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September 23, 2026

Mr. Curtis Slayton
Water & Sewer Superintendent
Town of Seabrook
PO Box 456
Seabrook, NH 03874

Re: Source Capacity Assessment

Dear Mr. Slayton:

This letter provides a summary of work completed by Weston & Sampson Engineers, Inc. (Weston & Sampson) to assess the existing source capacity of the Seabrook Water System. The goal of this assessment was to evaluate historical and current well yield capacities, historical and future population trends, and both past and future water demands to determine the system's existing capacity.

Existing Water System

The Town of Seabrook (the Town) is in Rockingham County, south of Hampton and north of Salisbury, MA. The Town has an area of 9.7 square miles and a year-round population of 8,401, according to the 2020 Census, and summer population estimated to be approximately 14,000. The original water system was constructed in 1954, with a significant expansion of the distribution system in the late 1980s and 1990s corresponding to the development of the Town's wastewater treatment plant. The existing water sources for the Town are comprised of five (5) gravel packed and seven (7) bedrocks wells. The two oldest wells that are currently active are gravel-packed well 1 and 2 and were constructed in 1956. The other gravel-packed wells were constructed in the 1970s and early 2000s. The Town constructed bedrock well 1 and 2 in 1982 and constructed the other bedrock wells in the following decades. The water treatment facility was built in 2011 and treats water from two (2) of the gravel packed wells and all of the bedrock wells.

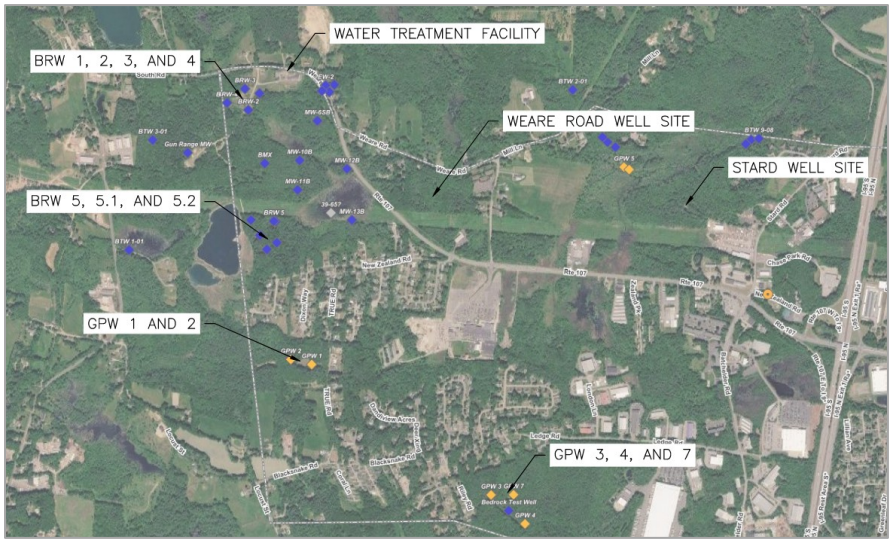


Figure 1: Map of Seabrook Sources

Water Supply

Existing Wells

Bedrock wells (BRW) 1, 2, 3 and 4 are located off Route 107 and are collectively referred to as the Route 107 Wellfield. Each are housed in below ground vaults that contain the wellhead, electrical controls, valves and an air vent. The raw water main from each well is directed to a common raw water pump station. The pump station houses meters and variable frequency drives (VFDs) for each of the four wells. The water then flows to the water treatment facility via a raw water transmission main. The Route 107 wells are sensitive to drought, which may be attributed to the small watershed, poorly recharging soils, and the low storage capacity of fractured bedrock aquifers as previously identified in the 2018 *Groundwater Management Plan* by AECOM.

BRW 5, 5.1, and 5.2 are located north of Old New Boston Road and are collectively referred to as the Old New Boston Road Wellfield. There are three wells at this site; however, they effectively comprise one source due to their proximity and influence between wells. Similar to the bedrock wells off Route 107, BRW 5 is located in a below ground concrete structure. BRW 5.1 and 5.2 are each located in their own single story buildings, which include a meter, raw water tap, and electrical controls for the VFDs. The raw water from the Old New Boston Road Wellfield then flows to the water treatment facility. The Old New Boston Road wells are sensitive to drought conditions, which may be due to a small water shed, poorly recharging soils, and the low storage capacity of fractured bedrock aquifers.

Gravel packed well (GPW) 1 is located off True Road and is one of three wells not treated by the water treatment facility. The well is located within the GPW 1 well house, where the raw water is treated using sodium hypochlorite (NaOCl) for disinfection before entering the distribution system. GPW 2 is also located off True Road and is housed in the lower level of a masonry block building. The raw water from GPW 2 is connected to the transmission main for the Old New Boston Road Wellfield to transfer to the water treatment facility. Similar to the wells previously discussed, the True Road wells are sensitive to droughts, which may be due to the small recharge area and competition with the Old New Boston Road wells

GPW 3, 4, and 7 are located in the Riley Wellfield off Ledge Road. GPW 7 is housed in a concrete vault and is pumped to the GPW 3 well pump house where GPW 3 is located. GPW 3 and 7 are treated with NaOCl before entering the distribution system. GPW 4 is located in a single story building with the raw water transferred to the water treatment facility for treatment. The Riley wells appear to be slightly sensitive to drought which is likely due to the large well-recharge area.

At the time of design and construction of the water treatment facility, GPW 1, 3, and 7 had the best water quality, including low levels of iron and manganese. As a result, these wells were not connected to the treatment facility and instead directly enter the water system after disinfection. This also provides the water system with redundancy, as not all of the wells are directed to the same centralized location prior to entering the distribution system.

Table 1: Existing Sources

Well	Location of Well(s)	Treatment Location
BRW 1, 2, 3 & 4	Route 107	Water Treatment Facility
BRW 5, 5.1 & 5.2	Old New Boston Road	Water Treatment Facility
GPW 1	True Road	GPW 1 Well Pump House
GPW 2	True Road	Water Treatment Facility
GPW 3 & 7	Ledge Road	GPW 3 Well Pump House
GPW 4	Ledge Road	Water Treatment Facility

New Sources

The Town is in the process of investigating two potential new groundwater well sites to provide additional supply to the system. The potential sources were identified in the 2018 *Potential Bedrock Sources of Supply Stard Road Wellfield* hydro-geological report by Geosphere. The first proposed well site is referred to as the Weare Well site and is located southwest of Weare Road and northeast of Route 107. The site has one (1) potential well and in the fall of 2025, a pumping test was completed for the Weare Well site. The result of the pumping test were sent to the New Hampshire Department of Environmental Services (DES) and is awaiting approval. The proposed flow rate for the well at the Weare site is 140 gpm. The permittable yield for the wellfield is not approved by DES at the time of writing the report.

The second well site is referred to as the Stard Well site (previously referred to as Fogg) and is located west of Stard Road and north of the powerline corridor. The Stard well site has two (2) potential wells. The pumping test was conducted at the end of July 2026, with a proposed combined flow rate of 510 gpm. The results of the pumping test will be sent to DES for review and approval once the evaluation and permit application is complete. Similar to the Weare well site, the permittable yield for the wellfield are not approved by DES at the time of writing the report. Based on the status of the Weare and Stard wells, it may be three to five years before the wells are placed into service.

Well Capacity

The following table describes the historical yields when the wells were initially put into service. The original well yields provided in Table 2 above are provided based on the conditions at the time of the original well pumping test. These pumping tests assess safe yield at the time the test is conducted and do not take into account the time variable health of the aquifer. As such, changes in capacity can be realized seasonally as well as over time due to land use changes, variability in recharge (drought), and mineral encrustation on well screens, gravel pack, or fractures feeding bedrock wells. As previously discussed, the Route 107 wells, Old New Boston Road wells, and True Road wells are sensitive to drought conditions, while the Riley wells were more resilient, as it is only slightly sensitive to drought conditions.

Table 2: Historical Yields

Well	Year of Construction	Depth (feet)	Diameter (inches)	Historical Yield (gpm)
BRW 1	1982	500	10	200
BRW 2	1982	500	10	320
BRW 3	1982	500	10	400
BRW 4	1984	500	10	200
BRW 5	1996	492	12	560
BRW 5.1	2010			175
BRW 5.2	2010			350
GPW 1	1956	54	24	450
GPW 2	1956	47	24	250
GPW 3	1970	99	24	300
GPW 4	1975	85	24	350
GPW 7	2002	127	24	300

In an effort to understand how the well yields have changed over time, Table 3 compares the original well yields provided in Table 2 to the current instantaneous maximum well yields, as reported in the 2026 Emergency Response Plan. It should be noted that some of the wells are not capable of pumping their maximum instantaneous rate due to mutual interference effects from nearby pumping wells. As such, an additional column in Table 3 entitled 'Operational Source Yield' is provided to better understand the system wide capacity. For example, BRW 5, 5.1, and 5.2 collectively have a maximum pumping rate of 500 gallons per minute (gpm). Similarly, the Town alternates the usage of GPW 3 and 7, so that the two wells are never operating at the same time. Therefore, the 'operational source yield' accounts for these limitations.

Table 3: Historical Well Yield and Existing Pump Capacity

Well	Historical Well Yield (gpm)	Instantaneous Max Well Yield (gpm) *as of 2026*	Operational Source Yield (gpm) *as of 2026*
BRW 1	200	175	175
BRW 2	320	200	200
BRW 3	400	250	250
BRW 4	200	100	100
BRW 5	560	175	500
BRW 5.1	175	175	
BRW 5.2	350	450	
GPW 1	450	350	350
GPW 2	250	250	250
GPW 3	300	200	200
GPW 7	300	200	
GPW 4	350	450	450

The Town operates the wells based on the 2018 *Groundwater Management Plan* by AECOM. The report evaluated the precipitation, wellfield pumping, and groundwater elevations for selected observation wells from July 2015 to June 2017. Based on the two-year program, the groundwater management plan was developed and recommends the Town operates the system based on the following parameters:

- Monitoring Pumpage – Monitor pumpage and compare to normal source yield
- Monitoring Low-Water Cutoffs – Adhere to the recommended low-water cutoffs in the individual pumping wells to maintain minimum height above transducers
- Monitor Indicator Wells – Monitor groundwater levels in three key indicator monitoring wells and institute voluntary or mandatory water-use restrictions based on associated trigger levels
- Reduce Pumpage – To manage aquifer depletion and avoid damaging individual wells during dry periods, reduce well field pumpage in the following order:
    - True Road Wells
    - Old New Boston Road Wells
    - Route 107 Wells
    - Riley Wells
- Monitor Precipitation – Monitor precipitation at the North Hampton weather station and compare to normal precipitation to predict drought conditions.

In addition to reviewing the Groundwater Management Plan, the daily pumping data of all twelve wells was analyzed for November 2023, January 2025, and February 2025. Based on three months of pumping data from 2023 and 2025, the wells were observed to utilize the operations as shown in Table 4. As previously mentioned, GPW 5, 5.1, and 5.2 are located on the same wellfield. In the observed period, all three wells were run every day; however, the yield from the wellfield did not exceed 500 gpm. Additionally, GPW 2 was offline for most of January and February of 2025 due to well cleaning and pump replacement, which is not representative of typical operations of the well.

Table 4: Operation of Wells

Well	Percent of Days Well was in Operation	Runtime (hours)		
		Minimum	*Maximum*	*Average*
BRW 1	100%	6.4	20.5	13.0
BRW 2	100%	6.4	18.8	13.0
BRW 3	100%	7.2	18.9	13.0
BRW 4	100%	6.3	18.9	13.0
BRW 5	100%	7.5	19.2	13.0
BRW 5.1	100%	7.7	20.2	13.0
BRW 5.2	100%	7.3	21.1	13.0
GPW 1	100%	7.5	19.3	12.6
GPW 2	35%	0.0	16.8	10.6
GPW 3	66%	0.0	24.0	11.9
GPW 7	39%	0.0	18.8	12.2
GPW 4	100%	5.2	19.3	13.0

All of the bedrock wells and GPW 4 average an approximate run time of 13 hours per day. GPW 1, 2, 3 and 7 were all operated slightly less than the other sources, averaging between 10.6 and 12.6 hours per day.

Summer operation of the wells for two years was also evaluated. The average daily runtime for the wells increased during the observed summer months to keep up with the high summer demand; however, longer runtimes corresponded with a reduction in the flow from the well, indicating a strain on the wells. Therefore, the runtimes observed in summer months are beyond the sustainable runtimes for the wells.

Due to operational limits of the wells, the sustainable runtime for the sources is assumed to be 12 to 13 hours if pumped at the instantaneous maximum yield to allow the wells to rest and prevent depletion of the groundwater levels. The *Recommended Standards for Water Works*, also known as the Ten States Standards, states the total developed groundwater source capacity shall assume the largest producing well or pump is out of service. Therefore, Seabrook source capacity will not include flow from its largest well, GPW 4. The *Groundwater Management Plan* also included an estimated pumping capacity during drought conditions based on the observed data from July 2015 to June 2017. The drought condition pumping capacity is not noted to have a redundant source available, therefore it is assumed that the flow from all wells is included.

Table 5: Capacity of Seabrook's Sources

Well	Instantaneous Max Well Yield (gpm) *as of 2026*	Operational Source Yield (gpm) *as of 2026*	Source Capacity (gpd) *as of 2026*
BRW 1	175	175	126,000 - 136,500
BRW 2	200	200	144,000 - 156,000
BRW 3	250	250	180,000 - 195,000
BRW 4	100	100	72,000 - 78,000
BRW 5	175	500	360,000 - 390,000
BRW 5.1	175		
BRW 5.2	450		
GPW 1	350	350	252,000 - 273,000
GPW 2	250	250	180,000 - 195,000
GPW 3	200	200	144,000 - 156,000
GPW 7	200		
GPW 4	450	450	324,000 - 351,000
		Total System Capacity	*1,782,000 - 1,930,500*
		Total System Capacity, excluding GPW 4	***1,458,000 - 1,579,500***
		Total System Capacity during drought conditions*	***700,000 - 1,300,000***

* Based on system capacity during drought conditions provided in 2018 Groundwater Management Plant by AECOM, does not note a redundant source

Based on the status of Seabrook's sources, the Town has a capacity of approximately 1.46 to 1.58 million gallons a day. However, this capacity may not be attainable for the Town to achieve while adhering to the operational parameters set in the *Groundwater Management Plan*. Guidelines such as the water level above the transducer and the trigger levels of the indicator wells have the potential to further reduce the system's capacity during drought conditions and periods of sustained high demand. Drought monitoring show Rockingham County has been in moderate or higher drought in eight of the last ten years. During drought conditions, the Town has a capacity of 0.7 to 1.3 mgd based on these considerations and past investigation efforts conducted on behalf of the Town.

Town Population and Development

Historical Population

Population growth within the Town reached its highest rate between 1970 and 1980 according to the decennial Federal Census, with the year-round population increasing by over 93% in the decade. While the growth rate has reduced considerably between 1990 and 2010, the rate of population growth was still between 9 – 20% for these census periods. Between the 2010 and 2020 census, the Town's year-round population decreased approximately 3%, the first time the Town has had a reduction in population over the 10-year census period.

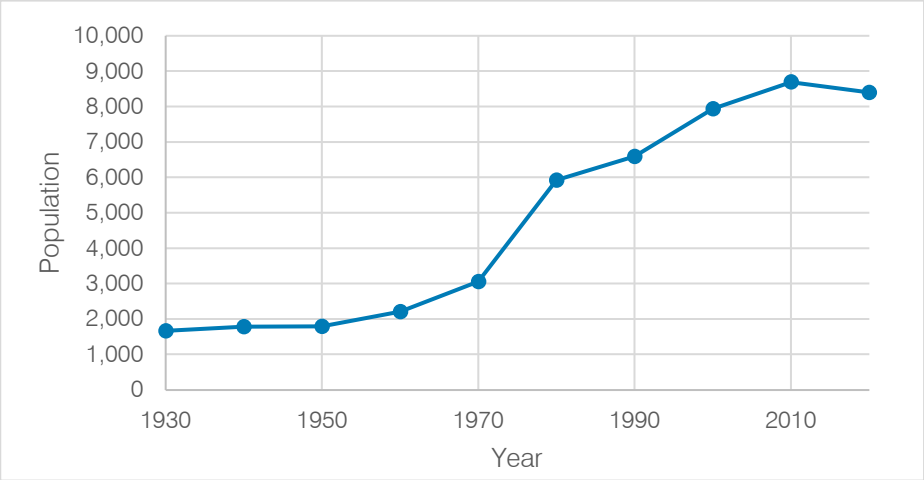


Figure 2: Seabrook Historical Year-Round Population

Additionally, the town experiences a seasonal fluctuation in population. The Environmental Protection Agency (EPA) and DES regulate the town as having a population of 14,000 which is reflective of the anticipated summer population.

New Hampshire Office of Energy Planning Projected Population

Future population estimates for the Town are prepared in 5-year intervals by the New Hampshire Office of Energy and Planning (NHOEP). The NHOEP develops estimates by forecasting the total population for each county in New Hampshire. The analysis then takes each town/city's share of the county population in the most recent census and compares it to the previous census to determine a trend in the Town's population over time. The table below presents the data from the 2010 and 2020 census as well as the NHOEP population estimates through 2050, which is known as the year-round population. To estimate the projected summer population, the rate of population growth projected for the year-round population was applied to the current estimated summer population.

Table 6: NHOEP Population Estimates

Year	Year-Round Population	Summer Population
2010*	8,693	14,000
2020*	8,401	14,000
2025	8,753	14,000
2030	9,059	15,045
2035	9,274	15,402
2040	9,356	15,538
2045	9,349	15,526
2050	9,291	15,430

*Official U.S. Census results

The year-round population estimate for 2025 according to the US Census is 8,430, which is lower than the projected year-round population from the NHOEP Population projection from September 2022.

Existing Planned Projects

In addition to the projected population growth that is estimated by the NHOEP, there are also various projects that have been reviewed and approved by the Town's planning board, some of which are under construction at the time of writing this report. Below is a list of the projects that have been presented to and approved by the planning board since 2024 that are anticipated to have a significant proposed water demand and impact to the system's overall capacity.

- Seabrook truck center, 8,695 square feet
- Walmart, 2,247 square feet building expansion
- Tobey, car sales, 2,100 square foot building expansion
- Cardinal LLC, 9,009 square feet
- Chick-fil-a, 5,200 square feet
- GEN 4, 5 lot subdivision
- The Brook, 24,000 square feet addition
- Aldis, 5,200 square feet (already built and in use)
- F.W. Webb, 6,100 square feet
- Cardinal LLC, 14,000 square feet
- Muraco, dog daycare, existing building
- DECM LLC, 10 lot subdivision
- Chipotle, 2,374 square feet
- Lenny Lobster Shack, existing building undergoing renovations
- Blue Heron, shrimp farming, existing building
- Four Seasons LLC, 136 room hotel with pool, 20,200 square feet
- Elite solutions, at home cleaning business
- Affordable Tech, 884 square foot addition
- Richard Adams Way, multi-lot subdivision, under construction
- Parke Place Village Limited Partnership and Forest Properties Management, 10 unit multifamily*

*going to planning board, not approved at the time of writing this report

Water System Demands

Historical Demand

The demand data from 2022 to 2024 was reviewed and analyzed. In the winter months, demand was typically around 885,000 - 960,000 gallons per day. System demand increased during the summer months and typically averaged approximately 1,187,000 - 1,243,000 gallons per day.

Due to the seasonal increase in population, the summer months were evaluated for average and maximum day demands. System maximum day demands were found to have an additional 1.6 peaking factor on the summer average day demand over this time period at approximately 1.97 million gallons per day (MGD). The summer average and maximum daily water system demands each year for the Town are shown in table 7.

Table 7: Water System Seasonal Summer Demands

Year	Average Day Demand (mgd)	Maximum Day Demand (mgd)
2022	1.243	2.396
2023	1.187	1.790
2024	1.204	1.725
3-year average 2022 – 2024	1.212	1.970

The demand data shown in table 7 was analyzed to determine trends in summer water demand and to develop per-capita demands. A large portion of demand for the system is due to commercial users and the powerplant, which is estimated in the summer to be a combined average day demand of 457,000 gallons and approximately 731,000 for maximum day demand.

The Seabrook Station Nuclear Power Plant is the town's singular largest water user. The powerplant contains critical infrastructure, that would have catastrophic consequences if there was a failure. Historically, the powerplant has large withdrawals, that may be unexpected to the water system.

Starting June 1, 2026, the water system imposed a mandatory water use curtailment which prohibited the use of municipal water for secondary or non-essential outdoor purposes. In July 2026, the Town was experiencing high demand during a prolonged drought. The Seabrook Station Nuclear Power Plant was experiencing an issue that required approximately 160k gallons of additional flow per day for numerous weeks, which further increased the demand on the system. Despite the Town's effort to conserve water, the water system had to operate all wells for over three days non-stop to meet the systems demand, which is significantly more than typical operations. The wells started on the morning of Friday, July 31, and did not shut off until Monday, August 3. On Saturday and Sunday, the system experienced a demand of approximately 1.5 million gallons and 1.6 million gallons, respectively.

Due to the drought at the time of this event, the wells had a lower yield; however, the system was able to provide sufficient water during this period by operating the wells past the recommended parameters and using all available wells, leaving the system with no redundant sources. Reliance on this approach to meet peak demand events is not sustainable and increases the risk of supply shortages or service disruptions if a well becomes unavailable due to emergency conditions or required and planned maintenance. Additionally, planned and future development in Town will continue to increase the water demand.

The per capita demand was calculated based on the residential water usage in the Town, excluding the powerplant and commercial users, which is shown below in table 8.

Table 8: Summer Average Per-Capita Water Demand

Year	Population Served	Summer Average Day Demand (mgd)	Residential Average Day Demand (gpd)	Average Day per Capita Demand (gpcd)
2022	14,000*	1.243	786,000	56.2
2023	14,000*	1.187	730,000	52.2
2024	14,000*	1.204	748,000	53.4
3-year average 2022 – 2024	14,000*	1.212	755,000	53.9

*DES and the EPA estimate the Town's summer population to 14,000

The summer average day per-capita usage (shown in gallons per-capita per day, gpcd) has remained relatively consistent within the three-year span. Therefore, for the purpose of estimating future water demands, the 3-year summer average of the per capita demand will be used (53.9 gpcd average day).

Demand Based on NHOEP Population Projection

Future summer average and maximum daily demands are projected based upon the expected population dynamics of the Town as well as the expected trends or changes, in per capita water use by the system. Water demand projections through the year 2050 were determined using the summer average per-capita water as shown in table 8, and the projected population served.

Table 9: Projected Future Summer Demand for Projected Population

Year	Population Served	Projected Average Day Demand (mgd)	Projected Maximum Day Demand (mgd)
2025	14,000	1.212	1.970
2030	15,045	1.268	2.063
2035	15,402	1.287	2.094
2040	15,538	1.295	2.106
2045	15,526	1.294	2.105
2050	15,430	1.289	2.097

Additional Planned Development Demand

In addition to the increased water demand as a result of the projected population growth, it is anticipated that planned development within the Town will also affect the water system. As previously discussed, numerous projects have been approved in the past three-year span. The commercial projects approved include a 136-room hotel with a pool and 24,000 square foot addition to the casino on Route 107. Additionally, approximately 39 new dwellings were approved in the three-year span. To estimate the anticipated demand for each case, section Env-Dw 405.11 was referenced from the DES Env-Dw 400, Public Water System Classification and Design. Based on the unit design flows provided in table 1008-1, the increase in demand based on the observed rate of project approval was calculated. The overall increase in average and maximum day demand is estimated to be 15,200 gallons per day per year and 24,200 gallons per day per year, respectively.

Future Demand for Water System

Table 10 displays the projected future demand of the water system based on the demand increase from the NHOEP population projection and the rate of approval from the planning board.

Table 10: Future Summer Demand for Water System

Year	Population Served	Projected Average Day Demand (mgd)	Projected Maximum Day Demand (mgd)
2025	14,000	1.212	1.970
2030	15,045	1.344	2.184
2035	15,402	1.439	2.336
2040	15,538	1.523	2.469
2045	15,526	1.598	2.589
2050	15,430	1.669	2.702

System Capacity Assessment

As previously discussed, Seabrook has a source capacity of 1.46 to 1.58 mgd and capacity during drought conditions of 0.7 to 1.3 mgd. The Town has a summer average day demand of 1.212 mgd and a maximum day demand of 1.970 mgd. The system can serve summer average day demand conditions with an available redundant source. However, during current maximum day demand events, the system frequently exceeds estimated system capacity even with all sources in operation. In the next 25 years, it is estimated the average day demand will be approximately 1.63 million gallons per day, with a maximum day demand of approximately 2.62 million gallons per day. The future summer average day demand outlined in table 10 will exceed the estimated sustainable capacity of the system. Similar to current conditions, the projected maximum day demands are above the capacity of the system, as shown in figure 3 below. Additionally, the system will further exceed the system's capacity during summer months if it is during drought conditions when the capacity of the system is lower.

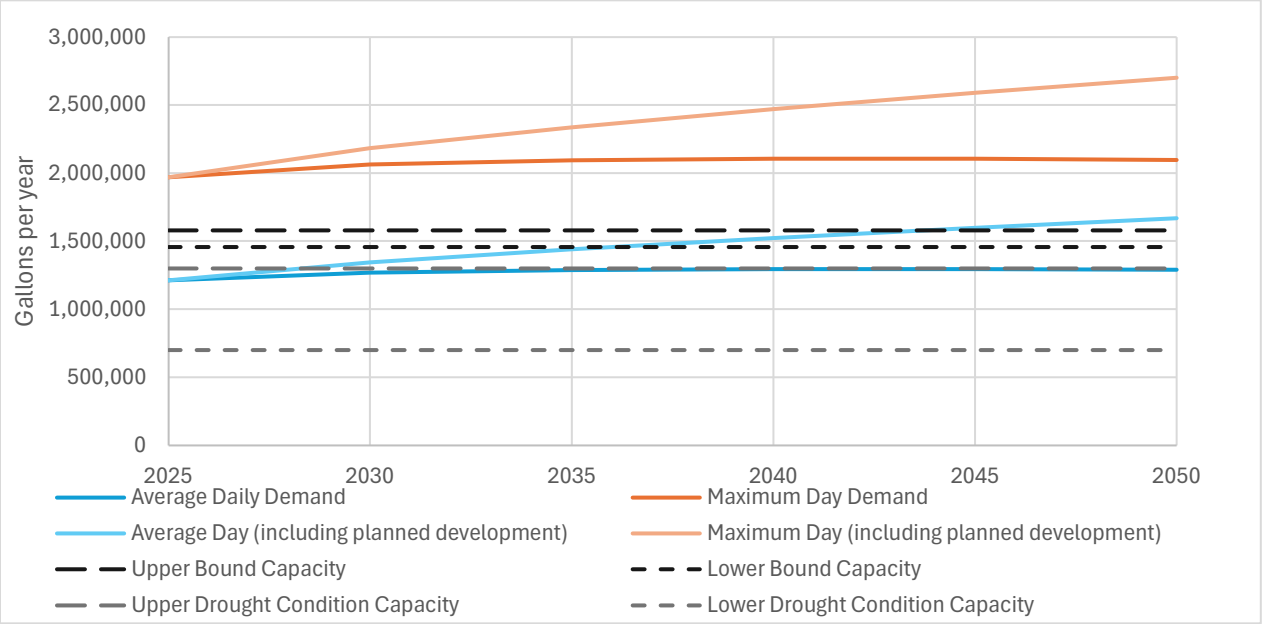


Figure 3: Projected Summer Demand

As previously discussed, the Town serves the Seabrook Station Nuclear Powerplant, which is the water system's largest water user and has critical infrastructure that always requires sufficient water flow. The amount of water required at the power plant may vary significantly depending on operations, which can largely affect the demand on the entire water system. This may occur during periods of drought or peak summer demand, and the system needs to be capable of accommodating the increased demand despite these conditions. Additionally, three of the four wellfields are sensitive to drought conditions, and the capacity of the system is reduced during these periods. Drought conditions generally occur during the summer months when demand is at its highest.

Taking into consideration the existing sources, recent environmental conditions, and the demand for the system, the Town is exceeding the source capacity for the water system to meet maximum day demand conditions and sustained periods of high usage. It is also projected that within the next 25 years, the Town's summer average day demand will exceed the source capacity of the system. Additionally, the Town has been unable to consistently maintain the recommended level of system redundancy during periods of high demand, as the system cannot reliably meet high demand with its largest water source out of service. The water system has also needed to operate the wells past the recommended parameters established by past investigations which increases the risk of damage to the wells that may permanently diminish their yields.

It is recommended that the Town continue to develop the Weare and Stard wells and explore other water sources to meet the water system's demand and provide redundancy and flexibility within the system. In addition, the Town should evaluate the impact that proposed projects may have on water system demand prior to planning approval to minimize further stress on the well sources. As previously examined in figure 3, the water system will not be able to provide sufficient water if anticipated population growth and planned development within the town continues at its current and projected rate.

Sincerely,
WESTON & SAMPSON ENGINEERS, INC.



Samuel H. Kenney, P.E.
Associate/Team Leader

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