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Meadows

REPORT ON CAPACITY OF WELLS VS WATER DEMAND  
AND WATER PLANT CAPACITY  
AT THE  
MARINE CORPS AIR FACILITY, NEW RIVER  
JACKSONVILLE, NORTH CAROLINA

AUGUST 1968

UTILITIES DIVISION  
ATLANTIC DIVISION, NAVAL FACILITIES ENGINEERING COMMAND  
NORFOLK, VIRGINIA

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Existing Facilities

Based on a 16-hour pumping day, theoretically the existing seven wells will produce approximately 905,000 gallons of water per day. However, due to the fact that all wells deliver to a common treatment plant influent line and that the distance between the treatment plant and each well varies considerably in some cases, the wells cannot produce at their established pumping rate. The number and location of the wells in service govern the volume of water which is pumped to the treatment plant.

With normal plant operation, the raw water influent line discharges to a Graver Reactivator. This process unit has a capacity of 980 gpm.

The two installed pressure filters were designed to produce not less than 500 gpm each at a rate not to exceed 3 gpm/sq. ft.

Storage capacity consists of two concrete, ground-level reservoirs, each having a capacity of 200,000 gallons and one 300,000 gallon elevated storage tank. A 300,000 gallon concrete, ground-level reservoir is located beside Building 2003, the booster and fire pumping station for the MOQ area. This pumping station is not used; however, the pumps are checked regularly.

Facilities Under Construction

Contract NBy-88179 provides for two new wells and a 350,000 gallon elevated tank.

Water Usage and Demand

The average volume of well water pumped per day to the water treatment plant during the period of October 1966 thru September 1967 approximated 635,000 gallons. The greatest volume of raw water used in one day during this period was 872,000 gallons.

Current water data are given below.

Month	Total Pumped (gals.)	RAW WATER		
		Maximum day (gals.)	Minimum day (gals.)	Average day (gals.)
Oct. ' 67	17,369,000	724,000	432,000	560,000
Nov. ' 67	15,522,000	671,000	456,000	517,000
Dec. ' 67	15,761,000	590,000	432,000	508,000
Jan. ' 68	16,582,000	636,000	465,000	535,000
Feb. ' 68	16,133,000	671,000	457,000	556,000
Mar. ' 68	17,901,000	699,000	458,000	577,000
Apr. ' 68	19,059,000	923,000	548,000	635,000
May ' 68	20,441,000	765,000	595,000	659,000
Jun. ' 68	21,072,000	832,000	616,000	670,000

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POTABLE WATER

Month	Total Pumped (gals.)	Maximum day (gals.)	Minimum day (gals.)	Average day (gals.)
Oct. ' 67	14,942,000	576,000	383,000	432,000
Nov. ' 67	13,402,000	538,000	366,000	496,000
Dec. ' 67	13,953,000	565,000	357,000	450,000
Jan. ' 68	14,863,000	545,000	406,000	479,000
Feb. ' 68	14,222,000	565,000	381,000	490,000
Mar. ' 68	14,756,000	554,000	310,000	476,000
Apr. ' 68	15,115,000	711,000	414,000	504,000
May ' 68	17,410,000	682,000	431,000	562,000
Jun. ' 68	17,331,000	755,000	467,000	578,000

During the first three and one-half weeks of July, 1968 daily pumping varied from 599,000 to 896,000 gpd.

Well Capacity

905,000 gpd - existing well capacity (16 hrs. well operation/day)

288,000 gpd - capacity of two new wells - contract NBy-88179 (16 hrs. well operation/day)

1,193,000 gpd - total well capacity when contract NBy-88179 is completed, provided necessary raw water lines to water treatment plant are provided.

Treatment Plant Capacity

980 gpm - capacity of Reactivator at Water Treatment Plant

80 gpm - water usage in treatment process

900 gpm - capacity of treatment plant with no outage time

900 gpm - 18 gpm (2% filter outage time) = 882 gpm plant export capacity

882 gpm x 960 min. (16 hour plant operation) = 846,720 gpd export capacity

882 gpm x 1440 min. (24 hour plant operation) = 1,270,080 gpd export capacity

Conclusions:

1. It will be necessary to operate the water treatment plant 24 hours per day to meet increasing water demand.
2. The existing plant capacity does not allow for a growth factor.
3. The existing plant will not meet design criteria on page 5-9-3 of Design Manual, Civil Engineering, NAVFAC DM-5 when industrial uses are considered even when a growth factor is not used.
4. Any increase in personnel and/or increase in industrial uses will create serious water deficiencies.
5. For every 3 wells required for production, 4 wells should be provided to permit adequate outage time for repair, etc.

