

TABLE 3-1

Estimated Current and Future Municipal and Domestic Water Use (5)

Sub-Watershed	Notes	Type	Total Number of Connections or ERUs	2002						Applied Annual Percent Increase ⁸	Total Number of Connections or ERUs	2005					
				ADD		MDD		Annual ⁷	ADD			MDD		Annual ⁷			
				mgd	cfs	mgd	cfs	AF/yr	mgd			cfs	mgd	cfs	AF/yr		
Chiwaukum	1	Part-Time	28	0.003	0.004	0.007	0.010	3	1.18%	36	0.003	0.005	0.008	0.013	4		
Chiwaukum	2	Full-Time	8	0.003	0.005	0.008	0.012	3	1.18%	10	0.004	0.006	0.010	0.015	4		
Chiwaukum	3	Connections with Exempt Wells	7	0.003	0.004	0.007	0.010	3	1.18%	9	0.003	0.005	0.008	0.013	4		
Chiwawa	1	Part-Time	3	0.000	0.000	0.001	0.001	0	1.18%	4	0.000	0.001	0.001	0.001	0		
Chiwawa	2	Full-Time	298	0.113	0.175	0.283	0.438	127	1.18%	379	0.144	0.223	0.360	0.556	161		
Chiwawa	3	Connections with Exempt Wells	86	0.033	0.051	0.082	0.126	37	1.18%	109	0.042	0.064	0.104	0.161	47		
Chiwawa	10	Chiwawa Communities Association	309	0.055	0.085	0.138	0.213	62	1.18%	393	0.070	0.108	0.175	0.270	78		
Chumstick	1	Part-Time	1	0.000	0.000	0.000	0.000	0	1.18%	1	0.000	0.000	0.000	0.000	0		
Chumstick	2	Full-Time	141	0.054	0.083	0.134	0.207	60	1.18%	179	0.068	0.105	0.170	0.263	76		
Chumstick	3	Connections with Exempt Wells	680	0.258	0.400	0.646	0.999	290	1.18%	864	0.328	0.508	0.821	1.270	368		
Icicle	1	Part-Time	3	0.000	0.000	0.001	0.001	0	1.18%	4	0.000	0.001	0.001	0.001	0		
Icicle	2	Full-Time	47	0.018	0.028	0.045	0.069	20	1.18%	60	0.023	0.035	0.057	0.088	25		
Icicle	3	Connections with Exempt Wells	402	0.153	0.236	0.382	0.591	171	1.18%	511	0.194	0.300	0.485	0.751	218		
Icicle	9	City of Leavenworth	2,028	1.011	1.564	2.528	3.911	1,133		4,714	2.195	3.396	5.693	8.490	2,461		
Lake Wenatchee	1	Part-Time	257	0.024	0.038	0.061	0.094	27	1.18%	327	0.031	0.048	0.078	0.120	35		
Lake Wenatchee	2	Full-Time	129	0.049	0.076	0.123	0.190	55	1.18%	164	0.062	0.096	0.156	0.241	70		
Lake Wenatchee	3	Connections with Exempt Wells	336	0.128	0.198	0.319	0.494	143	1.18%	427	0.162	0.251	0.406	0.627	182		
Little Wenatchee	3	Connections with Exempt Wells	1	0.000	0.001	0.001	0.002	0	1.18%	1	0.001	0.001	0.001	0.002	1		
Lower Wenatchee	1	Part-Time	174	0.017	0.026	0.041	0.064	19	1.16%	220	0.021	0.032	0.052	0.081	23		
Lower Wenatchee	2	Full-Time	488	0.185	0.287	0.464	0.717	208	1.16%	618	0.235	0.363	0.587	0.908	263		
Lower Wenatchee	3	Connections with Exempt Wells	1,874	0.712	1.102	1.780	2.755	798	1.16%	2,373	0.902	1.395	2.255	3.488	1,011		
Lower Wenatchee	4	City of Cashmere (36%)	819	0.364	0.563	0.910	1.408	408		1,000	0.447	0.691	0.763	1.728	501		
Lower Wenatchee	10	Chelan County PUD NO. 1 - Dryden	64	0.017	0.026	0.043	0.066	19	1.16%	81	0.022	0.033	0.763	0.083	24		
Lower Wenatchee	6	Peshastin Water District/Full-Time	243	0.092	0.143	0.231	0.357	104	6.09%	583	0.222	0.343	0.554	0.858	249		
Lower Wenatchee	6	Peshastin Domestic Water Association/Part-Time	17	0.002	0.002	0.004	0.006	2	1.16%	22	0.002	0.003	0.005	0.008	2		
Lower Wenatchee	6	Peshastin Domestic Water Association/Full-Time	56	0.021	0.033	0.053	0.082	24	1.16%	71	0.027	0.042	0.067	0.104	30		
Mission	1	Part-Time	2	0.000	0.000	0.000	0.001	0	1.16%	3	0.000	0.000	0.001	0.001	0		
Mission	2	Full-Time	144	0.055	0.085	0.137	0.212	61	1.16%	182	0.069	0.107	0.173	0.268	78		
Mission	3	Connections with Exempt Wells	596	0.226	0.350	0.566	0.876	254	1.16%	754	0.287	0.444	0.717	1.109	321		
Mission	4	City of Cashmere (64%)	1,455	0.647	1.001	1.618	2.503	725		1,777	0.794	1.229	1.357	3.072	890		
Nason	1	Part-Time	193	0.018	0.028	0.046	0.071	21	1.18%	245	0.023	0.036	0.058	0.090	26		
Nason	2	Full-Time	162	0.062	0.095	0.154	0.238	69	1.18%	206	0.078	0.121	0.196	0.303	88		
Nason	3	Connections with Exempt Wells	148	0.056	0.087	0.141	0.218	63	1.18%	188	0.071	0.111	0.179	0.276	80		
Peshastin	1	Part-Time	88	0.008	0.013	0.021	0.032	9	1.16%	111	0.011	0.016	0.026	0.041	12		
Peshastin	2	Full-Time	49	0.019	0.029	0.047	0.072	21	1.16%	62	0.024	0.036	0.059	0.091	26		
Peshastin	6	Valley Hi Community Club, Inc/Part-Time	24	0.002	0.004	0.006	0.009	3	1.16%	30	0.003	0.004	0.007	0.011	3		
Peshastin	6	Valley Hi Community Club, Inc./Full-Time	105	0.040	0.062	0.100	0.154	45	1.16%	133	0.051	0.078	0.126	0.195	57		
Peshastin	3	Connections with Exempt Wells	263	0.100	0.155	0.250	0.387	112	1.16%	333	0.127	0.196	0.316	0.490	142		

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Sub-Watershed	Notes	Type	Total Number of Connections or ERUs	2002					Applied Annual Percent Increase ⁸	Total Number of Connections or ERUs	2025				
				ADD		MDD		Annual ⁷			ADD		MDD		Annual ⁷
				mgd	cfs	mgd	cfs	AF/yr			mgd	cfs	mgd	cfs	AF/yr
Upper Wenatchee	1	Part-Time	62	0.006	0.009	0.015	0.023	7	1.18%	79	0.007	0.012	0.019	0.029	8
Upper Wenatchee	2	Full-Time	41	0.016	0.024	0.039	0.060	17	1.18%	52	0.020	0.031	0.049	0.077	22
Upper Wenatchee	3	Connections with Exempt Wells	330	0.125	0.194	0.314	0.485	141	1.18%	419	0.159	0.246	0.398	0.616	179
Upper Wenatchee	6	Ponderosa Community Club, Inc./Part-Time	457	0.043	0.067	0.109	0.168	49	1.18%	581	0.055	0.085	0.138	0.213	62
Upper Wenatchee	6	Ponderosa Community Club, Inc./Full Time	125	0.048	0.073	0.119	0.184	53	1.18%	159	0.060	0.093	0.151	0.233	68
White	1	Part-Time	12	0.001	0.002	0.003	0.004	1	1.18%	15	0.001	0.002	0.004	0.006	2
White	2	Full-Time	25	0.010	0.015	0.024	0.037	11	1.18%	32	0.012	0.019	0.030	0.047	14
White	3	Connections with Exempt Wells	64	0.024	0.038	0.061	0.094	27	1.18%	81	0.031	0.048	0.077	0.120	35
WRIA 45 TOTAL			12,844	4.82	7.46	12.05	18.65	5,405		18,602	7.092	10.972	17.662	27.431	7,950

NOTES:

This table builds on data presented in the Phase 2 - Level 1 Technical Assessment (MWG, 2003)

ADD = Average Day Demand; MDD = Maximum Day Demand; mgd = million gallons per day; AF/yr = acre-feet per year; DOH - Department of Health; ERU - Equivalent Residential Unit or User

(1) Part Time Connections obtained from DOH Database request (Nicodemus, personal communication, 2005). Includes Group A and B purveyors and water use classifications of single family part-time, part-time residential units, and recreational services (e.g. camp sites, RV parks). ADD calculated as the number of connections times 95 gpd/connections (i.e. 380/4, assuming use occurs only half of the year and at half the rate of average residential water production). MDD calculated as ADD times 2.5 (average peaking factor for WRIA 45).

(2) Full-Time connections obtained from DOH Database request (Nicodemus, personal communication, 2005) includes Group A and B purveyor and water use classifications of single family full-time, full-time residential units, multi-family residential buildings, commercial and industrial, industrial and any other non-residential services. ADD calculated as number of connections times 380 gpd/connection. MDD calculated as ADD times 2.5 (average peaking factor for WRIA 45 as presented in the Technical Assessment). 380 GPD REPRESENT THE TOTAL USE (CONSUMPTIVE AND NONCONSUMPTIVE) AND IS THE AVERAGE WATER PRODUCTION FACTOR REPORTED FOR WRIA 45 (MWG, 2003). THIS USAGE RATE IS NOT A REQUIREMENT BUT AN ASSUMPTION TO ENABLE CALCULATION OF RESIDENTIAL WATER USE FOR THE WATERSHED PLAN.

(3) Exempt Well Connections are calculated as the Total Number of Residential Parcels minus the total group A and group B residential connections (full and part-time) from the DOH database (Nicodemus, personal communication, 2005). Parcel data obtained from Chelan County Assessors database (June 6, 2005). Assumes that one residential parcel is equivalent to one household unless otherwise noted. Parcel types with a primary or secondary land use of the following types were included: All other residential, Household 2-4 units (assume 3 units), Mobile home parks/courts, Multi-units 5 or more (assume 5 units), Single family units, Vacation and cabin, and Residential Hotels - Condominiums. Only parcels with an improvement value of \$5,000 or greater are considered. Errors in the assessor's database are possible (Chelan County Planning, personal communication, 2005). The following assumptions are implicit in this calculation: data obtained from the Department of Health classifying Group A and Group B water systems do not include any systems served by exempt wells; Assumes all exempt well connections are full time (conservative). ADD calculated as number of connections times 380 gpd/connection (average water production factor for WRIA 45 as presented in the Technical Assessment). MDD calculated as ADD times 2.5 (average peaking factor for WRIA 45 as presented in the Technical Assessment).

(4) Data obtained from Cashmere Comprehensive Water System Plan (3/2004). 2025 data is based on 2021 projections in WSP and an applied linear growth rate in water use between 2021 and 2025. Future use projections assume the "no conservation" scenario. The City of Cashmere is divided over two sub-watersheds, the Lower Wenatchee and the Mission, therefore the water use is divided across these two sub-watersheds with approximately 36% of the use in the Lower Wenatchee and 64% of the use in the Mission.

(5) Water Use reported in this table is for all water uses including residential indoor and outdoor, commercial, industrial, institutional, etc.

(6) Connections (part-time and full time) data obtained from DOH (Nicodemus, personal communication, 2005) from an in-house database. ADD calculated as number of connections times 380 gpd/connection (average water production factor for WRIA 45 as presented in the Technical Assessment). MDD calculated as ADD times 2.5 (average peaking factor for WRIA 45 as presented in the Technical Assessment).

(7) Average day demand converted to AF/yr by multiplying by 1,121.

(8) Percent Increase based on Chelan County data (see Table A-2). The percent increase is applied to all residential and non-residential water use types (e.g. commercial, industrial).

(9) Data obtained from City of Leavenworth Water System Plan Final Draft, November, 2002 (Varela and Associates, 2002). Plan reported a 3.4% population growth rate (compounded). This rate was used to project 2020 population estimates in the WSP from 2020 to 2025. Current "Total Number of Connections or ERUs" represents estimate from the year 2000 (not 2002). City of Leavenworth water source obtained from Icicle Sub-watershed; however the majority of the population resides in the Chumstick Sub-watershed. Subsequent to the setting of sub-watershed boundaries it was determined that a large portion of the City of Leavenworth was located in the Wenatchee River drainage rather than the Chumstick drainage.

(10) Connections data obtained from DOH (Nicodemus, personal communication, 2005) from an in-house database. ADD obtained from Technical Assessment. MDD calculated as ADD times 2.5.

(11) In the Lake Wenatchee Sub-watershed, connections with exempt wells include many residences that are served directly from Lake Wenatchee. While the amount of water used is the same, the source is surface rather than groundwater.

Revision Notes:

7/20/05: The water usage for exempt well connections was incorrectly calculated using PT usage rates. All exempt well connections now use FT rates (380 mgd/connection)

8/1/2005: Changes to notes section.