KEEDYSVILLE COMPREHENSIVE PLAN
WATER RESOURCES ELEMENT

INTRODUCTION

Keedysville lies within southern Washington County Maryland within the Antietam Creek watershed. Although it is surrounded by lands in Washington County, it is in close proximity to Boonsboro and Sharpsburg Maryland. Each of these Towns share some infrastructure and facilities with each other.

The Towns of Keedysville and Boonsboro are partners in a regional water system. An advisory board, comprised of members of the two towns and chaired by an impartial advisor, provides oversight and guidance on matters involving water system issues affecting the towns. The Advisory Board, however, has no power to compel either Town to take action nor does it operate the water system. Operation and control of each Town's water system is performed by each Town.

The two towns share a water system via a 12 inch water main that connects the two systems. A master water meter near Keedysville measures flow from both towns. Keedysville currently relies on Boonsboro to provide water storage. Boonsboro maintains a one million gallon water storage tank while Keedysville possesses no storage within its system. Keedysville is currently planning to install its own 300,000-gallon storage tank and booster pump station and replace the existing aged water main on Main Street by 2012. These improvemens will allow the Town to reduce pressure within the Town's water system and rely on its own storage for emergencies.

Both towns own and maintain their own raw water supplies and water treatment facilities. Boonsboro's personnel operate both water treatment plants. Keedysville owns and maintains its own water distribution system.

The two towns in 1958 entered into an agreement to share water and establish reimbursement criteria for Keedysville. In 1998, the original agreement was amended as a result of a major water system upgrade. The upgrade included the construction of a new water filtration plant in each town, a new 12 inch water main connecting the towns, and water meters for all customers in Keedysville and Boonsboro. The amended agreement in 1998 established the Advisory Board, established cost sharing, operation responsibilities and responsibilities for project administration of the grant and loans needed to finance the project.

The Town of Keedysville's raw water source consists of a large spring near Hebron Road. The yield of the spring has been estimated in past studies to provide between one and two million gallons per day during non-drought years. As a result of the potential for contamination from surface water, in 1998 Maryland Department of Environment (MDE) mandated that the spring be filtered. Diatomaceous earth filters were installed in 1998. MDE has determined that the Town can only withdraw a limited amount from the spring or approximately 100 taps for new development due to drought conditions, the impact on reliability, and the reserve from the aquifer for other users in the zone of influence. Since water is shared by both Towns, Boonsboro could share any excess with Keedysville and vice versa provided both Towns agree and the existing water appropriation permit limits are not exceeded.

There are currently only three (3) private wells operating within the Town located in the eastern part of the Town near Mt. Hebron Road. These wells are planned to be eliminated by 2012 with connection to public water.

The Town's sewage treatment is provided by the Antietam Water Reclamation Facility which serves the towns of Keedysville and Sharpsburg. The treatment plant is owned and operated by Washington County. The plant has a design capacity of 163,000 gallons per day and currently treats an average of 113,000 gallons per day (GPD). The Town of Keedysville's sewage collection system consists of grinder pumps and low pressure sewer lines. All flow is conveyed to the County's central pump station on Maryland Route 34 that is currently operating at 89 percent capacity. As a result of both Sharpsburg and Keedysville's collection system consisting of low pressure sewers and grinder pumps, inflow and infiltration into the sewer system is minimal with flows remaining relatively consistent except for diurnal fluctuations. Keedysville has no septic systems within its sewer system.

With respect to Stormwater Management (SWM), the Town has adopted and enforces Maryland's 2000 Stormwater Management Design regulations and has adopted Washington County's Forest Conservation ordinance by Resolution. The Town is expected to adopt the new Maryland Department of the Environment's 2007 revisions to the Stormwater Management Guidelines by May 4, 2010. Except for the two Rural Legacy parcels that cross the municipality's boundaries, there is no agricultural activity in Town.

The Water Resources Mandate of House Bill 1141

Due to water quality concerns and shell fish decline in the Chesapeake Bay, House Bill 1141 was approved by the Maryland Legislature and signed by the Governor in 2006 which resulted in a mandate to provide a Water Resources Element in all future Comprehensive Plans. The purpose of this element is to analyze long-term water needs and supplies for the land uses in Keedysville, to analyze the sewerage and stormwater generated in the community, and to provide goals, policies, and strategies for conservation, pollution reduction, and water quality degradation in the Town during the planning period. Efforts to make Keedysville a more sustainable community will require participation from the public and private sector with assistance from the citizens in the community.

Box WR-1

The Purpose of the Water Resource Element (WRE) is to ensure that future municipal comprehensive plans take into account the opportunities and limitations presented by local and regional water resources. The WRE planning process will assist local governments in protecting public health, safety, and welfare; in meeting State Smart Growth policies; and in protecting Maryland's land and water resources.

Current Statistics and Future Projections

Keedysville is currently (2009) home to 1124 residents and 406 households, which are projected to grow to a population of 1500 residents and 560 households by 2030.

Future growth will result from infill development or redevelopment within the current municipal boundaries and by annexation of land from Washington County. Keedysville population has increased substantially by annexing property to the north and the south of the center of Town since the last Comprehensive Plan was adopted. Some projects have been approved that will provide additional housing; but, are on hold due to the poor national economy.

Table WR-1 below provides the 2030 population and household figures.

Population and Household Projections for 2030
Table WR-1

	Population		Households		Population Change	Household Change
	2000	2030	2000	2030		
Keedysville	507	1500	202	560	196%	177%

Drinking Water Supply Assessment

Keedysville shares a water system with Boonsboro through a twelve inch line and master meter that connects the two towns. Keedysville filters water from a spring and disinfects with chlorine prior to pumping into the distribution system. The majority of the distribution system ranges in size from a four inch line to an eight inch line. The Town meters all of its customers. Since the town treatment plant must be capable of pumping to Boonsboro's water storage tank, high pressures are experienced within Keedysville's distribution system. The high pressure in excess of 100 pounds per square inch (psi) has placed a strain on its older water lines and as a result a high leak rate has developed. The Town currently has plans to replace the aging water main in Main Street and install a booster pump and storage tank to help mitigate this problem.

The Town's water filtration plant was constructed in 1998 and consists of two (2) diatomaceous earth filters, two (2) high service pumps, chlorine disinfection and a concrete clear well under the building. Raw water is pumped from the spring near the plant through the filters into the clear well. High service pumps distribute treated water into the distribution system. Each filter and high service pump is capable of treating and pumping 150 gallons per minute or 216,000 GPD. The current water use is 80,000 GPD or 197 GPD per dwelling unit. The Town's water storage is provided by the Town of Boonsboro's one million gallon in ground storage.

The state has indicated that due to restrictions on withdrawal from the spring's aquifer, approximately 100 additional taps will be allowed. This may not be sufficient to support the growth projected to 2030. An additional 37,210 GPD of water supply will be needed between 2009 and 2030. Restrictions on the water supply may be an impediment to the projected growth rate beyond year 2020 if additional water supply cannot be achieved. The Town may consider increasing the available water supply by reducing the unaccounted water loss and/or requiring future developers to develop and provide a new well source to the Town. Aside from a new 61 unit development planned on the opposite side of Maryland Route 34 and 21 undeveloped lots in existing Stonecrest subdivision, the Towns' future growth is expected to largely result from infill, redevelopment and higher densities. In addition there is a possibility of annexation, if additional taps can be achieved.

The projected population is shown in Table WR-1. Using the State's estimate of 250 GPD per dwelling, the projected year 2030 water demand is shown in Table WR-2. The projected population as indicted in Table WR-1 is 1,500 persons which is an increase of 993 persons spread over the timeframe from 2000 to 2030. The increase in households is 358 over this same period. It must be noted here as is stated elsewhere in the Comprehensive Plan, these projections will be effected somewhat by the slow down of the national and local economy and the dated material since the next census is only a year away; therefore, during the next six year update of the Plan, the projections should be revisited. Given the projected water demand, the available water supply will be exhausted by year 2020 unless additional resources can be found or efforts to reduce unaccounted for water are successful in making up the difference.

In order to protect the existing spring in town from potential impacts, a well head protection plan should be developed by the Town. The plan would identify the area of influence and prohibit certain development from occuring within the zone of influence that could potentially contaminate the source.

Table WR-2 below provides the projected water demand for the year 2030.

Table WR-2
Water Demand Projections for 2030

	2000	2005	2010	2015	2020	2025	2030	Supply or Treatment Capacity
Population	507	826	1,191	1,287	1,382	1,439	1,500	
Households	204	298	430	468	508	533	560	
Water Demand (GPD)	40,188	58,706	84,710	94,210	104,210	110,460	117,210	105,000 GPD

NOTE:

1. New Development beyond year 2010 is computed at 250 GPD/dwelling unit per MDE guidelines.
2. Water demand figures include 10% for non-residential consumption (10% of the EDUs represent non-residential demand) based on historial water billing rates.
3. Water supply capacity is based on an additional 100 taps @ 250 GPD/tap beyond the current 80,000 GPD existing use in the absence of a firm limit imposed by MDE.

As stated previously the Town's unaccounted for water is water that is produced but not yet billed. To better manage unaccounted for water, the Town should establish a detailed tracking program to closely monitor each category of unaccounted for water. Using the list of sources identified, the Town should estimate the amount of water lost by each source on a monthly basis. Table WRE-3 identifies methods the Town can use to estimate the amount of water lost by each source. In some cases, more than one method of estimating water loss has been identified.

Once the amount of unaccounted for water has been estimated for each month, each category should then be evaluated to determine methods of reducing or eliminating unmetered uses. If the volume of unaccounted for water continues to exceed 10%, a more detailed study of the Town's unaccounted for water would be warranted. A detailed unaccounted for water study may include a leak detection study of the distribution system.

Methods for Estimated Unaccounted for Water Usage
Table WR-3

Source	Method(s)
Hydrant Flushing	1. Record the amount of time each hydrant is open and use pilot tube to estimate flow rate. The total volume of water used during the hydrant flushing is the product of the flow rate and the flushing time. 2. Estimate volume used during hydrant flushing by reading the system meter prior to and after flushing procedure. This method is less accurate than No. 1 above and should only be used during low demand periods.
Unmetered Filling of Swimming Pools	1. Place a meter on the line used to fill the pool. 2. Calculate the volume of water the pool can hold. The pool owner should contact the Town each time the pool is filled as well as when additional water is used to "top-off" the pool.
Water Main Breaks	1. Determine the amount of water lost by reading the amount of increased flow at the system meter during the period of break.
Sewer Main Cleaning	1. Determine volume of water stored in the sewer cleaning truck and keep track of the number of times the truck is filled.
Broken or Uncalibrated Meters	1. Replace or repair all broken meters. Begin a meter calibrating program and calibrate a certain percentage of meters each year.
Fire Protection	1. Have the fire department notify the Town after each period of water usage. The fire department should be able to inform the Town of the length of time during which water was used. The total volume of water can be estimated by reading the amount of increased flow at the system meter during the period of water usage.
Testing of Newly-constructed Water Mains	1. Calculate the volume of water the new water main can hold. Require the contractor/developer to notify the Town each time they fill a water main.
Cleaning of Wastewater Pumping Station	1. Estimate the flow rate of the cleaning device and keep track of the amount of time it is in use.
Unmetered Connections	1. Place meters on these services. 2. Estimate usage based upon the number of people within each household.

The Town's existing potable water storage is provided by Boonsboro's one million gallon storage tank. Analyzing the sufficiency of the existing storage requires a judgment involving the quantity and duration of fire flow. Given the nature of development in town of residential, relatively small-scale multi-family and commercial, and the ability of the existing main to convey flow, a value of 1,500 GPM for two (2) hours were used. An analysis of the existing storage volume given the existing and 2030 projected population is provided in Table WR-4. Although the analysis illustrates existing storage is adequate, the Town is planning a new storage tank and booster pump station within the Town boundaries to be more self reliant and reduce water pressure in Town.

Keedysville Water Storage Analysis
Table WR-4

YEAR	POP	1 EDU's	2 Average Daily Demand (GPD)	3 Equalizing Storage (GAL)	4 Fire Flow (GAL)	5 Emergency Reserve (GAL)	6 Required Storage (GAL)	7 Existing Storage (GAL)	8 Storage (GAL) Surplus (+)
2000	507	204	40,188	10,449	180,000	63,483	253,932	Town of Boonsboro 1,000,000	+746,068
2005	826	298	58,706	15,263	180,000	65,087	260,350	Town of Boonsboro 1,000,000	+739,650
2010	1,191	430	84,710	22,025	180,000	67,342	269,367	Town of Boonsboro 1,000,000	+730,633
2015	1,287	468	94,210	24,495	180,000	68,165	272,660	*300,000	+27,340
2020	1,382	508	104,210	27,095	180,000	69,032	276,127	*300,000	+23,873
2025	1,439	533	110,460	28,720	180,000	69,573	278,293	*300,000	+21,707
2030	1,500	560	117,210	30,475	180,000	70,158	280,633	*300,000	+19,367

*Keedysville's own 300,000 gallon storage tank expected on line by 2012.
Column 3 – Equalizing storage is 20% of maximum daily demand – Maximum daily demand is assumed at 1.3 x average daily demand.
Column 4 – Fire Flow at 2 hours duration (per AWWA Manual M31) at 1,500 GPM
Column 5 – Emergency Reserve is 25% of total storage.
Column 6 – Required Storage is Column 3 + 4 + 5
NOTE: Keedysville is interconnected to Boonsboro's water system for emergency use.

Wastewater Treatment Assessment

Keedysville is currently served by the Antietam Water Reclamation Facility which is operated by Washington County. The existing County treatment plant is designed and permitted to treat 163,000 gallons per day and currently treats an average daily flow of 113,000 GPD based on the average of the last three years. The County is currently planning on upgrading the existing plant by adding screening capability to the headworks and other minor maintenance items by year 2014/2015. No expansion of the plant will be necessary to accommodate the Town's growth to year 2030. The Town's sewer collection system consists of grinder pumps and low pressure sewers in the entire town except for Cannon Ridge East development which is served by gravity sewers. As a result of the low pressure sewer system, inflow and infiltration is minimal and is

relatively consistent flows are achieved. There are no septic systems within the Town. The only central pump station is owned and maintained by the County along Maryland Route 34. The pump station receives 52,000 GPD on average and is currently at 89 percent capacity. The County has plans to increase the capacity in conjunction with a new 61 unit subdivision along MD. Rte. 34 with contributions by the developer. With 560 total dwellings projected for the planning period an additional 35,540 GPD will be generated between 2009 and 2030. The existing wastewater treatment plant with a reserve capacity of 50,000 GPD does have sufficient capacity for the projected growth as shown in Table WR-5.

The Town currently discharges treated wastewater to the Antietam Creek under NPDES Permit #03-DP-2354 via the County's Antietam Water Reclamation Facility. This discharge is sufficient to accommodate the Town's projected growth through 2030. Stormwater management for future development will be accommodated on each individual site and comply with the MDE's 2007 stormwater guidelines that will go into effect on May 4, 2010.

Table WR-5 summarizes existing and future projected sewage demand.

Sewer Demand Projections for 2030
Table WR-5

	2000	2005	2010	2015	2020	2025	2030	Supply or Treatment Capacity
Population	507	826	1,191	1,287	1,382	1,439	1,500	
Households	204	298	430	468	508	533	560	
Wastewater Demand (GPD)	26,112	38,144	55,040	64,540	74,540	80,790	87,540	102,000 GPD

NOTE:

1. New Development beyond year 2010 is computed at 250 GPD/dwelling unit per MDE guidelines.
2. Sewer demand figures include 10% for non-residential consumption (10% of the EDUs represent non-residential demand) based on historial water billing rates.
3. Wastewater treatment capacity is based on 163,000 GPD design and permit capacity at the wastewater treatment plant and 61,000 GPD existing use by the Town of Sharpsburg. Sharpsburg is not anticipated to receive substantial future growth.

Stormwater Management Assessment

The Town currently enforces storm water management regulations for new or redevelopment using the State of Maryland 2000 Maryland Design guidelines and the new 2007 revisions by MDE. In urban sub water sheds, such as Keedysville, American Forests recommend an overall twenty-five percent tree canopy and fifteen percent in commercial areas. Tree canopies intercept and absorb rainfall, filter pollutants, and reduce temperature at the ground which is important especially where heat islands are created due to asphalt and roof top absorption of the sun's rays. Encouraging planting of trees within the Town can have a beneficial effect and assist reducing rain water, providing a cooler environment, and reduce storm water.

Keedysville is currently about twenty-percent impervious. Maintaining impervious surfaces to less than twenty-five percent can achieve certain goals such as reducing non-point source nutrient loads. In order to accommodate growth and lower pollutant loads the following goals, policies, and strategies at the end of the chapter are offered.

Stormwater runoff from the Town of Keedysville drains to the Little Antietam Creek, a tributary of the Antietam Creek. Antietam Creek ultimately drains to the Potomac River and the Chesapeake Bay. There is no current Total Maximum Daily Load (TMDL) allocation for nitrogen and phosphorous for the Antietam Creek or the area of the Potomac River at the point at which the Town's stormwater runoff drains; however, the Town recognizes the importance of minimizing nitrogen and phosphorous runoff to the waters of the Chesapeake Bay. Since TMDLs have not yet been established, the suitability of the receiving waters cannot be adequatetly addressed at this time.

A summary of impervious and pervious urban land cover by drainage area is presented below. The percent impervious values for the Zoning categories below are based on the 2006 Total Maximum Daily Load Implementation Guidance for Local Governments. The typical single family lot in the Low Density Residential Land Use category is at least one-third of an acre and one-half of an acre or larger: one-half of an acre was used as a conservative value, as pervious urban area contributes larger quantities of nitrogen and phosphorous runoff. (See analysis in the following paragraphs.)

The typical single family lot in the Medium Density Residential Land Use category is approximately one-quarter of an acre and limited institutional and commercial uses are present in this Zoning District as well. However, non-residential uses generally maintain the same setbacks in this land use category and parking facilities are generally on the public street due to topography and the presence of the Town's historic district and built environment.

In the Low Density Residential, a conservative assumption of one-half acre and exclusion of the non-residential uses was made in order to present a "worse case" scenario of potential nitrogen and phosphorous runoff quantities.

New development would predominantly involve construction of residential development on existing lots of record, infill lots or in annexation areas. In annexed areas, the future development options are limited to those allowed in low density residential zones. This will provide the least intense use and provide the least amount of impervious area.

Table WR-6 Current Land Cover depicts the Comprehensive Plan Land Use classifications, current land use cover, and the amount of pervious and impervious areas that would effect each area.

Keedysville's Current Land Cover
Table WR-6

Comprehensive Plan Land Use	Usage/Estimated Land Cover	Total Area (Acres)	Pervious Area (Acres)	Impervious Area (Acres)
Commercial	Commercial/ 85 % Impervious	6.37	0.96	5.41
Low Density Residential	.50 Acre-Residential: 25 Percent Impervious	392.28	294.21	98.07
Medium Density Residential	.25 Acre-Residential 35 Percent Impervious	98.89	64.28	34.61
Agricultural / Rural Legacy Easement	Agricultural – Low Till/ Pervious	20.08	20.08	-
Conservation	Forest/Pervious	11.37	11.37	-
Parkland	Mixed Open / Pervious	10.08	10.08	-
TOTAL AREA		**539.07**	**400.98**	**138.09**

Table Prepared by ARRO Consulting, Inc.

Nonpoint source nitrogen and phosphorous loading values based on land cover were determined based on the most recent (2007) Potomac River, Maryland watershed data in the Watershed Model Output Data available from the Chesapeake Bay Program. The total nitrogen and phosphorous loading for each land use in the watershed were divided by the total acreage for each use, with the resultant values being the nitrogen and phosphorous loading in pounds per acre per year for each type of land use. Based on the Watershed Model Output Data classifications, land use within the Town of Keedysville is primarily "Pervious Urban" or "Impervious Urban", with proportions equivalent to the pervious and impervious percentages as shown in the preceding table. A small portion (approximately 8%) of the Town area is comprised of parkland, forest/nontidal wetland conservation, and rural legacy agricultural uses.

Table WR-7 Current Nonpoint Source Loading, summarizes current nitrogen and phosphorous loading by drainage area based on the previously determined loading values and land cover.

The total current non-point source loading to Little Antietam Creek from the Town is 4,354.22 lb/year of nitrogen and 440.66 lb/year of phosphorous. The projected population growth will occur as infill or annexations within residentially zoned area of Town. The infill and associated new infrastructure will result in a net increase in impervious cover, which based on the historical trends in the Watershed Model should decrease nitrogen and phosphorous loading. Thus, the values calculated above represent maximum nitrogen and phosphorous loading for the projected

growth period; future development trends along with implementation of best management practices in stormwater design in accordance with the MDE's 2000 and 2007 Design Manual should reduce the ultimate loadings to Little Antietam Creek from the current and future areas of the Town.

Current Nonpoint Source Loading
Table WR-7

Cover	area (acres)	average nitrogen loading (lbs/acre year)	average phosphorous loading (lbs/acre year)	nitrogen loading (lbs/year)	phosphorus Loading (lbs/year)
Pervious Urban	359.45	8.60	1.00	3091.27	359.45
Impervious Urban	138.09	6.66	0.41	919.68	56.62
Mixed Open	10.08	4.62	0.58	46.57	5.85
Agricultural-Low Till	20.08	14.00	0.89	281.12	18.51
Forest	11.37	1.37	0.02	15.58	0.23
Total Loading				**4354.22**	**440.66**

Prepared by ARRO Consulting, Inc.

The potential annexations areas will add additional areas to the Town, as shown in the following table WR-8.

Land Cover for Future Annexations
Table WR-8

Land Use	Usage/Estimated Land Cover	Drainage Area	Total Area (Acres)	Pervious Area (Acres)	Impervious Area (Acres)
Low Density Residential	0.50 acre res. 25 % impervious	Little Antietam	68.88	51.66	17.22

Table WR-9 below identifies the non-point source nutrient loadings from the future annexation areas.

Non-Point Source Loading
From Future Annexations
Table WR-9

Cover	Drainage Area	Area (Acres)	Average Nitrogen Loading (lbs/acre/yr)	Average Phosphorus Loading (lbs/acre/yr)	Nitrogen Loading (lbs/yr)	Phosphorus (lbs/yr)
Pervious Urban	Little Antietam	51.66	8.6	1.00	444.28	51.66
Impervious Urban	Little Antietam	17.22	6.6	.041	113.65	7.06
TOTAL NON-POINT LOADING					557.93	58.72

The Town currently discharges treated wastewater to Antietam Creek under NPDES Permit #03-DP-2354, effective March 1, 2005 and expiring on February 28, 2010, via the Antietam Water Reclamation Facility. Projected future point-source discharge quantities and nutrient loadings from the Town are tabulated below. Projected nutrient loadings are based on the Maryland Tributary Strategy Statewide Implementation Plan Point Source Strategy (18 mg/l total nitrogen and 3 mg/l total phosphorous for plants without ENR upgrades and under 0.5 MGD) and population and wastewater flow projections from the Town as developed previously in this Plan.

Current/Projected Point Source Loading
Table WR-10

YEAR	Wastewater Flow (GPD)	Nitrogen (lbs/year)	Phosphorous (lbs/year)
2000	26,112	1,429	238
2005	38,144	2,088	348
2010	55,040	3,013	502
2015	64,540	3,588	589
2020	74,540	4,081	680
2025	80,790	4,423	737
2030	87,540	4,793	799

The following table presents projections of combined non-point and point source loading for the entire planning period. The most conservative assumption for non-point loading has been adopted, that nitrogen and phosphorous loading will not be decreased by increases in impervious area; as discussed above, actual non-point loading is likely to be lower, but it is difficult to quantify the amount of impervious increase to due to infill development.

Projected Total Non-Point and Point Source Loading
Table WRE-11

YEAR	Non-Point Source N (lbs/yr)	Non-Point Source P (lbs/yr)	Point Source N (lbs/yr)	Point Source P (lbs/yr)	Total N (lbs/yr)	Total P (lbs/yr)
2000	4,354	440	1,429	238	5,783	678
2005	4,354	440	2,088	348	6,442	788
2010	4,354	440	3,013	502	7,367	942
2015	4,354	440	3,588	589	7,942	1,029
2020	4,354	440	4,081	680	8,435	1,120
*2025	4,912	499	4,423	737	9,335	1,236
*2030	4,912	499	4,793	799	9,705	1,298

* Impacts from annexation added in year 2025 and 2030.

WATER RESOURCES GOALS

1. To ensure the quality of water and protect the public health, safety, and welfare of its citizens.
2. To protect Keedysville and the States' land and water resources and meet Smart Growth policies.
3. To participate with other jurisdictions to preserve and improve the conditions of the Chesapeake Bay, its marshes, and other waters of the State.
4. To minimize nutrient runoff and erosion and practice Best Management Practices to reduce impacts from development.

POLICY AND IMPLEMENTATION STRATEGIES

Policy WR.1: In order to minimize nutrient runoff and erosion, Best Management Practices including environnmental site design to the maximum extent possible as required by the 2007 State stormwater design guidelines to reduce impacts from development is recommended to be completed. Such techniques include the following implementation strategies.

Implementation Strategies

1. Minimizing disturbance by clustering development and preserving open space.
2. Vegetative filter strips and other multi-functional landscape areas.
3. Utilizing roof top storage.
4. Develop bioretention or microbioretention facilities in appropriate places such as parking lots.
5. Use drywells onsite.

6. Encourage the planting of street trees and landscaping to reduce temperature and enhance nutrient reduction.
7. Use infiltration trenches and rain gardens.
8. Limit overall impervious surfaces to twenty-five percent or less.
9. Rainwater harvesting.

Policy WR.2: Major capital and operational improvements that address long-range needs for public water and sewer must be utilized.

Implementation Strategies

1. Add Backflow Preventers to individual water services for existing customers to prevent potential contamination of the water supply.
2. Develop a system for allocating and monitoring sewer and water taps.
3. Since there is a limited amount of taps available to Keedysville, the Town should consider a Sunshine Policy where the taps must be used in a certain time period or they must be placed back into the tap pool to be available for other applicants.
4. Replace aging water line along Main Street to reduce leaks.
5. Add additional water sources and water treatment capacity.
6. Expand the existing wastewater treatment plant by year 2020.
7. Reduce unaccounted for water loss through reducing pressures, monitoring, and leak detection.
8. Initiate a wellhead protection plan to identify the spring recharge area and implement land use controls to prohibit certain potential contaminants from development activity.