

Water Supply Plan
City of Ocean City
August 2009

Overview

Potable water in Ocean City is provided by 11 wells drawing from the Lower Kirkwood – Cohansey Aquifer system (the Atlantic City 800 foot Sands Aquifer). The capacity of these wells is 11.4 million gallons per day (MGD) and a firm capacity of 9.792 MGD.

The water serves dwellings and businesses and is also used to water landscaping during the naturally hot, dry summer. The USGS has done an extensive study of Cape May County for purposes of determining the status of the potable ground water (see <http://water.usgs.gov/pubs/wri/wri014246/pdf/wrir01-4246.pdf>, Fig. 65 and following)

Water enters the Atlantic City 800-foot sands aquifer in Cumberland and western Atlantic counties. Prior to development the water flowed from west to east in the aquifer, discharging into the Atlantic Ocean and Delaware Bay under enough pressure that the saltwater did not enter the aquifer.

In 1990, when the study was done, the water was being withdrawn by wells in Atlantic and Cape May counties at a faster rate than it is being replaced from the west. That allows the saltwater to flow radially into the aquifer to fill the vacuum. The lines of the 250mg/L chloride concentration and the 50mg/L sodium concentration, which are the limits of potable water, have moved inland, as measured in test wells in various locations. However, the USGS has concluded that the rate of advance of salt water intrusion is such that the Ocean City wells will remain potable for the next century at least, given the current rate of withdrawal.

The locations of wells and the rate of withdrawal are all key to the rate of movement of the saltwater lines. The locations of wells in Ocean City can be viewed at www.state.nj.us/dep/gis/newmapping.htm, click on I-Map NJ DEP and then launch I-MapNJ DEP. The layers are listed on the left side and the key is on the right. Click on Public Community Water Supply Wells to see the locations.

The water supplied by New Jersey American Water Company is considered low in susceptibility for pathogens, nutrients, pesticides, volatile organic compounds, inorganics, radionuclides, and radon. It is considered high in susceptibility for disinfection byproduct precursors; however, the system does not use surface water to which this category of contaminants refers. Information on the water quality may be found at www.nj.gov/dep/swap/creport.htm. New Jersey American Water Company's report on the water in the Ocean City system for 2007 may be found [http: www.amwater.com/files/NJ-CapeMay2007web.pdf](http://www.amwater.com/files/NJ-CapeMay2007web.pdf).

Summary of Current and Future Capacity and Usage

Current Population (2005 est*)	Current Potable Water Demand	Future Population (2020 est*)	Future Expected Potable Water Usage
15,330	6.709 MGD peak	17,417 (12% increase)	7.514 MGD

*South Jersey Transportation Planning Organization
(MGD = million gallons per day; MGM million gallons per month)

Current peak demand is 6.709

Future peak demand is expected to be 7.514 based on 12% population increase.

Capacity of current system: 9.792 MGD

Current wells and aquifers are expected to provide potable water for the next century at least. (USGS).

Actions are recommended in the Master Plan that will reduce the usage of potable water. Examples include encouraging drought tolerant and native vegetation; as well as recommending USGBC standards for LEED certified buildings, which include water conservation measures in new construction and rehabilitation of structures.

Conclusion

The current supply and system capacity that provide potable water to the City of Ocean City is sufficient to handle current and future needs.

Attachment

New Jersey American Water Company capacity letter



New Jersey American Water P 856-824-2582
213 Carriage Lane F 856-764-4331
Delran, NJ 08075
vincent.monaco@amwater.com

April 20, 2009

Elizabeth A. Terenik
Acting Director of Planning and Engineering
City of Ocean City
115 East 12th Street
Ocean City, New Jersey 08226

Re: Ocean City Plan Endorsement - Information Request

Dear Ms. Terenik:

Your recent request to Dave Gelona of our Atlantic/Cape May District has been referred to the Engineering Department for a response.

New Jersey American Water (NJAW) owns and operates the public water system and the public wastewater collection system serving Ocean City.

The water system comprises of a distribution system, storage facilities and 11 wells drawing from the Lower Kirkwood - Cohansey Aquifer System (the Atlantic City 800 foot Sands Aquifer). These wells have an overall capacity of 11.4 MGD and a firm capacity 9.36 MGD. The water allocation monthly and annual diversion limits are 294.5 MGM and 1,474 MGY, respectively. The current water supply surpluses for the Ocean City water system are as follows:

Firm Capacity:	2.54 MGD (million gallons per day)
Water Allocation	
Monthly	84.8 MGM (million gallons per month)
Yearly	363.7 MGY (million gallons per year)

The wastewater system comprises of a sewer collection system with 8 sewer pump stations. The collected sewage is sent to the Cape May County Municipal Utilities Authority (CMCMUA). We have no restrictions within our wastewater collection system. We have no information on the available treatment capacity within CMCMUA.

If you have any questions or would like to discuss any other planning issues, please feel free to contact Ken Seelig at (856) 824-2564 or call me at (856) 824-2582.

Sincerely,

Vincent Monaco, P.E.
Engineering Manager – Asset Planning

c: Kevin Brown
Ken Seelig
Dave Gelona

NJ AMERICAN - OCEAN CITY

PWSID: 0508001
County: Cape May

Last Updated: 03/12/08 / 4/1/09 NJAW rev.

► Glossary of Terms Listed Below

Water Supply Firm Capacity: 9.792 MGD

Available Water Supply Limits

	Allocation	Contract	Total
Monthly Limit	294.500 MGM	N/A MGM	294.500 MGM
Yearly Limit	1474.000 MGY	N/A MGY	1474.000 MGY

Water Demand

	Current Peak	Date	Committed Peak	Total Peak
Daily Demand	6.709 MGD	07/2007	0.044 MGD	6.753 MGD
Monthly Demand	207.966 MGM	07/2007	0.682 MGM	208.648 MGM
				209.69MGM
Yearly Demand	1096.815 MGY	2007	5.353 MGY	1102.168 MGY
				1,110.3 MGY

Water Supply Deficit or Surplus

Firm Capacity	Water Allocation Permit
3.039 MGD / 2.54 MGD	85.852 MGM / 84.8 MGM
	371.832 MGY / 363.7 MGY

Note: Negative values (a deficit) indicate a shortfall in firm capacity and/or diversion privileges or available supplies through bulk purchase agreements.

Bureau of Water System and Well Permitting Comments:
Updated with Permit # WCP080001 Marmora Shopping Center

Bureau of Water Allocation Comments:
no comments provided

Source: NJDEP, Division of Water Supply website as of 4/17/09 with last update on 3/12/08.

NJAW editing is highlighted to reflect current conditions as of 4/1/09.

Firm Capacity and Water Allocation Analysis

Each applicant for a permit to construct or modify a public community water system must demonstrate that the proposed water system improvement, extension or connection will not exceed firm capacity, as defined below, or the water diversion limits contained in an applicable water allocation permit. An outline of the methodology used to calculate this information also appears below.

"Firm Capacity" means adequate pumping equipment and/or treatment capacity (excluding coagulation, flocculation, and sedimentation) to meet peak daily demand, as defined below, when the largest pumping station or treatment unit is out of service.

"Peak daily demand" means:

- i. For modification to or extension of an existing water system, the average daily demand as recorded in the peak month of the prior five years, plus an estimation of the anticipated peak daily water demand calculated as follows:
 - Residential – Average daily demand according to DCA's Residential Site Improvement Standards (RSIS), N.J.A.C. 5:21-5.2(d);
 - Non-residential – Average daily demand according to N.J.A.C. 7:10-12.6(b), Table 1;
 - The sum of the above multiplied by a peaking factor of three (3)
- ii. For a proposed new water system, an estimation of the anticipated peak daily water demand calculated for residential and non-residential development, per the above.

The Firm Capacity and Water Allocation Analysis consists of two (2) components:

1. Firm Capacity: The proposed water system has adequate firm capacity to meet all of the following:
 - Existing peak daily demand
 - Anticipated peak daily demand from both of the following –
 - Previously approved but not yet constructed DEP-permitted water main extensions or connections; and
 - Non DEP-permit water main extensions/connections committed to, but not yet completed by, the water supplier
 - Anticipated peak daily demand from the subject application.
2. Water Allocation: The applicant possesses a valid water allocation permit with sufficient monthly and annual diversion limits and/or bulk purchase agreements to meet existing and estimated demand, as follows:
 - Monthly – Average daily demand calculated for residential and non-residential development as above, multiplied by a peaking factor of 1.5, and then multiplied by 31 (days/month)
 - Annual – Average daily demand calculated for residential and non-residential development as above, multiplied by 365 (days/year)
 - The estimated peak monthly and annual demand shall be added to the respective, existing demand figures and then compared to the applicable water allocation permit limits.

Firm Capacity and Water Allocation Analysis Example

1. Calculating System/Source Firm Capacity:

System Plant	Well #	Capacity (Q)/mgd
1	1	2.0
2	2	2.0
3	3	2.0
4	4	2.4

Total System Capacity = 8.4 MGD
 Firm Capacity = 6.0 MGD

2. Calculating Projected System Water Demand:

Recorded Peak Demand for Previous Five Years					
	1998	1999	2000	2001	2002
Jan	74.4	71.3	71.3	77.5	77.5
Feb	70.0	67.2	72.8	75.6	64.4
Mar	89.9	96.1	93.0	89.9	93.0
Apr	102.0	99.0	102.0	99.0	105.0
May	120.9	127.1	124.0	136.4	124.0
Jun	129.0	132.0	126.0	141.0	135.0
Jul	145.7	148.8	136.4	142.6	155.0
Aug	142.6	151.9	147.7	139.5	151.9
Sep	132.0	132.0	145.1	132.0	135.0
Oct	117.8	111.6	114.7	114.7	108.5
Nov	96.0	96.0	105.0	102.0	90.0
Dec	74.4	77.5	83.7	80.6	80.6
Peak (MGD)	145.7	151.9	147.7	142.6	155.0
Total (MGY)	1,294.7	1,310.5	1,321.7	1,330.8	1,319.9

Outstanding Demand		
Project Name	Avg. Demand (MGD)	Peak Demand (MGD)
Cape Woods Campground	0.025	0.075
Briar Cliff Mews	0.040	0.120
5-SFD subdivision	0.0018	0.0054
Total Demand	0.0668	0.2004

Current Project Demand		
Project Name	Avg. Demand (MGD)	Peak Demand (MGD)
ABC Daycare	0.015	0.045

Existing Peak Demand (mgd) = 155.0/31 days = 5.000
 Outstanding Peak Demand (mgd) = 0.2004
 Estimated Project Peak Demand (mgd) = 0.045
 Total Existing/Projected Peak Demand = 5.2454 MGD

Conclusion: Existing/Estimated Peak Demand (5.2454 MGD) < 6.0 MGD (firm capacity)

3. Water Allocation Analysis:

Current Water Allocation Permit Limits – **170.5 MGM**
1,443.0 MGY

- ❑ **Formula for Calculating Peak Monthly Demand:**

$$155 \text{ MGM (July/2002)} + [1.5(0.0668 + 0.015) \times 31] = \mathbf{158.804 \text{ MGM}}$$

- ❑ **Formula for Calculating Annual Demand:**

$$\text{Peak Annual} + 365 (\text{outstanding avg.} + \text{estimated avg. project demand}) = 1,330.8 \text{ MGY} + 365(0.0668 + 0.015) = \mathbf{1,360.66 \text{ MGY}}$$