE SERVICE AREA OF THE PROPOSED NORTH TILLAMOOK COUNTY REGIONAL WATER SUPPLY, TOWNSHIPS 1, 2 AND 3 NORTH, RANGE 10 WEST, W.M.

Measurement, recording and reporting conditions:

- A. Before water use may begin under this permit, the permittee shall install a meter or other suitable measuring device as approved by the Director. The permittee shall maintain the meter or measuring device in good working order, shall keep a complete record of the amount of water used each month and shall submit a report which includes the recorded water use measurements to the Department annually or more frequently as may be required by the Director. Further, the Director may

require the permittee to report general water use information, including the place and nature of use of water under the permit.

- B. The permittee shall allow the watermaster access to the meter or measuring device; provided however, where the meter or measuring device is located within a private structure, the watermaster shall request access upon reasonable notice.

If substantial interference with a senior water right occurs due to withdrawal of water from any well listed on this permit, then use of water from the well(s) shall be discontinued or reduced and/or the schedule of withdrawal shall be regulated until or unless the Department approves or implements an alternative administrative action to mitigate the interference. The Department encourages junior and senior appropriators to jointly develop plans to mitigate interferences.

Within one year of formation of the Regional Water Supply Authority, the permittee shall submit a water management and conservation plan consistent with OAR Chapter 690, Division 86.

STANDARD CONDITIONS

The wells shall be constructed in accordance with the General Standards for the Construction and Maintenance of Water Wells in Oregon. The works shall be equipped with a usable access port, and may also include an air line and pressure gauge adequate to determine water shall be limited when it interferes with any prior surface or ground water rights.

Prior to receiving a certificate of water right, the permit holder shall submit the results of a pump test meeting the department's standards, to the Water Resources Department. The Director may require water level or pump test results every ten years thereafter.

The use shall conform to such reasonable rotation system as may be ordered by the proper state officer.

Prior to receiving a certificate of water right, the permit holder shall submit the results of a pump test meeting the department's standards, to the Water Resources Department. The Director may require water level or pump test results every ten years thereafter.

Failure to comply with any of the provisions of this permit may result in action including, but not limited to, restrictions on the use, civil penalties, or cancellation of the permit.

This permit is for the beneficial use of water without waste. The water user is advised that new regulations may require the use of best practical technologies or conservation practices to achieve this end.

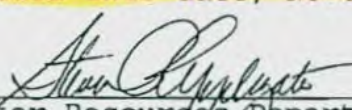
By law, the land use associated with this water use must be in compliance with statewide land-use goals and any local acknowledged land-use plan.

The use of water shall be limited when it interferes with any prior surface or ground water rights.

The Director finds that the proposed use(s) of water described by this permit, as conditioned, will not impair or be detrimental to the public interest.

Actual construction of the wells shall begin within one year from permit issuance, and shall be completed on or before October 1, 1997. Complete application of the water to the use shall be made on or before October 1, 1999.

Issued this date, November 6, 1995


for Water Resources Department
Martha O. Pagel
Director

Application G-13479
Basin 01
DLB

Water Resources Department
Volume 2 Nehalem River & Misc
MGMT.CODES 4FG, 4FR

PERMIT G-12196
District 18

State of Oregon
Water Resources Department

Interoffice Memorandum

January 25, 2006

To: Water Rights File G-13479
From: Ground Water Hydrology Section (Sabrina White)
Subject: Status of wells listed as POAs on Permit G-12196

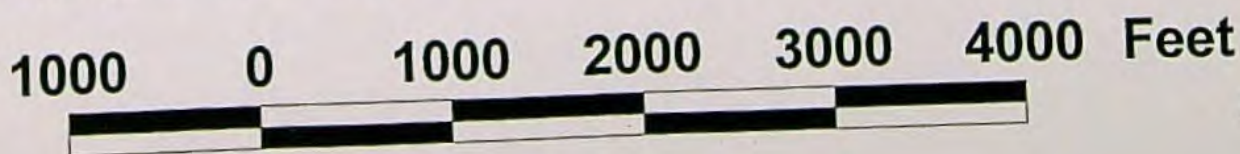
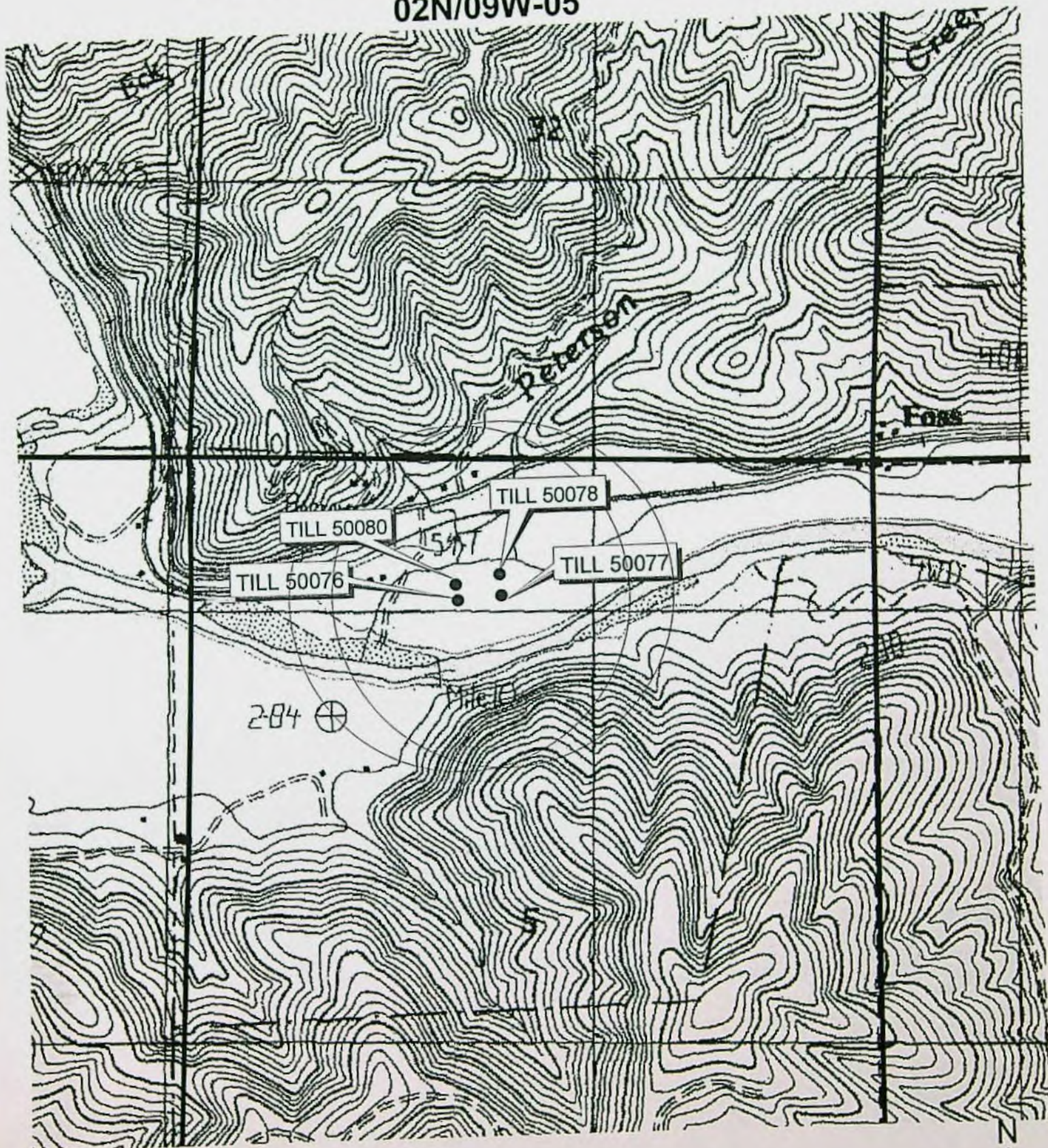
Summary:

Original Application

App #	Permit #	Well Log	Owner's Well Name
G-13479	G-12196	TILL 50076	Production Well 1 (was referred to as Well 6 on permit)
		TILL 50077	Production Well 2 (was referred to as Well 13 on permit)
		TILL 50078 *	Abandoned Well (located near legal for Well 10 on permit)
		TILL 50080 *	Test Well (located near legal for Well 4 on permit)

* INFORMATION FOR THE TEST WELL AND ABANDONED WELL HAVE BEEN SENT, BY THE CITY OF WHEELER, AS CURRENT STATUS OF WELLS 4 AND 10 ON THE PERMIT. IT IS UNCLEAR WHETHER THEY STILL PLAN ON DRILLING PRODUCTION WELLS AT THESE LOCATIONS. FOR THAT REASON, I DID NOT MAKE THE POA CORRELATION IN WRIS. HOWEVER, I DID CREATE RECORDS IN GWM AND DIGITIZED BOTH WELLS.

G-13479 Wheeler Municipal Extension
02N/09W-05





Oregon

Tina Kotek, Governor

Water Resources Department

North Mall Office Building
725 Summer St NE, Suite A
Salem, OR 97301-1266
Phone: 503-986-0900
Fax: 503-986-0904
www.Oregon.gov / OWRD

May 31, 2024

City of Wheeler
ATTN: Phil Chick or Pax Broder
P.O. Box 177
Wheeler, OR 97147

REFERENCE: Pending Application for Extension of Time for:
Water Right Application G-13479 (Permit G-12196)

Dear Municipal Water Right Holder:

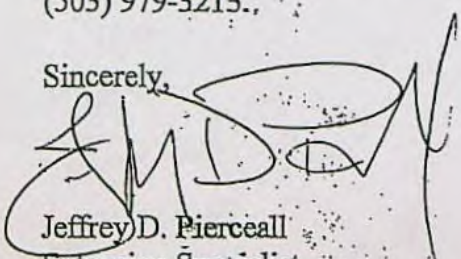
The purpose of this letter is to provide you with notification as per OAR 690-315-0080(2)(f) of fishery resource protection conditions that may be proposed in the proposed final order under OAR 690-315-0050.

On May 20, 2024, the Department received ODFW's Fish Persistence advice for the above referenced permit; it is enclosed for your review.

This letter will also act to provide you notice of your opportunity to request the Department place the above referenced municipal permit extension application on administrative hold.

If you should have any questions concerning your extension request you may contact me at (503) 979-3213.

Sincerely,



Jeffrey D. Pierceall
Extension Specialist

Enclosures

cc: Application File G-13479
Nikki Hendricks, Watermaster District 1





Oregon

Tina Kotek, Governor

Department of Fish and Wildlife

Habitat Division

4034 Fairview Industrial Dr SE

Salem, OR 97302-1142

Voice: 503-947-6000

Fax: 503-947-6330

Internet: www.dfw.state.or.us



May 20, 2024

Doug Woodcock, Acting Director
Water Resources Department
725 Summer Street NE, Suite A
Salem, OR 97301

Re: ODFW's recommendation on maintaining the persistence of listed fish species
City of Wheeler Application G-13479 (Permit G-12196)

Director Woodcock:

The City of Wheeler (City) has requested an extension of time to develop the municipal water right Permit G-12196; the undeveloped portion of this permit is 2.43 cfs from wells adjacent to Peterson Creek and the Nehalem River. ORS 537.230(3)(d) and 537.630(3)(d) direct the Oregon Water Resources Department (OWRD) to find that the undeveloped portion of the permit is conditioned to maintain, in the portions of waterways affected by water use under the permit, the persistence of fish species listed as sensitive, threatened, or endangered (STE) under state or federal law. OWRD is to base their findings on existing data and advice from the Oregon Department of Fish and Wildlife (ODFW). This letter is the advice provided to OWRD by ODFW.

Summary

- The City of Wheeler has a groundwater right (Permit G-12196) for 3.6 cfs with a priority date of July 29, 1993. The undeveloped portion of the permit is 2.43 cfs from wells adjacent to both Peterson Creek and the Nehalem River. The period of allowable use is year-round.
- OWRD has determined that use of the undeveloped portion has the Potential for Substantial Interference (PSI) with both Peterson Creek and the Nehalem River. OWRD estimated that the stream depletion rate after 360 days of pumping is 96% of the withdrawal rate. For this analysis, the long-term capture rate of 100% was used. The undeveloped portion of the permit with PSI was determined by OWRD to be 0.24 cfs for Peterson Creek (10%) and 2.19 cfs for the Nehalem River (90%).
- Potentially affected listed STE fish species include Coho Salmon, Chum Salmon, Pacific Lamprey, and Western Brook Lamprey. Other affected salmonids include Winter Steelhead, Coastal Cutthroat Trout, and Chinook Salmon, including an early summer run that is of special management concern.
- ODFW develops target flows for fish persistence based on available data including (but not limited to) instream water rights on the impacted reaches, flows recommended in Basin Investigation

*To protect and enhance Oregon's fish and wildlife and their habitats
for use and enjoyment by present and future generations.*

Reports, instream flow studies, and modeled or measured streamflow data. Target flows for Peterson Creek and Nehalem River are presented in Tables 1 and 2, respectively.

- Conditions outlined in this letter are based on **target flow achievement (T_a)**, which is calculated using monthly target flows, measured daily flows, and the portion of the undeveloped amount that applies to each stream (see Equation 1).
- There are existing instream water rights for Peterson Creek and the Nehalem River adjacent to the City's wells, and both instream water rights are senior to the City's 1993 water right (G-12196). When flows are below instream water right target flows, ODFW understands that the entire City water right is subject to regulation by OWRD.
- USGS streamgage #14301000 (Nehalem River near Foss, OR), located approximately three river miles upstream from the City's wells, was used to assess fish persistence flows on the Nehalem River. The gage is operational and should provide satisfactory data for the City of Wheeler to evaluate ODFW target flow achievement on a daily basis. There is no gage on Peterson Creek.
- Fish persistence target flows were established for the assumed monitoring location, USGS gaging station #14301000. If the City elects to install an appropriate streamflow measurement device near the POD for compliance purposes in place of the USGS gage, ODFW will provide revised target flows to reflect the POD monitoring location. It is the City's responsibility to install an additional streamflow gage or develop an approved daily monitoring approach for Peterson Creek.
- ODFW recommends **partial curtailment** of the undeveloped portion of water right Permit G-12196 from October 1-June 30 when T_a is missed ($T_a < 1$) in Peterson Creek or the Nehalem River. Partial curtailment may apply to one or both streams, depending on the independently calculated T_a values.
- ODFW recommends **full curtailment** of the undeveloped portion of water right Permit G-12196 from July 1-September 30 when T_a is missed ($T_a < 1$) in Peterson Creek or the Nehalem River. Full curtailment may apply to one or both streams, depending on the independently calculated T_a values. Seasonal low flows and high temperatures during this time coincide with important life stages of STE species identified above, and additional water withdrawals will negatively affect fish persistence.

Analysis of Flows for Fish Persistence

Water Availability

According to OWRD's Water Availability Reporting System (WARS) for the Nehalem River at the mouth, water is available for consumptive use year-round except for October based on 80% exceedance flows. Water is unavailable year-round for Peterson Creek based on 80% exceedance flows.

Listed STE Fish Species with Designation

Coho Salmon (*Oncorhynchus kisutch*) – Federal Threatened, State Sensitive

Chum Salmon (*Oncorhynchus keta*) – State Sensitive-Critical

Pacific Lamprey (*Entosphenus tridentata*) – State Sensitive

Western Brook Lamprey (*Lampetra richardsoni*) – State Sensitive

Other Affected Native Salmonids (not listed)

Winter Steelhead (*Oncorhynchus mykiss*)

Coastal Cutthroat Trout (*Oncorhynchus clarkii clarkii*)

Chinook Salmon (*Oncorhynchus tshawytscha*)

Analysis of Risk to Fish Persistence

- Coho Salmon –** Based on ODFW's 2007 Conservation Plan,¹ Coastal Coho Salmon are viable but effective management protections are needed to ensure that the productive capacity improves. Identified limiting factors include habitat quality, water quality, and water quantity.
- Chum Salmon –** Based on ODFW's 2014 Conservation and Management Plan,² Chum Salmon are a viable population in the Nehalem River watershed. However, they are state listed (critically sensitive) throughout their range, and one of the highest priority conservation goals identified in the plan includes ensuring that chum salmon status improves to a greater level of viability. Current abundance is presumed to be severely reduced compared to historical abundance, and identified limiting factors include habitat quality, water quality, and water quantity.
- Pacific Lamprey –** Based on ODFW's 2020 assessment,³ Pacific Lamprey are considered an at-risk species. The current status of the coastal Pacific Lamprey population stratum is prevalent; however, effective management protections are needed to address habitat limiting factors and ensure population persistence. Identified limiting factors include water quantity (reduced flows and flow management), water quality (high water temperature, sedimentation), physical habitat loss/degradation, and impeded passage.
- Western Brook Lamprey –** Based on ODFW's 2020 assessment,³ Western Brook Lamprey are considered at risk. Identified limiting factors include water quantity (reduced flows and flow management), water quality (high water temperature, sedimentation), physical habitat loss/degradation, and impeded passage.

Flow Restoration Priorities

Based on the 1998 Oregon Plan Flow Restoration Priorities developed by ODFW and OWRD, summer flow (July-September) restoration need is ranked highest in Peterson Creek, and it is a state flow restoration priority. The lower Nehalem River is ranked as having moderate restoration need. ODFW is in the process of updating flow restoration priorities.

¹ Oregon Department of Fish and Wildlife. *Oregon Coast Coho Conservation Plan for the State of Oregon*. (2007).

² Oregon Department of Fish and Wildlife. *Coastal Multi-Species Conservation and Management Plan*. 221 (2014).

³ Clemens, B., Anlauf-Dunn, K., Weeber, M. & Stahl, T. Coastal, Columbia, and Snake Conservation Plan for Lampreys in Oregon. (2020).

Existing Fish Protection Agreement

No existing fish protection agreement noted.

Determination of Target Flows

To determine target flows, ODFW considered the following data sources:

- Existing instream water rights on the impacted reaches.
 - IS 70958 on Peterson Creek (priority date November 30, 1990)
 - MF 36 on the Nehalem River (priority date May 9, 1973)
- Basin Investigation Report (BIR) flow recommendations for both Peterson Creek and the Nehalem River.⁴
- Measured streamflow from Gage #14301000, located three miles upstream of the POD.
- Modeled natural flows using multiple datasets for the State of Oregon.⁵

The City's wells have PSI with both Peterson Creek and the Nehalem River. See Table 1 for Peterson Creek and Table 2 for the Nehalem River flow targets.

Table 1. Monthly target flows for Peterson Creek.

Month	ODFW Target Flows [cfs]
Jan	22.7
Feb	18.0
Mar	16.1
Apr	13.4
May	8.2
Jun	5.4
Jul	2.1
Aug	1.3
Sept	1.4
Oct	4.9
Nov	17.1
Dec	23.2

⁴ Lauman, J., Smith, A., & Thompson, K. (1972). *Supplement to the fish and wildlife resources of the North Coast Basin, Oregon, and their water requirements* (Environmental Investigations). Oregon State Game Commission.

⁵ Data acquired from USGS StreamStats, USGS/EPA NHD, Oregon WRD's Water Availability Reporting System, and University of Washington's Variable Infiltration Capacity model

Table 2. Monthly target flows for the Nehalem River.

Month	ODFW Target Flows [cfs]
Jan	400
Feb	400
Mar	400
Apr	400
May	265
Jun	178
Jul	178
Aug	178
Sept 1-15	178
Sept 16-30	265
Oct	400
Nov	400
Dec	400

ODFW's Advice to OWRD on Maintaining the Persistence of Listed Fish Species

General Considerations

As directed by ORS 537.230 (3)(d) and ORS 537.630 (3)(d), ODFW provides the following advice to WRD to maintain, in the portions of waterways affected by water use under the permit, the persistence of fish species listed as sensitive, threatened, or endangered under state or federal law. ODFW's advice is based on existing data. ODFW recommends the flows set forth in Tables 1 and 2 and advises WRD to develop conditions that allow the City to meet its water needs while maintaining the persistence of listed fish species.

- The long-term objective for a listed species is to have the population increase to a sustainable level over time and maintain itself through natural fluctuations. Current scientific projections indicate that regional climate change impacts to freshwater systems in Oregon are likely to cause a long-term reduction in the frequency of favorable water years for many native species. Such changes include decreasing trends for snowpack volume, increased flows during the winter, decreased flows in late summer and fall, and an increasing trend in water temperatures. Conditions outlined in this letter reflect ODFW's obligation to conserve habitat conditions that support naturally-occurring native species.
- ODFW recognizes that municipalities can return a certain portion of flow to a waterbody through effluent discharge. If the municipality can demonstrate that the withdrawal point(s) and effluent discharge(s) are within reasonable proximity to each other - such that fish habitat between the two points is not impacted significantly - curtailment of the water right extension can be adjusted to be based on monthly consumptive use (diverted-effluent) rather than just the quantity diverted.

- A 303(d) water quality impairment (fecal coliform) has been identified on the Nehalem River reach downstream of the point of diversion. Water withdrawals during low-flow periods may exacerbate already-identified water quality issues.
- Use of the full undeveloped portion of the City's water right from the Nehalem River and Peterson Creek will further reduce the likelihood of meeting instream flow targets for fish persistence.

Specific Advice

ODFW recommends **full curtailment** of the undeveloped portion of G-12196 from July 1-September 30 when T_a is missed (<1) on the Nehalem River or Peterson Creek. For the remainder of the year, ODFW recommends **partial curtailment** of the undeveloped portion following the formula described below (Equation 2) when T_a is missed (<1) on the Nehalem River or Peterson Creek. Curtailment amounts should be calculated daily and independently for each stream; curtailment may be required due to conditions on both streams, only one stream, or may not be required if both exceed T_a .

ODFW evaluates water right permit curtailment need based on the fraction of target flow achievement (EQ 1).

$$T_a = (Q_g - P) / Q_t \quad (EQ 1)$$

T_a = target flow achievement

Q_g = gaged daily flow

P = amount of water conditioned for fish persistence (0.24 cfs for Peterson Creek; 2.19 cfs for Nehalem River)

Q_t = target flow

When target flow achievement (T_a) is greater than 1, no curtailment is recommended. When target flow achievement is less than 1, curtailment of the undeveloped portion of the permit is recommended. For partial curtailment, the curtailed permit rate is determined by scaling the undeveloped portion of the permit by the fraction the flow target is not being met (EQ 2).

If $T_a \geq 1$, no curtailment necessary. Otherwise:

$$D_m = T_a * P \quad (EQ 2)$$

D_m = maximum amount of water conditioned for fish persistence that can be appropriated as a result of this fish persistence condition

In relation to Nehalem River flows

Mean daily flow data measured at USGS gaging station #14301000 (Nehalem River near Foss, OR) are suitable for determining target flow achievement in the Nehalem River. When Nehalem River flows are less than those associated with MF-36, the City's water right is subject to regulation by OWRD. This regulation would apply to the developed as well as the undeveloped portion because MF-36 is senior to

Permit G-12196. When target flow achievement (T_a) < 1, full curtailment (no additional withdrawal) or partial curtailment (conforming to Equation 2 described above) should occur.

For descriptive purposes only, expected levels of flow target achievement are provided in Table 3, which tabulates the analysis described above using daily data from USGS streamgage #14301000 for the period of record from 1989-2018, the undeveloped water right apportioned to the Nehalem River (2.19 cfs, or 90% of the full undeveloped amount), and monthly target flows for fish persistence. For the years analyzed, the fraction of target non-achievement by month (Table 3, column 2) ranged from 0.00 to 0.91. The most frequent incidences of target non-achievement (when T_a < 1) occur in late summer.

Table 3. Persistence flow target non-achievement based on historical streamflow data for Nehalem River.

Month	Fraction of Days Target Not Met	Median of Target Flow Achievement (T_a) When T_a < 1
JAN	0.00	na
FEB	0.00	na
MAR	0.00	na
APR	0.00	na
MAY	0.00	na
JUN	0.01	0.91
JUL	0.29	0.81
AUG	0.83	0.67
SEP 1-15	0.91	0.59
SEP 16-30	0.86	0.37
OCT	0.63	0.34
NOV	0.12	0.72
DEC	0.01	0.64

In relation to Peterson Creek flows

When Peterson Creek flows are less than those associated with IS-70958, the City's water right is subject to regulation by OWRD. This regulation would apply to the developed as well as the undeveloped portion, because IS-70958 is the senior right. When target flow achievement (T_a) < 1, full curtailment (no additional withdrawal) or partial curtailment (conforming to Equation 2 described above) should occur.

Sample Curtailment Calculations

To exemplify ODFW's recommended curtailment procedure, Tables 4a and 4b demonstrate how full curtailment applies to the extension for the month of August. Tables 5a and 5b demonstrate how curtailment equations 1 and 2 (partial curtailment) apply to the extension for the month of October.

Table 4. Example full curtailment for August: a. Nehalem River (using 90% of the total undeveloped portion, or 2.19 cfs) and b. Peterson Creek (using 10% of the total undeveloped portion, or 0.24 cfs).

4a. Nehalem River

Streamflow [cfs]	Target [cfs]	Target Flow Achievement (T_a)	Curtailment [cfs]	D_m (amount that can be appropriated) [cfs]
200	178	1.11	0.00	2.19
150	178	0.83	2.19	0.00
100	178	0.55	2.19	0.00
50	178	0.27	2.19	0.00

4b. Peterson Creek

Streamflow [cfs]	Target [cfs]	Target Flow Achievement (T_a)	Curtailment [cfs]	D_m (amount that can be appropriated) [cfs]
2.0	1.3	1.35	0.00	0.24
1.0	1.3	0.58	0.24	0.00
0.8	1.3	0.43	0.24	0.00
0.5	1.3	0.20	0.24	0.00

Table 5. Example partial curtailment equations for October: a. Nehalem River (using 90% of the total undeveloped portion, or 2.19 cfs) and b. Peterson Creek (using 10% of the total undeveloped portion, or 0.24 cfs).

5a. Nehalem River

Streamflow [cfs]	Target [cfs]	Target Flow Achievement (T_a)	Curtailment [cfs]	D_m (amount that can be appropriated) [cfs]
550	400	1.37	0.00	2.19
450	400	1.12	0.00	2.19
350	400	0.87	0.29	1.90
250	400	0.62	0.83	1.36

5b. Peterson Creek

Streamflow [cfs]	Target [cfs]	Target Flow Achievement (T_a)	Curtailment [cfs]	D_m (amount that can be appropriated) [cfs]
6.0	4.9	1.18	0.00	0.24
4.5	4.9	0.87	0.03	0.21
3.0	4.9	0.56	0.10	0.14
1.5	4.9	0.26	0.18	0.06

Total daily curtailment should be based on the cumulative curtailment for Peterson Creek and the Nehalem River. For example, if flows on 10/1 are 350 cfs in the Nehalem River ($T_a=0.87$, resulting in 0.29 cfs curtailment), and 4.5 cfs in Peterson Creek ($T_a=0.87$, resulting in 0.03 cfs curtailment), total curtailment should be the cumulative $0.29 + 0.03 = 0.32$ cfs. Alternatively, if flows on 10/1 are 350 cfs in the Nehalem River ($T_a=0.87$, resulting in curtailment of 0.29 cfs) and flows in Peterson Creek are 6.0 cfs ($T_a>1$, so no curtailment), then total curtailment should be the cumulative $0.29 + 0.0 = 0.29$ cfs.

Streamflow Measurement Point

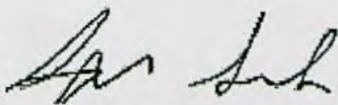
The City's wells are located approximately three miles downstream of the USGS gaging station #14301000 (Nehalem River near Foss, OR). This gage is a suitable measurement point to determine if target flows for fish persistence are met in the Nehalem River. Peterson Creek near its mouth (though outside a backwater influence zone from the Nehalem River) is recommended as a suitable gage location to determine if target flows in Peterson Creek are being met.

Conclusion

Use of the undeveloped portion of the City of Wheeler's permit should be conditioned with full or partial curtailment to maintain persistence of listed fish species when $T_a<1$ at either the Nehalem River or Peterson Creek. Measured streamflow data for the Nehalem River indicate that flows are most likely to be curtailed in August-October (Table 3); however, curtailment may occur at any time during the year and is based on daily flow measurements.

This concludes ODFW's advice to OWRD on the City of Wheeler's Municipal Extension Permit # G-12196. If you have questions about our advice or need further clarification, please contact me (971-375-7440).

Sincerely,



Spencer Sawaske

ODFW Acting Habitat Division Deputy Administrator

Enclosure: Proposed Fish Persistence Conditions for Extension of Time Proposed Final Order (PFO) for Application #G-13479/Permit #G-12196

Cc: Jeffrey Pierceall, WRD

**Peterson Creek and Nehalem River – DRAFT Proposed Fish Persistence
Conditions
for Extension of Time Proposed Final Order (PFO)
for Application G-13479 (Permit G-12196)
City of Wheeler**

**Note: The developed portion (1.17 cfs) used in these conditions was diverted AFTER the
C-date but prior to June 29, 2005**

FINDINGS

1. Summary and Excerpts of Advice from ODFW:

As directed by ORS 537.230 (3)(d) and ORS 537.630 (3)(d), ODFW provides the following advice to WRD to maintain, in the portions of waterways affected by water use under the permit, the persistence of fish species listed as sensitive, threatened, or endangered under state or federal law. ODFW's advice is based on existing data. ODFW recommends the flows set forth in Tables 1 and 2 and advises WRD to develop conditions that allow the City to meet its water needs while maintaining the persistence of listed fish species.

The long-term objective for a listed species is to have the population increase to a sustainable level over time and maintain itself through natural fluctuations. Current scientific projections indicate that regional climate change impacts to freshwater systems in Oregon are likely to cause a long-term reduction in the frequency of favorable water years for many native species. Such changes include decreasing trends for snowpack volume, increased flows during the winter, decreased flows in late summer and fall, and an increasing trend in water temperatures. Conditions outlined in this letter reflect ODFW's obligation to conserve habitat conditions that support naturally-occurring native species.

ODFW recognizes that municipalities can return a certain portion of flow to a waterbody through effluent discharge. If the municipality can demonstrate that the withdrawal point(s) and effluent discharge(s) are within reasonable proximity to each other - such that fish habitat between the two points is not impacted significantly - curtailment of the water right extension can be adjusted to be based on monthly consumptive use (diverted-effluent) rather than just the quantity diverted.

A 303(d) water quality impairment (fecal coliform) has been identified on the Nehalem River reach downstream of the point of diversion. Water withdrawals during low-flow periods may exacerbate already-identified water quality issues.

Use of the full undeveloped portion of the City's water right from the Nehalem River and Peterson Creek will further reduce the likelihood of meeting instream flow targets for fish persistence.

ODFW recommends **full curtailment** of the undeveloped portion of G-12196 from July 1-September 30 when target flow achievement (T_a) is missed ($T_a < 1$) in Peterson Creek or the Nehalem River. For the remainder of the year (October 1-June 30),

ODFW recommends **partial curtailment** of the undeveloped portion when target flow achievement (T_a) is missed ($T_a < 1$) on Peterson Creek or the Nehalem River.

Table 1. Monthly target flows for Peterson Creek.

Month	ODFW Target Flows [cfs]
Jan	22.7
Feb	18.0
Mar	16.1
Apr	13.4
May	8.2
Jun	5.4
Jul	2.1
Aug	1.3
Sept	1.4
Oct	4.9
Nov	17.1
Dec	23.2

Table 2. Monthly target flows for the Nehalem River.

Month	ODFW Target Flows [cfs]
Jan	400
Feb	400
Mar	400
Apr	400
May	265
Jun	178
Jul	178
Aug	178
Sept 1-15	178
Sept 16-30	265
Oct	400
Nov	400
Dec	400

Curtailment amounts should be calculated daily and independently for each stream; curtailment may be required due to conditions on both streams, only one stream, or may not be required if both exceed T_a .

ODFW evaluates water right permit curtailment need based on the fraction of target flow achievement (EQ 1).

$$T_a = (Q_g - P) / Q_t \quad (EQ 1)$$

T_a = target flow achievement

Q_g = gaged daily flow

P = amount of water conditioned for fish persistence (0.24 cfs for Peterson Creek; 2.19 cfs for Nehalem River)

Q_t = target flow

When target flow achievement (T_a) is greater than 1, no curtailment is recommended. When target flow achievement is less than 1, curtailment of the undeveloped portion of the permit is recommended. For partial curtailment, the curtailed permit rate is determined by scaling the undeveloped portion of the permit by the fraction the flow target is not being met (EQ 2).

If $T_a \geq 1$, no curtailment necessary. Otherwise:

$$D_m = T_a * P \quad (EQ 2)$$

D_m = maximum amount of water conditioned for fish persistence that can be appropriated as a result of this fish persistence condition

In relation to Nehalem River flows

Mean daily flow data measured at USGS gaging station #14301000 (Nehalem River near Foss, OR) are suitable for determining target flow achievement in the Nehalem River. When Nehalem River flows are less than those associated with MF-36, the City's water right is subject to regulation by OWRD. This regulation would apply to the developed as well as the undeveloped portion because MF-36 is senior to Permit G-12196. When Nehalem River target flow achievement (T_a) < 1, full curtailment (no additional withdrawal) or partial curtailment (conforming to Equation 2 described above) should occur.

For descriptive purposes only, expected levels of flow target achievement are provided in Table 3, which tabulates the analysis described above using daily data from USGS streamgage #14301000 for the period of record from 1989-2018, the undeveloped water right apportioned to the Nehalem River (2.19 cfs, or 90% of the full undeveloped amount), and monthly target flows for fish persistence. For the years analyzed, the fraction of target non-achievement by month (Table 3, column 2) ranged from 0.00 to 0.91. The most frequent incidences of target non-achievement (when $T_a < 1$) occur in late summer.

Table 3. Persistence flow target non-achievement based on historical streamflow data for Nehalem River.

Month	Fraction of Days Target Not Met	Median of Target Flow Achievement (T_a) When $T_a < 1$
JAN	0	n/a
FEB	0	n/a
MAR	0	n/a
APR	0	n/a
MAY	0	n/a
JUN	0.01	0.91
JUL	0.29	0.81
AUG	0.83	0.67
SEP 1-15	0.91	0.59
SEP 16-30	0.86	0.37
OCT	0.63	0.34
NOV	0.12	0.72
DEC	0.01	0.64

In relation to Peterson Creek flows

When Peterson Creek flows are less than those associated with IS-70958, the City's water right is subject to regulation by OWRD. This regulation would apply to the developed as well as the undeveloped portion, because IS-70958 is the senior right. When Peterson Creek target flow achievement (T_a) < 1 , full curtailment (no additional withdrawal) or partial curtailment (conforming to Equation 2 described above) should occur.

Sample Curtailment Calculations

To exemplify ODFW's recommended curtailment procedure, Tables 4a and 4b demonstrate how full curtailment applies to the extension for the month of August. Tables 5a and 5b demonstrate how curtailment equations 1 and 2 (partial curtailment) apply to the extension for the month of October.

Table 4. Example full curtailment for August: a. Nehalem River (using 90% of the total undeveloped portion, or 2.19 cfs) and b. Peterson Creek (using 10% of the total undeveloped portion, or 0.24 cfs).

4a. Nehalem River

Streamflow [cfs]	Target [cfs]	Target Flow Achievement (T _a)	Curtailment [cfs]	D _m (amount that can be appropriated) [cfs]
200	178	1.11	0	2.19
150	178	0.83	2.19	0
100	178	0.55	2.19	0
50	178	0.27	2.19	0

4b. Peterson Creek

Streamflow [cfs]	Target [cfs]	Target Flow Achievement (T _a)	Curtailment [cfs]	D _m (amount that can be appropriated) [cfs]
2.0	1.3	1.35	0	0.24
1.0	1.3	0.58	0.24	0
0.8	1.3	0.39	0.24	0
0.5	1.3	0.20	0.24	0

Table 5. Example partial curtailment equations for October: a. Nehalem River (using 90% of the total undeveloped portion, or 2.19 cfs) and b. Peterson Creek (using 10% of the total undeveloped portion, or 0.24 cfs).

5a. Nehalem River

Streamflow [cfs]	Target [cfs]	Target Flow Achievement (T _a)	Curtailment [cfs]	D _m (amount that can be appropriated) [cfs]
550	400	1.37	0	2.19
450	400	1.12	0	2.19
350	400	0.87	0.29	1.9
250	400	0.62	0.83	1.36

5b. Peterson Creek

Streamflow [cfs]	Target [cfs]	Target Flow Achievement (T_a)	Curtailment [cfs]	D_m (amount that can be appropriated) [cfs]
6.0	4.9	1.18	0.00	0.24
4.5	4.9	0.87	0.03	0.21
3.0	4.9	0.56	0.10	0.14
1.5	4.9	0.26	0.18	0.06

Total daily curtailment should be based on the cumulative curtailment for Peterson Creek and the Nehalem River. For example, if flows on 10/1 are 350 cfs in the Nehalem River ($T_a=0.87$, resulting in 0.29 cfs curtailment), and 4.5 cfs in Peterson Creek ($T_a=0.87$, resulting in 0.03 cfs curtailment), total curtailment should be the cumulative $0.29 + 0.03 = 0.32$ cfs. Alternatively, if flows on 10/1 are 350 cfs in the Nehalem River ($T_a=0.87$, resulting in curtailment of 0.29 cfs) and flows in Peterson Creek are 6.0 cfs ($T_a>1$, so no curtailment), then total curtailment should be the cumulative $0.29 + 0.0 = 0.29$ cfs.

Streamflow Measurement Point

USGS gaging station #14301000 (Nehalem River near Foss, OR) is located approximately three river miles upstream from the City's wells and provides appropriate data for target flow achievement monitoring for the Nehalem River. It is the City's responsibility to install an additional streamflow gage or develop an approved daily monitoring approach for Peterson Creek. Peterson Creek near its mouth (though outside a backwater influence zone from the Nehalem River) is recommended as a suitable gage location to determine if target flows in Peterson Creek are being met.

2. Department's Findings Based on Review of ODFW's Advice:

There is an undeveloped portion of 2.43 cfs of water under Permit G-12196 as per ORS 537.630(1). For the purpose of conditioning this permit to maintain the persistence of fish, the Department finds that the amount of the undeveloped portion of water under Permit G-12196 is 2.43 cfs. Therefore, 2.43 cfs is the amount of water under Permit G-12196 that must be conditioned for the persistence of listed fish species.

Use of the undeveloped portion of the groundwater source under Permit G-12196 has the Potential for Substantial Interference (PSI) with both Peterson Creek and the Nehalem River. The Department estimated that the stream depletion rate after 360 days of pumping is 96% of the withdrawal rate. The undeveloped portion of the permit with PSI was determined by OWRD to be 0.24 cfs for Peterson Creek (10%) and 2.19 cfs for the Nehalem River (90%).

Authorization to incrementally expand use of water under this permit beyond 1.17 cfs

up to the permitted quantity of 3.6 cfs can only be granted through the Department's review and approval of the municipal permit holder's future WMCPs (OAR 690-086).

When ODFW's recommended target flows are missed, the proposed conditions may result in a reduction in the amount of water conditioned for fish persistence under Permit G-12196 that can be diverted.

The proposed conditions in this extension of time are based on the following findings:

- a. The flows needed to maintain the persistence of fish must be determined or measured on the Nehalem River and Peterson Creek, by the water user at USGS streamgage #14301000 on Nehalem River near Foss, OR; and measured at an approved location and using an approved method developed by the water user on Peterson Creek.
- b. From October 1-June 30, ODFW recommends **partial curtailment** of the undeveloped portion of water right Permit G-12196 when target flows are missed ($T_a < 1$) in Peterson Creek and/or the Nehalem River. Partial curtailment may apply to one or both streams, depending on the independently calculated T_a values.
- c. From July 1-September 30, ODFW recommends **full curtailment** of the quantity of the undeveloped portion of water right apportioned to each individual stream, being 2.19 for the Nehalem River, and 0.24 for Peterson Creek, when a target flow is missed ($T_a < 1$). Full curtailment may apply to one or both streams, depending on their independently calculated T_a values. Seasonal low flows and high temperatures during this time coincide with important life stages of STE species identified above, and additional water withdrawals will negatively affect fish persistence.

ODFW evaluates water right permit curtailment need based on the fraction of target flow achievement (herein referred to as "target flow achievement value") as determined independently for the Nehalem River and Peterson Creek). (EQ 1).

$$T_a = (Q_g - P) / Q_t \quad (EQ 1)$$

T_a = target flow achievement value

Q_g = gaged daily flow

P = amount of water conditioned for fish persistence (0.24 cfs for Peterson Creek; 2.19 cfs for Nehalem River)

Q_t = target flow

When target flow achievement values (T_a) for the Nehalem River and Peterson Creek are greater than 1, no curtailment is recommended.

If $T_a \geq 1$, no curtailment necessary.

From October 1-June 30, when target flow achievement value (T_a) for the Nehalem River and/or Peterson Creek is less than 1, curtailment of the undeveloped portion of the permit is recommended. For partial curtailment, the curtailed rate is determined by scaling the undeveloped portion of the permit, being 2.19 cfs for the Nehalem River and 0.24 cfs for Peterson Creek, by the fraction each flow target is not being met (i.e., the flow achievement value) (EQ 2).

$$D_m = T_a * P \quad (EQ\ 2)$$

D_m = maximum amount of water conditioned for fish persistence that can be appropriated as a result of this fish persistence condition

T_a = target flow achievement value

P = amount of water conditioned for fish persistence (0.24 cfs for Peterson Creek; 2.19 cfs for Nehalem River)

1. Conditions to Maintain the Persistence of Listed Fish

The first 1.17 cfs of water under Permit G-12196 or any subsequent water right(s) originating from Permit G-12196 is not and will not be conditioned for maintaining fish persistence.

The portion of Permit G-12196 subject to these fish persistence conditions is established as 2.43 cfs in accordance with ORS 537.630(3)(d). The use of 2.43 cfs as authorized under this permit must be hereafter conditioned with these fish persistence conditions. Therefore, all subsequent water right(s) originating from this portion of Permit G-12196 implemented will include these Conditions to Maintain the Persistence of Listed Fish. If more than one resulting water right is subject to these Conditions to Maintain the Persistence of Listed Fish, then legal use of the 2.43 cfs conditioned to maintain the persistence of listed fish species shall be determined among all the permit/water right holders of record; all the permit/water right holders of record subject to these Conditions to Maintain the Persistence of Listed Fish must ensure that these fish persistence conditions are met.

A. Minimum Fish Flow Needs

Fish persistence target flows in the Nehalem River and Peterson Creek and as recommended by ODFW are in Table 6, below; Nehalem River flows are to be measured at USGS streamgage #14301000 near Foss, OR and, Peterson Creek flows are to be measured at an approved location and using an approved method developed by the water user.

Table 6

Month	ODFW Target Flows at Gage 14301000 (cfs) on the Nehalem River	ODFW Target Flows on Peterson Creek
JAN	400	22.7
FEB	400	18.0
MAR	400	16.1
APR	400	13.4
MAY	265	8.2
JUN	178	5.4
JUL	178	2.1
AUG	178	1.3
SEPT 1-15	178	1.4
SEPT 16-30	265	1.4
OCT	400	4.9
NOV	400	17.1
DEC	400	23.2

Alternate Streamflow Measurement Point

The location of a streamflow measurement point as established in these Conditions to Maintain the Persistence of Listed Fish may be revised if the permit or water right holder provides evidence in writing that ODFW has determined that flows may be measured at an alternate streamflow measurement point and the permit or water right holder provides an adequate description of the location of the alternate streamflow measurement point, and the Water Resources Director concurs in writing.

B. Determining Water Use Reductions - Generally

The maximum amount of the 2.43 cfs conditioned for fish persistence that can be appropriated is determined independently for each stream (up to 2.19 cfs on the Nehalem River, and up to 0.24 cfs on Peterson Creek) in proportion to the amount by which the target flows shown in Table 6 are missed. The amount by which the target flows are missed will be based on measured Nehalem River daily flows at USGS streamgage #14301000, Nehalem River near Foss, OR; and on Peterson Creek at an approved location and using an approved method developed by the water user. The proportion by which target flows are missed is expressed as a decimal, and termed "flow achievement value."

The target flow achievement value for the Nehalem River (NR) is defined as:

$$T_{aNR} = (Q_{gNR} - P_{NR}) / Q_{tNR} \quad (EQ 1a)$$

Q_{gNR} = gaged daily flow on the Nehalem River

P_{NR} = amount of water conditioned for fish persistence for the Nehalem River, being 2.19 cfs

Q_{tNR} = target flow for the Nehalem River

T_{aNR} = target flow achievement value for the Nehalem River

The target flow achievement value for Peterson Creek (PC) is defined as:

$$T_{aPC} = (Q_{gPC} - P_{NPC}) / Q_{tPC} \quad (EQ\ 1b)$$

Q_{gPC} = gaged daily flow on the Peterson Creek

P_{PC} = amount of water conditioned for fish persistence for Peterson Creek, being 0.24 cfs

Q_{tPC} = target flow for Peterson Creek

T_{aPC} = target flow achievement value for Peterson Creek

During any time of the year, when the target flow achievement values are greater than 1 in both the Nehalem River ($T_{aNR} > 1$) and Peterson Creek ($T_{aPC} > 1$), no curtailment is recommended. The full undeveloped portion of 2.43 cfs may be utilized.

July 1-Sept 30

When the target flow achievement values are less than 1 in both the Nehalem River ($T_{aNR} < 1$) and Peterson Creek ($T_{aPC} < 1$), the undeveloped portion of 2.43 cfs shall be curtailed in full.

When the target flow achievement value is less than 1 in the Nehalem River ($T_{aNR} < 1$) but greater than 1 in Peterson Creek ($T_{aPC} > 1$), the 2.19 cfs for the Nehalem River shall be curtailed in full, but the 0.24 cfs for Peterson Creek may be fully utilized.

When the target flow achievement value is greater than 1 in the Nehalem River ($T_{aNR} > 1$) but less than 1 in Peterson Creek ($T_{aPC} < 1$) the 2.19 cfs for the Nehalem River may be fully utilized, but the 0.24 cfs for Peterson Creek shall be curtailed in full.

Oct 1 - June 30

When a target flow achievement value is less than 1 for a given stream, partial curtailment of the amount of water conditioned for fish persistence for that stream (up to 2.19 cfs on the Nehalem River, and up to 0.24 cfs on Peterson Creek) is recommended. The maximum amount of water conditioned for fish persistence that can be appropriated as a result of this fish persistence condition is determined independently for each stream by scaling the amount of water conditioned for fish persistence by the fraction each flow target is not being met ("flow achievement value") for that stream. (EQ 2a & 2b).

Nehalem River: $D_{mNR} = T_{aNR} * P_{NR}$ (EQ 2a)

D_{mNR} = maximum amount of water conditioned for fish persistence that may be appropriated as a result of this fish persistence condition

T_{aNR} = target flow achievement value for the Nehalem River

P_{NR} = amount of water conditioned for fish persistence (2.19 cfs for the Nehalem River)

Peterson Creek: $D_{mPC} = T_{aPC} * P_{PC}$ (EQ 2b)

D_{mPC} = maximum amount of water conditioned for fish persistence that may be appropriated as a result of this fish persistence condition

T_{aPC} = target flow achievement value for Peterson Creek

P_{PC} = amount of water conditioned for fish persistence (0.24 cfs for Peterson Creek)

When the target flow achievement value is less than 1 in both the Nehalem River ($T_{aNR} < 1$) and Peterson Creek ($T_{aPC} < 1$), the undeveloped portions of 2.19 cfs and 0.24 cfs shall be curtailed by the fraction each flow target is not being met (i.e., flow achievement value). The maximum amount of water conditioned for fish persistence that can be appropriated as a result of this fish persistence condition would be the sum of $D_{mNR} + D_{mPC}$.

When the target flow achievement value is less than 1 in the Nehalem River ($T_{aNR} < 1$) but greater than 1 in Peterson Creek ($T_{aPC} > 1$) the 2.19 cfs for the Nehalem River shall be proportionately curtailed, but the 0.24 cfs for Peterson Creek may be utilized in full. The maximum amount of water conditioned for fish persistence that can be appropriated as a result of this fish persistence condition would be the sum of $D_{mNR} + 0.24$.

When the target flow achievement value is greater than 1 in the Nehalem River ($T_{aNR} > 1$) but less than 1 in Peterson Creek ($T_{aPC} < 1$) the 2.19 cfs for the Nehalem River may be utilized in full, but the 0.24 cfs for Peterson Creek shall be proportionately curtailed. The maximum amount of water conditioned for fish persistence that can be appropriated as a result of this fish persistence condition would be the sum of $2.19 + D_{mPC}$.

C. Consumptive Use Percentages for Utilization in Peterson Creek and Nehalem River Calculations

a. Initial Consumptive Use Percentages

The City of Wheeler (CITY) has not identified any Consumptive Use Percentages based on the return of flows to the Nehalem River through effluent discharge. Thus, at this time the City may not utilize Consumptive

Use Percentages for the purpose of calculating the maximum amount of the undeveloped portion of Permit G-12196 that can be diverted as a result of this fish persistence condition.

b. First Time Utilization of Consumptive Use Percentages

Utilization of Consumptive Use Percentages for the purpose of calculating the maximum amount of the undeveloped portion of Permit G-12196 that can be diverted as a result of this fish persistence condition may begin after the issuance of the Final Order for this extension of time.

First time utilization of Consumptive Use Percentages is contingent upon the CITY (1) providing evidence in writing that ODFW has determined that withdrawal points and effluent discharges are within reasonable proximity to each other, such that fish habitat between the two points is not impacted significantly, and (2) submitting monthly Consumptive Use Percentages and receiving the Water Resources Director's concurrence with the proposed Consumptive Use Percentages. Utilization of Consumptive Use Percentages is subject to an approval period described in 2.C.f., below.

Consumptive Use Percentages submitted to the Department for review must (1) be specified as a percentage (may be to the nearest 1/10 percent) for each month of the year and (2) include a description and justification of the methods utilized to determine the percentages. The proposed Consumptive Use Percentages should be submitted on the *Consumptive Use Percentages Update Form* provided with the Final Order for this extension of time.

c. Consumptive Use Percentages Updates

Continuing the utilization of Consumptive Use Percentages for the purpose of calculating the maximum amount of the undeveloped portion of Permit G-12196 that can be diverted as a result of this fish persistence condition beyond an approval period (as described in 2.C.f., below) is contingent upon the City submitting updated Consumptive Use Percentages and receiving the Water Resources Director's concurrence with the proposed Consumptive Use Percentages Updates. Utilization of Consumptive Use Percentages Updates is subject to an approval period described in 2.C.f., below.

The updates to the Consumptive Use Percentages must (1) be specified as a percentage (may be to the nearest 1/10 percent) for each month of the year and (2) include a description and justification of the methods utilized to determine the percentages. The updates should be submitted on the *Consumptive Use Percentages Update Form* provided with the Final Order for this extension of time.

d. Changes to Wastewater Technology and/or Wastewater Treatment Plant Practices

If there are changes to either wastewater technology or the practices at the CITY wastewater treatment facility resulting in 25% or more reductions in average monthly return flows to the Peterson Creek and Nehalem River, then the Consumptive Use Percentages in effect at that time may no longer be

utilized for the purposes of calculating the maximum amount of the undeveloped portion of Permit G-12196 that can be diverted as a result of this fish persistence condition. The 25% reduction is based on a 10-year rolling average of monthly wastewater return flows to the Peterson Creek and Nehalem River as compared to the average monthly wastewater return flows from the 10 year period just prior to date of the first approval period described in 2.C.f., below.

If such changes to either wastewater technology or the practices at CITY wastewater treatment facility occur resulting in 25% reductions, further utilization of Consumptive Use Percentages is contingent upon the CITY submitting Consumptive Use Percentages Updates as per 2.C.c., above, and receiving the Water Resources Director's concurrence with the proposed Consumptive Use Percentages.

e. Relocation of the Point(s) of Diversion(s) and/or Return Flows

If the point(s) of diversion(s) and/or return flows are relocated, Consumptive Use Percentages in effect at that time may no longer be utilized for the purposes of calculating the maximum amount of the undeveloped portion of Permit G-12196 that can be diverted as a result of this fish persistence condition.

After relocation of the point(s) of diversion(s) and/or return flows, further utilization of Consumptive Use Percentages is contingent upon the CITY (1) providing evidence in writing that ODFW has determined that any relocated withdrawal points and effluent discharge points are within reasonable proximity to each other, such that fish habitat between the two points is not impacted significantly, and (2) submitting Consumptive Use Percentages Updates as per 2.C.c., above, and receiving the Water Resources Director's concurrence with the proposed Consumptive Use Percentages.

f. Approval Periods for Utilization of Consumptive Use Percentages

The utilization of Consumptive Use Percentages for the purpose of calculating the maximum amount of the undeveloped portion of Permit G-12196 that can be diverted as a result of this fish persistence condition may continue for a 10 year approval period that ends 10 years from the Water Resources Director's most recent date of concurrence with Consumptive Use Percentages Updates as evidenced by the record, unless sections 2.C.d., or 2.C.e. (above) are applicable.

Consumptive Use Percentages (first time utilization or updates) which are submitted and receive the Director's concurrence will begin a new 10 year approval period. The approval period begins on the date of the Water Resources Director's concurrence with Consumptive Use Percentages Updates, as evidenced by the record. The CITY at its discretion may submit updates prior to the end of an approval period.

D. Examples

In each example below, the undeveloped portion (2.43 cfs) is partitioned to estimate the use of groundwater impact on each stream, being 90% of the impact being on the Nehalem River (2.19 cfs), and 10% of the impact on Peterson Creek (0.24 cfs).

Example 1: Jan 1 – Dec 31 ($T_{aNR} > 1$ & $T_{aPC} > 1$)

Target flows are met in both the Nehalem River and Peterson Creek.

On August 15, the gaged daily flow of the Nehalem River (Q_{gNA}) is 190.0 cfs. Given that the amount of water for the Nehalem River conditioned for fish persistence (P_{NR}) is 2.19 cfs, then the gaged daily flow (Q_{gNR}) minus 2.19 cfs (P_{NR}) is greater than the 178.0 cfs target flow (Q_{tNR}) for August 15. In this example, $(Q_{gNR} - P_{NR})/Q_{tNR} \geq 1$.

$$(190.0 - 2.19)/178 \geq 1$$

On August 15, the measured daily flow of the Peterson Creek (Q_{gPC}) is 3.0 cfs. Given that the amount of water for Peterson Creek conditioned for fish persistence (P_{PC}) is 0.24 cfs, then the gaged daily flow (Q_{gPC}) minus 0.24 (P_{PC}) is greater than the 1.3 cfs target flow (Q_{tPC}) for August 15. In this example, $(Q_{gPC} - P_{PC})/Q_{tPC} \geq 1$.

$$(3.0 - 0.24)/1.3 \geq 1$$

The amount of water conditioned for fish persistence, being 2.43 cfs, may be utilized in full because the target flows are considered met in both the Nehalem River and Peterson Creek.

Example 2: July 1 – Sept 30 ($T_{aNR} < 1$ & $T_{aPC} < 1$)

Target flows are missed in both the Nehalem River and Peterson Creek

On July 15, the gaged daily flow of the Nehalem River (Q_{gNR}) is 160.0 cfs. Given that the amount of water conditioned for fish persistence for the Nehalem River (P_{NR}) is 2.19 cfs, then the gaged daily flow (Q_{gNR}) minus 2.19 cfs (P_{NR}) is less than the 178.0 cfs target flow (Q_{tNR}) for July 15. The flow target is missed in the Nehalem River.

On July 15, the gaged daily flow of the Peterson Creek (Q_{gPC}) is 1.9 cfs. Given that the amount of water conditioned for fish persistence for Peterson Creek (P_{PC}) is 0.24 cfs, the gaged daily flow (Q_{gPC}) minus 0.24 cfs (P_{PC}) is less than the 2.1 cfs target flow (Q_{tPC}) for July 1. The flow target is missed in Peterson Creek.

Step 1: Given that the amount of water conditioned for fish persistence is 2.43 cfs ($P_{NR} + P_{PC}$), if on July 15, the average of the gaged daily flow is 160.0 cfs on the Nehalem River (Q_{gNR}), and 1.9 cfs on Peterson Creek

(Q_{gPC}), and the target flow is 178.0 cfs on the Nehalem River (Q_{tNR}) and 2.1 cfs for Peterson Creek (Q_{tPC}), then each target flow achievement value (T_{aNR} & T_{aPC}) is less than 1.

$$\begin{array}{c} \text{Nehalem River} \\ (160.0 - 2.19) / 178.0 = 0.89 \end{array}$$

$$0.89 < 1$$

$$\begin{array}{c} \text{Peterson Creek} \\ (1.9 - 0.24) / 2.1 = 0.79 \end{array}$$

$$0.79 < 1$$

None of the water conditioned for fish persistence (2.43 cfs) could be diverted because the target flows are considered missed in both the Nehalem River and Peterson Creek.

Example 3: July 1 – September 30 ($T_{aNR} < 1$ & $T_{aPC} > 1$)

Target flows are missed in the Nehalem River, but met in Peterson Creek

On July 10, the gaged daily flow of the Nehalem River (Q_{gNR}) is 170.0 cfs. Given that the amount of water conditioned for fish persistence for the Nehalem River (P_{NR}) is 2.19 cfs, the gaged daily flow (Q_{gNR}) minus 2.19 cfs (P_{NR}) is less than the 178.0 cfs target flow (Q_{tNR}) for July 10. The target flow is missed in the Nehalem River.

On July 10, the gaged daily flow of the Peterson Creek (Q_{gPC}) is 3.3 cfs. Given that the amount of water conditioned for fish persistence for Peterson Creek (P_{PC}) is 0.24 cfs, then the gaged daily flow (Q_{gPC}) minus 0.24 cfs (P_{PC}) is greater than the 2.1 cfs target flow (Q_{tPC}) for July 10. The flow target is met in Peterson Creek.

Step 1: Given that the amount of water conditioned for fish persistence is 2.43 cfs ($P_{NR} + P_{PC}$), if on July 10, the average of the gaged daily flow is 170.0 cfs on the Nehalem River (Q_{gNR}), and 3.3 cfs on Peterson Creek (Q_{gPC}), and the target flow is 178.0 cfs for Nehalem River (Q_{tNR}) and 2.7 cfs for Peterson Creek (Q_{tPC}), then the target flow achievement value for the Nehalem River (T_{aNR}) is less than 1, but the target flow achievement value for the Peterson Creek (T_{aPC}) is greater than 1.

$$\begin{array}{c} \text{Nehalem River} \\ (170.0 - 2.19) / 178.0 = 0.94 \end{array}$$

$$0.94 < 1$$

$$\text{Peterson Creek} \\ (3.3 - 0.24) / 2.1 = 1.46$$

$$1.46 > 1$$

Only the amount of water the water conditioned for fish persistence for Peterson Creek, being 0.24 cfs, could be diverted because the target flows are considered missed in the Nehalem River.

Example 4: Oct 1 – June 30 ($T_{aNR} < 1$ & $T_{aPC} < 1$)

Target flows are missed in both the Nehalem River and Peterson Creek

On June 1, the gaged daily flow of the Nehalem River (Q_{gNR}) is 160.0 cfs. Given that the amount of water conditioned for fish persistence for the Nehalem River (P_{NR}) is 2.19 cfs, the gaged daily flow (Q_{gNR}) minus 2.19 cfs (P_{NR}) is less than the 178.0 cfs target flow (Q_{tNR}) for June 1. The flow target is missed for the Nehalem River.

On June 1, the gaged daily flow of the Peterson Creek (Q_{gPC}) is 4.0 cfs. Given that the amount of water conditioned for fish persistence for Peterson Creek (P_{PC}) is 0.24 cfs, the gaged daily flow (Q_{gPC}) minus 0.24 cfs (P_{PC}) is less than the 5.4 cfs target flow (Q_{tPC}) for June 1. The flow target is missed for Peterson Creek.

Step 1: Given that the amount of water conditioned for fish persistence is 2.43 cfs ($P_{NR} + P_{PC}$), if on June 1, the average of the gaged daily flow is 160.0 cfs on the Nehalem River (Q_{gNR}), and 4.0 cfs on Peterson Creek (Q_{gPC}), and the target flow is 178.0 cfs for Nehalem River (Q_{tNR}) and 5.7 cfs for Peterson Creek (Q_{tPC}), the target flow achievement values (T_{aNR} & T_{aPC}) are less than 1.

$$\text{Nehalem River} \\ (160.0 - 2.19) / 178.0 = 0.89$$

$$0.89 < 1$$

$$\text{Peterson Creek} \\ (4.0 - 0.24) / 5.4 = 0.70$$

$$0.70 < 1$$

Step 2: Given the target flow achievement value for Nehalem River (T_{aNR}) is less than 1 (from Step 1), and amount of water conditioned for fish persistence for the Nehalem River (P_{NR}) is 2.19 cfs, the maximum amount of water conditioned for fish persistence for the Nehalem River that can be appropriated as a result of this fish persistence condition is 1.95 cfs. ($D_{mNR} = T_{aNR} * P_{NR}$)

Nehalem River

$$0.89 * 2.19 \text{ cfs} = 1.95 \text{ cfs}$$

Step 3: Given the target flow achievement value for Peterson Creek (T_{aPC}) is less than 1 (from Step 1), and amount of water conditioned for fish persistence for Peterson Creek (P_{PC}) is 0.24 cfs, the maximum amount of water conditioned for fish persistence for Peterson Creek that can be appropriated as a result of this fish persistence condition is 0.17 cfs.
($D_{mPC} = T_{aPC} * P_{PC}$)

Peterson Creek

$$0.70 * 0.24 \text{ cfs} = 0.17 \text{ cfs}$$

Step 4: The maximum amount of water out of the 2.43 cfs conditioned for fish persistence that may be diverted based on Nahalem River and Peterson Creek stream flows is 2.10 cfs. ($D_{mNC} + D_{mPC}$).

$$1.95 + 0.17 = 2.12 \text{ cfs}$$

Example 5: October 1 – June 30 ($T_{aNR} > 1$ & $T_{aPC} < 1$)

Target flows are met in the Nehalem River, but missed in Peterson Creek

On November 1, the gaged daily flow of the Nehalem River (Q_{gNR}) is 420.0 cfs. Given that the amount of water conditioned for fish persistence for the Nehalem River (P_{NR}) is 2.19 cfs, then the gaged daily flow (Q_{gNR}) minus 2.19 cfs (P_{NR}) is more than the 400.0 cfs target flow (Q_{tNR}) for November 1. The target flow is met for the Nehalem River.

On November 1, the gaged daily flow of the Peterson Creek (Q_{gPC}) is 16.0 cfs. Given that the amount of water conditioned for fish persistence for Peterson Creek (P_{PC}) is 0.24 cfs, then the gaged daily flow (Q_{gPC}) minus 0.24 cfs (P_{PC}) is less than the 17.1 cfs target flow (Q_{tPC}) for November 1. The target flow is missed for Peterson Creek.

Step 1: Given that the amount of water conditioned for fish persistence is 2.43 cfs ($P_{NR} + P_{PC}$), if on November 1, the average of the gaged daily flow is 420 cfs on the Nehalem River (Q_{gNR}), and 16.0 cfs on Peterson Creek (Q_{gPC}), and the target flow is 400.0 cfs for Nehalem River (Q_{tNR}) and 17.1 cfs for Peterson Creek (Q_{tPC}), then the target flow achievement value for the Nehalem River (T_{aNR}) is greater than 1, but target flow achievement value Peterson Creek (T_{aPC}) is less than 1.

Nehalem River

$$(420 - 2.19) / 400 = 1.04$$

$$1.04 > 1$$

$$\text{Peterson Creek} \\ (16 - 0.24) / 17.1 = 0.92$$

$$0.92 < 1$$

Step 2: The full amount of water the water conditioned for fish persistence for the Nehalem River, being 2.19 cfs, could be diverted because the target flows are not considered missed in the Nehalem River.

Step 3: Given the target flow achievement value for Peterson Creek (T_{aPC}) is less than 1 (from Step 1), and amount of water conditioned for fish persistence for Peterson Creek (P_{PC}) is 0.24 cfs, the maximum amount of water conditioned for fish persistence for Peterson Creek that can be appropriated as a result of this fish persistence condition is 0.19 cfs.
 $(D_{mPC} = T_{aPC} * P_{PC})$

Peterson Creek

$$0.24 * 0.92 = 0.22$$

Step 4: The maximum amount of water out of the 2.43 cfs conditioned for fish persistence that may be diverted is 2.41 cfs.

$$2.19 + 0.22 = 2.41$$