

<b>Bonney Lake Area Source Capacity Analysis</b>				
	Forecasted Year			Max <sup>4</sup>
	2017	2027	2037	
Serves Normally Closed or Open System: Closed System				
<b>Projected Demands (gpm)</b>				
<b>Average Day Demands of Areas Served</b>				
Bonney Lake 1010	46	49	80	
Bonney Lake 950	43	47	76	
Bonney Lake 860	7	7	12	
Bonney Lake 581	0	0	0	
<b>Projected Total Average Day Demand</b>	96	104	168	466
<b>Projected ERUs</b>	749	812	1,310	3,640
<b>Projected Maximum Day Demand (gpm)</b>	163	177	285	792
<b>Projected Peak Hour Demand (gpm)</b>	328	350	523	1,334
<b>Required Fire Flow (gpm) <sup>1</sup></b>	1,500	1,500	1,500	1,500
<b>Required Pump Station Capacity (gpm) <sup>2</sup></b>	1,663	1,677	1,785	2,292
<b>Sources (gpm)</b>				
Prairie Ridge PS				
Pump 1		433		
Pump 2		433		
Pump 3		713		
Pump 4		713		
<b>Total Available Sources, All Online</b>		2,292		
<b>Total Available Sources, Largest Offline <sup>3</sup></b>		1,579		
<b>Pumping Capacity Surplus / (Deficiency)</b>	(84)	(98)	(206)	(713)
<b>Pumping Capacity Surplus / (Deficiency)</b>				
<b>Assuming All Sources Available</b>	629	615	507	0

Notes:

1. Required fire flow to the Bonney Lake pressure zones is 1,500 gpm for residential. Fire flow included because pump station serves a closed system.
2. Because the pump station serves a closed pressure zone, required pump station capacity is equal to the greater of MDD + FF or PHD.
3. Because the pump station serves a closed pressure zone, capacity is based on the available flow with the largest source offline.
4. Maximum if all sources are online and for current 1,500 gpm required fire flow.

<b>Prairie Ridge Area Source Capacity Analysis</b>				
	Forecasted Year			Max
	2017	2027	2037	
Serves Normally Closed or Open System: Open System				
<b>Projected Demands (gpm)</b>				
<b>Average Day Demands of Areas Served</b>				
Prairie Ridge 810	573	615	950	
Bonney Lake 1010	46	49	80	
Bonney Lake 950	43	47	76	
Bonney Lake 860	7	7	12	
Bonney Lake 581	0	0	0	
<b>Projected Total Average Day Demand</b>	669	719	1,118	5,758
<b>Projected ERUs</b>	5,228	5,618	8,737	45,010
<b>Projected Maximum Day Demand (gpm)</b>	1,137	1,222	1,900	9,789
<b>Sources (gpm)</b>				
214th Ave E Pump Station	6,000			
198th Avenue E Pump Station	2,400			
Prairie Ridge Springs Pump Station	1,389			
<b>Total Available Sources, All Online</b>	9,789			
<b>Pumping Capacity Surplus / (Deficiency)</b>	8,652	8,567	7,889	0

<b>Cumberland Area Source Capacity Analysis</b>				
	<b>Forecasted Year</b>			<b>Max <sup>5</sup></b>
	<b>2017</b>	<b>2027</b>	<b>2037</b>	
Serves Normally Closed or Open System: Open System				
<b>Projected Demands (gpm)</b>				
<b>Average Day Demands of Areas Served</b>				
Cumberland 931	10	10	17	103
<b>Projected ERUs</b>	76	82	132	805
<b>Projected Maximum Day Demand (gpm)</b>	16	18	29	175
<b>Projected Peak Hour Demand (gpm)</b>	65	68	92	347
<b>Required Fire Flow (gpm) <sup>1</sup></b>	1,000	1,000	1,000	0
<b>Fire Flow Available from Storage (gpm) <sup>2</sup></b>	752	752	752	0
<b>Required Pump Station Capacity (gpm) <sup>3</sup></b>	265	266	277	347
<b>Sources (gpm)</b>				
Cumberland Pump Station				
Pump 1				139
Pump 2				208
<b>Total Available Sources, All Online</b>				347
<b>Total Available Sources, Largest Offline <sup>4</sup></b>				139
<b>Pumping Capacity Surplus / (Deficiency)</b>	(126)	(127)	(138)	(208)
<b>Pumping Capacity Surplus / (Deficiency) Assuming All Sources Available</b>	82	81	70	0

Notes:

1. Although the pump station serves an open system, fire flow is included because the Cumberland tank cannot completely accommodate the total volume associated with the design fire event (1,000 gpm x 2 hours). The remainder of the fire flow volume not in storage is assumed to be provided by the Cumberland Pump Station.
2. Cumberland Reservoir only has enough volume for a portion of the required fire flow. The volume available in the reservoir is included to reduce required fire flow necessary for the pump station.
3. The required pump station capacity is the greater of the MDD + FF or PHD.
4. Because the pump station analysis is assuming the pump station is providing fire flow, capacity is based on the available flow with the largest source offline.
5. Maximum if assuming all sources available and if pump station does not need to pump any fire flow (fire flow completely accommodated by storage).

Fennel Creek Area Source Capacity Analysis				
	Forecasted Year			Max <sup>4</sup>
	2017	2027	2037	
Serves Normally Closed or Open System: Closed System				
<b>Projected Demands (gpm)</b>				
<b>Average Day Demands of Areas Served</b>				
Fennel Creek 705	33	36	58	118
<b>Projected ERUs</b>	257	279	450	920
<b>Projected Maximum Day Demand (gpm)</b>	56	61	98	200
<b>Projected Peak Hour Demand (gpm)</b>	146	154	221	387
<b>Required Fire Flow (gpm) <sup>1</sup></b>	1,500	1,500	1,500	1,500
<b>Required Pump Station Capacity (gpm) <sup>2</sup></b>	1,556	1,561	1,598	1,700
<b>Sources (gpm)</b>				
Fennel Creek Pump Station				
Pump 1	100			
Pump 2	400			
Pump 3	400			
Pump 4	400			
Pump 5	400			
<b>Total Available Sources, All Online</b>	1,700			
<b>Total Available Sources, Largest Offline <sup>3</sup></b>	1,300			
<b>Pumping Capacity Surplus / (Deficiency)</b>	(256)	(261)	(298)	(400)
<b>Pumping Capacity Surplus / (Deficiency)</b>				
<b>Assuming All Sources Available</b>	144	139	102	0

Notes:

1. Fire flow included because pump station serves a closed system. The required fire flow for the Fennel Creek 705 pressure zone is 750 gpm x 45 minutes per the Pierce County Code. However, Tacoma Water's planning level fire flow is 1,500 gpm x 2 hours.

2. The required pump station capacity is the greater of the MDD + FF or PHD.

3. Because the pump station serves a closed pressure zone, capacity is based on the available flow with the largest source offline.

4. Maximum if assuming all sources available.

Highland Area Source Capacity Analysis				
	Forecasted Year			Max
	2017	2027	2037	
Serves Normally Closed or Open System: Closed System				
<b>Projected Demands (gpm)</b>				
<b>Average Day Demands of Areas Served</b>				
Highland 621	89	97	156	205
<b>Projected ERUs</b>	697	756	1,219	1,604
<b>Projected Maximum Day Demand (gpm)</b>	152	164	265	349
<b>Projected Peak Hour Demand (gpm)</b>	310	330	491	625
<b>Required Fire Flow (gpm)</b> <sup>1</sup>	0	0	0	0
<b>Required Pump Station Capacity (gpm)</b> <sup>2</sup>	310	330	491	625
<b>Sources (gpm)</b>				
Highland Pump Station				
Pump 1	225			
Pump 2	400			
Pump 3	400			
<b>Total Available Sources, All Online</b>	1,025			
<b>Total Available Sources, Largest Offline</b> <sup>3</sup>	625			
<b>Pumping Capacity Surplus / (Deficiency)</b>	315	295	134	0

Notes:

1. Even though pump station serves a closed system, required fire flow is assumed to be zero. Fire flow is available from the Sunrise Standpipe through PRV connections with the McMillin 706 zone.

2. Because pump station serves a closed pressure zone, pump station must meet PHD.

3. Because the pump station serves a closed pressure zone, capacity is based on the available flow with the largest source offline.

<b>Sunrise Area Source Capacity Analysis</b>				
	<b>Forecasted Year</b>			<b>Max</b>
	<b>2017</b>	<b>2027</b>	<b>2037</b>	
Serves Normally Closed or Open System: Open System				
<b>Projected Demands (gpm)</b>				
<b>Average Day Demands of Areas Served</b>				
McMillin 706	598	647	1,044	
Sunrise Terrace 519	8	9	14	
<b>Projected Total Average Day Demand</b>	606	656	1,058	4,044
<b>Projected ERUs</b>	4,735	5,126	8,269	31,612
<b>Projected Maximum Day Demand (gpm)</b>	1,030	1,115	1,798	6,875
<b>Sources (gpm)</b>				
McMillin 1 Pump Station	1,944			
McMillin 2 Pump Station	4,931			
<b>Total Available Sources, All Online</b>	6,875			
<b>Pumping Capacity Surplus / (Deficiency)</b>	5,845	5,760	5,077	0

Indian Hill Source Capacity Analysis				
	Forecasted Year			Max
	2017	2027	2037	
Serves Normally Closed or Open System: Closed System				
<b>Serves Normally Closed or Open System:</b>				
<b>Average Day Demands of Areas Served</b>				
Indian Hill 649	110	119	192	382
<b>Projected ERUs</b>	859	930	1,500	2,989
<b>Projected Maximum Day Demand (gpm)</b>	187	202	326	650
<b>Projected Peak Hour Demand (gpm)</b>	366	391	589	1,107
<b>Required Fire Flow (gpm)</b> <sup>1</sup>	1,500	1,500	1,500	1,500
<b>Required Pump Station Capacity (gpm)</b> <sup>2</sup>	1,687	1,702	1,826	2,150
<b>Sources (gpm)</b>				
Indian Hill 1 Pump Station				
Pump 1	200			
Pump 2	640			
Pump 3	680			
Indian Hill 2 Pump Station				
Pump 4	640			
Pump 5	670			
<b>Total Available Sources, All Online</b>	2,830			
<b>Total Available Sources, Largest Offline</b> <sup>3</sup>	2,150			
<b>Pumping Capacity Surplus / (Deficiency)</b>	463	448	324	0

Notes:

1. Required fire flow for Indian Hill 649 pressure zone. Fire flow included because pump station serves a closed system.
2. The required pump station capacity is the greater of the MDD + FF or PHD.
3. Because the pump station serves a closed pressure zone, capacity is based on the available flow with the largest source offline.

<b>NE Tacoma Area Source Capacity Analysis</b>				
	<b>Forecasted Year</b>			<b>Max</b>
	<b>2017</b>	<b>2027</b>	<b>2037</b>	
Serves Normally Closed or Open System: Open System				
<b>Projected Demands (gpm)</b>				
<b>Average Day Demands of Areas Served</b>				
NE Tacoma 549	595	644	1,040	
Twin Lakes 411	154	167	270	
NE Tacoma 346	54	59	95	
Lakota Beach 186	9	10	16	
Dash Point High 411	9	9	15	
Harbor View 426	9	10	16	
Browns & Dash Point 346	41	45	72	
Dash Point Low 226	5	5	9	
Hayada 226	34	37	60	
Beverly Heights 486	17	18	30	
Overlook 370	29	31	50	
Fife Heights Low 411	21	23	37	
Indian Hill 649	110	119	192	
<b>Projected Total Average Day Demand</b>	1,088	1,178	1,900	6,087
<b>Projected ERUs</b>	8,503	9,206	14,854	47,577
<b>Projected Maximum Day Demand (gpm)</b>	1,849	2,002	3,230	10,347
<b>Sources (gpm)</b>				
356th Street Pump Station				4,028
Marine View Drive Pump Station				6,319
<b>Total Available Sources, All Online</b>				10,347
<b>Pumping Capacity Surplus / (Deficiency)</b>	8,498	8,345	7,117	0

<b>Park Royal Source Capacity Analysis</b>				
	<b>Forecasted Year</b>			<b>Max</b>
	<b>2017</b>	<b>2027</b>	<b>2037</b>	
Serves Closed or Open System: Closed System				
<b>Projected Demands (gpm)</b>				
<b>Average Day Demands of Areas Served</b>				
Park Royal 556	38	41	66	205
<b>Projected ERUs</b>	297	322	519	1,604
<b>Projected Maximum Day Demand (gpm)</b>	65	70	113	349
<b>Projected Peak Hour Demand (gpm)</b>	162	171	247	625
<b>Required Fire Flow (gpm)</b> <sup>1</sup>	0	0	0	0
<b>Required Pump Station Capacity (gpm)</b> <sup>2</sup>	162	171	247	625
<b>Sources (gpm)</b>				
83rd Avenue & Cirque Pump Station	625			
<b>Pumping Capacity Surplus / (Deficiency)</b>	463	454	378	0

Notes:

1. Even though pump station serves a closed system, required fire flow is assumed to be zero. Fire flow is available through check valve connections with the University Place 531 and High 478 zone.
2. Because pump station serves a closed pressure zone, pump station must meet PHD.

Westgate Area Source Capacity Analysis				
	Forecasted Year			Max <sup>4</sup>
	2017	2027	2037	
Serves Normally Closed or Open System: Closed System				
<b>Projected Demands (gpm)</b>				
<b>Average Day Demands of Areas Served</b>				
Westgate 538	318	344	555	
Fletcher 538	99	108	174	
<b>Projected Total Average Day Demand</b>	417	452	729	3,366
<b>Projected ERUs</b>	3,259	3,530	5,696	26,310
<b>Projected Maximum Day Demand (gpm)</b>	709	768	1,239	5,722
<b>Projected Peak Hour Demand (gpm)</b>	1,201	1,295	2,049	9,222
<b>Required Fire Flow (gpm) <sup>1</sup></b>	0	0	0	0
<b>Required Pump Station Capacity (gpm) <sup>2</sup></b>	1,201	1,295	2,049	9,222
<b>Sources (gpm)</b>				
N 21st and Pearl PS				2,250
Mildred Street PS				972
North End PS (Westgate Pump)				6,000
<b>Total Available Sources, All Online</b>				9,222
<b>Total Available Sources, Largest Offline <sup>3</sup></b>				3,222
<b>Pumping Capacity Surplus / (Deficiency)</b>	2,021	1,927	1,173	(6,000)
<b>Pumping Capacity Surplus / (Deficiency)</b>				
<b>Assuming All Sources Available</b>	8,021	7,927	7,173	0

Notes:

1. Even though pump station serves a closed system, required fire flow is assumed to be zero. Fire flow is available through check valve connections with the High 478 zone and PRV connections to the NETPL.
2. Because the pump station serves a closed pressure zone, required pump station capacity is equal to the greater of MDD + FF or PHD.
3. Because the pump station serves a closed pressure zone, capacity is based on the available flow with the largest source offline.
4. Maximum if all sources available.

Frederickson Area Source Capacity Analysis				
	Forecasted Year			Max <sup>4</sup>
	2017	2027	2037	
Serves Normally Closed or Open System: Closed System				
<b>Projected Demands (gpm)</b>				
<b>Average Day Demands of Areas Served</b>				
Frederickson 588	13	14	23	27
<b>Projected ERUs</b>	103	111	179	211
<b>Projected Maximum Day Demand (gpm)</b>	22	24	39	46
<b>Projected Peak Hour Demand (gpm)</b>	79	83	112	126
<b>Required Fire Flow (gpm)<sup>1</sup></b>	0	0	0	0
<b>Required Pump Station Capacity (gpm)<sup>2</sup></b>	79	83	112	126
<b>Sources (gpm)</b>				
Frederickson Pump Station				
Pump 1				30
Pump 2				96
<b>Total Available Sources, All Online</b>				126
<b>Total Available Sources, Largest Offline<sup>3</sup></b>				30
<b>Pumping Capacity Surplus / (Deficiency)</b>	(49)	(53)	(82)	(96)
<b>Pumping Capacity Surplus / (Deficiency)</b>				
<b>Assuming All Sources Available</b>	47	43	14	0

Notes:

1. Even though pump station serves a closed system, required fire flow is assumed to be zero. Fire flow is available to Frederickson 588 zone through check valve connections with the SE Tacoma 581 zone.
2. Because the pump station serves a closed pressure zone, required pump station capacity is equal to the greater off MDD + FF or PHD.
3. Because the pump station serves a closed pressure zone, capacity is based on the available flow with the largest source offline.

<b>S Summit High Area Source Capacity Analysis</b>				
	Forecasted Year			Max
	2017	2027	2037	
Serves Normally Closed or Open System: Closed System				
<b>Projected Demands (gpm)</b>				
<b>Average Day Demands of Areas Served</b>				
S Summit High 669	130	141	227	239
<b>Projected ERUs</b>	1,017	1,102	1,777	1,871
<b>Projected Maximum Day Demand (gpm)</b>	221	240	386	407
<b>Projected Peak Hour Demand (gpm)</b>	421	450	685	718
<b>Required Fire Flow (gpm)</b> <sup>1</sup>	0	0	0	0
<b>Required Pump Station Capacity (gpm)</b> <sup>2</sup>	421	450	685	718
<b>Sources (gpm)</b>				
128th and Canyon Pump Station				
Pump 1	601			
Pump 2	162			
62nd Ave E Pump Station	556			
<b>Total Available Sources, All Online</b>	1,319			
<b>Total Available Sources, Largest Offline</b> <sup>3</sup>	718			
<b>Pumping Capacity Surplus / (Deficiency)</b>	297	268	33	0

Notes:

1. Even though pump station serves a closed system, required fire flow is assumed to be zero. Fire flow is available to S Summit High 669 zone through check valve connections with the SE Tacoma 581 zone.
2. Because the pump station serves a closed pressure zone, required pump station capacity is equal to the greater off MDD + FF or PHD.
3. Because the pump station serves a closed pressure zone, capacity is based on the available flow with the largest source offline.

80th Avenue E Area Source Capacity Analysis				
	Forecasted Year			Max
	2017	2027	2037	
Serves Normally Closed or Open System: Closed System				
<b>Projected Demands (gpm)</b>				
<b>Average Day Demands of Areas Served</b>				
80th Ave E 626	7	8	13	11
<b>Projected ERUs</b>	58	63	102	85
<b>Projected Maximum Day Demand (gpm)</b>	13	14	22	18
<b>Projected Peak Hour Demand (gpm)</b>	55	58	79	69
<b>Required Fire Flow (gpm)</b> <sup>1</sup>	0	0	0	0
<b>Required Pump Station Capacity (gpm)</b> <sup>2</sup>	55	58	79	69
<b>Sources (gpm)</b>				
80th Avenue E & 132nd Lane E Pump Station	69			
<b>Pumping Capacity Surplus / (Deficiency)</b>	14	12	(9)	0

Notes:

1. Even though pump station serves a closed system, required fire flow is assumed to be zero. Fire flow is available to 80th Ave E 626 zone through check valve connections with the SE Tacoma 581 zone.
2. The required pump station capacity is the greater of the MDD + FF or PHD.

Alder Lane Area Source Capacity Analysis				
	Forecasted Year			Max
	2017	2027	2037	
Serves Normally Closed or Open System: Closed System				
<b>Projected Demands (gpm)</b>				
<b>Average Day Demands of Areas Served</b>				
Alder Lane 626	2.4	2.6	4.3	1.9
<b>Projected ERUs</b>	19	21	33	15
<b>Projected Maximum Day Demand (gpm)</b>	4.1	4.5	7.3	3.3
<b>Projected Peak Hour Demand (gpm)</b>	30	31	40	28
<b>Required Fire Flow (gpm)</b> <sup>1</sup>	0	0	0	0
<b>Required Pump Station Capacity (gpm)</b> <sup>2</sup>	30	31	40	28
<b>Sources (gpm)</b>				
Alder Lane Pump Station	28			
<b>Pumping Capacity Surplus / (Deficiency)</b>	(3)	(4)	(12)	0

Notes:

1. Even though pump station serves a closed system, required fire flow is assumed to be zero. Fire flow is available to Alder Lane 626 zone through check valve connections with the SE Tacoma 581 zone.
2. The required pump station capacity is the greater of the MDD + FF or PHD.