



Water Supply and Demand in the Town of Maynard

Planning Board
January 14, 2020

Evaluation Process: Town's Ability to Meet Future Water Demands

- Evaluate current demands (average and maximum day)
- Estimate future water demands
 - Review population growth data
 - Consider water conservation efforts
 - By residents
 - By the Town (“unaccounted for water”; i.e. unmetered water - leaks)
 - Review ongoing and planned development
- Evaluate Current Water Supplies
- Compare Water Demands against Supply

Current Water Demands

- 2018 Water Use – based on metered data
Average Day 0.685 MGD
Max Day 1.04 MGD

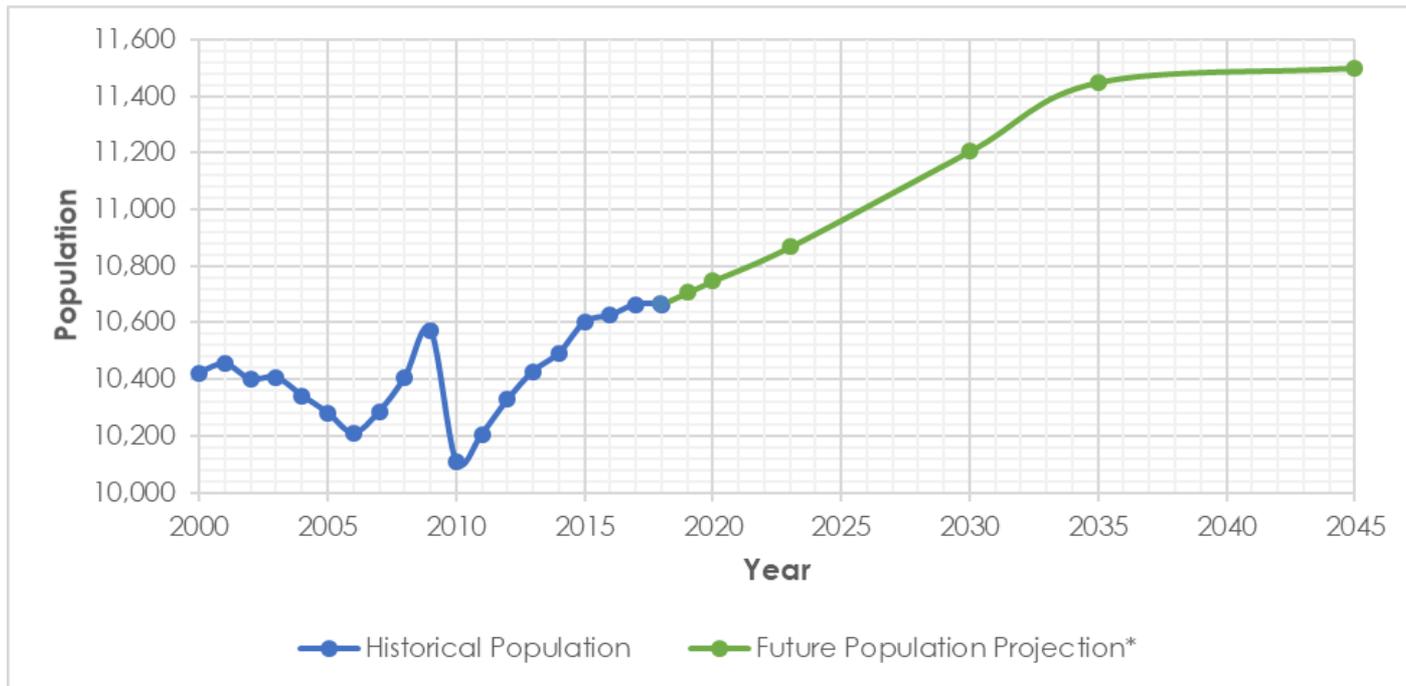
Year	Residential	Commercial/ Business	Industrial	Municipal/ Institutional/ Non-profits	Total CEMU	UAW	Total
2010	58.5%	3.8%	0.6%	0.6%	0.0%	36.5%	100.0%
2011	68.6%	4.5%	0.6%	5.2%	1.1%	20.0%	100.0%
2012	58.7%	10.1%	1.5%	5.4%	0.8%	23.5%	100.0%
2013	62.3%	11.3%	0.4%	2.1%	1.3%	22.6%	100.0%
2014	70.2%	5.2%	3.4%	2.2%	3.3%	15.6%	100.0%
2015	74.6%	4.9%	3.8%	2.3%	0.4%	13.9%	100.0%
2016	71.8%	4.5%	2.7%	2.3%	0.9%	17.7%	100.0%
2017	73.0%	2.3%	0.3%	2.4%	6.2%	15.8%	100.0%
2018	77.1%	4.1%	0.6%	2.8%	2.0%	13.5%	100.0%
AVG	68.3%	5.6%	1.6%	2.8%	1.8%	19.9%	100.0%

MA WMA Performance Standard 10%

Note: if a property is currently vacant, no demand is associated with it in current demand estimates

Future Demands – Population Projections

- 25 Year Planning Period (2045)
- Increase in demands based on 2045 population = 0.07 MGD



* Based on Population Projections Data from Metropolitan Area Planning Council MetroFuture 2035 Update, Maynard's Master Plan, and Stantec's estimate

Future Water Demands - Conservation

- Unaccounted for Water (UAW):
 - Assume 10% by 2045 to meet MA performance standards; reduction in water use is negligible
- Residential Use:
 - 2010 – 2018 avg use: 51.8 residential gal/person/day (RGPCD)
 - MA performance standard is 65 RGPCD
 - Conservation efforts have been significant lately due to water bans
 - Unlikely to get much lower
- No change in demands due to conservation efforts

Future Water Demands - Development

Ongoing (Re)Development	Avg Day Demand
Maynard Crossing/129 Parker	32.5 gpm
Maynard Point/42 Summer St	1.5 gpm
Maynard Square/115 Main St	2.2 gpm
Powder Mill Place	9.8 gpm
<i>Total</i>	<i>46 gpm (0.07 MGD)</i>

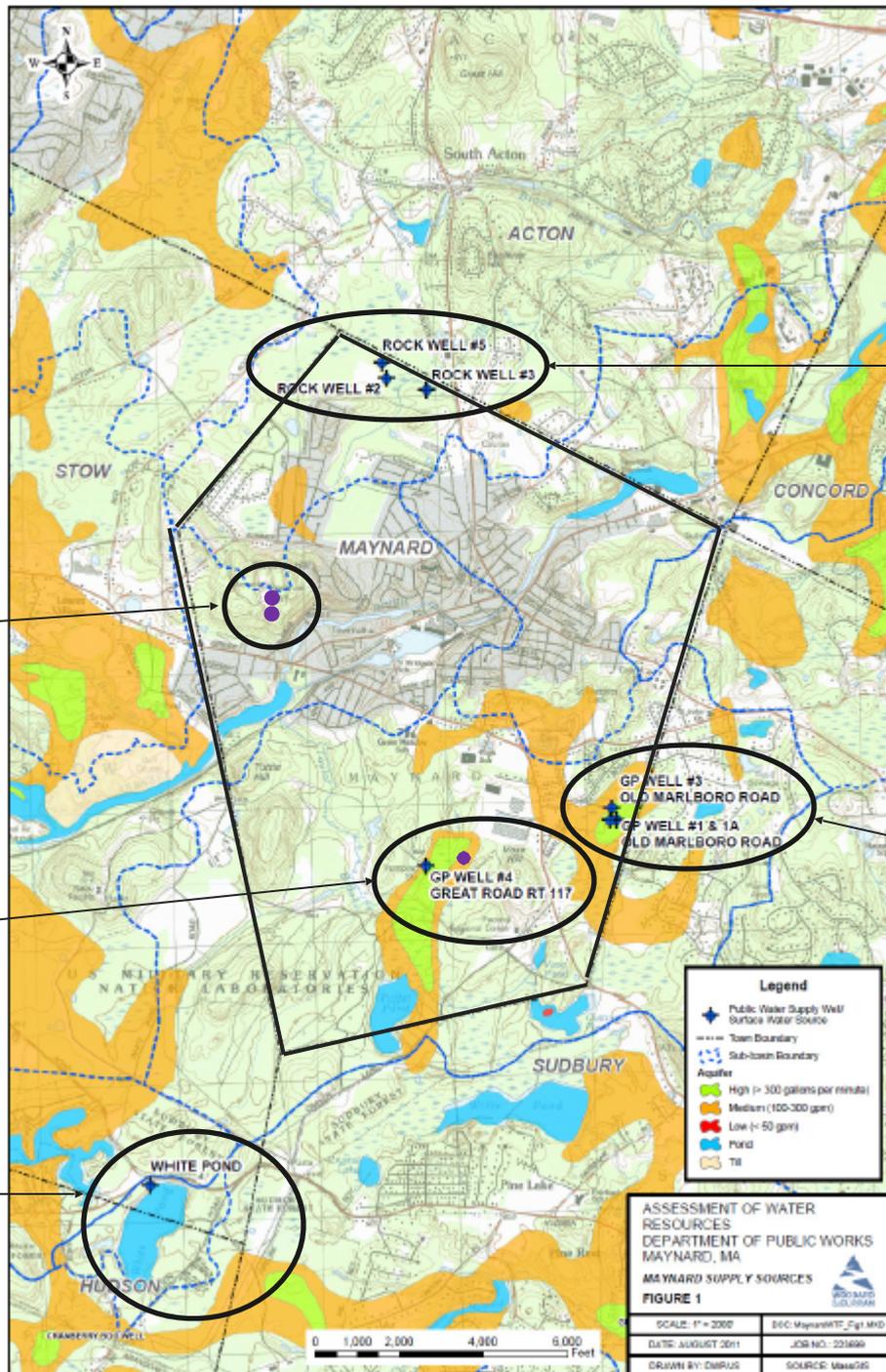
Future (Re)Development	Avg Day Demand	Notes
Mill & Main	0.06 MGD	Assumed 500 1-BR units
Beijing Royal School	0.07 MGD	Assumed 1,000 people
<i>Total</i>	<i>0.13 MGD</i>	

- Total Estimated (Re)Development Future Demands = 0.2 MGD
- Contingency for Unknown Development = 0.05 MGD (5% of total estimated future avg day demand)

Recommended Future Water Demands

- **Average Day Demand (ADD) = 0.99 MGD** (increase of 0.3 MGD from 2018)
 - This is a ~50% increase from current demands
 - For comparison, largest well source is 0.285 MGD @ OMR
- **Maximum Day Demand = 1.58 MGD** (increase of 0.54 MGD from 2018)
- 35% of planned future development demand (total 0.2 MGD) is accounted for in the future population projections (0.07 MGD)
- Mill & Main and BRS demands (0.13 MGD) are directly built into future demand estimates
- All known planned/potential development demands can be met with a future ADD of 0.99 MGD;
 - Only leaves an additional 0.1 MGD for future unknown growth
 - 0.1 MGD = 450 2-BR units

Existing Water Supply



Rockland Ave Filtration Plant:
Wells 5G, 6G, & 7G

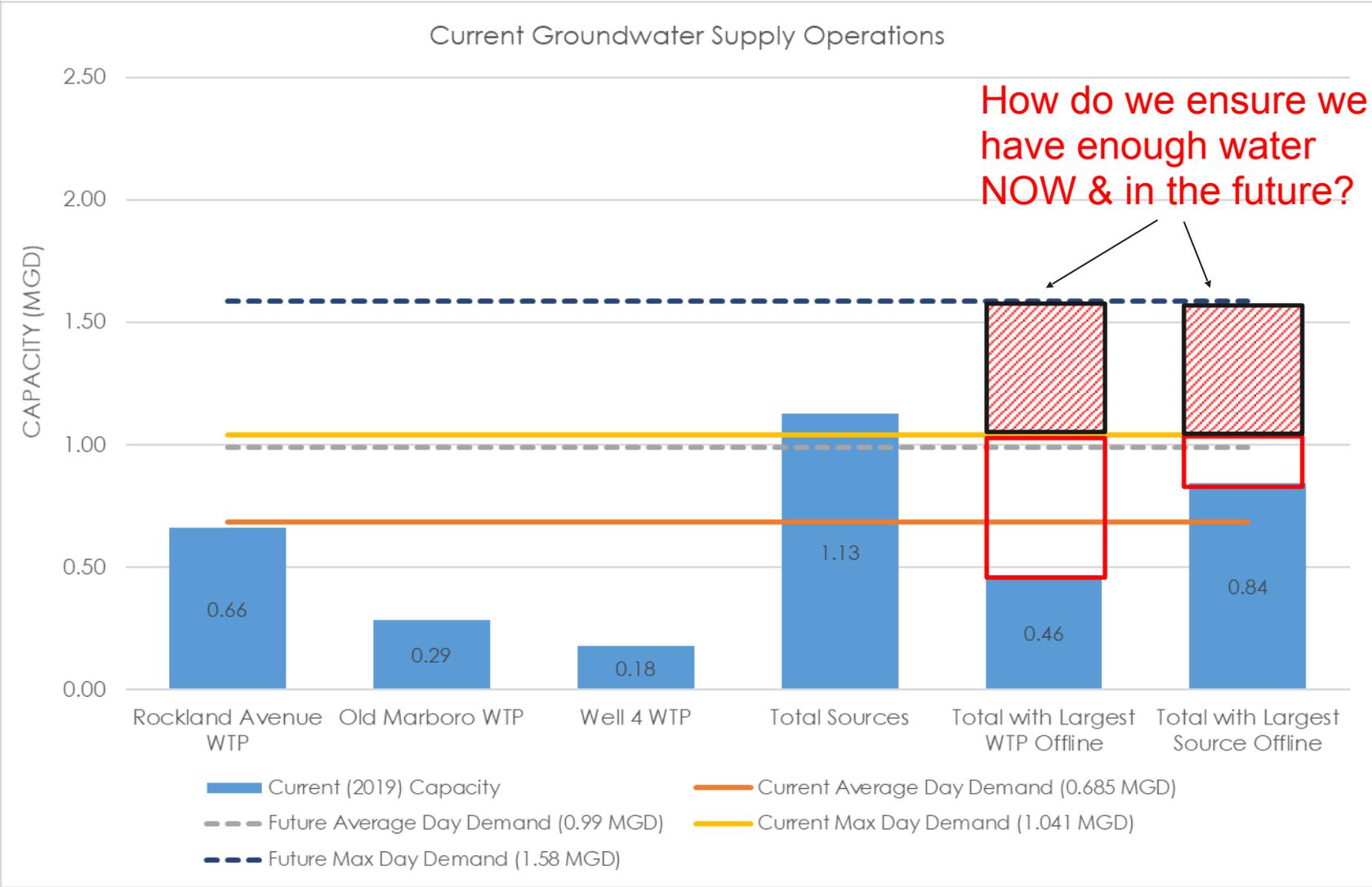
Old Marlboro Road Filtration Plant:
Wells 1G, 2G, & 3G (not in use)

Water Storage Tanks:
#1 (concrete) – 1.5MG
#2 (steel) – 3.1 MG

Well #4
Filtration Plant:
Well 4G
New Well #4A (future)

White Pond not currently used as a source water

Supply (existing) vs. Demand



How do we ensure we have enough water NOW & in the future?

 Current Demand Inadequacy

 Future Demand Inadequacy

Sources for Additional Capacity

- GROUNDWATER SOURCES:

- Well 4 new source: 0.35 MGD (est.) → in permitting process now
- Rockland Ave new well: 0.2 MGD (est.); potential – need to do testing to determine if feasible
- OMR Well 3G Re-activation: 0.5 MGD (est.) → requires additional treatment due to impaired water quality
- TOTAL POTENTIAL ADDITIONAL CAPACITY = 1.05 MGD

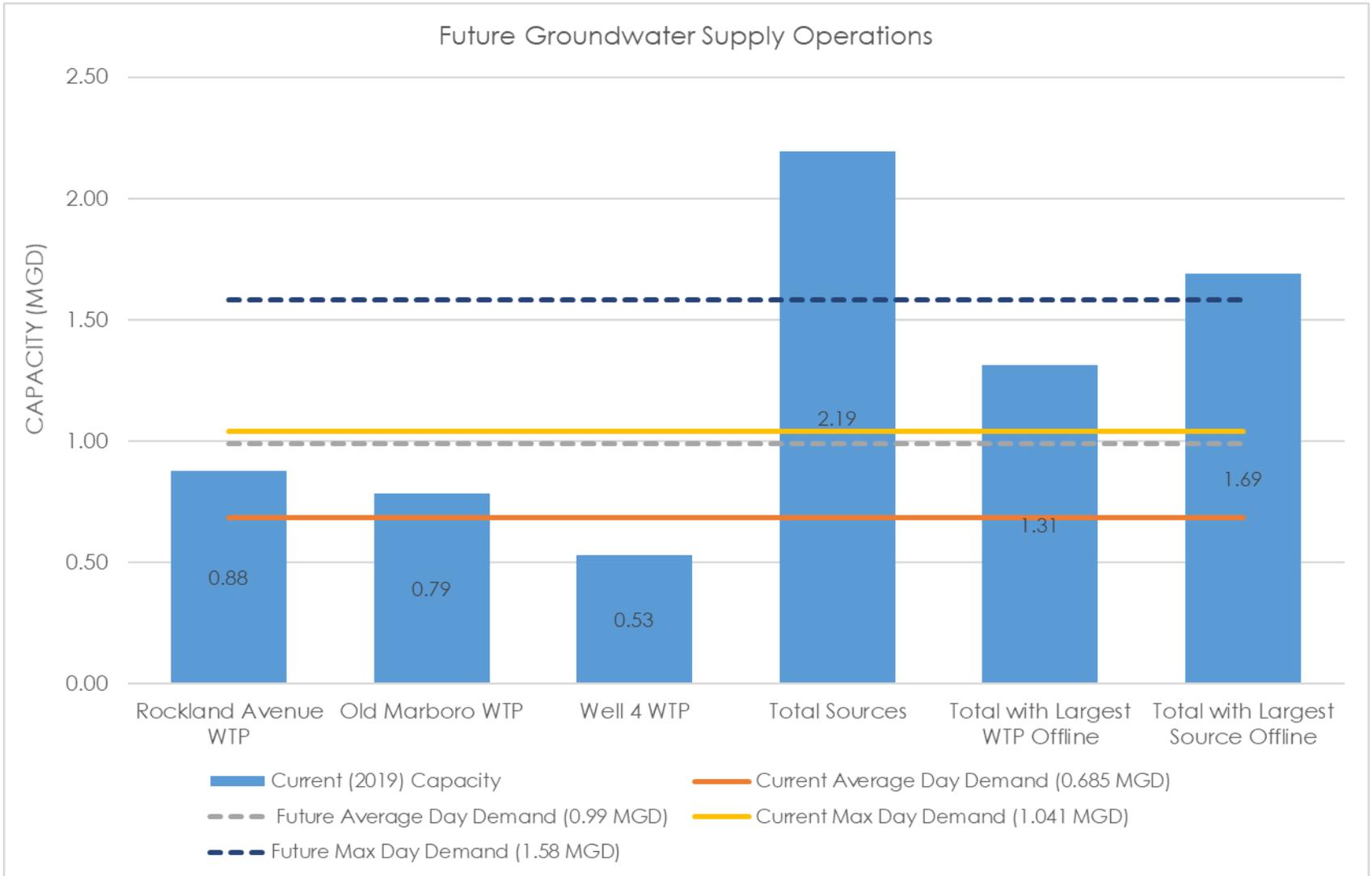
- SURFACE WATER SOURCES

- White Pond: potentially up to 1 MGD

How to Ensure Adequate Capacity NOW?

- Immediate Concerns:
 - **Unable to meet current max day demands with the largest source offline (OMR Well #1= 0.285 MGD)**
 - Unable to meet current average day demand with the largest WTP offline
- Recommended Short Term Solutions:
 - New Well 4A (0.35 MGD): Permitting is underway now, anticipated that these wells can be online by Fall 2021. Schedule dependent upon permitting & funding
 - New well source at Rockland Ave (0.22 MGD): if this is pursued immediately, permitting, design & construction could be finished by Fall 2022. Schedule dependent upon permitting & funding
 - Bring OMR Well #3 back online and implement major treatment improvements at Old Marlboro Road WTP (0.5 MGD): if begin immediately, permitting, design & construction could be finished by Winter 2023. Schedule dependent upon funding.

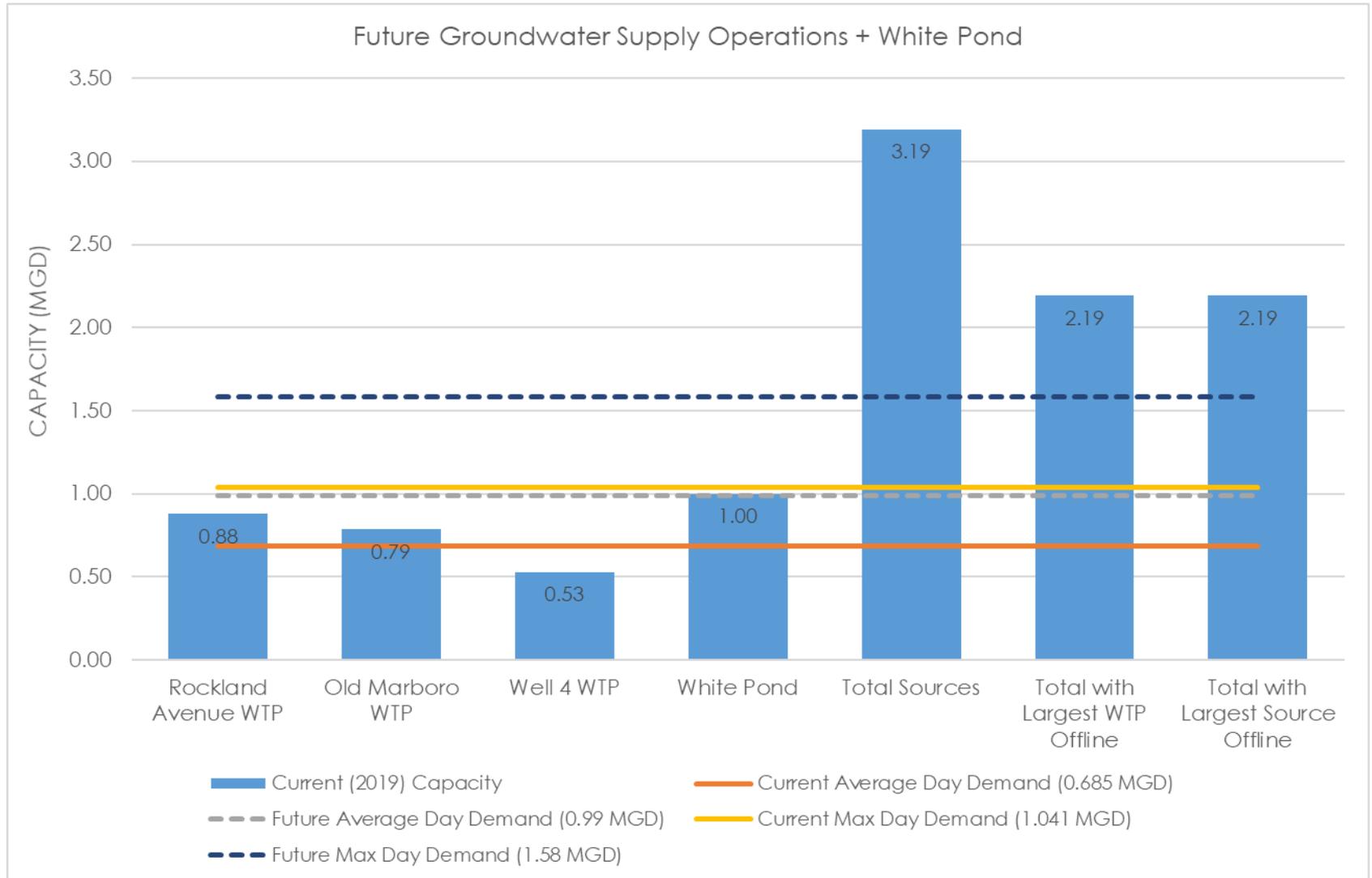
Recommended Short Term Solutions to Meet Existing Demands



How to Ensure Adequate Capacity in the Future?

- Long Term Concerns
 - Unable to meet future average or max day demands with the largest well source offline
 - Unknown future well performance; degradation of water quality/quantity over 25-year planning period is likely
 - Possible hindrance to Town's growth
- Recommended Long Term Solutions:
 - Use White Pond as additional supply source; estimated from beginning of permitting process through construction to be a 5 to 8 year project
 - Implement all short-term solutions immediately, while concurrently working towards White Pond

Recommended Long Term Solution to Meet Future Demands



White Pond Study – Draft Report Completed

Objectives:

1. Determine how the Town can best meet long term water demands (avg and max day demands) with a fully redundant water treatment system
2. Determine feasibility (engineering, cost, permitting) of using White Pond for source of drinking water
3. Determine feasibility (engineering, cost, permitting) and options for transmission main from White Pond to Town