

Carroll County Master Plan for Water & Sewerage

CHAPTER THREE **WATER SUPPLY FACILITIES**

Section I: Groundwater

General

Groundwater is the principal source of both public and private potable water supplies in Carroll County. Approximately 70 percent of the County's population receives their water supply from wells (groundwater) only. With the exception of Westminster and the Sykesville/Freedom District, all the public water service areas in Carroll County rely solely on groundwater from the aquifers in the County. The public water supply agencies provide an average daily volume of approximately 7.348 mgd of water to their service areas (including Westminster and Sykesville/Freedom), serving approximately 47 percent of the County's population.

Quantity

The best understanding of potential quantity of available groundwater is developed from a study of the hydrologic cycle combined with long-term measurements of stream flows. Studies indicate that the base flow of a stream from the basin it drains represents, over time, the quantity of precipitation that has infiltrated into the subsurface to move as groundwater. Because of the nature of the hydrologic cycle, the amount of water available for use is finite. Groundwater in small to moderate amounts is available nearly everywhere in Carroll County. Development of wells with sufficient quantity and dependable yields for cost-effective incorporation into public water supply systems requires a thorough knowledge of subsurface conditions.

Three basic aquifer types exist in Carroll County. Generally, the northwestern corner of the County is underlain by the Triassic rock aquifer that provides all of the potable water needs for Taneytown. The saprolite aquifer (including metavolcanic, phyllite, and schist parent rock material) occurs over most of the County and is the source of water for Mount Airy, Hampstead, and Manchester, and a partial source for New Windsor, Westminster, and Sykesville/Freedom. The carbonate rock aquifers, the most productive and environmentally sensitive aquifers in the County, are located in discrete formations in central Carroll County. Union Bridge relies completely on this source while New Windsor and Westminster utilize this aquifer in part.

Most private, individual domestic wells yield 1 to 20 gallons per minute (gpm), but those located along earth fracture zones may yield as much as several hundred gallons per minute. Larger capacity production wells, such as those used by municipal community systems and some industrial users, are located in fracture zones and generally produce in excess of 50 gpm. Periodic measurements of water levels in existing wells demonstrate that groundwater levels fluctuate in a more or less uniform pattern from year to year, the levels being lowest in the late fall and throughout the winter.

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Most community (public supply) wells in Carroll County derive their supply from water-table aquifers. The subsurface flows come from precipitation in the immediate vicinity of the well that has percolated through the soil and fractured rock to enter the well.

Figure 6, General Aquifer Map, shows the major aquifer types found in Carroll County. The range of yields for the crystalline rocks differs from those for the sedimentary rocks. The best producing wells are found with the metamorphic carbonate rock unit, the Wakefield Marble, with measured yields in excess of 500 gpm. Some wells in the other crystalline metamorphic rocks have tested yields greater than 100 gpm, but most yield between 20 and 70 gpm. Producing zones within the metamorphic rock aquifers range from 30 to 500 feet, while sedimentary-rock wells may encounter water to a depth of 600 feet.

Knowledge of groundwater occurrence and flow is based upon direct, as well as indirect, observations of precipitation, stream flow, well tests, topography, and geologic/lithologic structure. Most general determinations of volume and quality are based on assumptions that the aquifer is uniform and homogeneous. For general planning purposes, these generalizations are sufficient, but should never be substituted for more site-specific information when available. Water-well development is therefore exploratory in nature and often requires several wells to fully develop the potential of a given area. As more information is accumulated from the results of well exploration, projections for water supply availability become more accurate.

Variations in groundwater levels occur in all wells over a given period of time. Long-term observations of wells have shown that the groundwater falls in the late summer and fall, and rises in late winter and spring. If a series of years with below-average precipitation occur consecutively, the groundwater level may fall to progressively lower levels each summer. But even in such cases, one year of above-average precipitation may restore the groundwater levels to a normal range of fluctuation. For wells in the crystalline rocks, and particularly where located in the upper elevations where there is moderate relief, the fluctuations can be many tens of feet. Those wells located in low elevations, or where the topography is quite flat, are least affected. Large-yielding wells generally produce a cone of depression, the size of which depends on local aquifer conditions and the extent of pumping.

Recognizing that water supply is essential to support growth and development, the Carroll County Commissioners in 1981 contracted with R. E. Wright Associates, Inc., to perform an assessment of the County's water resources. Phase I of that study was completed in 1983 and included:

1. A determination of the water resource development potential of the County and the community planning areas.
2. An analysis of the publicly owned community water systems and the hydrogeo-environmental factors influencing water resources development within the community planning areas.

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3. A determination of data deficiencies within each planning area that needed to be filled in order to formulate a master plan to provide for water resources development through the year 2020.

Phase II of the study was initiated in 1984 and completed in 1988. The Phase II effort includes the following information: field validation of the information gathered and developed in Phase I; field work to fill the data deficiencies uncovered in Phase I; individual well field management plans for each community planning area; a countywide nitrate study; and a countywide assessment of developable public water supplies through the Year 2020, looking at quality and quantity.

Both phases of the Water Resources Study are made a part of this plan by reference.

With the exception of Westminster and Sykesville/Freedom, all of the towns in Carroll County that operate a public water system rely primarily on wells for their source of water. During the drought of 2002, most of the towns instituted voluntary or mandatory water restrictions. The water supply system operated by the County in the Sykesville/Freedom area is predominately surface water dependant.

The towns and the County are constantly seeking and developing new water sources to keep pace with increased demands generated by growth and development as well as changes in State policy and guidance regarding groundwater appropriations.

Quality

The quality of groundwater in Carroll County is generally excellent and except for occasional instances is acceptable for all uses. Most of the water is soft to moderately hard. Groundwater from the metamorphic rocks often has a low pH and consequently is corrosive (aggressive).

The quality of groundwater is influenced by both natural and human impacts. Rainfall can be contaminated with pollutants before infiltrating into the subsurface aquifers. Purification and mineralization of the water occurs as it percolates through the soil column. The degree to which the groundwater quality is altered is a function of the groundwater travel time through the aquifer. Wells that are properly constructed and isolated from potential pollution sources should not have problems with pollution.

Groundwater pollution problems have been identified in several small communities in rural Carroll County. Please see Table 4 for an inventory of water problem areas. Individual wells have been contaminated by septic systems in close proximity. Small lot sizes prevent the replacement of the individual septic systems. Approximately 20 communities have been identified by the local Department of Environmental Health as having groundwater contamination problems. Additionally, isolated instances of contaminated groundwater have been traced to leaking gasoline and mismanagement of oil storage tanks, leaks from industrial facilities, and landfills.

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Groundwater Resource Development

With Phase II of the Water Resources Study and continuing into the present, an active program of groundwater development for the Community Planning Areas (CPA's) has been followed. Potential well sites have been identified in all CPA's which use groundwater as a municipal water supply source. Well sites were located using photogeologic fracture trace analysis, followed by field verification. These identified well site locations are used by the municipalities and the County for planning purposes. Test wells have been drilled at several of the identified well sites verifying the accuracy of the photogeologic fracture trace analysis method of determining potential well sites.

Factors that influence the dependable yield of wells include aquifer type and recharge, well location and construction, and well operation. All of these factors are considered when developing municipal wells and management plans to ensure the continuing safe supply of the groundwater source.

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Section II: Surface Water

General

Surface water is utilized in Carroll County community water systems in the Westminster and the Sykesville/Freedom service areas.

The City of Westminster uses two surface water sources. The 125-million gallon Cranberry Reservoir is filled by extracting water from the Cranberry Branch, a tributary of the West Branch of the Patapsco River. Another tributary of the West Branch, Hull Creek, is the source of water for a small impoundment and infiltration gallery located at Bennett Cerf Park. The City is permitted to withdraw 2.0 mgd from these surface water sources.

The Sykesville/Freedom area is served through a direct withdrawal from the Liberty Reservoir. Carroll County has constructed and operates a surface water intake through an agreement with Baltimore City, the reservoir's owner. Under the agreement, Carroll County may withdraw an average of 4.2 mgd with the maximum month of withdrawal of 6.0 mgd.

Surface Water Quality

To protect surface water quality, the State has adopted surface water quality standards, which include designated uses of the waters of the State (i.e., stream classifications), and water quality criteria to protect the designated uses. The standards, which are detailed in COMAR 26.08 of the Code of Maryland Regulations, were established to provide water quality for the designated uses of water contact recreation; fishing; propagation of fish, other aquatic life, and wildlife; and agricultural and industrial water supply. The specific use classifications are:

Use I	Water Contact Recreation and Protection of Aquatic Life
Use I-P	Water Contact Recreation, Protection of Aquatic Life, and Public Water Supply
Use II	Shellfish Harvesting Waters
Use III	Natural Trout Waters
Use III-P	Natural Trout Waters and Public Water Supply
Use IV	Recreational Trout Waters
Use IV-P	Recreational Trout Waters and Public Water Supply

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The following table indicates the stream classifications for the major surface waters that flow through Carroll County.

Use Classifications For Streams In Carroll County		
Stream	Use	Limits
<i>Gunpowder River Sub-Basin</i>		
• Gunpowder Falls and all tributaries	III-P	Above Loch Raven Dam
<i>Patapsco River Sub-Basin</i>		
• Liberty Reservoir	I-P	Above Liberty Dam
• All tributaries to East Branch Patapsco River	I-P	
• All tributaries to West Branch Patapsco River	I-P	
• All tributaries to North Branch Patapsco River (unless otherwise designated below as Use III-P or IV-P)	I-P	Above Liberty Reservoir
• Piney Run and all tributaries	III	From mouth to Slacks Road (on Springfield State Hospital grounds)
• Gillis Falls and all tributaries	III	
• South Branch Patapsco River and all tributaries	III	Above confluence with Gillis Falls tributaries
• Piney Run and all tributaries	III-P	Above Slacks Road (on Springfield State Hospital grounds)
• Morgan Run and all tributaries	III-P	
• Beaver Run and all tributaries	III-P	
• Snowdens Run and all tributaries	III-P	
• Stillwater Creek and all tributaries	III-P	
• Carroll Highlands Run and all tributaries	III-P	
• Autumn Run and all tributaries	III-P	
• South Branch Patapsco River	IV	Mainstream only
• North Branch Patapsco River	IV-P	Mainstream only above Liberty Reservoir
• East Branch Patapsco River	IV-P	Mainstream only
• West Branch Patapsco River	IV-P	Mainstream only
• Cranberry Branch and all tributaries	IV-P	Above MD 852 (Old Manchester Road)
<i>Middle Potomac River Sub-Basin</i>		
• Monocacy River and tributaries (except those designated above as Use III-P)	IV-P	Above U.S. 40

Total Maximum Daily Load (TMDL)

TMDLs are a requirement of the Clean Water Act that became effective in 1972. A TMDL establishes the maximum amount of an impairing substance or stressor that a waterbody can assimilate and still meet water quality standards. The State of Maryland is required to list the State's Impaired Surface Waters that require a TMDL. After a TMDL has been approved, State and local water quality management plans need to be updated and control measures implemented.

Currently, no TMDLs have been approved for surface water bodies in Carroll County, however several are pending. A section is being included in the County's comprehensive plan draft that will provide for future RMDL management. The comprehensive plan draft will also address

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management considerations for tributary strategies. Please refer to www.mde.state.md.us/programs/waterprograms/tmdl for further information on TMDL status in Carroll County.

Future Surface Water Supplies

Carroll County is committed to the development of a multi-resource public water supply system, utilizing both its ground and surface waters. Although ground and surface water are considered a single resource in Carroll County, two specific initiatives keyed toward the provision and protection of surface water have been undertaken. Another major initiative has been taken in concert with groundwater protection.

Sites on Piney Run, Gillis Falls, and Big Pipe Creek were identified as future reservoir sites in the 1960's. The Piney Run Reservoir in the southeastern portion of the County was completed in January 1975. The multi-purpose reservoir was designed to provide a safe yield of 3.5 mgd. Land is committed to protect the areas around the Union Mills and Gillis Falls Reservoir sites to provide for long-range water supplies. Approximately 90 percent of the land needed for these reservoirs has been acquired by the County to date.

Several towns experienced shortages during the drought of 2002. As a result, MDE distributed new guidance documents in 2006 that require more detailed planning for municipal water supplies and municipal sewerage systems once a capacity threshold is exceeded. In order to meet near-term water needs, the City of Westminster is working with the County to develop an agreement allowing the City to develop wells and/or a surface intake from Big Pipe Creek stream in the Union Mills area to be used on an interim basis until the reservoir is constructed. The Town of Mt. Airy has signed an agreement with the County to develop wells and/or a surface intake from the stream in the Gillis Falls area to be used on an interim basis until the reservoir is constructed. In both cases, these planned wells and/or surface intakes will be considered interim and supportive of the eventual construction of the referenced Union Mills and Gillis Falls reservoirs.

Reservoir Watershed Agreement

As part of the Baltimore Region, Carroll County participated in the preparation of a Water Quality Management Plan for the Baltimore Metropolitan Region under Section 208 of P. L. 92-500 (Clean Water Act). A primary goal of that plan was the improvement of water quality within the three major reservoirs serving the Baltimore metropolitan area that were determined to be in various states of eutrophication (nutrient enrichment). As an outgrowth from that plan, the City of Baltimore and Baltimore and Carroll Counties entered into a Reservoir Watershed Management Agreement in 1979. Recognizing that the 1979 Agreement needed to be updated and strengthened, a new agreement was entered into by the City of Baltimore, Baltimore and Carroll Counties, the Carroll and Baltimore County Soil Conservation Districts, and the Maryland Departments of Agriculture and the Environment. This agreement established a Reservoir Watershed Management Program. The 1984 Agreement included an Action Strategy for the Reservoir Watersheds that applied a comprehensive, balanced set of new or enhanced

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point and non-point source pollution controls, and established a monitoring and reporting system to measure the extent to which goals are being achieved.

Chapter III (Recommendations) of the document includes an implementation schedule entitled "Pollution Control Action Plan", which detailed the range of actions to be taken.

In 1990, the Agreement was reaffirmed by all participating jurisdictions and agencies and the "Action Strategy" was updated to include new initiatives. The agreement was reaffirmed again in 2003.

In an effort to update the goals and approach included in the agreement, the signatories reviewed all of the commitments and developed topical issue reports designed to illustrate the issues and concerns that make up an effective watershed management plan. As a result of that two-year effort, the signatories have jointly developed a new agreement and a set of action strategies that effectively update the agreement to work in today's environment. That new Watershed Management Agreement was signed on November 7, 2005 and remains in effect to this day. Carroll County remains an active signatory and participant in that effort. The Baltimore Metropolitan Watershed Management Agreement is a model agreement involving a partnership among multi-jurisdictions toward a common goal.

Piney Run Reservoir

Piney Run is a 298-acre reservoir located in the south-central part of Carroll County. It was constructed in 1975 for three purposes: flood control, water supply, and recreation. To support the development of the lake toward its use as a water supply, the County established two monitoring programs.

In 1990 Carroll County established a volunteer Citizens Monitoring Program intended to gain knowledge of the streams flowing into the reservoir. The program has evolved over the years and is now focused on the collection of nitrate levels and stream temperature. The volunteer monitors are also charged with recording observations on stream conditions and habitat that may help in the management of the lake's resources.

With assistance from Black and Veatch, Inc., Carroll County personnel also developed a lake monitoring program to provide baseline information that could be used in the development and ongoing management of the reservoir. In 1990, Black and Veatch, Inc. and County staff developed a comprehensive water quality monitoring program for Piney Run Reservoir. However, the program was not implemented until 1993. The program was established to develop a better understanding of the reservoir's water quality and its role in the design and operation of a water treatment plant. The reservoir monitoring program was initially designed to meet the following objectives:

- Describe the water quality in the reservoir, including the establishment of long-term trends (e.g., seasonal, annual, and between monitoring stations).
- Address water supply issues of concern such as: (a) identifying potential water quality concerns in the lake that may affect water treatment costs (e.g., taste and odor problems),

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and (b) characterizing the lake's water quality response to extreme events such as droughts and large storm events.

- Provide the necessary calibration data for future water quality model(s) that could be used as a diagnostic and predictive tool.
- Provide information to park staff and fisheries biologists to aid in the management of Piney Run's fishery resource.

To meet these objectives, a watershed-monitoring plan was developed incorporating the following five components:

- Reservoir sampling
- In-flow sampling
- Storm sampling
- Synoptic survey
- Special sampling

The reservoir sampling component began in 1993 with County staff and Black and Veatch Inc. collecting samples 18 times each year from three stations at different depths within the reservoir. Samples were collected twice each month from April through October and monthly from November through March. Station 1, the shallowest station, is located at the northern end of the reservoir adjacent to the wildlife management area; the maximum depth at this station is 12 feet. Station 2, located near the middle of the lake, has a maximum depth of 25-30 feet. Station 3, located near the dam and the intake for the water treatment plant, has a maximum depth of 50 feet.

Several modifications to the monitoring program have occurred since 1993, including switching to another analytical laboratory with more sensitive method-detection limits, discontinuing the services offered by Black and Veatch, Inc., adding a more in-depth algae monitoring component, and discontinuing the stormwater monitoring component.

Continued monitoring is essential to successfully manage Piney Run Reservoir as a resource. The data collected to date have given County personnel an initial understanding of the complexities and interactions between the biological communities within the reservoir. Monitoring of Piney Run Reservoir's water quality is important to the recreational aspects as well as to its future use as a water supply source.

In 2003, Carroll County initiated the development of a Watershed Management Plan for the Piney Run Watershed. In connection with that, Carroll County has undertaken the development of a Comprehensive Management Plan for the Piney Run Reservoir Watershed. This effort is comprised of two phases:

1. Phase 1 includes data collection and water quality modeling. The goal of Phase 1 is to collect data and model the Piney Run Reservoir using an integrated approach to establish baseline conditions within the reservoir and the watershed to support Phase 2 of this study.

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2. Phase 2 will expand on the data collected and model developed in Phase 1 to characterize the watershed, analyze the model results, identify nutrient loading areas, and provide strategies for addressing physical, ecological, and social opportunities within the watershed. The goal of Phase 2 is to develop a comprehensive watershed management plan for the Piney Run Reservoir Watershed.

The intent of the Piney Run Watershed Management Plan development process is to identify problem areas and propose actions using Phase 1 modeling, previously collected data, and stakeholder involvement. Phase 2 is expected to involve interaction with stakeholders from outside County Government (farmers, recreational councils, local schools, citizens, etc.) to help define overall goals and to develop planning-level concepts and costs for project implementation that will assist with watershed management efforts. This work is being performed under the County's MS4 NPDES Program and stands to set the standard for future development of management plans in other watersheds within Carroll County.

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Section III: Water Resource Management Efforts In Carroll County

Carroll County has been aggressively pursuing an understanding and development of its water resources for well over a decade. In the late 1970's, the County Commissioners made a commitment to evaluate the County's groundwater resources. This initial commitment led to the development of a comprehensive countywide water resource management program. Elements of that program have been implemented since that time, including a concerted effort to evaluate impacts and to manage and protect public water supplies. The program is currently located in the Bureau of Resource Management under the Carroll County Department of Planning.

Water Resources Protection Policy

In 1984, the County Commissioners approved a Water Resources Protection Policy. The purpose of the Policy is to afford protection to water resources in Carroll County.

In the late 1980's, Carroll County pursued State enabling legislation to allow the County to develop a local water resource program. The result was the enactment of House Bill 710 in 1988. This legislation authorizes Carroll County to develop, administer, and enforce a program to protect ground and surface waters through land use controls or other regulations.

Water Resource Management Program

The Program has numerous objectives that are directly intended to support the maintenance of public water supplies. These activities include the following:

1. Maintain and improve existing water supply sources
2. Develop new water supply sources
3. Design and implement special targeted water quality monitoring programs, i.e., Piney Run Reservoir
4. Delineate water resource protection areas
5. Develop and maintain water resource related databases
6. Promote a public education and information program
7. Evaluate potential funding mechanisms
8. Work directly with and support the incorporated towns on water resource and supply issues

The Program is also charged with the review of land development proposals with regard to the potential impact on community water supply resources. In that context, numerous

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databases of potential sources of water resource contamination are used in the review and source development process.

In April 2004, the County Commissioners adopted Ordinance No. 04-08, which created Chapter 218 Water Resource Management to the County Code. This new chapter formalized and strengthened the ability to manage and protect water resources within the County. The chapter provides for the delineation of management areas, and the ability to perform a water resource impact review on all proposed development projects within the County. In addition, water resource protection easements are required adjacent to streams, wells, and well sites when land is developed. Also, adopted by resolution was the Water Resource Management Manual, which provides for management standards and design criteria relating to land use activities and management areas. Several municipalities including the towns of New Windsor, Manchester, and Sykesville have also adopted Chapter 218.

Stream Buffers

In February 1993, the Carroll County Planning and Zoning Commission established a stream buffer provision for subdivisions within the unincorporated portion of the County. The provision required a Water Resource Protection Easement be placed on any stream located within the limits of a subdivision. The easement was to extend a minimum of 100 feet from the stream banks, unless specifically modified by the Planning Commission. In April 2004, the Board of County Commissioners adopted Chapter 218 of the Carroll County Code of Public Local Laws and Ordinances entitled Water Resource Management. Chapter 218 modified the original stream buffer requirement. The current provision requires the delineation of a variable width stream buffer on all development proposals. The variable width delineation takes into account various environmental features within the riparian zone including slope, steep slopes, and wetlands. Once delineated, the buffer is protected by a permanent easement. The easement must be shown on the final plat and be conveyed to the Carroll County Commissioners simultaneously with the recordation of the final plat.

Designation of Water Resource Management Areas

The identification of public water supply sources is a key component in managing existing and future water supply needs. The aquifers and streams that feed the existing and future supplies must be protected to ensure that good quality is maintained and dependable yields are not reduced.

Chapter 218 designates the following Water Resource Management Areas associated with existing and future water supplies. Those areas have been identified and provide guidance for protection measures. The Management Areas are as follows:

Carbonate Rock Area. The Carbonate Rock Area encompasses all areas that are currently known or suspected to be underlain by carbonate rocks. This includes the Wakefield Marble and Silver Run Limestone geologic units, as well as unnamed calcareous zones within schist and phyllite areas.

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Wellhead Protection Area. The Wellhead Protection Area represents those regions that contribute groundwater to the indicated sources. These areas are based on “capture areas” as estimated from available field testing data, hydrologic flow equations, and groundwater availability estimates, in combination with the hydrogeological characteristics of the subject aquifers.

Aquifer Protection Area. The Aquifer Protection Area encompasses regions within 2,000 feet of each Community Planning Area (CPA) boundary, as well as any watershed-draining tributary to the Aquifer Protection Area (APA). The groundwater recharge available is assumed to be that which could be captured by gravity drainage into each of these areas. These areas, therefore, constitute the potential groundwater resource available that may be reasonably developed for each CPA.

Surface Watershed Area. The Surface Watershed Area encompasses the drainage basins of all existing and proposed surface water reservoirs in Carroll County. The delineation of these areas is based on topography and gravity drainage to the reservoirs.

Water Resource Related Activity

In mid-2003 the County Commissioners directed staff to perform a comprehensive review of County environmental ordinances. Revisions to existing regulations, as well as the creation of several new protection policies, was forwarded to the Board of County Commissioners in early 2004. After receiving public comment, the Board adopted the following revised or new ordinances:

- Stormwater Management
- Floodplain Management
- Forest Conservation Management
- Water Resource Management
- Development and Subdivision
- Grading and Sediment Control
- Adequate Public Facilities

These regulations, directly or indirectly, provide significant additions to water resource management and protection in Carroll County.

Carroll County has implemented a watershed management approach consistent with that required in the Clean Water Act. Internal programs have been implemented that are consistent with the Reservoir Watershed Agreement in which Carroll County participates. Those programs will help to preserve and improve conditions in the watershed, providing increased levels of protection for water resources. Most recently activities have increased in compliance with conditions included in Carroll County’s Storm Sewer System NPDES permit:

In 1996, amendments to the County’s Stormwater Management Ordinance were adopted that give the County the authority referred to in 40CFR122.26(d)(2)(i), i.e.:

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- (A) to control discharges of pollutants to storm sewer systems carried by stormwater flow associated with industrial activity,
- (B) to control illicit discharges to storm sewer systems,
- (C) to control the spilling, dumping, or disposal of materials other than stormwater into storm sewer systems, and
- (D) to control pollutants carried between municipal systems.

The Board of Commissioners adopted the ordinance amendments on November 19, 1997, prior to the November 28, 1997 compliance date in Permit MS-CL-95-007.

Using the County's NPDES application as a basis, information on new sources of concentrated storm flow are being identified on the base maps in the County's Geographic Information System. New development is also regularly added to the system as it receives final approval. In conjunction with that, stormwater management and facility data are also added.

Data on environmental resources and potential contaminant sources are also maintained by County personnel. These data include stream systems, buffers, forest cover, landfills, CERCLIS sites, underground storage tanks, junkyards, right-to-know locations, issued NPDES permits, automotive repair facilities, other potential contaminant sources, public supply wells, sludge sites, sinkholes, RCRA permits, etc.

A capital budget was also established to fund a countywide watershed assessment effort, as well as ongoing retrofit and restoration project needs. Such a watershed assessment was initiated during the year 2000. Capital budgets have also been established to fund retrofit and restoration projects from FY 2001 through FY 2007. Funds will be available for watershed improvement projects on a regular basis. Improvements will be prioritized and based on need. Watershed improvements that benefit water supply receive a high priority. In support of the watershed assessment, a Watershed Restoration Action Strategy (WRAS) grant was completed by Carroll County in 2003 for a portion of the Liberty Watershed.

Most of the restoration efforts performed since 1995 have been concentrated within the Liberty Reservoir Watershed. Those have included stormwater retrofit and stream restoration projects in the Patapsco system.

In addition to a storm flow monitoring system being installed on its upper reach, Carroll County has also been gradually implementing watershed improvements within the Longwell Run basin at the headwaters of the West Branch of the Patapsco River.

The overall success of the aforementioned projects has defined the direction of the countywide watershed assessment and restoration efforts in Carroll County. The watershed assessment is an ongoing effort to rank and prioritize watersheds, as well as potential restoration projects proposed for implementation. Reservoir watersheds (both existing and potential) have been given a high priority in this process.

The Carroll County Forest Conservation Ordinance requires all new development to both conserve forest resources and to replace forest to be removed to a location within the same

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watershed at a one-to-one ratio. Stream buffers are a high priority under the ordinance for both forest retention and compliance planting. New development must give first priority to the retention and planting of riparian buffers on new development sites.

Carroll County's Forest Conservation Banking Program has been successful in the establishment of over 100 acres of new forested riparian buffer in the County during its first five years. As riparian areas are a priority, the forest banking program has also become a stream buffer establishment program.

The Forest Conservation Ordinance also requires the establishment of stream buffers on development sites. The County recently adopted changes to the Forest Conservation and Floodplain chapters which require a variable width stream buffer. All existing forested areas are placed in easement, and as a compliance measure, unforested streams are also planted with new forest areas and protected with easements.

In compliance with the 1992 Planning Act, the Board of County Commissioners adopted the Environmental Resource Elements of the Carroll County Master Plan in January 1997. That document established requirements for an environmental resource inventory and the application of management practices to protect those resources:

- Streams and stream buffers
- Steep slopes
- 100-year floodplains
- Habitat of threatened and endangered species
- Wetlands
- Wellhead buffers
- Areas of carbonate rock
- Reservoir watersheds
- Use III waters
- Soils with structural limitations, hydric soils, or soils with a K value greater than 0.35 on slopes of 15 percent or more
- Forest stands

The County Commissioners in 2004 adopted changes to the development and subdivision chapter that requires an Environmental Site Delineation be performed on property to be developed. This process adequately fulfills the requirements called for in the 1992 Planning Act.

Countywide Water Conservation Program

The conservation of water is a fundamental aspect of resource protection and management. This component of Carroll County's Water Resource Management Program consists of three elements: educate the public, update the plumbing code for new construction, and retrofit plumbing in existing construction.

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Brochures, videos, and public speaking engagements are components of the educational effort. Information on water conservation is also made available through the County's website through the Bureau of Utilities and Drought Information pages.

In 1991, the County adopted Ordinance 52B, which mandates water conservation devices for new construction. The ordinance requires that certain plumbing fixtures that are newly installed meet specified flow rates. The County continues to coordinate with the Maryland State Water Conservation Office in an ongoing effort to keep up-to-date on plumbing codes.

In the summer of 1991, the County began a pilot retrofit program in the Town of Hampstead which was in conjunction with an increase in water rates. Marketing efforts were targeted toward Town residents to purchase conservation devices to replace or enhance existing plumbing fixtures. Approximately 200 toilet dams, 120 low-flow shower heads, and 450 kitchen and bathroom faucet aerators were sold in Hampstead by the end of 1993.

In December 1991, the County instituted mail order for purchasing the devices that are now available through the Bureau of Utilities to anyone in the County. That program has expanded making water conservation retrofit devices available to the public both through mail order and over the counter.

PHASE I and II MS4 NPDES

In May of 1995, after completion of the formal application process, Carroll County was issued a National Pollutant Discharge Elimination System (NPDES) permit by the Maryland Department of the Environment for its storm sewer systems (no. MS-CL-007). The permit was issued with an effective date of May 30, 1995 and an expiration date of May 30, 2000. Subsequently, the second generation of Carroll County's permit was issued on July 14, 2000. The County's current permit covers a five-year period that concludes in July of 2010.

Coincidentally, Phase II of the Federal stormwater NPDES regulations that initially required Carroll County to secure a permit were subsequently made effective on October 29, 1999. Those new rules expanded the applicability of the program to require the same of small municipalities, including all of those located in Carroll County. The final form of those Phase II regulations was further published in the Federal Register on December 8, 1999.

In conjunction with that requirement, each of the eight municipalities in Carroll County indicated a desire to work with the County on a mutually beneficial arrangement that would allow for the hiring of an individual to assist all signatories with NPDES compliance. A Memorandum of Understanding was developed and agreed to between the eight municipalities and the County Government that has since become part of the Town/County Agreement. That agreement resulted in the hiring of a dedicated individual that is responsible for storm conveyance and management system mapping and for data base management for both the County and the municipalities. The responsibilities involve the gathering of data on infrastructure systems in the municipalities and the County, the development of mapping as required by the permit, and management of the required data base systems necessary for compliance reporting, as well as other tasks associated with NPDES compliance.

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Under Phase II of the program each municipality is responsible for the following, as each applies to MS4 NPDES compliance:

- Public education and outreach
- Public involvement
- Illicit Discharge Control
- Erosion and Sediment Control
- Stormwater Management Programs
- Good housekeeping

Each municipality is responsible for maintaining a program that emphasizes those categories. However, under the agreement, the County committed to assist the municipalities in the following ways:

- Permit Management and Compliance reporting
- Data Management and Mapping System Development
- Educational Planning and Information Dissemination
- Illicit Discharge and Management
- Watershed Assessment and Management
- Compliance Audit and Assessment Assistance
- Stormwater Management Enforcement
- Erosion and Sediment Control Enforcement

The agreement stands as a successful example of Town/County cooperation toward an effective watershed management program. Without the agreement, watershed management would have been fragmented and ineffective. Under the agreement, watershed management is performed countywide without consideration of jurisdictional boundaries.

One of the conditions of the MS4 NPDES permit is the systematic assessment of the County's watersheds and the implementation of watershed restoration projects derived directly from the assessment process. This assessment process was initiated in 2000, but will be ongoing for some time. The concept is that assessments are performed on watersheds until the entire County has been covered. The process is then begun over, creating a cyclical process.

Since 2000, Middle Run, Snowdens Run, the West Branch of the Patapsco River, and Piney Run data has all been the subject of assessments. Over the coming years, other subwatersheds in the Patapsco basin will also need to be assessed, i.e. Beaver Run or the East Branch. As indicated, this will continue until the entire County has been assessed. The process will then start over as it is a continuing responsibility.

The County is currently developing a Watershed Management Plan for the Piney Run Lake watershed in south Carroll County. Piney Run Lake was proposed to have a TMDL, but MDE later determined that the lake was marginally impaired for nutrient. In lieu of a formal TMDL, Carroll County has conducted a detailed assessment and has an agreement with the Corp of Engineers to perform modeling to quantify the nutrient pathways. All of this will become the basis for a management plan for the watershed. The resultant watershed management plan will

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potentially include restoration projects as well as operational and maintenance best management practices designed to reduce nutrient loadings, if needed; maintain the nutrient loadings in to the lake at acceptable loading rates; and prevent any further nutrient related degradation.

Although other assessments have been performed, no other watershed management plan efforts are ongoing. As this process advances, Carroll County will be better able to identify specific issues related to the service areas.

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Section IV: Existing and Proposed Water Facilities by Service Area

The following sections describe 11 publicly owned community water supply systems and the plan for serving the corresponding water service areas. Maps W-1 through W-11 relate to the written text and detail the location of the various service area categories and existing and planned facilities.

Connection to Community Water Supply System

In Carroll County, properties within the Existing/Final Planning (W-1) and Priority (W-3) Service Areas will be connected to the community water supply system at the time of development. It is the responsibility of the developer to arrange for the required engineering and needed lines and facilities to make the connections. Interim individual systems may not be permitted where the utility of record or municipality has an official connection policy and/or code requirement that precludes interim individual systems. Where the utility of record or municipality does not have a connection policy and/or code requirement which precludes new interim individual systems, such interim systems may be considered by the utility of record or municipality where it has been adequately demonstrated that extraordinary or unusual circumstances exist and that authorizing same will not compromise the integrity of the Water and Sewerage Master Plan or the County or municipal comprehensive master plan. It is the intention of the Water and Sewerage Master Plan that development in the Priority Service Area will not occur without connection to the community system. Development within the Future Service Area (W-5) will be permitted to develop on individual water supply systems, unless connection to the community system is required by the utility of record or municipality, or is requested, in which case the service area category must be changed to the Priority Service Area (W-3) in order for the Maryland Department of the Environment to issue construction permits. Under the Annotated Code of Maryland, Environment Article, the Carroll County Board of Health has authority to grant exceptions to the County Water and Sewer Plan to remediate documented health hazards.

Mount Airy Water Service Area (see Map W-1)

Current Water Supply

The Mount Airy water service area, which encompasses 3,280 acres, includes area in both Frederick and Carroll County and is located in the southwestern corner of Carroll County. The Town of Mount Airy owns and operates the community water supply system that provides water to Town residents only. Development currently located in the unincorporated areas uses individual wells. Unincorporated areas that are planned to be served with Town water must first be annexed into Town.

As of August 1, 2005, the Town's existing water supply system consists of ten wells, three elevated storage tanks, transmission and feeder mains, and five pumping stations. The main wellfield is located in Frederick County and consists of Public Wells 1-4, 8, and 9. Well 7

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is also in Frederick County, but in a separate watershed in Frederick County. Wells 5, 6, and 10 are in separate watersheds and are located in Carroll County.

As of August 1, 2005, appropriations for the ten Town wells total 855,000 gpd on a yearly average and 1,267,000 gpd for the month of maximum use. The 2004 yearly average water use was 765,000 gpd and the maximum month was 835,000 gpd. The total capacity of the Town's three elevated storage tanks is 1,705,000 gallons.

Mt. Airy Community Water System Sources - Appropriations			
Water Source	Permit Number	Permitted Daily Average Use (gpd)	Average Day Demand Month of Maximum Use (gpd)
Well 5	CL1987G076 (06)	38,000	43,000
Well 6	CL1987G176 (03)	80,000	180,000
Well 10 (Flickinger)	CL2000G022 (03)	77,000	144,000
Frederick Co. wells (7)		660,000	900,000
TOTAL		855,000	1,267,000

Future Water Supply

As successful wells are located in unconfined, fractured rock aquifers, contamination from aboveground sources should be monitored and minimized. In order to adequately protect the current and future water supply, Mount Airy has adopted both a groundwater recharge ordinance, which requires that stormwater management facilities within a production well watershed be designed for water recharge, and a wellhead protection ordinance, which protects existing and future wells from potentially harmful land uses. These ordinances allow for maximum protection of the water resources and ensure the maximum potential for recharge into the ground.

Over recent years, attempts at groundwater exploration have failed to locate additional groundwater. Mt. Airy is investigating the development of additional water sources that may include sources of supply beyond its corporate limits. Pursuant to the Town's initiative seeking additional groundwater and/or surface intakes, Carroll County and Mt. Airy officials signed a letter of agreement allowing town exploration on county-owned property at Gillis Falls. The agreement facilitates a County and municipal partnership in the provision of needed water capacity in response to the town's water deficit. In September 2005, the Town entered into a Consent Agreement with the Maryland Department of the Environment (MDE). The consent agreement is undergoing modifications in recognition of the Town's plan to develop new groundwater and/or surface intake supplies in accord with the referenced Town/County letter of agreement. Once the details of the Town's plans for a new water source are solidified, this Water and Sewer Plan will be amended to reflect those details.

The proposed Gillis Falls Reservoir is one of the sources of water that may assist in meeting the Town's ultimate need for a municipal water supply. This facility is projected to have a safe yield of approximately 3.8 million gallons of water per day, and a maximum yield of

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4.1 million gallons per day. As of April 2006, Carroll County has acquired 1,125 acres of land, which is 94 percent of the total 1,200 acres needed within the minimum acquisition line.

Allocation Procedure

The Town currently has five active residential subdivisions under construction totaling 488.4 equivalent dwelling units (EDU's). Each of these subdivisions is limited to 24 building permits per construction year. In addition, the Town is presently considering an overall building permit cap which would limit the number of total permits the Town would issue per year.

The Town previously adopted an Adequate Public Facilities Ordinance (APFO), whereby upon submission by a developer of the first development plan filed for any proposed development project, the Planning Commission shall review the adequacy of public facilities, including water. However, review of adequacy of facilities is not required for site plans for any lot contained within a commercial or industrial subdivision that received preliminary plan approval prior to April 5, 2005, unless the proposed development project is designated a "large water user". (A "large water user" refers to any proposed use which, according to water and use projections adopted by the Carroll County Health Department, will generate an average daily water consumption rate of greater than 2,000 gallons per day.)

If water supply for any particular development is not adequate, the project may not proceed until such water supply becomes available.

Sykesville/Freedom Water Service Area (see Map W-2)

Current Water Supply

Carroll County owns and operates the community water supply system serving the Freedom area. The Freedom planned water service area is located in southeastern Carroll County and covers about 9,122 acres, which includes the Town of Sykesville.

The Carroll County Commissioners have an agreement with the City of Baltimore to purchase water for the Freedom community from the Liberty Reservoir water supply. The County receives the water by way of a floating surface water intake on Liberty Lake. Through agreement with Baltimore City, Carroll County is authorized to withdraw an average of 4.2 mgd with a maximum month of withdrawal of 6.0 mgd. This raw water is treated at the County's Water Treatment Plant (WTP) located at the end of Oakland Road. The WTP has a maximum day design capacity of 3.0 mgd and is being expanded by 4 mgd for a total capacity of 7 mgd. Treatment at the original plant consists of pretreatment by four sand filters and four diatomaceous earth pressure filters, each rated at 0.75 mgd capacity. At the 4.0 mgd facility, treatment will be by immersed membrane filtration technology. Chlorine and fluoride are added to the water. The agreement with Baltimore City expires July 1, 2018.

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In addition to the water treatment plant on Liberty Reservoir, Fairhaven Well 22B is permitted to provide an annual average 0.227 mgd with a maximum month of withdrawal of 0.340 mgd usage.

As of December 2004, the Freedom community was using a yearly average of 2.15 mgd as metered at the water treatment plant and well. Estimated average daily flows as metered at the user end (e.g. at each residence, business, industry, institution, etc.) totaled 1.78 mgd. The Sykesville/Freedom service area had an average peak usage of 2.61 million gallons during 2004.

The County, along with the State, has five water tanks, for a total storage capacity of 3.95 mg. Under an agreement between the Town of Sykesville, Carroll County, and the State of Maryland, Carroll County provides water to the Springfield Complex. The Springfield Complex currently includes a hospital operated by the State Department of Health and Mental Hygiene, a safety training center and minimum security laundry camp operated by the State Department of Public Safety and Correction, and the Warfield Center, which was annexed by the Town of Sykesville and is being redeveloped for mixed uses. The agreement requires Carroll County to supply up to 400,000 gallons per day to the Springfield Complex. The County is negotiating an increase in this amount with the State of Maryland. Maryland Environmental Service (MES) maintains the infrastructure on the Springfield Complex property, while Carroll County Bureau of Utilities maintains the meters.

Sykesville/Freedom Community Water System Sources - Appropriations			
Water Source	Permit Number	Permitted Daily Average Use (gpd)	Average Day Demand Month of Maximum Use (gpd)
Liberty Reservoir	CL1970S030 (01)	2,400,000	3,000,000
Fairhaven well	CL1998G002 (01)	227,000	340,000
Raincliffe and Freedom Park wells (not in use)	CL1998G102 (01)	211,000	381,000
Springfield wells (not in use)	CL1998G202 (01)	257,000	650,000
Total		3,095,000	4,371,000

Future Water Supply Sources

Carroll County is currently focused on increasing the capacity of the Freedom Water Treatment Plant located on Liberty Reservoir by 4 mgd for a total maximum day capacity of 7 mgd along with developing additional wells in the Freedom area including the ones at the Springfield Complex, Freedom Park, and the Raincliffe Center.

On February 16, 2005, the Carroll County Commissioners finalized an agreement with the City of Baltimore to provide for expansion of the Freedom Water Treatment Plant and additional withdrawal of raw water from Liberty Reservoir. Design of the expanded treatment plant is underway and is expected to be operational in 2008. As part of the treatment plant expansion project, Carroll County will also install a parallel transmission main from the

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treatment plant along Oakland Road and Mineral Hill Road to Oklahoma Road. Treated water from this line will be fed into the existing distribution system at several points.

To provide additional water supply in the short term, the County has developed and permitted a groundwater supply in the Freedom area. The Fairhaven well (Well 22B) is appropriated for an annual average 227,000 gallons per day, with a maximum month of withdrawal of 340,000 gpd. Other additional wells on the Springfield Hospital property and adjacent Raincliffe Center and Freedom Park have been developed and tested. Appropriations have been made for the Springfield wells at 257,000 gallons per day annual average with a maximum month withdrawal of 650,000 gpd. Some of the Springfield wells were found to be contaminated with volatile organic compounds (VOCs) and may require VOC removal treatment in order to be used as supply wells. The Freedom Park and Raincliffe Center wells are appropriated for an annual average of 211,000 gallons per day with a maximum month of withdrawal of 381,000 gpd. Carroll County is negotiating with the State of Maryland for use of the five Springfield complex well sites and the Freedom Park well. When completed, water will be pumped from the Freedom Park well to be treated at the Raincliffe well site.

For long term water needs, Piney Run Reservoir remains a viable option.

In the Sykesville/Freedom area, the County is in general support of extending community water service to areas designated low density residential and zoned Residential "R-40,000" which are planned for cluster development. Extension of water service will include the small cluster lots only and will exclude the open space portion of the development. Providing community water service in this manner will promote environmental protection of Liberty Reservoir with increased open space areas while maintaining high levels of efficiency and cost-effectiveness of the public water supply system.

Freedom District Water System Study

Whitman, Requardt and Associates, an engineering firm, completed a study of the Freedom District's existing water distribution system in August 1999. This hydraulic analysis evaluated the fire suppression capacity, existing water flows and pressure, and future water demands based upon all planned development and the current land use plan. A computer model was created to assist the County's Bureau of Utilities in determining appropriate facilities necessary for new development for the Freedom area. A new hydraulic analysis of the system is being developed to include the additional supply from Liberty Reservoir and the planned wells in the system.

Allocation Procedure

Carroll County, owner and operator of the Sykesville/Freedom community water supply system, currently allocates water flows on a first come, first serve basis.

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Manchester Water Service Area (see Map W-3)

The Town of Manchester owns and operates the public water system which limits service to the corporate boundary. The existing and planned service area covers approximately 1,378 acres and is located in the northeast portion of the County along MD 30. This existing and planned water service area is consistent with the Comprehensive Plan for Manchester and Environs, as amended.

Current Water Supply

The system is currently supplied by 12 wells and one spring and 10 pumping stations. The Hillside Spring is the only current spring source in the Walnut Street Spring Area. The Huppman Spring, which is also part of the Walnut Street Spring area, has been out-of-service for approximately one year due to surface water influence. The Lippy Well, also known as the Route 30 Well, has been out-of-service for several years because of high nitrates. Water is treated at each well pumping station and at the spring pumping station which is then pumped into the system. Treatment consists of chlorination at all 10 pumping stations. Soda ash is also added at all 10 pumping stations for pH control.

Water storage for the Town of Manchester is comprised of two elevated water storage tanks. A 500,000-gallon storage tank is located on York Street on the northeast side of Town and the other is a 100,000-gallon storage tank located on Park Avenue in the western part of Town. The current storage system is a “floating” system which means both tanks are connected and act as overflows for the distribution system. When demand is low, additional water in the system goes to the tanks. When demand is high, water is relieved from the tanks by gravity.

The Town of Manchester’s watershed is divided into three separate watershed areas, these being the Potomac, the Patapsco, and the Gunpowder. Based on the division of these three watersheds, the Maryland Water Resources Administration has issued four separate Water Appropriation Permits to the Town of Manchester.

Manchester Community Water System Sources - Appropriations				
Watershed	Permit No.	Allocation		Wells/Springs Included in the Permit
		Average Daily Demand on Yearly Basis	Daily Demand for Month of Maximum Use	
Potomac	CL1966G112(03)	134,000	199,000	Bachman Road Well Crossroads Well #1 Crossroads Well #2 Hallie Hill Well
Patapsco	CL1966G212(01)	38,000	63,000	Patricia Court Well
	CL1995G046(01)	69,700	116,400	Manchester Farms Well
	CL2002G005(01)	6,000	10,000	Park Ridge Well

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Gunpowder	CL1966G012(11)	324,000	486,000	Walnut Street Spring MD 30 Well Holland Drive Well Black Farm Well #1 (not in use) Black Farm Well #2 (not in use) Ferrier Road Wells (A, B, C) Walnut Street Well
Total		571,700	874,400	

During the past few years, 6 new wells were brought on line including the Walnut Street well in March 2000, the Hallie Hill well in February 2003, three wells on Ferrier Road in April 2004, and the Park Ridge well in 2005.

Town of Manchester	
Annual Average Daily Water Demands	
1982 – 2000	
Year	Average Gallons Per Day
1982	162,906
1983	165,763
1984	197,072
1985	204,150
1986	226,210
1987	246,650
1988	252,685
1989	251,564
1990	252,953
1991	258,289
1992	251,119
1993	221,530
1994	219,549
1995	208,279
1996	208,111
1997	206,900
1998	254,500
1999	252,744
2000	219,598
2001	222,696
2002	227,003
2003	259,568
2004	270,444

Future Water Supply Sources

Within the planning period of this Plan, the Town of Manchester will continue relying on groundwater sources to serve future growth. This will be accomplished primarily by developing new wells and well fields as development takes place. The Town of Manchester, as part of an ongoing water system upgrade project, will be developing potential municipal groundwater sources and completing rehabilitation of the Walnut Street Spring, specifically the Huppman Spring, to eliminate susceptibility to surface water influence and restore this spring as a supply

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source. The Lippy well, which was removed from service in 2003 due to high nitrates, is currently undergoing rehabilitation in an attempt to restore this well as a potable supply.

In 1994, the Town of Manchester hired the firm of Tatman & Lee to study its existing and future water supply sources in light of new regulations adopted in recent years. This study assessed the quantity and quality of existing water supplies and evaluated the disposition of the Town's springs. A hydraulic model of the Town's entire water system was developed along with a 15-year projection for the amount of water storage needed. The Town of Manchester is currently using this study as a guide for developing new wells for future growth in and around the Town and for developing capital improvements to the system.

Using information provided by the study from Tatman & Lee and funding from State and local government, the Town has been able to secure additional water storage for the system by installing a 500,000-gallon water storage tank on York Street in 1998. This tank replaces a former 150,000-gallon tank. Also in 1998, all water pumping stations were upgraded by the installation of new pumps, piping, and chemical feed systems. In 1999, a Radio Telemetry System was installed to control the water system.

The proposed optimum growth goal for the Town's water service area indicates that the Town's future water needs may be adequately served by water resources existing within the anticipated service boundaries of the Town.

At such time as the Union Mills Reservoir is constructed on Big Pipe Creek north of Westminster, this long-range surface water facility could serve as a supplemental source should the need arise.

Allocation Procedure

Prior to approving a development of more than two units, the Town requires that the developer provide a water supply that will deliver 375 gallons of water per day for each equivalent dwelling or commercial unit. Wherever possible, the required water supply is located within the proposed development and the developer is responsible for drilling and testing the well under the supervision of the Town or its agent. In cases where a well meeting these requirements cannot be located within the proposed development, the developer may, if the Town has sufficient water, be assessed a water replacement fee for each equivalent dwelling or commercial unit. The fee is payable prior to the issuance of a building permit. In 2002, the water replacement fee was increased to \$5,000.

In addition, Section 89 of the Town Code requires that public facilities, including water, be adequate in order for the Planning Commission to approve a project at each stage of the development approval process.

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Hampstead Water Service Area (see Map W-4)

The Town of Hampstead owns and operates the community water supply system which limits service to the corporate boundary. Approximately 96 dwelling units in the County receive public water service because they were connected to the system before this policy was adopted by the Town in 1962. The existing and planned service area is situated in the northeast section of the County along MD 30 and covers approximately 2,479 acres.

Current Water Supply

The system, which was built by the Town in 1936, is supplied by 17 wells. All sources pump directly into the system following chlorination and pH adjustment using soda ash. The operation and production of the pumps in the wells are controlled and monitored by a mechanical system and time clocks. The Town has installed a computerized control (SCADA) system in four pump houses and in the Panther Drive and North Hampstead water storage tanks.

A 100,000-gallon storage tank was constructed on the central-eastern side of the Town as part of the original water system built in the 1930's. The Hillcrest Street tank remains in service today. In 1975, the Town built a 500,000-gallon storage tank near North Carroll High School. The Panther Drive water tank was repainted in the spring of 2005. In 2001, the Town built a 400,000-gallon storage tank near the North Carroll Shopping Center. The three tanks provide water storage of about one million gallons, about 2½ times greater than the current demand.

The Water Resources Administration has issued an allocation of 521,400 gallons per day (gpd) for average usage and 743,300 gpd for maximum usage. During 2004, the average daily use was approximately 423,666 gpd. The Town has applied for an increased groundwater appropriation permit for 580,000 gallons per day.

The following data represent average water flows in gallons per day from 1982 to 2004:

Year	Average Gallons Per Day
1982	143,350
1983	144,988
1984	156,038
1985	171,370
1986	176,532
1987	181,784
1988	231,781
1989	218,326
1990	233,877
1991	281,018
1992	264,016
1993	346,000
1994	342,000
1995	359,000
1996	365,000
1997	371,000
1998	366,000
1999	367,000
2000	383,000

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2001	403,000
2002	394,166
2003	415,417
2004	423,666
2005	444,000

After a long-term operational test, Well 22 (near the Robert's Field Shopping Center) was returned to service. The conditions for operating the well are an average daily use of 30,000 gpd and a daily average of 40,000 gpd for the month of maximum use.

In 2006, two wells (PW20 and PW21) are temporarily out of service due to high nitrate levels. The Town is working on a project to connect these two wells to low nitrate wells in a new pumping station.

MTBE contamination was discovered in private wells in the Hillcrest area, very near the town limits and in the planned service area. The Town offered to annex these properties and serve them with public water. However, the annexation was not supported by a majority of the residents.

Hampstead Community Water System Sources - Appropriations

Water Source	Permit Number	Permitted Daily Average Use (gpd)	Average Day Demand Month of Maximum Use (gpd)
Wells	CL1974G062 (06)	273,000	387,500
Wells	CL1974G162 (02)	218,400	315,800
Wells	CL1974G362 (01)	30,000	40,000
Total		521,400	743,300

Future Water Supply Sources

The Town of Hampstead is approaching build out and plans to rely on groundwater sources to accommodate infill development. Exploration for new groundwater wells at the Leister property was unsuccessful. Exploration of other new sources will continue with the search a focusing on water quality as much as quantity. Service to the Priority and Future Service areas identified in this plan will require annexation by the Town of Hampstead and provision of additional groundwater resources. Limited sewerage treatment plant capacity and current inadequate school facilities make development of these areas unlikely in the near timeframe.

Allocation Procedure

Development which is planned to be served by the community water system is required to provide the water needed. Each proposed dwelling unit must be supported by a well producing 375 gallons per day. If water cannot be located onsite, the developer is required to pay a well replacement fee, which is \$800 per unit.

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Westminster Water Service Area (see Map W-5)

The City of Westminster owns and operates the community water supply system serving the City and areas beyond the corporate limits. The existing and planned service area is located in central Carroll County and covers approximately 7,704 acres.

The system, which dates back to 1898, was purchased by the City of Westminster in 1964 from the Maryland Water Works Company.

Current Water Supply

A major source of water is Cranberry Branch, a tributary of the West Branch of the Patapsco River. A small reservoir is located north of Lucabaugh Mill Road. From that point, a 30-inch transmission line runs for approximately 7,500 feet along Cranberry Branch to the water treatment plant in Cranberry.

In the same vicinity, the City also extracts surface water from the West Branch of the Patapsco, also known as Hull Creek. A small impoundment and an infiltration gallery are located in Bennett Cerf Park and a 14 to 16-inch transmission line allows for gravity flow to the water treatment plant at Cranberry. The City has an appropriations permit to withdraw 2.0 mgd from these two sources combined.

Because these streams eventually supply Liberty Reservoir, low stream flow below 0.85 cubic feet per second (cfs), or 0.56 mgd at the gauging station, requires augmentation. This is accomplished by pumping water from the Koontz Creamery well into a third tributary until the gauge exceeds 1.62 cfs (1.05 mgd). The City purchased the Koontz Creamery well in 1974 in order to meet increasing demands on the City's water supply sources. However, the Koontz Creamery well is not connected directly into the City's potable water system due to the presence of hydrocarbons. Since the City was approaching the maximum withdrawals possible from Cranberry and Hull Creek, and in order to maintain a stipulated minimum streamflow, the State agreed to the supplementation procedure noted above. This pumping has been permitted under a State-approved discharge permit. The mixing, dilution, and aeration of the Koontz Creamery well water enables dissipation of the pollutants.

A portion of the groundwater supply located in the Westminster area has become contaminated. The areas occupied by the Koontz Creamery well, the Old Westminster Sewage Treatment Plant, and the old City landfill have known pollutants which prohibit the use of the groundwater for potable water supply.

The City has been continually working to develop groundwater supplies. Consultants have been hired to conduct hydrogeologic evaluations for the purposes of selecting test sites for high-yield wells. To date, there are eight wells which have been developed and are in service. The well located within the County Air Business Center (Well 4) is permitted at 0.17 mgd. Well 6 is located on South Center Street, and is permitted at 0.10 mgd. The third well (Well 3) is permitted at 0.10 mgd and is located at the County maintenance facility on Old Meadow Branch Road. The well on Krider's Church Road (Well 5) is permitted at 0.230 mgd and is on property

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formerly owned by the State Highway Administration. The Carfaro well (Well 7) is located near the intersection of MD 31 and Windsor Drive next to the Furnace Hills development and is permitted at 0.300 mgd. The two companion wells, Wells 9 and 10, are located on what is known as the Koontz property, which is located along the north side of MD 140, in the vicinity of its intersection with MD 31 and is permitted at 0.125 mgd. The Vo-Tech well (Well 8) is located on the site of Westminster High School on Washington Road, adjacent to the County's Career and Technology Center, which is part of the County's high school system, and is permitted at 0.119 mgd.

The City also has water sources within the Wakefield Valley, an area southwest of central Westminster. The entire valley is underlain with Wakefield Marble, which is the most prolific groundwater aquifer in the County. The Wakefield wells (Wells 1 and 2) are permitted at 0.197 mgd combined. Once a satellite system, this system has been tied into the central system. With both systems now connected, the Wakefield Valley can be served by the central system in the event of any problems with Wells 1 and 2 or the Wakefield Water Storage Tank.

Westminster Community Water System Sources - Appropriations			
Water Source	Permit Number	Permitted Daily Average Use (gpd)	Average Day Demand Month of Maximum Use (gpd)
Cranberry Branch/Hull Creek	CL1957S002 (06)	2,000,000	3,000,000
Koontz (for stream augmentation only)	CL1977G036 (05)	500,000	750,000
Airport (Business Center (Well 4))	CL1977G136 (04)	170,000	180,000
County Maintenance Facility (Well 3)	CL1977G236 (03)	100,000	120,000
South Center Street (Well 6)	CL1977G336 (02)	100,000	115,000
Kriders Church Road (Well 5)	CL1977G436 (02)	230,000	300,000
Wakefield Valley (Wells 1 & 2)	CL1977G536 (02)	197,000	250,000
Carfaro (Well 7)	CL1977G636 (03)	300,000	350,000
Vo-Tech (Well 8)	CL1977G736 (02)	119,000	288,000
Koontz Property (Wells 9 & 10)	CL1977G836 (01)	125,000	150,000
Roop Mill Well* (Well 11)	CL2000G025 (01)	135,000	187,000
Total Available		3,976,000	5,690,000
Medford Quarry (Emergency source)	CL2002S042 (02)	139,000	500,000

* Not in use

The average day permitted use of all sources currently in use is 3.841 mgd. However, recent history indicates that these resources have not been able to sustain this yield under drought conditions. The City of Westminster is currently preparing a Water Capacity Management Plan, as required by Maryland Department of the Environment, to address this supply issue in greater detail. Preliminary results of that Plan indicate the total system's capacity during a severe drought is 2.2 mgd.

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Treatment Facilities

The Water Treatment Plant is located on Old Manchester Road in Cranberry. This facility treats water from two surface sources and has a capacity of 2.75 mgd. Treatment consists of an uplift sand filter system, and additions of lime and the coagulant Ultrion, with chlorination and fluoridation. In early 1992, improvements to the facility, including construction of a new clearwell, were completed. Sludge that is generated at the water treatment plant is conveyed into the sewerage system and ultimately treated at the Wastewater Treatment Plant.

In 1996, the City installed a mechanical mixer in the Cranberry Branch Reservoir which keeps the water in the reservoir from stratifying, preventing odor and taste problems with the City's water. Additionally, two compressors and a piping network, which provide fine-bubble aeration, also operate as a backup system.

In 2004, the City commissioned the Design Report for Membrane Filtration at the Cranberry Water Treatment Plant. The submerged membrane upgrade at the Cranberry Water Treatment Plant will enhance the City's ability to provide quality drinking water and to comply with new regulations, known as the Long Term 2 Enhanced Surface Water Treatment Rule (LT2 Rule). The major objective of this rule is to increase protection against microbial pathogens in drinking water, including Cryptosporidium. The LT2 Rule will supplement existing regulations by targeting additional Cryptosporidium treatment requirements and disinfection benchmarks. This approximately \$5.5 million upgrade should help the City meet and exceed current and future regulations as adopted by the U.S. Environmental Protection Agency. It is anticipated that the City of Westminster will secure funding through the Maryland Department of Environment's Water Quality Revolving Loan Fund. Final approval of the bid for equipment is currently pending from MDE, and design work is nearing completion. The City anticipates that construction will begin during Fiscal Year 2006.

Fluoridation is provided directly at all City wells.

Storage

A raw water reservoir having a capacity of 121.8 mgd is located along Cranberry Branch north of Lucabaugh Mill Road. All water in the impoundment is pumped from the raw water intake on Cranberry Branch. The 30-inch transmission line from the intake to the treatment plant also connects the reservoir to the treatment plant. The water in the reservoir is used either when conditions prevent direct withdrawal from the stream or to supplement low stream flow.

Treated water is pumped to, and stored in, four locations:

- clearwater reservoir off Gorsuch Road, with a capacity of 1.0 mg
- 1.5-mg water tank off Hook Road
- 0.5-mg elevated water tank on the McDaniel College (formerly Western Maryland College) campus

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- 2.0-mg high zone water tank located off Gorsuch Road
- 2.0-mg storage tank on Sawgrass Court in Wakefield Valley

Future Sources

In the short term, the City will continue its program of developing new wells to keep pace with the demands of new growth. Additional sources not currently programmed will need to be developed to accommodate the current water deficit and the growth planned for the Priority and Future Planning categories as evidenced by the projected water demand and planned capacities shown in Table 2.

The quality and quantity of groundwater readily available for use is, at best, uncertain, and a few areas of questionable groundwater quality are suspected. Development of groundwater sources is expensive and highly regulated by the State.

The City has drilled test wells in several areas. The City is also considering a potential drill site on the Frock property located on Bond Street.

The City is pursuing a permanent emergency connection of the Medford (Genstar) Quarry. In that regard, the City has water rights assigned to it by the County resulting from an older agreement with the Quarry's predecessor. This connection would be a twelve inch water pipe that would be buried along MD 31. The total length of the pipe is approximately 7 miles and will discharge the water into the raw water reservoir on Lucabaugh Mill Road. This connection will be used for emergency purposes only, and the City denied access to all properties adjacent to this pipe that are outside the City of Westminster's Priority Funding Area. Those properties denied access are referenced by Map, Block, and Parcel Number. They are as follows: Map 45, Block 19, and Parcel 186; Map 45, Block 19, and Parcel 203; Map 45, Block 19, and Parcel 204; Map 45, Block 20, and Parcel 206. The City has an application pending to extend a raw water line from Hyde's Quarry to connect into the City's system for additional supply during emergency situations. The City has received an appropriation permit for the Roop's Mill Well. The well has been permitted at 135,000 gpd and 187,000 gpd during the month of maximum use. Development of this well will be completed with the residential development of the adjacent Roop property.

Furthermore, the City acquired the Dutterer property for development into a public park. The site is located on Winter's Alley, east of Pennsylvania Avenue, and was formerly part of the Dutterer's Florist operation. The former greenhouses on the property were supplied by a high yield well on the site. The City will be investigating the production of this well and the possibility of developing it into a public water supply.

Given the current water supply deficit, the City is exploring several options to develop new sources of water supply. Ultimately, the existing sources will be supplemented with water from the planned Union Mills Reservoir. This facility will be located on Big Pipe Creek north of the service area. Carroll County has been acquiring land for this facility as it becomes available.

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In the interim, the City is working with the County to develop an agreement allowing the City to develop wells and/or a surface intake from Big Pipe Creek in the Union Mills area. These interim water sources, however, cannot threaten the eventual construction of the reservoir.

The City is also investigating the use of Hyde's Quarry for use as a raw water reservoir, converting the Koontz Creamery well to a potable source, and use of a surface water intake on Little Pipe Creek.

The City plans to raise the water elevation of the Cranberry Reservoir to increase storage capacity of that source.

Allocation Procedure

Adequate Public Facilities certification is required for water system capacity at preliminary and final development plan approval stages. A water benefit-assessment is levied on each new residential lot to defray the costs associated with the development and maintenance of public water facilities. In 2005, the water benefit-assessment fee was \$4,370 per residential lot, in addition to the connection fee and cost of the meter. The water benefit-assessment is also levied on multi-family dwellings as well as industrial uses, commercial uses, and other non-residential uses.

In accordance with Ordinance No. 677, the City must receive a completed application for water service accompanied by the payment of all fees, after which the City will review the application. The City may accept the application provided that the property to be served is identified as W-1 or W-3 in the Carroll County Master Plan for Water and Sewerage. Additionally, the development of the property must be consistent with the current City/County Agreement, unless the Mayor and Common Council grant a waiver for good cause.

Because of the current water supply deficit, the City is deferring all applications for water service. Once plans are in place to address the deficit, and new supplies are developed and connected to the system, the City will adopt a policy explaining how it will allocate that supply to new users.

Union Bridge Water Service Area (see Map W-6)

The Town of Union Bridge owns and operates the community water supply system, which serves approximately 1,049 people residing within the Town's corporate limits. The existing and planned service area is situated in the west-central portion of the County and encompasses approximately 1,352 acres.

Current Water Supply

The Town has completed several major system improvements since the plan was last undated in 2002/2003. The system is supplied by two wells. The Town's primary well, located on West Locust Street, was purchased from the Union Bridge Water Company in 1963. The well

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was drilled in 1913 and is estimated to have a safe yield of 0.576 mgd. A second well became operational in 2003. This well is located near Whyte Street, on property owned by the Union Bridge Fire Company. The Town has secured an easement from the fire company for the well and a buffer area surrounding the wellhead. This well has an estimated safe yield of 0.100 mgd. The wells are combined under appropriation permit # CL1979G048(05) for 0.166 mgd average use.

Both wells are tied into a new 300,000 gpd water treatment plant (WTP), constructed in 2004. Due to concerns that these wells are “under the influence” of surface water, and also due to rising nitrate levels, the Town installed a filtration system, nitrate removal equipment, and telemetry as part of the new WTP project.

A third well (#3) has been drilled north of MD 75 on property annexed by the Town in 1992. This property is proposed for residential and commercial development. Well #3 is housed in a new water treatment plant, which also has filtration and nitrate removal equipment. This well should be placed online in 2006, and has an estimated yield of 144,000 gpd. The cost of drilling, testing, and bringing the well online will be borne by the developer. The well will be connected by means of an 8-inch water main extension into the Town’s system.

Average daily metered water use is estimated to be .114 mgd, and the system serves approximately 1,049 people. Actual water pumped was .181 mgd in the given time period. However, this figure is skewed due to leakage. The Town is implementing a leak detection and repair program.

The Town’s water has a high hardness rating with a pH value of 7.6. A chlorine generation system was installed as part of the WTP project in 2004.

Union Bridge Community Water System Sources - Appropriations			
Water Source	Permit Number	Permitted Daily Average Use (gpd)	Average Day Demand Month of Maximum Use (gpd)
Locust St. and Whyte St. Wells	CL1979G048 (05)	166,000	200,000
Phillips Well (not in use)	CL1979G148 (03)	42,300	82,000
Total		208,300	282,000

Storage

The water supply system uses one glass-lined steel tank for storage. This elevated tank has maximum capacity of .3 mgd, and reserves a two- to three-day supply for residents in the event of a well failure. This elevated tank was constructed in 2003 and replaced a .29 mgd ground level tank. The elevated tank significantly improved water pressure for residential use and fire protection.

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Distribution Mains

New eight-inch water lines, water meters, automated meter reader technology, valves, fire hydrants, and related water improvements were completed in Main Street, Locust Street, East Elger Street, Lehigh Drive, and White Street in 2003 and 2004. The new mains replaced substandard four and six-inch lines, and provided for “looping” at several locations in the system. Fire protection was enhanced with increased water volume and pressure and the installation of additional or improved fire hydrants. A new water distribution main was also extended along Ladiesburg Road and Quaker Hill Road to service new development, particularly the Shriner Court elderly residential development.

As part of its water system improvement project, the Town installed updated computer systems and water billing software. The new billing system is part of an automated meter reader system installed with the new water meters.

Planned System Improvements

A second elevated water storage tank will be constructed in the northeast quadrant of the Phillips property to serve future development.

The West Locust Street Well #1 (the Town’s primary well) will be rehabilitated by 2006. The well was drilled in the early 1900’s and needs to be re-lined and rehabilitated to reduce the influence of surface water.

In connection with the planned development of the Bowman property, a well has been located and drilled with a yield of 130 gpm. A water appropriation permit from MDE is pending for this well.

Maintaining Development Density

The planned water service area for Union Bridge and its environs is comprised predominately of higher density residential, commercial, and industrial land use designations and zoning classifications. The Union Bridge Community Planning Area also contains nearly 420 acres of Conservation zoning, located in the vicinity of Little Pipe Creek. Although planned to be served by both community water supply and sewerage systems, the Town has been successful in securing portions of the Conservation zone for public use. As areas are annexed or developed, the Town has acquired environmentally sensitive areas including wetlands, floodplains, streams, and forests. Union Bridge has promulgated a policy to create greenways surrounding the Town. These greenways will be protected and used for recreational enjoyment of the public. However, the Town may allow underground public water lines, sewer lines, and other public transmission lines, to be placed within the greenway areas. The Conservation zoning classification permits a lower density of residential development (i.e., minimum 3-acre lot size for conventional residential development) than is generally found in areas planned for community services. The Union Bridge Zoning Ordinance contains a provision for cluster subdivisions whereby conservation zoned land which is planned for both community water and sewer service may be subdivided into smaller lots. In order to cluster the lots, the number of proposed lots may not

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exceed the number that would be permitted with a conventional development, and the unlotted portion of the development, derived from the reduction of lot size, must be provided and maintained as “common open space”. The Town of Union Bridge anticipates that these conservation zoned areas will develop as cluster subdivisions so that small lots that will be served by community water and sewerage may be concentrated on the most developable land and the remaining land, comprising steep slopes, floodplains, and streams, may serve as open space. However, the Town will continue to call for the protection of sensitive areas and the preservation of open space and parkland including the formation of municipal “greenways” and linear park systems along Little Pipe Creek and Cherry Branch.

Allocation Procedure

A lack of new subdivision activity in Union Bridge has resulted in an unofficial “first come, first serve” allocation policy for Town water services. Any new development activity that necessitates an expansion of the existing water system will be required to provide the additional water at the sole financial responsibility of the developer; no burden for the expansion will be borne by the existing residents of Union Bridge. No reservations or set-aside policies are provided for business or industrial users. However, the Town reserves the right to adopt a policy to reserve a portion of its water and sewerage capacity for commercial, industrial, and institutional uses. A water benefit-assessment fee is charged for all new residential and commercial uses.

The Maryland Department of the Environment and the Town of Union Bridge are considering a program involving the acquisition of property and/or transference of water recharge easements as a means to increase the land area within the Union Bridge watershed surrounding certain wells. The Town and MDE are working to approve deed restriction language to achieve the goal of allocability transference. MDE is also reviewing this proposal with the Maryland Department of Agriculture to determine what degree groundwater allocability is eligible for transference from lands in agricultural preservation.

Union Bridge may require additional water allocation based on an estimated average of 320 gallons per day (gpd) per residential dwelling unit, in order to provide sufficient public drinking water to service new development and growth.

New Windsor Water Service Area (see Map W-7)

The community water supply system in New Windsor is owned by the Town and is operated by the Maryland Environmental Service (MES). The system serves residents and businesses within the corporate limits of the municipality. The existing and planned service area is located in the west-central portion of the County and encompasses approximately 944 acres.

Current Water Supply

The New Windsor Municipal Water System is supplied by spring and well sources. These sources include Main Spring, Roops Meadow Spring, the two Hillside wells, Dennings

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Well, and Dennings Spring. Water from the new Dennings Well travels by a 4-inch diameter gravity pipeline that feeds directly into the Main Spring system. The combined waters are then conveyed through approximately four miles of 8-inch cast-iron pipeline to a 50,000 gallon chlorine contact tank which feeds the Town's Main Water Pumping Station. Roops Meadow Spring and Dennings Spring, additional longstanding water sources for the system, are currently not utilized as they have been determined to be under the influence of surface water by MDE and would require treatment before using. The two Hillside wells located at the south side of Hillside Drive pump water directly into the Town's water distribution system. For the past year the Town has only pumped from Well No. 1 due to water quality problems in Well No. 2. A contingency plan remains in effect with the Lehigh Portland Cement Company, which would provide water in the event that quarry operations were to adversely affect Roops Meadow Spring. The Town of New Windsor currently has an Appropriation and Use Permit for an emergency use only municipal water supply. The permit allows an average daily withdrawal of 100 gallons on a yearly basis and maximum daily withdrawal of 250,000 gallons from Dickenson Run. The point of withdrawal is designated as 211 High Street, New Windsor, Carroll County, Maryland. The Town is presently permitted for an average daily total demand of 196,000 gpd from the system's multiple sources.

New Windsor Community Water System Sources - Appropriations			
Water Source	Permit Number	Permitted Daily Average Use (gpd)	Average Day Demand Month of Maximum Use (gpd)
Main Spring	CL1978G022 (05)	143,000	202,000
Roops Meadow Spring	Same		
Dennings Well (DS-1)	Same		
Main Spring Well (MSF-5)	Same		
Hillside Wells (No. 1 & 2)	CL1992G049 (01)	53,000	80,000
Total Available		196,000	282,000
Dickinson Run (Emergency source)	CL1977S054 (03)	100	250,000

In 1998 the Town created a Water Task Force to assist the municipality in developing a program for making systematic improvements to the water supply system. As a result, a "water budget" analysis was completed to determine the amount of potential State water appropriation that can be made available to the Town; water exploration has been undertaken and test wells drilled on the Town's Dennings Tract and Main Spring Farm. The Dennings Well (DS-1) has been constructed and is connected to the system as a production well. Another new well (MSF-5) at Main Spring Farm has been constructed and incorporated into a new umbrella permit (noted in the table above) issued by the State for the Town's water supply sources. Once engineering is completed for the Main Spring Well (MSF-5), it can be connected to the system.

Future Sources

Test Well MSF-6 at Main Spring Farm in the vicinity of Well MSF-5 must be further tested and pumped to determine if turbidity levels can be reduced to acceptable levels, which will enable it to be added to the water supply system as a production well. The Atlee Ridge Well, drilled in 1992 by the developer of Atlee Ridge Subdivision, is a possible future source.

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Extensive testing of both quantity and quality will be necessary before this source can be utilized. The Town will also continue efforts to locate additional water supply sources.

Storage

Water from the Main Spring and the new Dennings Well flows by gravity through a pipeline to a 50,000 gallon chlorine contact tank for treatment . From there the water flows through a booster pump station and pumped into the distribution system and ultimately into two water storage tanks . The Hillside wells are also pumped into the distribution system. Storage consists of a 250,000 gallon finished water standpipe and a 375,000-gallon water storage tank located on Town property next to the first tank.

As a result of the Water Task Force's efforts in 2001, the Town engineer was asked to develop a *Comprehensive Water System Improvement Plan* to address system operation and improvements. This Plan notes that the existing raw water reservoir no longer meets current water quality requirements since it is unlined and uncovered. The Town plans to abandon the existing reservoir. The new 375,000-gallon storage tank provides additional finished water storage previously provided by the reservoir. A new chlorine storage tank facility is presently being engineered and will be located at the existing reservoir site. The existing chlorination equipment will be moved from the main booster station to this new location.

System Improvements

In addition to the above mentioned improvements, the Town *Water System Improvement Plan* includes several water main projects, additional pumps, instrumentation and telemetry, and installation of flow meters and level indicators, all to improve the effectiveness of the distribution system. This plan is the basis for the Waterworks Improvement Projects Priority List, which contains cost estimates and recommended sequencing of each project. This list in turn forms the basis for a capital improvement program for the water system to implement the needed improvements to the system. The *New Windsor Water System Improvement Plan*, as it may be amended from time to time, is made a part of this Plan by reference. In March 2005, the Town of New Windsor authorized ARRO Consulting, Inc. to determine the available water supply and sewer treatment capacity remaining for the Town. The report is being finalized and contains a comparison of current water and sewer needs, future needs, and available resources along with recommendations to manage and address capacity issues.

Allocation Procedure

New Windsor follows a "first come, first served" policy for the allocation of available water service. Subdivision or development activity is a developer or new-user expense. Currently there are no "set-aside" policies for business or industrial users. "Adequacy" of the water supply system is a prerequisite to executing public works agreements or making new connections for water service to new customers (*New Windsor Code §92-46*).

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Taneytown Water Service Area (see Map W-8)

The City of Taneytown owns and operates the community water supply system and generally limits service to the area located within the City's corporate boundary. The overall planned water service area covers approximately 3,133 acres within and bordering the municipality and is situated in the northwest portion of the County along MD 140 and MD 194.

Current Water Supply

Taneytown's water supply system relies on groundwater which is supplied by eight municipal wells. Wells 8, 9, 11, 12, 13 have a permitted average day capacity of 390,000 gallons. Well 14 provides an additional 90,000 gallons average day capacity. Wells 15 and 16 were recently placed in service and are permitted for 103,000 gallons average day capacity. In recent years, the production from Well 11 dropped off considerably. In an effort to address the problem, the City lowered the level of pumping and continues to use the well every other week, alternating with Well 12. Shortly after Well 14 was put into production, residences along Fringer Road began having problems with their individual on-lot wells. The Water Management Administration (MDE) determined that Well 14 was causing the problem. The City was required to replace 12 impacted domestic wells and monitor other wells that could potentially be affected.

When signaled by a level controller at the City's 150,000-gallon (0.150 mg) elevated storage tank, all six wells are activated. Chlorination by chlorine gas cylinders, the only treatment used, occurs at each pumphouse, with the exception of water from Wells 11 and 12 which is treated at the Well 11 pumphouse.

After chlorination, water is pumped directly into distribution mains where system pressure forces the water into the City's two aboveground storage tanks, a 0.150-mg elevated tank and a 0.460-mg standpipe. The combined storage of 0.610 mg provides a one-day to two-day supply of water based on actual consumption. In addition to maintaining constant pressure throughout the system, the storage tanks also provide an adequate supply for firefighting.

In 2004, the community water supply system served a residential population of approximately 5,421. Total water production (as metered at the City's production wells) from January 1, 2004 through December 31, 2004 was recorded to be approximately 174,847,000 gallons, or an average of 479,033 gallons per day. Total water consumption (as metered by all users) during the same period was recorded at 118,615,300 gallons, or an average of 324,973 gallons per day. The recorded difference between water produced and consumed amounted to 56,231,700 gallons, or 17.5 percent of total production.

The City estimates that 80 percent of total consumption is generated by the residential population.

As described above, the amount of water that is pumped from the City's wells is substantially greater (i.e., by 32 percent) than that which is metered and consumed. This unaccounted for loss of water through the system indicates that the water distribution system may contain severe leaks. Part of the discrepancy results from the fact that certain institutional

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users are not metered, including City government offices, parks, and water taken directly from fire hydrants for such purposes as suppressing fires and street paving. The City has instituted an ongoing meter replacement program to replace meters as they age and slow down, which results in the under-reporting of water usage. City staff continually monitor and repair leaks in water mains throughout the system. The City also retained a specialist to locate leaks in June 2005. Several significant leaks were located and repaired. The City will continue to pursue leak repair with the goal of reducing leakage to 10-15 percent.

Water Source	Permit Number	Permitted Daily Average Use (gpd)	Average Day Demand Month of Maximum Use (gpd)
Wells 8, 9, 11, 12 & 13	CL1978G079 (07)	390,000	475,000
Well 14	CL1978G179 (04)	90,000	197,000
Wells 15 & 16	CL2004G018 (01)	103,000	141,000
Total		583,000	813,000

System Improvements

As part of the MD SHA Baltimore Street Reconstruction project, the City will replace the existing water line in Baltimore Street from the traffic circle at Antrim Boulevard to Harney Road. Parallel 8-inch ductile iron water mains (17,000-LF) will be located on both sides of Baltimore Street. This water line replacement is anticipated to begin in Spring of 2007.

The City is planning to perform a water tank siting study during 2005 to identify a site for a new water storage tank. Following siting and acquisition of property, the City will construct a new 300,000-gallon storage tank before the end of 2006.

If the City proceeds with plans to expand their water production capacity by developing a surface water supply with a production capacity of >1.0-MGD, the City will site and construct a new 450,000-gallon storage tank after which, the existing 0.150 mgd elevated storage tank will be dismantled. The timing of such a project, should it occur, will be tied to the development of a surface water source, which is estimated to be three to five years out.

The City has detected elevated levels of PCE in the water quality samples of Well No. 9. The City suspects that the plume that contaminated Well No. 13, which is currently being remediated by MDE and ESAB, is migrating towards Well No. 9. The City and MDE are monitoring the PCE levels. The source of detected PCE in Well No. 9 has not been determined. If levels continue to rise, it will become necessary to treat the water pumped from Well No. 9 prior to introduction to the transmission system. Carbon filtration is the most likely means of treatment. The timing of this project, should it occur, cannot be estimated by the City at this time.

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Future Water Supply

The City is studying the most effective means of expanding their production capacity out of existing wells (8, 9, 10, 11, 12, 13, and 14) to overcome the production deficit caused by the contamination of Well 13. Following completion of the study (by November 2005), the City will proceed with recommended projects to increase production capacity. This may include, but is not limited to, the rehabilitation of existing wells, provision of new private wells to homeowners impacted by increased operation of City wells, and production of new public wells. The City will continue to depend on developing new wells to keep pace with the demands of new growth. Additional sources not currently programmed will need to be developed to accommodate the growth planned for the Priority and Future Planning categories.

The City is investigating the feasibility of developing a 1.5 mgd surface water source to help supplement current and future water needs. The Big Pipe Creek is the most likely candidate. Such a project would require the construction of an intake structure and raw water pumping station at the Big Pipe Creek in the area of MD 140; a one-mile raw water main from the Big Pipe Creek to Taneytown; and a new surface water treatment plant. Should the City elect to proceed with the development of a surface water source, the projected time frame for connection to the City's system would be three to five years.

To plan for and secure needed public drinking water to meet the demand generated by the approved Taneytown Master Plan, the City is considering the acquisition of water recharge areas in order to increase water appropriations from MDE to the City of Taneytown to meet water supply demands.

The City of Taneytown and MDE will need to approve deed restriction language to achieve the goal of allocability transference. This policy should be reviewed with the Maryland Department of Agriculture and Carroll County to determine what degree groundwater allocability is eligible for transference from lands in agriculture and lands subject to an agricultural preservation easement.

Allocation Procedure

The City is operating under a Consent Agreement with MDE, which limits allocation of water until corrective actions have been completed by the City. Due to the existing water supply limitations, the City of Taneytown is allocating water connections in accordance with City Resolution 2005-10, which limits connections to specific existing platted lots. Following completion of the construction of Well No. 15, Well No. 16, and existing well capacity improvements, the restrictions can be lifted.

During periods without restrictions, the City of Taneytown provides community water service on a "first come, first served" basis. Water capacity cannot be purchased in advance and is not held in reserve. Building permits are issued for new development only after all fees are paid. Included in these fees are water connection and benefit-assessment charges.

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Bark Hill Water Service Area (see Map W-9)

Current Water Supply

The Bark Hill water service area, comprising approximately 140 acres, is located on the west side (and partially on the east side) of Raywell Avenue, between Bark Hill and Middleburg Roads.

The Keyview Estates development, containing 36 lots (and 35 homes), is located on the south side of Middleburg Road. Lots range in size from approximately 20,000 to 35,000 square feet. Groundwater is contaminated within the development as a result of failing septic systems. The earliest known incidence of sewage contamination occurred in 1972. Efforts to resolve the problem were made by the homeowner in 1982. Three sites were selected for the drilling of a new well. All three sites failed to produce water of sufficient quantity or quality for residential use. Alternative sites were not available due to the small size of the lots in the development.

Additional problems with bacterial contamination, involving 12 homes, were discovered in 1983. Through the use of dye-trace testing and monitoring in 1984, three septic systems were found to be the source of contamination. As a result of an abatement order issued by the Carroll County Health Department in 1985, an attempt to renovate one of the existing septic systems using innovative methods was made at the owner's expense. The attempt was unsuccessful due to lot area constraints.

In late 1985, the Health Department issued an abatement order to a second property owner. In July, 1986, renovations were made to the onsite septic system at the owner's expense. The renovations did not correct the leakage of sewage into the groundwater. Due to area constraints, replacement of the septic system was considered infeasible unless the onsite well was eliminated.

In 1988, the Carroll County Health Department investigated the possibility of locating a community septic system on a portion of the Bark Hill Landfill property. The package disposal system would have served the Keyview Estates development. Following percolation testing, it was determined that the landfill site was unsuitable for a shared facility septic system.

Nine additional homes and a church are located within the water service area on the west side of Raywell Avenue and on the north side of Bark Hill Road. Two of the properties on the west side of Raywell Avenue have experienced contaminated wells. In July, 1989, the County installed water purification systems to both homes at a cost of \$5,000 each.

Located between these two properties and Keyview Estates are two former landfills. The smaller landfill (approximately 3 acres) was owned and operated by the Town of Union Bridge. The larger landfill, Bark Hill Landfill, comprises approximately 20 acres and was originally privately owned and operated. Carroll County acquired the site in 1965 and ceased operation in 1979. Onsite monitoring wells have been sampled and tested since 1983. These wells have shown evidence of leachate. The landfill was closed out and capped in 1984. A salt storage shed was constructed and operational at the east end of the property in 1986.

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A consent agreement was executed in March, 1989, between the Maryland Department of the Environment and Carroll County. Provisions of the agreement included installation of a leachate collection system, disposal of the leachate at a permitted wastewater treatment facility, and installation of an engineered landfill cap. These actions were completed by the County in the fall of 1991.

Construction of the Bark Hill water supply system was completed in mid-1993. The system was operable June 1, 1993. As of December 1, 1993, 43 dwelling units, Francis Scott Key High School, and a church were connected to the system. The Carroll County Department of Public Works, Bureau of Utilities, operates and maintains the system.

Among the residences served by the community water supply system is an existing farm house which was previously served by a spring which was inadequate. The residence is located on property on the west side of Francis Scott Key High School and is approximately 400 feet west of the County well that supplies water to the system. There is no intent to serve any subsequent development of the property.

Water is supplied by two wells. The newer well, located southeast of the Bark Hill Road/Raywell Avenue intersection, has a rated capacity of 60 gallons per minute. Water treatment includes chlorination in addition to nitrate removal using reverse osmosis. The older well, which has served Francis Scott Key High School for years and is located northeast of the newer well, is connected to and is a part of the water supply system. The high school well provides a backup to the newer well.

The water supply system includes a 100,000-gallon elevated water tank to provide adequate capacity, fire protection, and stable water pressure for approximately 65 homes.

In 2004, an estimated 60 residential and 2 commercial accounts were connected to the system and consumed an average of 13,280 gpd. In 2006, rusted treatment tanks were replaced along with reworked piping at the treatment facility. In addition, the type of disinfection was switched from chlorine gas to liquid chlorine. In 2007, the elevated storage tank is scheduled to be painted.

Bark Hill Community Water System Sources - Appropriations			
Water Source	Permit Number	Permitted Daily Average Use (gpd)	Average Day Demand Month of Maximum Use (gpd)
Bark Hill wells (2)	CL1969G009 (06)	20,000	33,000

Future Use

In the long term, the water service area may need to be expanded and an additional water tank installed if groundwater contamination occurs in areas adjoining the service area where

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correction of the problem is not feasible and the only effective alternative is to provide safe water from the community system.

In the short term, the County Health Department will require that the area's failing septic systems be replaced, using conventional systems, where possible, and innovative and alternative systems, where necessary.

Pleasant Valley Water Service Area (see Map W-10)

Current Water Supply

The Pleasant Valley planned water service area, comprising approximately 37 acres, is located on both sides of Pleasant Valley Road between Richardson Road and Hughes Shop Road. An estimated 50 residences, 5 businesses, and the Pleasant Valley Fire Department are located within the area. Forty-four residences in the area were served by a privately owned community water supply system until 1991 when the County accepted responsibility for the system. The original system dated back to around 1929.

The County acquired ownership of the community water supply system and land in 1993; construction of a new system was completed in 1994.

As part of the new water supply system, the County constructed a new water distribution system. Meters, vaults, hydrants (for fire protection), a standpipe (60,000-gallon storage), and approximately 3,470 feet of 8-inch ductile iron pipe (DIP) were installed. Service connection for an estimated 61 homes and buildings was provided. All three of the old wells have been abandoned and sealed.

In November 1997, the County drilled two test wells on County-owned property located on the north side of Pleasant Valley Road between Halter and Hughes Shop Roads. A new well, Well 2, was completed and tested for production use. The well, which has a yield of 15 gpm (21,600 gpd), has no water quality impairments and was placed in service.

The County is working to locate and develop a backup well.

The upgraded system provides 40 pounds of pressure per square inch (psi) at each house and 60 psi in the main line. By providing adequate and constant water pressure, the water system will be safeguarded from the danger of contaminants being siphoned back into the system from the user end of the water pipe (e.g., a faucet or garden hose).

Initial treatment included chlorination. Fluoridation was added in late 1994.

Since completion of the system upgrade, the Carroll County Department of Public Works, Bureau of Utilities, has operated and maintained the new water supply system.

Carroll County Master Plan for Water & Sewerage

Provisions to reduce water demand are limited in the County. Each house is separately metered and is charged according to the gallonage of water used. The Carroll County Plumbing Code requires that new homes have volume regulators, a water-saving device, on all faucets.

In 2004, an estimated 50 residential and four commercial accounts used an average of 5,780 gpd.

Pleasant Valley Community Water System Sources - Appropriations			
Water Source	Permit Number	Permitted Daily Average Use (gpd)	Average Day Demand Month of Maximum Use (gpd)
Well 2	CL1995G053 (02)	10,100	17,000

Future Use

The County has a CIP project to drill and develop a backup well on Halter Road west of the stream.

Bramble Hills Water Service Area (see Map W-11)

Current Water Supply

The Bramble Hills water service area, comprising approximately 11 acres, is located on the east side of MD 27, just south of the railroad lines owned by CSX Transportation. Fourteen homes are located within the service area.

The water service area includes the Bramble Hills development, containing 14 lots, plus 5.4 acres containing the well, well house, and wellhead protection area. Lots range in size from 11,761 square feet (0.27 acre) to 26,179 square feet (0.6 acre). Six lots in Bramble Hills were originally recorded in the Land Records in 1959 at Liber 4, Folio 80. On June 9, 1965, an additional eight lots were recorded in the Land Records at Liber 5, Folio 099. On June 10, 1965, the Carroll County Health Department approved a Community Water System for lots 6 – 13. Over time, other lots within the Bramble Hills development were connected to the community water system. Presently, 12 homes are served by the water system, and two homes are served by individual wells.

The water system was operated as a privately owned, public water system until the Safe Drinking Water Act was passed in 1974. Beginning in 1974, the water system was operated as a privately owned system not subject to the Safe Drinking Water Act. In 1998, the property on which the well and pump house are located was sold. The new owner was informed by the Maryland Department of the Environment (MDE) that the water system was subject to the Safe Drinking Water Act and that she needed to operate the Spring Mills Water Company, LLC as a community water system.

Carroll County Master Plan for Water & Sewerage

On December 16, 1999, the Department of the Environment (MDE) ordered the County Commissioners of Carroll County to “provide public water to all customers served by the Spring Mills Water Company”. The Department of the Environment found that “deteriorated facilities, lack of capital, and poor management have resulted in conditions in Spring Mills that threaten the public health and safety of those who are served by the system”. After filing an administrative appeal of MDE’s order, Carroll County Department of Public Works operated the Bramble Hills water system from December 1999 through October 21, 2002 under the MDE consent order.

During the time Carroll County operated the Bramble Hills Water System, the County obtained a water appropriation and use permit from the Maryland Department of the Environment, completed required consumer confidence reports for 1999-2001, performed copper and lead tests under the State’s monitoring requirements in 2001 and 2002, billed the 12 residential customers, and took measures to update the antiquated equipment at the facility. During this time, the County was unsuccessful in acquiring the property that includes the well, well house, and distribution system.

The property containing the well and pump house was sold again in 2002. Carroll County ceased operating the Bramble Hills water system on October 21, 2002. MDE sued the new owner and the County, and after a Circuit Court hearing, the new property owner contracted with Maryland Environmental Service (MES) to operate the water system. Maryland Environmental Service operated the Bramble Hills water system as a private community water system from October 21, 2002 through June 10, 2004.

On May 6, 2004, the Circuit Court for Carroll County heard arguments to reconsider an earlier injunction and order issued by the Court. On May 11, 2004, the Circuit Court for Carroll County ordered Carroll County to begin maintaining and operating the Bramble Hills well for the benefit of those households currently supplied by the well. The Court also ordered that the land with the well and pump house, and any easement required to operate the water system be deeded to Carroll County. Carroll County assumed operation of the Bramble Hills Water System on June 11, 2004. On June 10, 2004, 5.4 acres of land were deeded to Carroll County containing the well, well house, access, and wellhead protection area.

The Bramble Hills water system consists of one well, a raw water transmission line, a treatment plant, two bladder water storage tanks, and water distribution lines. The system draws raw water from the well. The raw water goes to the plant where it is chlorinated. From the plant, the water is pumped through the storage tank into the distribution lines to the homes served by the system.

The Bramble Hills community is served by one well in the Ijamsville phyllite. The well is permitted for an average daily use of 3,300 gallons and a daily average use for the month of maximum use of 5,500 gallons. The average daily use for the month of June 2004 was 2,061 gallons. Water treatment included chlorination.

In 2004, an estimated 12 residential accounts were connected to the system.

Carroll County Master Plan for Water & Sewerage

Bramble Hills Community Water System Sources - Appropriations			
Water Source	Permit Number	Permitted Daily Average Use (gpd)	Average Day Demand Month of Maximum Use (gpd)
Bramble Hills well	CL2000G001 (03)	3,300	5,500

System Improvements

The County has developed a plan to rehabilitate the existing water system including the purchase of additional easements, the development of a backup well if needed, and the construction of a new pump house, water treatment system, and water main replacement.

Future Use

The Bramble Hills community is located in the planned future service area for the Westminster Water Service Area. However, existing lines are not within a reasonable distance for the Bramble Hills community to connect to the Westminster public system. When water lines are within a reasonable distance of the community, the Bramble Hills water system will likely be incorporated into the larger Westminster water system.

Regional Facilities

The following discussion relates to areawide water supply management and is, therefore, not restricted to a single service area.

Carroll County Government adopted a policy of pursuing a diversified and balanced approach to supplying the County's water needs in the 1970 County Master Plan for Water and Sewerage. This approach has followed through time and continues with the adoption of this Plan. A summary of actions necessary to implement the policy follows:

1. Acquire and reserve land to develop dependable surface water supplies to prevent the natural surface water impoundment sites from being preempted or restricted by one means or another. Proceeding with acquisition of land for the Union Mills and Gillis Falls Reservoirs will preclude the possible partial or complete loss of these respective valuable resources.

Implementation since 1970:

The preceding has been followed by the County since 1970. Approximately 73 percent of the land area required for the Union Mills and the Gillis Falls Reservoirs had been purchased by the end of 2004.

2. Solve water-related problems of distinct local geographical areas with area-wide solutions.

Carroll County Master Plan for Water & Sewerage

Implementation since 1970:

The planned Gillis Falls and Union Mills Reservoirs are envisioned as regional facilities, available to provide drinking water to areas of the County where there is an insufficient groundwater supply. Development of these regional supplies will be necessary to balance the County water budget according to the 1987 Water Resources Study.

3. Make full use of groundwater where economically feasible and available in quantities practical for extraction.

Implementation since 1970:

The Carroll County Water Resources Study (1988) identified where groundwater is available to provide municipal water supplies and where the need presently exists to develop the planned surface water supplies. Current State groundwater appropriation policies have administratively limited the prior-identified resources from the Water Resources Study. This unforeseen factor may impose significant reductions in the ability to use groundwater for future growth of municipal water supply systems.

The 1981 Water and Sewer Master Plan states:

“At some time beyond 2000, and perhaps in some instances before 2000, the demands of the communities in the County will probably exceed the groundwater supply, and they will become dependent upon surface supplies. The development of the Union Mills Reservoir for Westminster water supply in the 1980’s should also provide for its future use as an ultimate supply for Manchester and Hampstead. The County should pursue the development of this source.”

“The implementation of Piney Run Reservoir is desirable as a supplement supply for the Freedom District.”

“The reservoir being studied for Gillis Falls, east of Mount Airy, should be actively encouraged. This reservoir could supply Mount Airy and other communities in the southwestern (and southeastern) portion(s) of the County.”

This commitment to the development of a multi-resource water supply, utilizing both ground and surface waters, has been part of the County’s long-range plan since the early 1970’s. The investigation of potential water resources, protection of future reservoir sites, and development of a regional water resources program have been consistently followed. The policy of water resource management on a municipal, regional, and countywide basis will be continued in the future.

Carroll County Master Plan for Water & Sewerage

Insert Table 2 Part 1 – Towns

Carroll County Master Plan for Water & Sewerage

TABLE 2 PROJECTED WATER SUPPLY DEMANDS AND PLANNED CAPACITY

SERVICE AREA	PRESENT YEAR						PRIORITY PLANNING (0-6 Year)						FUTURE PLANNING (7-10 Year)					
	POPULATION				CAPACITY MILLION GAL. DAILY (MGD)		POPULATION				CAPACITY MILLION GAL. DAILY (MGD)		POPULATION				CAPACITY MILLION GAL. DAILY (MGD)	
	TOT.	SER.	UNS.	GCPD	DEMAND	EXISTING CAPACITY	TOT.	SER.	UNS.	GCPD	DEMAND	PLANNED CAPACITY	TOT.	SER.	UNS.	GCPD	DEMAND	PLANNED CAPACITY
PUBLIC SCHOOLS*																		
Charles Carroll Elem.	379	0	6.6		0.0025	0.0640	393	0	10.0	0.0039	0.0640	413	0	10.0	0.0041	0.0640		
Mechanicsville Elementary	652	0	2.6		0.0017	0.0140	745	0	10.0	0.0075	0.0075	770	0	10.0	0.0077	0.0075		
Sandymount Elementary	635	0	3.8		0.0024	0.0050	638	0	10.0	0.0064	0.0050	655	0	10.0	0.0066	0.0050		
South Carroll High School	1356	0	10		0.0136	0.0100	1346	0	12.5	0.0169	0.0100	1205	0	12.5	0.0151	0.0100		
Winfield Elementary	831	0	4.0		0.0033	0.0027	889	0	10.0	0.0089	0.0027	912	0	10.0	0.0091	0.0027		
Runnymede Elementary	690	0	3.4		0.0016	0.0250	788	0	10.0	0.0079	0.0250	809	0	10.0	0.0081	0.0168		
PRIVATE COMMUNITY, MULTI-USE, OR PRIVATE SCHOOL																		
Ashley MHP	153	153	0	75	0.0115	0.0070	153	153	0	75	0.0115	0.0070	153	153	0	75	0.0115	0.0070
Bowling Brook Prep. School	149	149	0	58	0.0086	0.0330	523	523	0	73	0.0383	0.0330	523	523	0	73	0.0383	0.0330
Gaither Manor Apartments	400	400	0	75	0.0300	0.0250	400	400	0	75	0.0300	0.0250	400	400	0	75	0.0300	0.0250
Gerstell Academy	205	205	0	2.5	0.0005	0.0240	400	400	0	12.5	0.0050	0.0240	690	690	0	12.5	0.0086	0.0240
Golden Age Guest Home	50	50	0	100	0.0050	0.0056	50	50	0	100	0.0050	0.0060	50	50	0	100	0.0050	0.0060
Hillandale MHP	438	438	0	60	0.0263	0.0140	438	438	0	60	0.0263	0.0140	438	438	0	60	0.0263	0.0140
Lakeview MHP	99	99	0	75	0.0074	0.0800	99	99	0	75	0.0074	0.0800	99	99	0	75	0.0074	0.0800
Pheasant Ridge Estates MHP	303	303	0	75	0.0227	0.0200	303	303	0	75	0.0227	0.0200	303	303	0	75	0.0227	0.0200
Pleasant View Nursing Home	100	100	0	100	0.0100	0.0090	100	100	0	100	0.0100	0.0090	100	100	0	100	0.0100	0.0090
Ramblin' Pines Campground	468	468	0	57	0.0267	0.0461	468	468	0	57	0.0267	0.0461	468	468	0	57	0.0267	0.0461
Reservoir MHP	84	84	0	75	0.0063	0.0066	84	84	0	75	0.0063	0.0066	84	84	0	75	0.0063	0.0066
River Valley Ranch	477	477	0	50	0.0239	0.0239	477	477	0	50	0.0239	0.0239	477	477	0	50	0.0239	0.0239
Rock Brook MHP	123	123	0	75	0.0092	0.0130	123	123	0	75	0.0092	0.0075	123	123	0	75	0.0092	0.0075
Shields Todd Village MHP	234	234	0	75	0.0176	0.0200	234	234	0	75	0.0176	0.0200	234	234	0	75	0.0176	0.0200
Sullivan's MHP	123	123	0	75	0.0092	0.0088	123	123	0	75	0.0092	0.0088	123	123	0	75	0.0092	0.0088
Taylorville MHP	60	60	0	75	0.0045	0.0045	60	60	0	75	0.0045	0.0045	60	60	0	75	0.0045	0.0045
Westminster First Church of the Nazarene							2,230	2,230	0	2.5	0.0055	0.0055	2,230	2,230	0	2.5	0.0055	0.0055
PARKS																		
Camp Hashawha	128	128	0	75	0.0096	0.0096	128	128	0	75	0.0096	0.0096	128	128	0	75	0.0096	0.0096
Gillis Falls							500	500	0	10	0.0050	0.0050	500	500	0	10	0.0050	0.0050
Patapsco State	1,000	1,000	0	10	0.0100	0.0100	1,000	1,000	0	10	0.0100	0.0100	1,000	1,000	0	10	0.0100	0.0100
Piney Run	500	500	0	10	0.0050	0.0050	500	500	0	10	0.0050	0.0050	500	500	0	10	0.0050	0.0050
INDUSTRIAL – COMMERCIAL																		
Congoleum Industries	230	230	0	20	0.0046		230	230	0	20	0.0046		230	230	0	20	0.0046	
Development Company of America (Bethel Rd.)	530	530	0	20	0.0106		530	530	0	20	0.0106		530	530	0	20	0.0106	
Finksburg Plaza	500	500	0	20	0.0100	0.0100	500	500	0	20	0.0100	0.0100	500	500	0	20	0.0100	0.0100
Hampstead Industrial Center (former Black & Decker Manufacturing)	472	472	0	20	0.0094		600	600	0	20	0.0120		1,000	1,000	0	20	0.0200	
Joseph A. Bank Clothing	250	250	0	25	0.0063		250	250	0	25	0.0063		250	250	0	25	0.0063	
South Carroll Swim Club	1,234	1,234	0	3	0.0037	0.0077	1,234	1,234	0	10	0.0123	0.0077	1,234	1,234	0	10	0.0123	0.0077
PUBLIC COMMUNITY																		
Bark Hill***	312	312	0	43	0.01328	0.0200	317	317	0	100	0.014	0.0200	319	319	0	100	0.014	0.0200
Bramble Hills	31	31	0	65	0.00201	0.0033	32	32	0	68	0.00201	0.0033	32	32	0	68	0.00201	0.0033
Greater Carroll Indus. Park	116	116	0	5	0.0005	0.0100	116	116	0	5	0.0005	0.0100	116	116	0	5	0.0005	0.0100
Pleasant Valley****	123	123	0	47	0.00578	0.0101	139	139	0	100	0.00578	0.0101	139	139	0	100	0.00578	0.0101

* Includes staff at school

*** Population and Demand include Francis Scott Key High School; the school population (students and staff) is converted to a population equivalent (school population divided by 8)

**** Demand includes Pleasant Valley Fire Dept. (411 gpd Present Year demand by Fire Dept.; assume 500 gpd demand for Priority and Future Planning)

Carroll County Master Plan for Water & Sewerage

Table 3
Inventory of Existing Community and Multi-Use Water Sources, Treatment Plants, and Distribution Systems

	Water Source	Storage Capacity	Max. Safe Yield (Mgd)	Avg. Daily Use (Mgd)	Max. Peak Flow (Mgd)	WTP Capacity
Municipal						
Mount Airy	Main Well Field (1- 4)	N/a	.347	.307	.720	.720
	Well Fields 5 & 6	N/a	.223	.118	.172	.172
	Well Field 7		.139	.112.099	.259	.259
	Well Fields 8 & 10	N/a	.354	.239.212	.345	.345
	Well Field 9		.204	.079.064	.288	.288
	Elevated Tank 1	.200	n/a	N/a	n/a	n/a
	Elevated Tank 2	.500	n/a	N/a	n/a	n/a
	Elevated Tank 3	1.005				
Manchester	Walnut Street Spring	47,965	.110	.043	.130	
	Holland Drive Well		.036	.020	.035	
	Bachman Road (Dell) Well		.060	.045	.105	
	Patricia Court Well		.026	.013	.032	
	MD Route 30 (Lippy) Well		.030	.020	.050	
	Crossroads #1 Well		.062	.028	.071	
	Crossroads #2 Well		.030	.020	.033	
	Manchester Farms Well		.080	.030	.130	
	Walnut Street Well		.025	.012	.048	
	Hallie Hill Well		.032	.018	.065	
	Ferrier Road Well A		.050	.050	.093	
	Ferrier Road Well B		.053	.035	.101	
	Ferrier Road Well C		.039	.036	.072	
	Park Avenue Water Tank	100,000				
	York Street Water Tank	500,000				
	Hampstead	Well 7 (Houck Avenue)	abandoned	.050	.016	.017
Well 11 (Main Street)			.065	.024	.051	
Well 12 (Main Street)			.079	.030	.063	
Well 13 (MD 88)			.091	.036	.057	
Well 15 (Ralph Avenue)			.094	.030	.056	
Well 18 (Greenmount Church Road)		abandoned	.029	.018	.035	
Well 19 (Greenmount Church Road)			.058	.035	.055	
Well 20 (Old Dairy Farm)			.058	.031	.045	
Well 21 (Old Dairy Farm)			.072	.035	.043	
Well 22 (Boxwood Drive)			.030	.017	.030	
Well 23 (Boxwood Drive)			.030	.016	.030	
Well 24 (Small Crossings)			.020	.018	.025	
Well 25 (Fairmount Road/Small Crossings)			.072	.010	.025	
Well 26 (Caddis Drive)			.072	.030	.045	
Well 27 (Retriever Dr)			.035	.028	.035	
Well 28 (Shiloh Run)			.033	.028	.040	
Well 29 (Shiloh Run)			.020	.023	.030	
Well 30 (Shiloh Run O.O.S)						
Well 31 (Westwood Park)		.041	.046	.055		
Well 32		.059	.074	.080		
Hillcrest Water Tank	100,000					
MD 482/Panther Drive Water Tank	500,000					
North Carroll Plaza Water Tank	400,000					
Westminster	Cranberry Water Treatment Plant		3.0	1.8	2.67	2.75
	Wells 1 and 2 - Wakefield		(1 & 2)	(1 & 2)	(1 & 2)	.197
			.250	.183	.348	
	Well 3 - County Maintenance		.120	.085	.098	.100
	Well 4 - Air Business Center		.180	.072	.185	.170
	Well 5 - Krider's Church Road		.300	.158	.447	.230
Well 6 - South Center Street		.115	.105	.102	.100	

Carroll County Master Plan for Water & Sewerage

Table 3
Inventory of Existing Community and Multi-Use Water Sources, Treatment Plants, and Distribution Systems

	Water Source	Storage Capacity	Max. Safe Yield (Mgd)	Avg. Daily Use (Mgd)	Max. Peak Flow (Mgd)	WTP Capacity
	Koontz Creamery Well (John Street)	(used for stream flow augmentation only)	.750	.255	.439	.500
	Well 7 - Carfaro		.350	.130	.189	.300
	Well 8 - Vo-Tech		.288	.082		.119
	Wells 9 and 10 - Koontz Property		.150	.080	.150	.125
	Well - Roop's Mill		0.135	Not In Use	0.187	n/a
	Raw Reservoir at Cranberry (Lucabaugh Mill Road)	125.0 mg				
	Wakefield Water Storage Tank	2.0 mg				
	Clear Reservoir	1.0 mg				
	Western Maryland College Water Tank	0.5 mg				
	Hook Road Water Tank	1.5 mg				
	Gorsuch Road High Zone Water Tank	2.0 mg				
	Hook Road Booster Station					
	High Zone Booster Station					
Union Bridge	Well (Locust Street) #1 Storage Tank	.29 mgd	.576	.133	unknown	
	Well (Whyte Street) #2		.101	unknown	unknown	
	Well (Phillips Lane) #3		.144	Pending	unknown	
	Water Treatment Plant (W. Locust Street)					0.3
	Well (Union Bridge Road) #4		Pending	Pending	unknown	
New Windsor	Main Spring					
	Dennings Road Well Network		.202	.127	.148	
	Roops Meadow Spring					
	Dennings Spring					
	Raw Water Reservoir	.5 mg				
	Standpipe	.25 mg				
	Standpipe	.375 mg				
	Hillside wells		0.080	0.027	0.036	
Taneytown	Well 8		0.079	0.041	0.069	52 gpm
	Well 9		0.187	0.090	0.192	135 gpm
	Well 11		0.166	0.029	0.166	82 gpm
	Well 12		0.202	0.039	0.170	100 gpm
	Well 13		0.684	0.179	0.308	290 gpm
	Well 14		0.180	0.032	0.123	90 gpm
	Pump House Rd. Standpipe	.650 mg				
	E. Baltimore St. Water Tower	.150 mg				
County/State						
Sykesville-Freedom	Liberty Reservoir	n/a	96.0 (2.4)*	2.207	2.973	3.0
	Freedom Water Treatment Plant		3.0	2.4		3.0
	Well 22B	n/a	.227	n/a	.340	
	Linton Springs Water Tank	0.5				
	Bartholow Road Water Tank	1.0				
	Springfield Water Tank	0.45				
	Liberty Road Water Tank	1.0				
	Martz Road Water Tank	1.0				
Public/Community						
Bark Hill	Well #1 (County) Alternates with Well #2		.020 (combined)	.01328 (combined)	0.033 (combined for both wells 1 & 2)	0.072 (combined for both wells 1 & 2)
	Well #2 (FSK) Alternates with Well #1		.020 (combined)	.01328 (combined)		
	Water Storage Tank	.100 mg				

Carroll County Master Plan for Water & Sewerage

Table 3
Inventory of Existing Community and Multi-Use Water Sources, Treatment Plants, and Distribution Systems

Water Source		Storage Capacity	Max. Safe Yield (Mgd)	Avg. Daily Use (Mgd)	Max. Peak Flow (Mgd)	WTP Capacity
Bramble Hills	Groundwater	N/a	.0033	.00201	.0055	.010 mgd
Greater Carroll Industrial Park	Water Storage Tank	.010 mg				
Pleasant Valley	Well #2 (new well, on-line)	N/a	.0101	.00578	.017	n/a
	Water Standpipe	.060 mg				
	Well treatment facility					
Industrial/Commercial						
Congoleum Ind. Development Co. of America (Bethel Rd.)	Cf 11		.144 unknown	.024 .015	.040 .020	
Finksburg Plaza				.005	.006	
Hampstead Industrial Center (former Black & Decker)	10 wells		.360	.214		
Thomas, Bennett & Hunter	Cd 16		.144	.020	.040	
Private Community or Multi-Use						
Ashley MHP				.010	.012	
Camp Hashawha	No. 3		.021	.004	.005	
Charles Carroll Elementary School				.003	.006	
Gaither Manor Apartments						
Golden Age Guest Home				.005		
Hilldale MHP				.020		
Lakeview MHP				.008	.012	
Mechanicsville Elementary Sch.				.002	.020	
Patapsco State Park	Ef 13			.005	.018	
Pheasant Ridge Est. MHP				.030	.040	
Piney Run Park No. 1	No. 1		.003	.003	.003	
Ramblin' Pines Campground	No. 2		.014			
			.0461	.0178	.0267	
River Valley Ranch				.001	.001	
Rock Brook MHP				.008	.010	
Runnymede Elementary Sch.				.002		
Sandymount Elementary Sch.				.002	.025	
Shields Todd Village MHP				.015	.040	
S. Carroll High School				.014	.016	
South Carroll Swim Club	Groundwater			.004		
Sullivan's MHP				.008	.016	
Taylorville MHP						
Winfield Elementary Sch.	Dd 1		.005	.003	.029	

Carroll County Master Plan for Water & Sewerage

**Table 4
Inventory of Water Problem Areas**

Area Name	Location	Population	Nature of Problem	Planned Correction
Mount Airy	Dorseytown	40	Low well yields	W-3 category
Westminster	Old Manchester Road, Cranberry	54	Number of wells are located in the basement, and others too close to the house	Connection to Westminster community water system (W-5 category)
Hampstead	Town of Hampstead	6,200	High nitrates	Blending of water sources
Hampstead	Hillcrest Street neighborhood outside Town limits	100	MTBE contamination	MDE investigation, carbon filtration, connection to public water
Hampstead	MD 482 and North Carroll Street	30	Petroleum contamination	Monitoring wells and mechanical recovery
Manchester	Town of Manchester	3,400	Impact of Surface Water Treatment Rule under the Safe Drinking Water Act on Town's springs	Under study
Mount Airy	Town of Mt. Airy	8,631	Insufficient water appropriations for existing and future growth	Under study
Taneytown	City of Taneytown	5,421	Insufficient water appropriations for existing and future growth	Under study
Black & Decker	MD 30		Chemical contamination	Remediation is underway
Union Bridge	Town system	1,220	Leaks in system	Locate and correct leaks
Sykesville/ Freedom	Freedom District		Insufficient treatment capacity	Design and construct a 4.0 mgd expansion at the Freedom Water Treatment Plant. Develop groundwater supplies at Springfield State Hospital, Freedom Park, and the Raincliffe Center
Finksburg				
1. Pow-r-matic	MD 140 near MD 91		Industrial solvent contamination - 2 wells	Remediation is complete; contamination is still present
2. MD 140 Corridor	MD 140 south of MD 91	20	Petroleum contamination - 10 wells	Remediation is complete; contamination is still present
3. MD 140 Corridor	East of Brown Rd. to Baltimore Co. line		a. Mobile Home Park - high nitrates b. Health issues related to solvent and petroleum contaminations c. Health issues related to salt	None planned

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Catalyst Research	Poole Road		contamination Contamination including industrial solvents - 2 wells, 1 surface supply	Remediation is complete; contamination is still present
Taylorsville	North of MD 26/MD 27 intersection		Petroleum contamination	Remediation is complete; contamination is still present
Taylorsville	Half-mile radius of MD 26/MD 27 intersection		Health issues related to salt, petroleum, and nitrate contamination; low well yields	None planned
Woodbine	Woodbine Rd. (MD 94), north of Carroll-Howard County line		Petroleum contamination	Under study
Colonial Pipeline	East of Morgan Rd., north side of Carroll-Howard County line		Petroleum contamination	Remediation is underway
Smallwood	MD 32 and Deer Park Rd.		Petroleum contamination	Under study
Lineboro	Lineboro Rd. (MD 86) south of Pennsylvania State line		Contaminated wells	None planned
Gamber	MD 32 and MD 91		Petroleum contamination	Under study
Winfield	MD 26 and MD 94		Petroleum contamination	Under study
Westminster	City of Westminster and environs	26,861	Water supply capacity issues	Under study
Alesia	Hoffmanville and Grave Run Road area	30	Volatile organic (fuel) contamination	Under study
Finksburg	Sullivan Mobile Home Park	123	MTBE contamination	Under study
Westminster	Well #8 (VoTech well)		High nitrates	Under study

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**Table 5
Planned Public Water Projects**

Project Name	Service Area Category	Description	Location
<i>Mount Airy</i>			
Upgrade Water Plant #1	Existing/Final Planning (W-1)	Full plant upgrade/replacement	Prospect Road
Upgrade Water Plant #2	Priority (W-3)	Full Plant Upgrade	
SCADA for Water System	Existing/Final Planning (W-1)	Develop and install	Entire system
New Source Development	Priority (W-3)	Find New Water Source for Immediate Construction	Entire System-2010
Upgrade Water Mains	Priority (W-3)	Hydraulics Upgrades	Entire System

Project Name	Service Area Category	Description	Location
<i>Sykesville/Freedom</i>			
Water Main #3	Priority (W-3)	8" (hydraulic looping)	Bartholow Road to MD 32
Water Main #6	Priority (W-3)	8" (hydraulic looping)	Bond Ave./Monroe Ave.
Water Main #8	Priority (W-3)	12"	Northup Grumman
Water Main #11	Priority (W-3)	8" (hydraulic looping)	Sandosky Rd. (Village to College Roads)
Freedom WTP Expansion	Priority (W-3)	4.0 MGD expansion of existing plant	Oakland Road
Water Main	Priority (W-3)	24" transmission main	Oakland Rd./Mineral Hill Rd.
Groundwater Development	Priority (W-3)	Develop 2 wells and bring on line, connect to public system	Raincliffe Center/Freedom Park
Piney Run Treatment Plant	Future	3.0 mgd (peak flow design capacity)/24" transmission main	WTP – Hollenberry Road
Pine Knob Road loop	Existing/Final Planning (W-1)	8" line to complete a loop	Pine Knob Road from MD 32 to Conan Doyle Way
Gaither Road area	Priority (W-3)	8' water lines to serve existing communities	Gaither Road from Obrecht Road to County line
Groundwater Development	Priority (W-3)	Develop 5 wells, bring on line, connect to public system	Springfield Complex
Water tank	Existing/Final Planning	1 million gallon storage tank	Piney Run Reservoir

Project Name	Service Area Category	Description	Location
<i>Manchester</i>			
Refurbish Walnut Street Springs	Priority (W-3)	Refurbish springs to meet Surface Water Treatment Rule	North side of Town
Install Water Storage and Water Main	Priority (W-3)	Work with Black Farm Partnership and Carroll County Board of Education to construct additional water tank to increase fire flow capabilities for additional development and school	North of Lineboro Road

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**Table 5
Planned Public Water Projects**

Project Name	Service Area Category	Description	Location
Walnut Street Springs	Priority (W-3)	Install a filtration system on the Walnut Street Springs	North side of Town
Filtration for Nitrates	Priority (W-3)	Install filtration for nitrates on MD Route 30 (Lippy) well	South side of Town
Computer Mapping	Priority (W-3)	Develop computer map of complete water distribution system	

Project Name	Service Area Category	Description	Location
<i>Hampstead</i>			
Well 34	Priority (W-3)	Bring well online (N. Carroll Farms, Sec. 4)	East of MD 30/south of Farm Woods Lane
Well 35 (Oakmont Green)	Priority (W-3)	Bring well online	East of MD 30/north of Greenmount Church Rd./Triple Green Court
Production Well	Priority (W-3)	Bring additional production well online	Leister Farm near Black Rock Road

Project Name	Service Area Category	Description	Location
<i>Westminster</i>			
New Water Storage Tank	Priority (W-3)	Construct additional water storage tank to boost supply and pressures	Downtown Westminster area
Additional Well	Priority (W-3)	Develop a new water supply well	Westminster area
Main Street Water Main	Priority (W-3)	Upgrade existing line to 12" water main	Main St. from Longwell Ave. to Penn Ave.
Water Treatment Plant Supply Main	Priority (W-3)	Renovate 30" water transmission line	Supply line from raw reservoir to Water Treatment Plant at Cranberry
Park Avenue Water Main	Priority (W-3)	Replace two 4" waterlines with 6" water main	Park Avenue from W. Green St. to W. George St.
Winters Street Water Main	Priority (W-3)	Replace existing lines with 6" water main	Winters St. from Railroad Ave. to John St.
Hollow Rock Rd. and City View Rd. Water Main	Priority (W-3)	Replace 2" waterline with 6" water main in both streets and create a loop in the system	Hollow Rock Rd. from Liberty St. to end and City View Ave. from Hollow Rock Rd. to Goodwin Quarry Rd.
Gorsuch Rd. Water Main	Priority (W-3)	Install 4" Water Main	Gorsuch Rd. from Manchester Rd. to MD 140
Medford Quarry Emergency Connection	Priority (W-3)	Construction of an emergency waterline connection between Medford Quarry and the Carfaro well treatment facility	MD 31 at Medford Road
Roop's Mill Well (11) Development	Priority (W-3)	Study, development, engineer, and construct a new well to augment existing sources	Roop's Mill located on south side of MD 140
Interzone Main	Priority (W-3)	Design and construct a water main connecting various water zones in	MD 140 area

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**Table 5
Planned Public Water Projects**

Project Name	Service Area Category	Description	Location
Ridge Road Water Main	Priority (W-3)	the service area Design and construct an 8" and 6" water main as a replacement for an old 2" and 4" main	Old New Windsor Rd. to Westmoreland St. to the dead end of the line on Ridge Road
Sophia Ave. Water Main	Priority (W-3)	Design and construct an 8" ductile iron water main, replaces existing asbestos concrete pipe	Fairfield Ave. to Gist and Washington Roads
W. George St. Water Main	Priority (W-3)	Design and construct 4" water main	W. George Street to Chase St.
Ralph and Church St. Water Main	Priority (W-3)	Install a water main in Ralph St. and Church St.	Ralph St. to Charles St. and from Church St. to Charles St.
John St. Water Main Replacement	Priority (W-3)	Design and construct 6" water main replacement	John St. between W. Main St. and Winters Alley
James St. Water Main Replacement	Priority (W-3)	Design and construct 6" water main replacement	James St. from Kemper Ave. to the alley
MD 140 Parallel Water Main	Priority (W-3)	Construction of parallel main to equalize pressure and improve system operations	
New Water Treatment Plant	Priority (W-3)	Construct a new plant utilizing new technologies for water treatment	Same location as current water treatment plant
Increased Reservoir Surface Elevation	Priority (W-3)	Increase capacity of reservoir by increasing the water surface elevation	Cranberry Reservoir
Interzone Main	Priority (W-3)	Connect zones with a new 12 inch main to enhance operations	Poole Road vicinity
Radon and Nitrate Removal	Priority (W-3)	Removal of contaminants to comply with drinking water regulations	Vo-Tech well
MD 27 Water Main	Priority (W-3)	Replace existing main with a new 16 inch DIP main to reduce breaks	
West Green Street Water Main	Priority (W-3)	Installation of a new main as part of road reconstruction	Green Street

Project Name	Service Area Category	Description	Location
<i>Union Bridge</i>			
Video Survey of Water Lines	Priority (W-3)	Conduct video survey of water lines to detect areas of leakage or other problems	Various locations
WTP	Priority (W-3)	Construct 300,000 gpd WTP with filtration system and nitrate removal equipment	

Project Name	Service Area Category	Description	Location
<i>New Windsor</i>			
Chlorine Contact Tank	Priority (W-3)	Relocate chlorination equipment; part of reservoir replacement	Reservoir site

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**Table 5
Planned Public Water Projects**

Project Name	Service Area Category	Description	Location
Rehabilitate Existing Tank (No. 1)	Priority (W-3)	Inspect, rehabilitate, paint	Rowe Road
Main Spring Farm Well	Priority (W-3)	Well MSF-5; connect to system	Main Spring Farm
Main Spring Infrastructure	Priority (W-3)	Water control	Main Spring Farm
Main Spring Farm Pump	Priority (W-3)	Add second pump	Main Spring Farm
Test Well	Priority (W-3)	Well MSF-6; resume pump testing	Main Spring Farm
Control Flow Meters	Priority (W-3)	Central control	System-wide facilities
1,800 Feet of 6-Inch Main	Priority (W-3)	Improve distribution	Lambert/Hillside/Church
Water Audit	Priority (W-3)	Account for water loss	Wherever necessary
Main St. Project	Priority (W-3)	Water main replacement to improve distribution	Main/High Streets
Generators	Priority (W-3)	Add generators at two locations	Rowe Road Pump Station and Snader Pump Station
New Water Tank (No. 3)	Future (W-5)	Planned service area	MD 31 employment campus
Additional Water Sources	Future (W-5)	Explore, identify, acquire, develop	Various locations

Project Name	Service Area Category	Description	Location
<i>Taneytown</i>			
Storage Facility	Priority (W-3)	Construct water storage tank	Southeast section of Town
New Well	Priority (W-3)	Develop new water source	Southeast section of Town
Waterline	Priority (W-3)	Install 10" Waterline	Amicus Street
Waterline	Priority (W-3)	Install 4" Waterline	North side of Baltimore Street
Waterline	Priority (W-3)	Install 10" Waterline	South side of Baltimore Street

Project Name	Service Area Category	Description	Location
<i>Pleasant Valley</i>			
Backup Well	Priority (W-3)	Drill and develop backup well	Halter Road west of stream
<i>Bramble Hills</i>			
Well System Rehabilitation	Priority (W-3)	Rehabilitate existing water system	MD 27, north of Spring Mills

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