

APPENDIX 3

Method for Projecting Water Supply and Sewerage Demands

Estimates and projections of population within the community planned water and sewer service areas and estimates and projections of water and sewer demand are summarized in Tables 2 (water) and 6 (sewerage). The estimates are based on current development that is connected to the relevant community system and actual flows generated by that development within the service area. The service areas are divided into three service categories (Existing/Final Planning, Priority, and Future Service Areas). Projections, which are calculated for average-day demand, are based on total buildout of the service area by category and the land uses and densities as permitted by current zoning. Projections in each successive service category are cumulative. Consequently, projections for the Future Service Area correspond to total population and demand projections for the entire planned service area.

Tables 2 and 6 divide the planned service areas into three phases (Present Year, Priority Planning, and Future Planning), which generally correspond to the three service area categories referenced above. Calculations by phase are summarized as follows:

Present Year -- This column relates to developed areas located within the Existing/Final Planning Service Area that are served by the community water supply and/or sewerage system, and the actual water and sewer flows which are recorded by the utility. Projection of population and flows for the undeveloped areas of the Existing/Final Planning Service Area, as well as unserved developed areas, are included in the Priority Planning phase.

The Residential Population column is an estimate of the number of residents (including apartment dwellers) whose dwelling units are connected to the community system (Population Served).

The GCPD (gallons per capita per day) column is based on an estimate of actual Residential Demand divided by the Population Served.

The Capacity (in mgd) column includes:

1. An estimate of actual Residential Demand. This estimate is based on flows which are processed (actual flows) by the community sewerage or water supply system and is measured at the wastewater treatment plant (Table 6), or at the community system well as it is pumped from the ground (for water systems relying on wells and groundwater) or as metered at the reservoir (for water systems relying on surface water) (Table 2). To determine the portion of these actual flows that are attributable to residential demand, the utility will generally need to evaluate the metered flows, which are derived from individual user accounts for billing purposes (i.e., metered readings at the place of use) and determine the proportion of flows that are residential. This proportion is then applied to actual flows measured at the system (e.g., wastewater treatment plants, system wells, reservoirs) to derive an estimate of residential actual flows (Residential Demand).

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2. An estimate of Other Demand, which is everything that is not residential (commercial, industrial, institutional, recreational, etc.). This estimate is generally the difference between actual flows measured at the system minus the estimated Residential Demand. Other Demand pertains to current development that is connected to the community system.

3. Total Demand is the total estimated flows that are processed by the community system as measured at the treatment plant, wells, and/or reservoir.

4. Existing Capacity represents the combined average day permitted flows for all water sources (e.g., wells, reservoirs) comprising the current water supply system (Table 2) and the current average day permitted capacity of the wastewater treatment plant (Table 6).

Priority Planning -- This column combines the current served development from the Present Year column with unserved existing development and future development areas from the Existing/Final Planning and Priority Service Areas.

The Residential Population column includes:

1. Population calculations that are made for the number of existing dwelling units that are located within the Existing/Final Planning and Priority Service Areas that are not currently served.

2. Population calculations that are made for the undeveloped areas located within the Existing/Final Planning Service Area that are zoned for residential development and are unserved by the community system, and for the undeveloped areas within the Priority Service Area that are zoned for residential development. These calculations are based on the County's Buildable Land Inventory

The projected number of dwelling units (both existing and future development) is multiplied by the average family size to derive population. The average family size is estimated for each community and is based on 2000 Census data. The multipliers are as follows:

Community	Average Family Size
Mount Airy	3.37
Sykesville-Freedom	3.27
Manchester	3.24
Hampstead	3.32
Westminster	3.05
Union Bridge	3.11
New Windsor	3.11
Taneytown	2.22

The Population Served (under Present Year) is added to the existing and future population located within the Existing/Final Planning and Priority Service Areas. This number is

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then assigned as Population Served for the Priority Planning phase. It is assumed that all dwellings will be served at full buildout in this phase.

Water and sewer demand (Tables 2 and 6) is projected at 250 gallons per unit per day for units added to the existing ones.

The Capacity column includes:

- a. Residential Demand is figured at 250 gallons per additional unit added to the Existing Residential Demand. .
- b. Other Demand for areas in the Priority Service Area are projected based on acreages of commercial and industrial zoning. Water and sewer demand are projected at 700 gallons per acre for Business zoning and at 800 gallons per acre for Industrial zoning. The Other Demand flow estimated in the Present Year column is added to the projected Other Demand in the Priority Service Area. The Other Demand of the Priority Planning phase is the sum of these two Other Demands.
- c. Total Demand is the sum of Residential Demand and Other Demand.
- d. Planned Capacity represents the utility's plans for expanding the capacity of the community system. Generally, plans for expanding capacity in the Priority Planning phase are tied to a much shorter time frame than the demand projections, which relate to full buildout of the relevant area (i.e., an indefinite time frame).

Future Planning -- This column combines the current development from the Present Year column, existing (but unserved) and projected development within the Existing/Final Planning and Priority Service Areas, and existing (but unserved) and projected development within the Future Service Area.

The method for projecting and summing population and demand data are the same as for the Priority Planning phase. Since the numbers are cumulative, the data contained in the Future Planning column pertain to the entire planned service area. Planned capacities in this phase should therefore correspond more closely to the projections of Total Demand. Where Total Demand exceeds Planned Capacity by a large proportion, it is important that the utility evaluate the need for, and timing of, an increase in the capacity of the community system.

Tables 2 and 6 represent the best efforts of the County to interpret the capacity needs of each system. All numbers are based on average day needs. Since most of the systems rely solely on groundwater sources, the amount of water that will be available for future use is often unknown. Currently, permitted quantities will not meet future demand. Based on the conservative evaluation and permitting of groundwater sources by the State, allocable supplies are not known until after a well or wells are drilled, tested for quantity and quality, and an appropriation permit is issued by Maryland Department of the Environment. Most towns rely on an adequate public facilities ordinance to control development based on the adequacy of public facilities including public water and sewer. The towns primarily depend on developers to provide water supplies

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and infrastructure for their development either through a developed and permitted source or through a fee-in-lieu. Finally, the projections in Tables 2 and 6 assume the service area will be completely built-out which is unlikely to occur in the time frames given.