White Bear Lake Area Comprehensive Plan Meeting #5

Preliminary Water Demand Projections

METROPOLITAN COUNCIL

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Greg Johnson, Principal Engineer

metrocouncil.org

Preliminary water demand projections (1/15)

One-on-one meetings

Met Council had one-on-one meetings with the communities to discuss the preliminary water demand projections for Year 2050 and ultimate development

Preliminary water demand projections (2/15)

Purpose of water demand projections

- Provide agreed-up projections to the DNR for updating the groundwater model to estimate future long-term impacts to White Bear Lake if communities remained on groundwater supply public water systems.

- Provide consistent projections for each of the consultants for sizing future infrastructure needs and estimating water conservation potential for each of the potential solutions to be evaluated.

Preliminary water demand projections (3/15)

Definitions and equations used

- Total Gallons Per Capita Per Day (TGPCD) = Total gallons pumped or consumed from 2014-2023 divided by water service population from the DNR's MPARS/ESPWater databases

- Variable Demand Factor = Community's historical maximum and minimum TGPCDs that were above and below the average TGPCD that occurred from 2014-2023

Preliminary water demand projections (4/15)

Definitions and equations used

- Projected Average Day Water Demand (2050 and Ultimate) = (2014-2023 Avg. TGPCD) X (Projected Water Service Population) X (Variable Demand Factor)

Preliminary water demand projections (5/15)

Definitions and equations used

- Projected Maximum Day Water Demand (2050 and Ultimate) = (2014-2023 Avg. TGPCD) X (Projected Water Service Population) X (Variable Demand Factor) X (Peaking Factor)
- Peaking Factor = Maximum Day Demand/Average Day Demand for year

  Highest peaking factor that occurred from 2017 to 2023 was used to account for the potential highest demand in the future

Preliminary water demand projections (6/15)

Hugo potential ultimate development scenarios

- Hugo 1 Development Scenario – Projected ultimate development water service population inside existing MUSA = 37,000 people
- Hugo 2 Development Scenario (includes over 6,000 additional developable acres) – Projected ultimate development water service population inside and outside of existing MUSA = 102,492 people

Preliminary water demand projections (7/15)

Historical water use (2014-2023)

Year	Total Annual Gallons Pumped (ESPWater)	Daily Gallons Pumped	Water Service Population (*)	Average TGPCD
2014	9,198,624,357	25,201,711	255,690	98.56
2015	8,941,579,358	24,497,478	264,877	92.49
2016	8,806,460,965	24,127,290	269,205	89.62
2017	9,253,632,388	25,352,418	270,764	93.63
2018	9,147,624,275	25,061,984	276,565	90.62
2019	8,978,582,327	24,598,856	281,362	87.43
2020	9,568,153,249	26,214,118	285,392	91.85
2021	10,660,476,984	29,206,786	290,302	100.61
2022	10,359,950,985	28,383,427	289,928	97.90
2023	10,915,917,080	29,906,622	300,222	99.62
Range				87.41-101.18
Average (2014-2023)				**94.23**
% Above Average				6.77
% Below Average				-7.22

Preliminary water demand projections (8/15)

2023 versus 2050 projected water service population and average day water demand with Hugo 1 development scenario

- Water service population - 300,222 people in 2023 versus 374,144 people in 2050 = increase of 73,922 people
- Average day water demand - 29,906,622 gpd in 2023 versus 36,653,354 gpd in 2050 = increase of 6,746,732 gpd

Preliminary water demand projections (9/15)

2023 versus ultimate development water service population and average day water demand with Hugo 1 development scenario

- Water service population - 300,222 people in 2023 versus 449,847 people at ultimate development = increase of 149,625 people
- Average day water demand - 29,906,622 gpd in 2023 versus 43,434,201 gpd at ultimate development = increase of 13,527,579 gpd

Preliminary water demand projections (10/15)

2023 versus ultimate development water service population and average day water demand with Hugo 2 development scenario

- Water service population - 300,222 people in 2023 versus 513,339 people at ultimate development = increase of 213,117 people
- Average day water demand - 29,906,622 gpd in 2023 versus 48,803,145 gpd at ultimate development = increase of 18,896,523 gpd

Preliminary water demand projections (11/15)

Variable demand discussion

Year	Total Annual Gallons Pumped (ESPWater)	Daily Gallons Pumped	Water Service Population (*)	Average TGPCD
2014	9,198,624,357	25,201,711	255,690	98.56
2015	8,941,579,358	24,497,478	264,877	92.49
2016	8,806,460,965	24,127,290	269,205	89.62
2017	9,253,632,388	25,352,418	270,764	93.63
2018	9,147,624,275	25,061,984	276,565	90.62
2019	8,978,582,327	24,598,856	281,362	87.43
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2023	10,915,917,080	29,906,622	300,222	99.62
Range				87.41-101.18
Average (2014-2023)				**94.23**
% Above Average				6.77
% Below Average				-7.22

Preliminary water demand projections (12/15)

2023 versus ultimate development water service population and water demand with Hugo 1 development scenario with +/-15% variable demand factor

- Estimated maximum day demand – 74,805,148 gpd in 2023 versus 126,749,848 gpd at ultimate development with a historical peaking factor of 2.54 = increase of 51,944,700 gpd

Preliminary water demand projections (13/15)

2023 versus ultimate development water service population and water demand with Hugo 2 development scenario with +/-15% variable demand factor

- Estimated maximum day demand – 74,805,148 gpd in 2023 versus 142,417,520 gpd at ultimate development with a historical peaking factor of 2.54 = increase of 67,612,372 gpd

Preliminary water demand projections (14/15)

Additional groundwater wells needed with Hugo 1 development

- Hugo – 4 wells
- Lake Elmo – 6 wells
- Lino Lakes – 5 wells
- North Oaks – 4 wells (1 well is backup)
- Vadnais Heights – 1 well

Total – 20 wells

Preliminary water demand projections (15/15)

Additional groundwater wells needed with Hugo 2 development

- Hugo – 16 wells
- Lake Elmo – 6 wells
- Lino Lakes – 5 wells
- North Oaks – 4 wells (1 well is backup)
- Vadnais Heights – 1 well

Total – 32 wells

Questions

Any questions about anything discussed today?