

The Bedford County Chesapeake Bay Tributary Strategy

Prepared by:
The Bedford County Conservation District
2/1/05



Executive Summary:

The Bedford County Conservation District has chosen to address sediment loss as the highest priority followed by phosphorous and then nitrogen in the Bay Strategy. Based on watershed assessments and bay models, sediment and nutrient loads due to agriculture and forestry are a problem throughout the county. The district has focused on BMPs that will reduce soil loss, which will also help reduce phosphorous loads resulting from agricultural practices.

With agriculture playing a major role in nutrient and sediment loss into our waterways across the entire county, the district feels that it is our responsibility to continue supplying the agricultural community with the tools and technical assistance needed to have a cleaner environment.

The BMPs that we feel will work best for our county and will provide the highest return back to the environment are but not limited to:

- No-till planting
- Cover crops
- Precision Agriculture (Getting farmers enrolled into CMA)
- Rotational Grazing
- Grass Buffers
- Off Stream Watering w/ Fencing
- Animal Waste Management Systems
- Nutrient Management
- Conservation Plans
- Erosion and Sediment Controls
- Dirt and Gravel Roads
- Storm Water Management

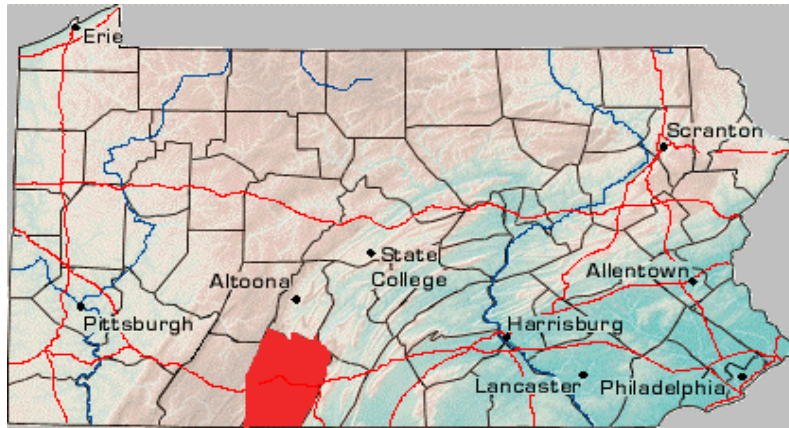
The following BMPs that are listed are those being considered possibly in other programs or at a later time depending on interested participation by the local farming community:

- Carbon Sequestration, Conservation Tillage, Forest Buffers, Horse Pasture Management, Land Retirement, Mortality Composters, Non-Urban Stream Restoration, Precision Rotational Grazing, Septic-denitrification, Street Sweeping, Tree Planting, Urban Growth Reduction, Urban Nutrient Management, Urban Stream Restoration, Wetland Restoration, Yield Reserve, Dairy-Precision Feeding, Dairy-Ammonia Emission Controls, Swine-Phytase Feed Additive, Swine-Ammonia Emission Controls, Poultry-Phytase Feed Additive, Poultry-Ammonia Emission Controls.

Although there is not a high demand for these BMPs in Bedford County, we will keep open the possibility for future interest.

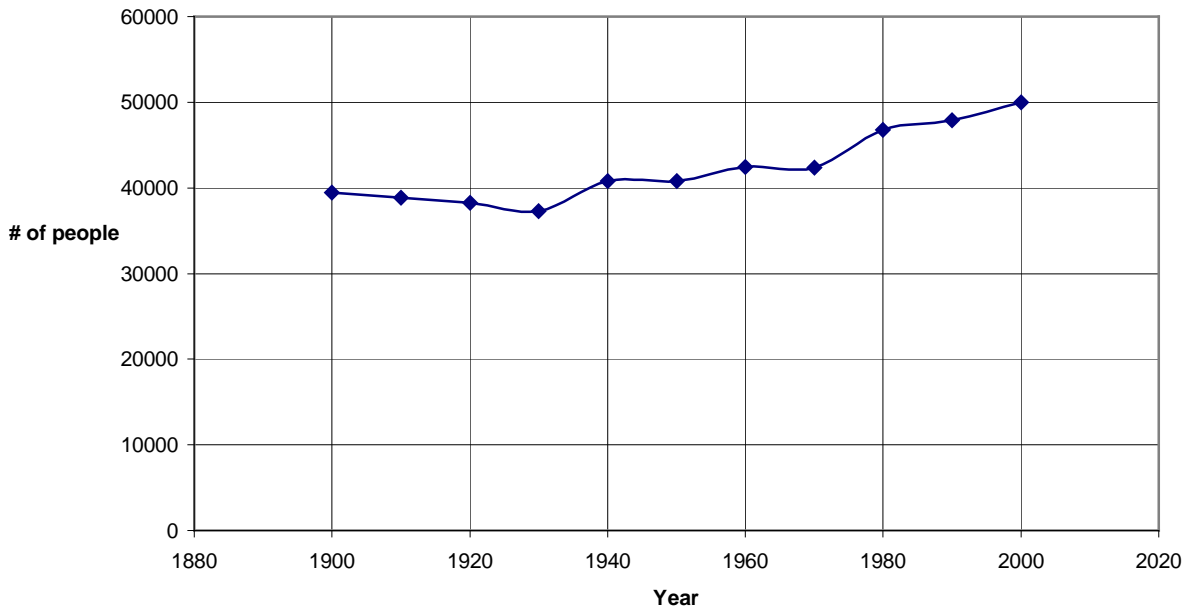
A. County Description:

Bedford County lies in the foothills of the Southern Allegheny Mountains. It is located in the south-central part of Pennsylvania. The county's terrain consists of ridge and valley, which makes for a high soil loss and runoff potential. There is approximately 1014.5 square miles (649,287 acres) of land area with 2.9 square miles of water running through it. An estimated 68% of the total land in Bedford County is forested.



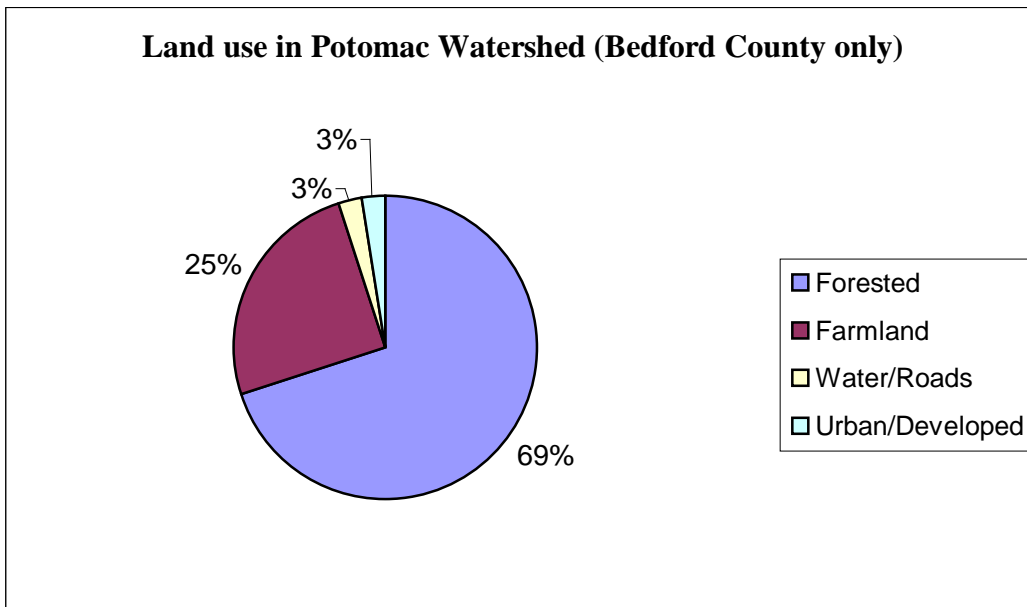
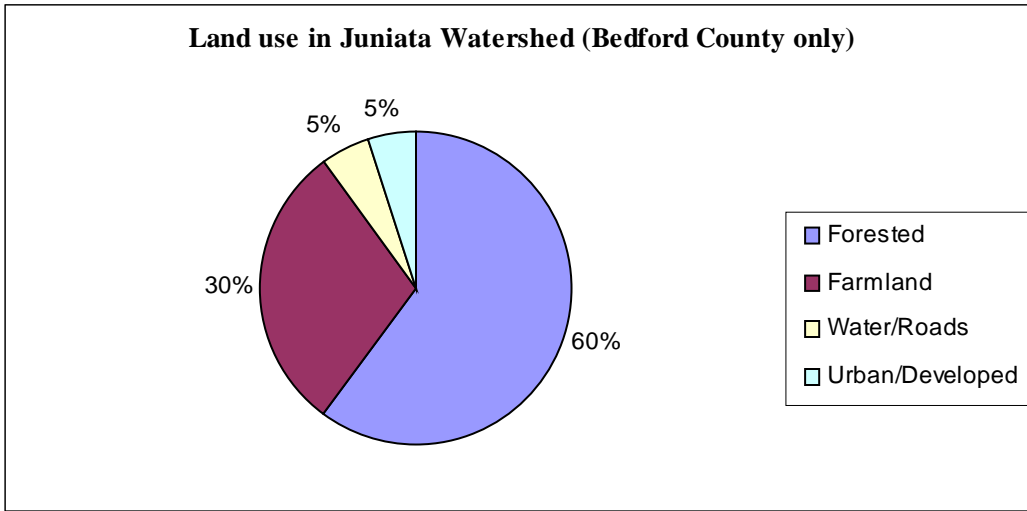
Population Trend:

Population Growth



Land use:

(Information obtained from The Bedford County Planning Commission)



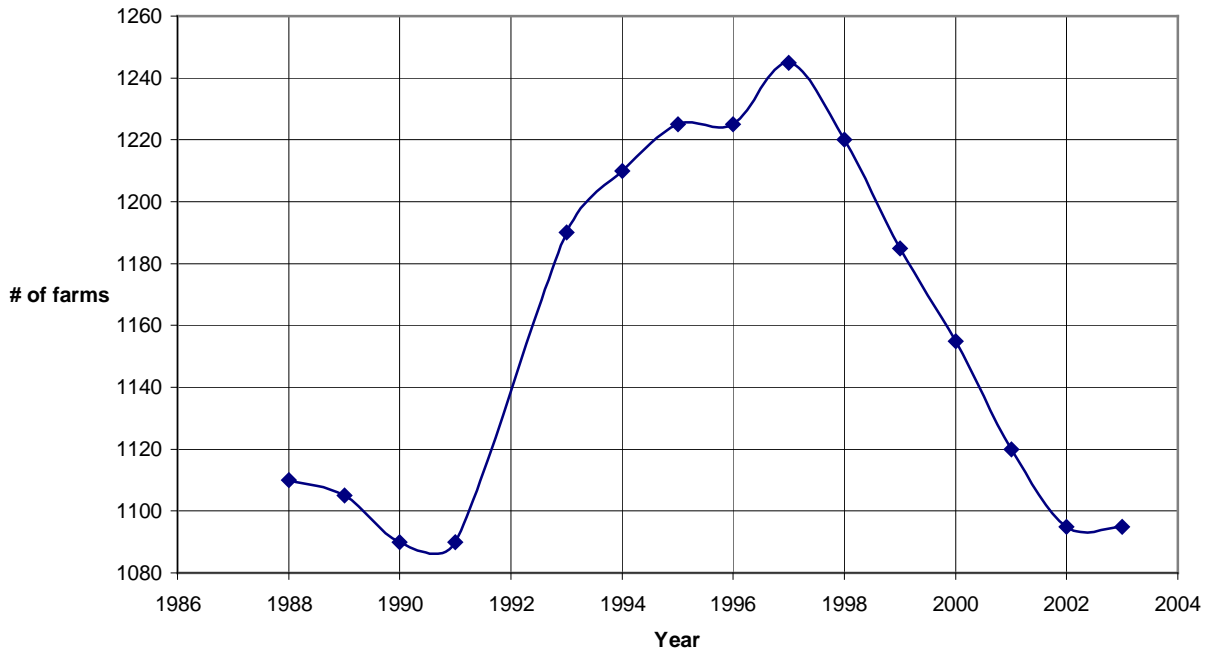
Economy:

(Non-Agriculture Percentage of Employment by Industry Group (2003))

Type	Percentage
*Construction	6%
*Manufacturing	29%
*Transportation & public utilities	4%
*Wholesale Trade	3%
*Retail Trade	25%
*Finance, insurance, & real estate	2%
*Services	16%
*Government	15%

Agricultural Profile

Farm growth



Land use in Farms (2002)

Cropland= 58.86%
 Woodland= 27.96%
 Pasture= 8.32%
 Other uses= 4.86%

Land in Farms according to use

	<u>1997</u>	<u>2002</u>
Total Cropland=	1,102 farms 131,222 ac.	994 farms 113,480 ac.
Harvested cropland=	1,004 farms 99,427 ac.	855 farms 86,340 ac.
Cropland pasture/grazing only=	626 farms 23,348 ac.	479 farms 14,500 ac.

Animal Inventory

<u>Year</u>	<u>Cattle</u>	<u>Commercial Dairy</u> (10 or more animals)	<u>Hog</u>	<u>Sheep</u>
1999	730 farms	250 farms	75 farms	40 farms
2000	730 farms	250 farms	50 farms	40 farms
2001	710 farms	220 farms	50 farms	45 farms
2002	700 farms	220 farms	55 farms	55 farms

2010 Animal Units by County and Watershed Teams

<u>COUNTY</u>	<u>BASIN</u>	<u>Watershed</u>	<u>Year</u>	<u>Beef AUs</u>	<u>Dairy AUs</u>	<u>Swine AUs</u>	<u>Layers AUs</u>	<u>Broilers AUs</u>	<u>Turkeys AUs</u>	<u>Turkeys AUs</u>
BEDFORD	susq	Juniata	2010	26,858	19,854	4,067	9	1	0	0
BEDFORD	susq	Juniata	2010	1,082	800	164	0	0	0	0
BEDFORD	potm	Potomac	2010	2,943	2,176	446	1	0	0	0
BEDFORD	potm	Potomac	2010	3,603	2,664	546	1	0	0	0

Projected 2010 Animal Units

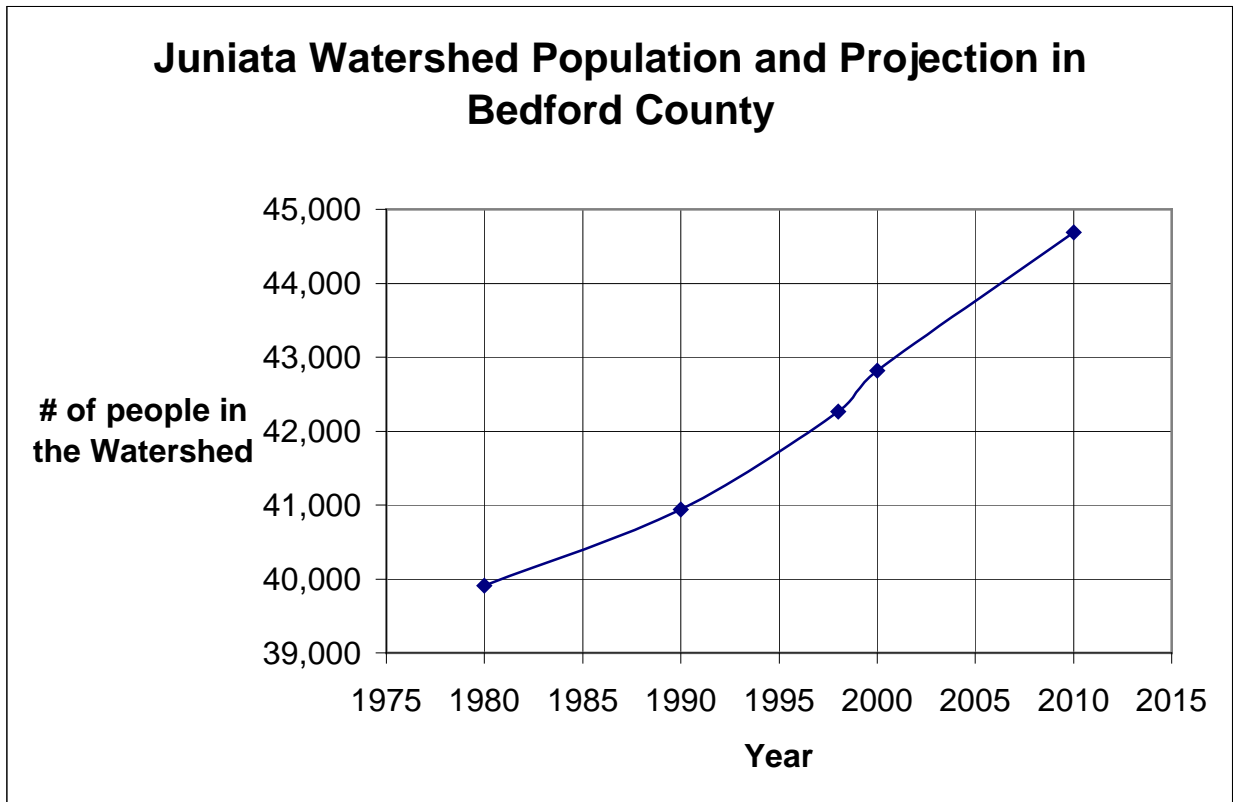
<u>COUNTY</u>	<u>Beef</u>		<u>Dairy</u>		<u>Swine Total AUs</u>	<u>Swine</u>		<u>Poultry</u>		<u>Poultry</u>		<u>Swine Total AUs</u>
	<u>Total AUs</u>	<u>Total AUs</u>	<u>Ammonia Emission</u>	<u>Ammonia Emission</u>		<u>Feed Phytase</u>	<u>Ammonia Emission</u>	<u>Layers AUs</u>	<u>Broilers AUs</u>	<u>Feed Phytase</u>	<u>Ammonia Emission</u>	
BEDFORD	34,487.4	25,493.2	19,119.9	6,373.3	5,222.8	5,118.3	2,611.4	11.0	1.9	12.9	12.9	10.9

B. Water Resources/Quality:

Bedford County can be split into two major watersheds; the Juniata and Potomac. Approximately two-thirds of the county’s water flows into the Juniata Watershed while the southern one third of the county’s water flows into the Potomac.

Watershed info:

Juniata Watershed- The Juniata watershed encompasses parts of 12 counties, with a majority of the watershed in Bedford, Blair, Fulton, Huntington, Juniata, Mifflin, and Perry counties. The mineral resources in the basin are somewhat abundant. There is one major area of coal in the watershed, located in the Broad Top region, where Bedford, Fulton, and Huntington Counties adjoin. Including all the counties, 67% of the watershed is forested, 23% agriculture, 7% developed (residential, industrial, etc.), and the rest in mine lands, water, or miscellaneous. Agricultural land and services are decreasing throughout the watershed due to an increase in population size and regional development. Of the seven main counties in the watershed, over 87,000 farming acres has been lost from 1982 to 1997 due to erosion and development. The chart below represents the population growth within the watershed in Bedford County.



Potomac Watershed- Whether you live in the mountains or foothills of Pennsylvania, Virginia, and Maryland or in the lowlands along the Chesapeake Bay, you affect the Potomac River. This watershed is nearly 15,000 square-miles. The Potomac River Basin is one of the nation's most geologically and ecologically distinct river basins. It flows over 383 miles from Fairfax Stone, WV to Point Lookout, MD and drains 14,670 square miles of land area from four states and the District of Columbia. The Potomac is the second largest contributor of fresh water to the Chesapeake Bay. From its headwaters to the Bay, the river has eight major tributaries and crosses five spectacular geological provinces. Recent centuries of intense use of the land for agriculture and rapidly expanding urban populations have presented challenges for the watershed health.

Many of the river's tributaries have been altered and degraded as a result of agriculture. Acid mine drainage has polluted its headwaters, while farming has overloaded the waterway with sediments and nutrients. Rapidly expanding urban populations and urban sprawl have created a host of problems, from urban storm water runoff and altered streams to fragmentation of the forest and destruction of critical fish and wildlife habitat.

*Note: The watershed information was obtained from the Juniata Watershed Assessment and the Potomac Watershed Group.

Below is a chart that represents the two major watersheds in Bedford County and breaks those watersheds down into smaller watersheds. The chart also represents the designated use of the watershed, category, and the type of impairments that the various watersheds have been assessed for. The information was obtained from The Department of Environmental Protection website. Some Streams that are not listed as impaired but for which there is some concern as a result of volunteer monitoring or visual assessment include:

- Scrubgrass Run (Bobs Creek watershed)- siltation
- Osterburg Run (Bobs Creek watershed)- nutrients
- Shober Run- siltation
- East Branch Sideling Hill Creek- siltation
- Buffalo Run- siltation

<u>Stream</u>	<u>Designated Use</u>	<u>State water plan</u>	<u>Category</u>	<u>Uses Assessed</u>	<u>Impairment</u>
Juniata River sub-basin					
Raystown Branch Juniata River	TSF	11C	2	Aquatic life	
UNT 15053	WWF	11C	5	Aquatic Life	Agri/siltation/industrial point source/nutrients/mercury
UNT 15087	WWF	11C	5	Aquatic Life	Agri/siltation/industrial point source/nutrients/mercury
UNT 15088	WWF	11C	5	Aquatic Life	Agri/siltation/industrial point source/nutrients/mercury
UNT 15089	WWF	11C	5	Aquatic Life	Agri/siltation/industrial point source/nutrients/mercury
UNT 15269	WWF	11C	5	Aquatic Life	Agri/siltation/industrial point source/nutrients/mercury
Spicer Brook & UNTs	WWF	11C	5	Aquatic Life	Agri/siltation
Shawnee Branch	WWF	11C	2	Aquatic life	
Kegg Run	WWF	11C	2	Aquatic life	
Bentz Run	WWF	11C	2	Aquatic life	
Burns Creek	WWF	11C	2	Aquatic life	
Negro Hollow Run	WWF	11C	2	Aquatic life	
Buffalo Run	WWF	11C	2	Aquatic life	
Smally Spring Branch	WWF	11C	2	Aquatic life	
Sulphur Springs Creek	WWF	11C	2	Aquatic life	
Milligan Run	WWF	11C	2	Aquatic life	
Cumberland Valley Run & UNTs	WWF	11C	5	Aquatic Life	Agri/siltation/nutrients/residential runoff
Shobers Run	HQ-CWF	11C	2	Aquatic life	
Dunning Creek	WWF	11C	2	Aquatic life	
UNT to Dunning	WWF	11C	2	Aquatic life	
Rocklick Creek	WWF	11C	2	Aquatic life	
Barefoot Run	WWF	11C	2	Aquatic life	
Georges Creek	WWF	11C	2	Aquatic life	
Bobs Creek	HQ-CWF/CWF	11C	2	Aquatic life	
Deep Hollow Run	TSF	11C	2	Aquatic life	
Scrubgrass Run	CWF	11C	2	Aquatic life	
Mud Run	CWF	11C	2	Aquatic life	
Osterburg Run	CWF	11C	2	Aquatic life	
Pavia Run	TSF	11C	2	Aquatic life	
Wallacks Branch	HQ-CWF	11C	2	Aquatic life	
Ciana Run	TSF	11C	2	Aquatic life	
Rhodes Run	TSF	11C	2	Aquatic life	
Ickes Run	TSF	11C	2	Aquatic life	

Stone Creek & UNTs	WWF	11C	5	Aquatic Life	Agri/siltation/nutrients
Adams Run	WWF	11C	2	Aquatic life	
Oppenheimer Run	WWF	11C	2	Aquatic life	
Brush Run	WWF	11C	2	Aquatic life	
Imlertown Run & UNTs	TSF	11C	5	Aquatic Life	Agri/siltation/nutrients
Pleasant Valley Run & UNTs	CWF	11C	5	Aquatic Life	Agri/siltation/nutrients
Cove Creek	EV/CWF	11C	2	Aquatic life	
Swamp Run	EV/CWF	11C	2	Aquatic life	
Snakespring Valley Run	WWF	11C	2	Aquatic life	
Bloody Run	WWF	11C	5	Aquatic Life	Urban runoff/storm sewers/siltation
Black Valley Creek	WWF	11C	5	Aquatic life	Urban runoff/storm sewers/salinity/TDS/chlorides (lower 0.5 m)
Black Valley Creek & UNTs	WWF	11C	2	Aquatic life	
Clear Creek	TSF	11C	2	Aquatic life	
Milk and Water Creek	WWF	11C	2	Aquatic life	
Horse Pen Hollow	WWF	11C	2	Aquatic life	
Pine Lick Hollow	WWF	11C	2	Aquatic life	
Gander Run	WWF	11C	2	Aquatic life	
Greys Run	WWF	11C	2	Aquatic life	
Brush Creek	WWF/HQ-CWF	11C	5	Aquatic Life	Agri/siltation/nutrients/residential runoff
UNT 14277	WWF	11C	5	Aquatic Life	Agri/siltation/nutrients/residential runoff
UNT 14278	WWF	11C	5	Aquatic Life	Agri/siltation/nutrients/residential runoff
UNT 14279	WWF	11C	5	Aquatic Life	Agri/siltation/nutrients/residential runoff
UNT 14280	WWF	11C	5	Aquatic Life	Agri/siltation/nutrients/residential runoff
UNT 14281	WWF	11C	5	Aquatic Life	Agri/siltation/nutrients/residential runoff
Shaffer Creek	WWF	11C	2	Aquatic life	
Chapman Run	WWF	11C	2	Aquatic life	
Brush Creek	WWF	11C	2	Aquatic life	
Weimer Run	WWF	11C	2	Aquatic life	
Johns Branch	WWF	11D	3		
Tub Mill Run	WWF	11D	3		
French Run	WWF	11D	3		
Sherman Valley Run	CWF	11D	3		
Kimber Run	WWF	11D	5	Aquatic life	AMD/pH
Pipers Run	WWF	11D	3		
Yellow Creek & UNTs	HQ-CWF	11D	5	Aquatic Life	Agri/siltation/nutrients
Maple Run	TSF	11D	2	Aquatic life	

Beaver Creek & UNTs	TSF	11D	5	Aquatic Life	Agri/siltation/nutrients
Three Springs Run & UNTs	TSF	11D	5	Aquatic Life	Agri/siltation/nutrients
Potter Creek & UNTs	TSF	11D	5	Aquatic Life	Agri/siltation/nutrients
Hickory Bottom Creek & UNTs	TSF	11D	5	Aquatic Life	Agri/siltation/nutrients
Sandy Run	WWF	11D	4a	Approved TMDL	AMD/pH/metals
Longs Run	WWF	11D	4a	Approved TMDL	AMD/pH/metals
Sixmile Run	WWF	11D	5	Aquatic life/ human health	AMD/pH/metals
Brewster Hollow Run	WWF	11D	3		
Shreeves Run	WWF	11D	3		
Ravers Run	TSF	11D	3		
Shoup Run	WWF	11D	4a	Approved TMDL	AMD/pH/metals
Coal Bank Run		11D	3		
Clover Creek (hw)	HQ-CWF	11A	11C	2	Aquatic life
Halter Creek (hw)	WWF	11A	11C	2	Aquatic life
Beaverdam Creek (hw)	CWF	11A	11C	2	Aquatic life
South Poplar Run (HW)	CWF	11A	11C	2	Aquatic life
Boiling Spring Run (hw)	CWF	11A	11C	2	Aquatic life

11A streams with small headwaters areas in Bedford County

category 3 - unassessed streams

category 2 - meeting at least one designated use

category 5 - requiring TMDL (impaired)

category 4a - approved TMDL

Potomac River Basin					
Wills Creek	HQ-CWF	13A	2	Aquatic life	
UNT to Wills Creek	TSF	13A	2	Aquatic life	
Little Wills Creek	TSF	13A	2	Aquatic life	
Wolf Camp Run	TSF	13A	2	Aquatic life	
Tar Water Run	TSF	13A	2	Aquatic life	
Sugar Hollow Run	TSF	13A	2	Aquatic life	
Tiger Run	CWF	13A	2	Aquatic life	
Thompson Run	TSF	13A	2	Aquatic life	
Gladdens Run	TSF	13A	5	Aquatic life	AMD/metals
Jennings Run	TSF	13A			
Rocky Gap Run	TSF	13A	2	Aquatic life	
Evitts Creek	HQ-CWF	13A	5	Aquatic life	low regulation/modification/thermal modification/ag nutrients
Growden Run		13A	2	Aquatic life	
Oster Run		13A	2	Aquatic life	
Sand Spring Run		13A	5	Aquatic life	Atmospheric deposition/pH
Town Creek	HQ-CWF	13A	2	Aquatic life	
UNT to Town Creek	HQ-CWF	13A	2	Aquatic life	
Amorine Branch	HQ-CWF	13A	2	Aquatic life	
Black Valley Branch		13A	2	Aquatic life	
Flintstone Creek	HQ-CWF/TSF	13A	5	Aquatic life	Atmospheric deposition/pH
UNT to Flintstone	HQ-CWF	13A	2	Aquatic life	
Lost Run	HQ-CWF	13A	5	Aquatic life	Crop related ag nutrients/siltation
Twigg Hollow Run	HQ-CWF	13A	5	Aquatic life	Atmospheric deposition/pH
Laurel Branch		13A	5	Aquatic life	Atmospheric deposition/pH
Bear Gap Run		13A	5	Aquatic life	Atmospheric deposition/pH
Pigeonroost run		13A	5	Aquatic life	Atmospheric deposition/pH
Little Pigeonroost Run		13A	5	Aquatic life	Atmospheric deposition/pH
Wildcat Run		13A	5	Aquatic life	Atmospheric deposition/pH
Georgetown Run		13A	2	Aquatic life	
Wilson Run		13A	2	Aquatic life	
Blues Gap Run		13A	2	Aquatic life	
Sweet Root Creek		13A	2	Aquatic life	
Elk Lick Creek		13A	2	Aquatic life	
Fifteenmile Creek	WWF	13B	2	Aquatic life	

Bear Camp Branch		13B	2	Aquatic life	
Sideling Hill Creek	EV	13B	2	Aquatic life	
West Branch Sideling Hill	EV	13B	2	Aquatic life	
Johnson Branch	EV	13B	2	Aquatic life	
Crooked Run		13B	2	Aquatic life	
Piney Creek	EV	13B	2	Aquatic life	
Blackberry Lick Run		13B	2	Aquatic life	
East Branch Sideling Hill	EV	13B	2	Aquatic life	
UNT East Branch		13B	2	Aquatic life	

11A streams with small headwaters areas in Bedford County

category 3 - unassessed streams

category 2 - meeting at least one designated use

category 5 - requiring TMDL (impaired)

category 4a - approved TMDL

C. Trends of Significance to Water Quality:

a. Potomac Watershed- This watershed lies in the lower one-third of the county. The agricultural makeup of the county consists mostly of small beef and dairy farms. In this watershed, approximately 15% of the farmers implement No-Tilling, 30% plant cover crops, and less than 10% are rotational grazing.

Juniata Watershed- This major watershed covers the remaining two-thirds of the county. It is a mix of urban sprawl and agricultural population. Dairy, livestock, and crop are the main types of farming that occurs in this area. The two main agricultural areas are Morrison's Cove and Friend's Cove (Cove Creek). Unfortunately these low areas are also the passageways for the water runoff from the mountains to flow. Within the watershed, 20% of the farmers implement No-Tilling, 35% plant cover crops, and less than 10% have a grazing system.

- i) Morrison's Cove- This area is economically the highest farming community in the county and is broken down into the Yellow Creek Watershed. Approximately 45% of the farmers are Mennonites and growing. Land use in this area is estimated to be 47% cropland and 40% forested. The remaining 13% is divided between hay land/pasture, roadside, urban, etc. Over 50% of our workload to install BMP's has been done in this area.
- ii) Friend's Cove- This area is similar to the Morrison's Cove in which an up-land valley bordered by high mountain ridges characterizes the terrain. Economically the farming population is not as great as compared to Morrison's Cove, but over 70% of the Cove consist of farming and forested ground. Of the farming community, 50% of the population is Mennonite and increasing.

*Note: All though most of the Mennonite community does not accept cost-share money, they do take advantage of the technical services and equipment program that we provide.

b. Other significant sediment and nutrient sources that can be credited for the loads are Timbering and Construction. There is approximately 384,000 acres of timbered ground in the county and roughly 4% of that is harvested every year. In Bedford County, there is an average of 45 E&S plans/yr. That accounts for an average of 237 total acres/yr of earth disturbance. Also on an average of 2 Individual and 7 General NPDS Permits are issued yearly. Majority of these permits are issued in the Juniata Watershed since this consists of the highest urban populations.

As of 2004, there were 141 issued EPA water discharge permits. Sewer Systems account for 30 permits, businesses for 25 permits, and residential/townships/etc. with 86 permits.

c. Water Quality:

Potomac Watershed- The Evitts Creek branch has the highest nutrients load due to agriculture. The Town Creek branch has numerous tributaries that are atmospheric deposition and pH impaired. Impaired streams on the 303d list in the Potomac River basin within Bedford County include Evitts Creek, due to agriculture, and streams of the Flintstone Creek watershed, Southampton Township, due to atmospheric deposition/pH.

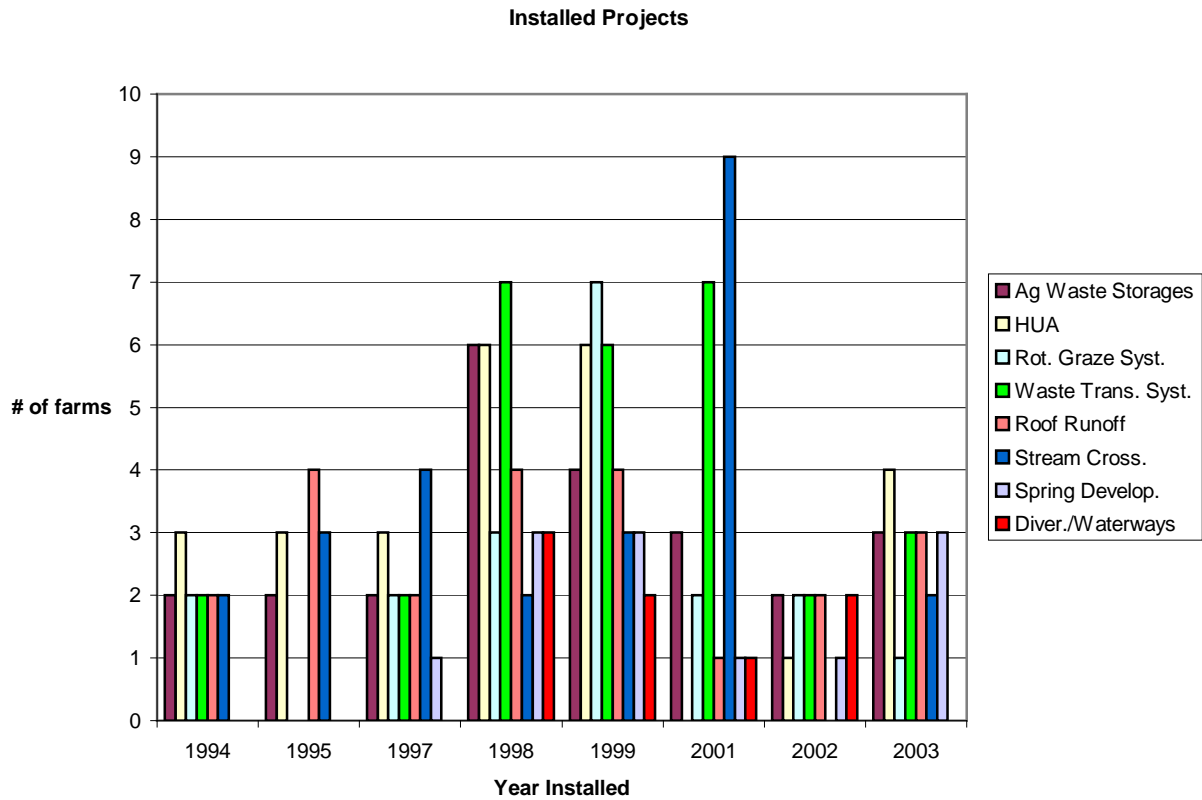
Juniata Watershed- The Raystown Branch of the Juniata River have a high nutrient, industrial point, and siltation loads. Dunning Creek and Yellow Creek also have high nutrients and siltation loads. Bloody run and Black Valley Creek are impaired due to urban runoff and storm sewers. Brush Creek also has impairment due to residential runoff along with nutrients and siltation.

D. Sediment and Nutrient/Source Reductions:

a. There are various cost-share programs and grants offered to farmers in Bedford County to install BMP's. Listed below are programs and their past accomplishments:

Chesapeake Bay Program:

The district has spent over \$1,355,623.00 to install BMP's in Bedford County. This program has been partnered with various other programs to help cost share larger projects so that more funding could be available for the farmers to install practices. The first BMP was install in 1991 and the demand has been growing since. The chart below represents the most requested BMP's installed over the years.



Growing Greener Grants:

Bedford County has spent over \$235,000 to help cost-share stream bank fencing, stream crossings, Ag. waste storages, barnyard improvements, and various other BMP's. The conservation district was also able to lease a Great Plains No-Till Drill under a Growing Greener Grant for three years to help farmers implement no-till farming and cover crops. A grant was also used to help fund a position to assist with the equipment program.

E&S Program

There are currently two portable bridges that the district rents out to timber harvesters. There is a demand to use them on a regular basis in which the E&S technician oversees. In 1997, the Dirt and Gravel Roads began to address sediment loss for these types of roads. An estimated 42 miles of roadway improvements such as drainage and surface stone has been implemented to reduce sediment loss.

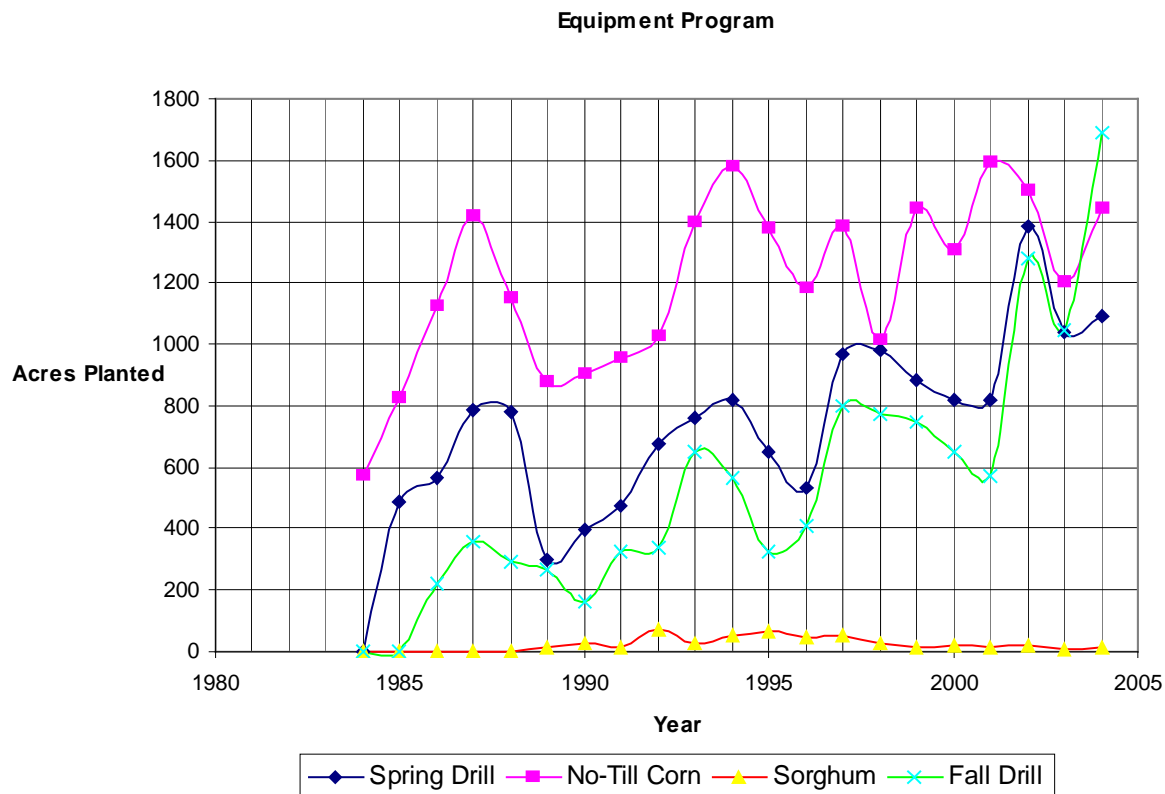
Nutrient Management Program/Act6:

There are currently 84 finished nutrient management plans in Bedford County and the demand continues to grow. The program began cost sharing BMP's in 2001 and since then, the district has spent \$776,324.80 to help install various practices.

Equipment Program:

The Bedford County Conservation District started the rental program in 1984 by leasing three John Deere no-till corn planters. The first year 571 acres on no-till corn was planted. In 1985, a no-till drill was purchased using grant funds and a loan. Three John Deere corn planters were purchased from John Deere Company in 1988 using a five-year finance program. The no-till has continued to expand to four (4) no-till drills and six (6) no-till corn planters. Nearly 2,800 acres were planted with the drills and 1400 acres with the corn planters in 2004.

The no-till program provided an excellent opportunity to enroll farmers into the Chesapeake Bay Cost share Program. No-Till planting, cover crops, and pasture planting were implemented along with Ag. waste storage structures. Below is a chart that represents the amount of acres planted with various crops:



With the increasing amount of liquid manure being stored, it soon became evident of a lack of available equipment for spreading. With the use of rental funds and an Evitts Creek Watershed 319 Grant, two 3,250-gallon manure tanks and a multi-purpose pump were purchased in April of 1995. Since this time, the program has grown to four tanks and two pumps.

The district purchased two (2) pull type damp lime spreaders in 2004. Over 2,000 tons of lime was spread in the first year they were available.

The district's list of equipment users has grown to over 320 landowners. The current equipment program now consist of:

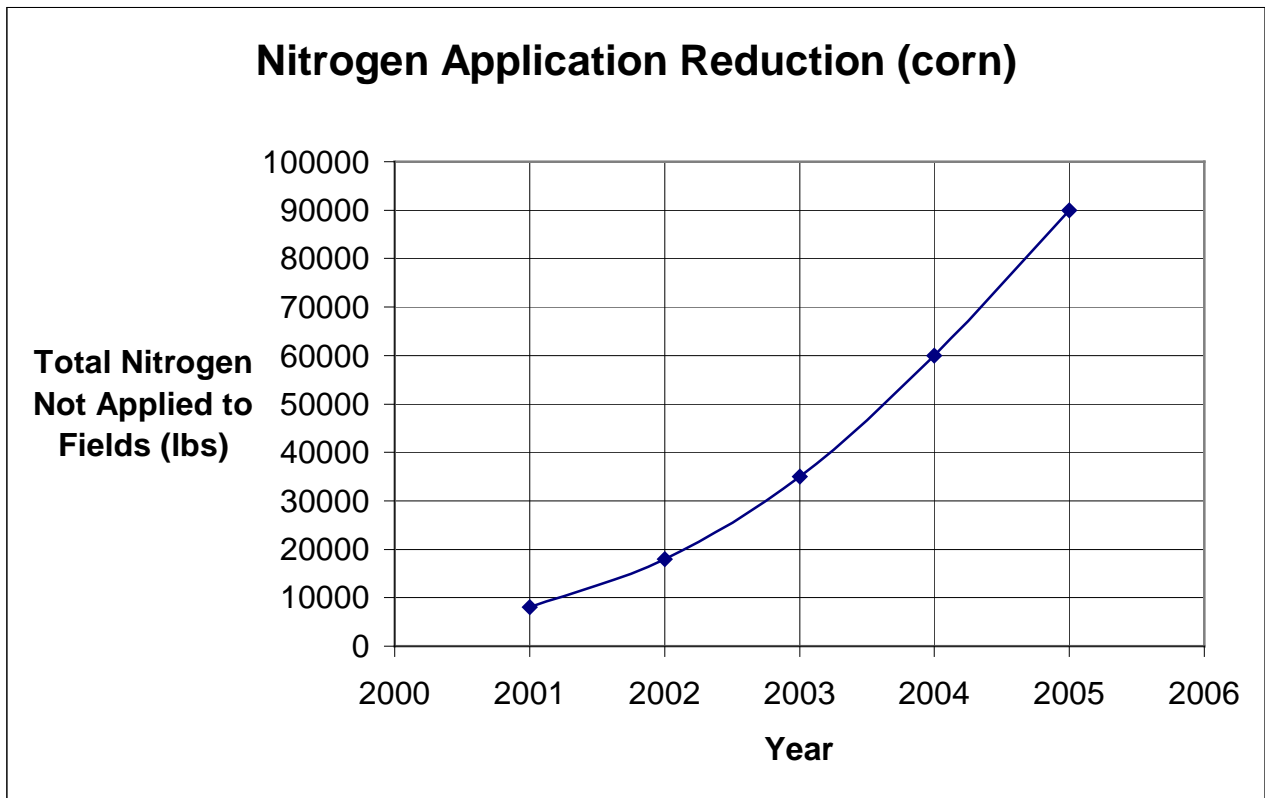
- (6) No-till corn planters
- (4) No-till drills
- (4) Liquid manure tanks
- (2) Manure pumps
- (2) Damp lime spreaders

A district committed to providing equipment to landowners as quick and timely as possible is the key to a successful program. Delivering equipment in a timely fashion and maintaining the equipment are the main components to having a high demand for the equipment.

Crop Management Association:

The Bedford-Blair Crop Management Association has experienced a phenomenal growth and improvement since July 2001. From July 2001 to December 2003 total acres increased from 1108 acres to 3600 acres. During this time, using high nitrogen test plots reduced approximately 50,000 lbs of nitrogen fertilizer. There were over 200 soil samples taken for farmers to determine the nutrient loads in the fields.

There are now 22 members and almost 5000 acres enrolled in the CMA. An estimated 89% of the 5000 acres are implementing Nutrient Management Plans provided through the program. In 2004 alone, there were 180 soil samples taken and 3 liquid manure tests. The Chlorophyll Leaf Meter was used to check over 1500 acres which reduced N application by 40% (60,000 lbs). Crop scouting also played a key role in which insecticide application was reduced on 2,000 acres of alfalfa alone by min. 35%. Application rates were reduced up to 1 quart/acre on these fields.



Currently there are estimated 86,340 harvested crop acres in Bedford County. Despite a rapid growth, a mere 6% of that total is currently enrolled in CMA. Other services provided include farm mapping of fields, crop moisture checks, pesticide record keeping, corn silage/grain yield checks, and there is currently a cover crop incentive program.

This page contains projected nitrogen, phosphorus and sediment loads based on the total cumulative management practices reported through 2002 and the estimated land use acres for each county based on the 2002 implementation.

Loading rates for each land use within the counties are estimated by dividing the total nutrient and sediment loads by the corresponding total acres.

Caveats:

1. The nutrient and sediment loads listed do not represent actual 2002 loads. The loads are those projected to eventually occur when all the reported management practices installed between 1985 and 2002 become fully functional at reducing loads to surface water and within groundwater.
2. All loading and land use information provided by EPA's Chesapeake Bay Program Office
3. All nutrient and sediment loads calculated using EPA's Chesapeake Bay Program watershed model.
4. The nutrient and sediment loads represent the sum of the individual loads for those model segment(s) which comprise the area with a county. That is, for counties with more than one portion of a model segment within the county boundary, the loads for each segment were added together to obtain the total for the county.

NITROGEN Projected 2002 Edge-Of-Stream Loads --- in pounds per year

COUNTY	Conventional Till	Conservation Till	Hay	Pasture	Manure	Forest	Pervious Developed	Impervious Developed	Mixed Open	Open Water	Septic Systems
BEDFORD	565,194	419,927	520,184	610,594	301,322	1,027,410	83,580	26,232	237,448	27,303	119,084

Conventional Till	Conservation Till	Hay	Pasture	Manure	Forest	Pervious Developed	Impervious Developed	Mixed Open	Air Dep to Water	Septic Systems
27,862	6,923	18,193	16,333	0	17,790	3,312	0	7,781	0	0

2002 Acres by landuse

COUNTY	Conventional Till	Conservation Till	Progress Hay	Pasture	Manure	Forest	Pervious Developed	Impervious Developed	Mixed Open	Air Dep to Water	Septic Systems
BEDFORD	25,284	20,335	57,054	43,185	213	447,821	8,818	3,315	41,712	2,736	N/A

NITROGEN --- Projected loading rates based on 2002 implementation --- in pounds per acre

COUNTY	Conventional Till	Conservation Till	Progress Hay	Pasture	Manure	Forest	Pervious Developed	Impervious Developed	Mixed Open	Air Dep to Water	Septic Systems
BEDFORD	22.4	20.7	9.1	14.1	1,412.0	2.3	9.5	7.9	5.7	10.0	---

PHOSPHORUS Projected 2002 Edge-Of-Stream Loads --- in pounds per year

COUNTY	Conventional Till	Conservation Till	Hay	Pasture	Manure	Forest	Pervious Developed	Impervious Developed	Mixed Open	Open Water	Septic Systems
BEDFORD	42,633	21,877	34,561	60,693	36,666	12,404	4,972	1,678	17,109	1,550	0

2002 Acres by landuse

COUNTY	Conventional Till	Conservation Till	Progress Hay	Pasture	Manure	Forest	Pervious Developed	Impervious Developed	Mixed Open	Air Dep to Water	Septic Systems
BEDFORD	25,284	20,335	57,054	43,185	213	447,821	8,818	3,315	41,712	2,736	N/A

PHOSPHORUS --- Projected loading rates based on 2002 implementation

COUNTY	Conventional Till	Conservation Till	Progress Hay	Pasture	Manure	Forest	Pervious Developed	Impervious Developed	Mixed Open	Air Dep to Water	Septic Systems
BEDFORD	1.69	1.08	0.61	1.41	171.82	0.03	0.56	0.51	0.41	0.57	N/A

SEDIMENT Projected 2002 Edge-Of-Stream Loads --- in tons per year

COUNTY	Conventional Till	Conservation Till	Hay	Pasture	Manure	Forest	Pervious Developed	Impervious Developed	Mixed Open	Open Water	Septic Systems
BEDFORD	27,862	6,923	18,193	16,333	0	17,790	3,312	0	7,781	0	0

2002 Acres by landuse

COUNTY	Conventional Till	Conservation Till	Progress Hay	Pasture	Manure	Forest	Pervious Developed	Impervious Developed	Mixed Open	Air Dep to Water	Septic Systems
BEDFORD	25,284	20,335	57,054	43,185	213	447,821	8,818	3,315	41,712	2,736	N/A

SEDIMENT --- Projected loading rates based on 2002 implementation

COUNTY	Conventional Till	Conservation Till	Progress Hay	Pasture	Manure	Forest	Pervious Developed	Impervious Developed	Mixed Open	Air Dep to Water	Septic Systems
BEDFORD	1.100	0.340	0.319	0.378	0.000	0.040	0.376	0.000	0.187	0	N/A

<u>COUNTY</u>	<u>Watershed</u>	<u>Urban Growth</u>	<u>Urban Growth</u>	<u>Forest Buffers</u>	<u>Forest Buffers</u>	<u>Forest Buffers</u>	<u>Forest Buffers</u>	<u>Wetland</u>	<u>Wetland</u>
		<u>Reduction</u>	<u>Reduction</u>	<u>Row Crops</u>	<u>Hay</u>	<u>Pasture</u>	<u>Mixed Open</u>	<u>Restoration</u>	<u>Restoration</u>
		<u>Pervious Developed</u>	<u>Impervious Developed</u>					<u>Row Crops</u>	<u>Hay</u>
BEDFORD	Juniata	61	23	2,513	355	1,942	218	53	75
BEDFORD	Juniata	6	1	51	10	76	6	2	3
BEDFORD	Potomac	9	4	429	50	379	35	6	9
BEDFORD	Potomac	0	0	412	45	330	48	7	10

<u>COUNTY</u>	<u>Watershed</u>	<u>Tree Planting</u>	<u>Tree Planting</u>	<u>Tree Planting</u>	<u>Carbon Sequestration</u>	<u>Forest Buffers</u>	<u>Grass Buffers</u>	<u>Grass Buffers</u>	<u>Land</u>
		<u>Row Crops</u>	<u>Pasture</u>	<u>Mixed Open</u>	<u>Row Crops</u>	<u>Pervious Developed</u>	<u>Pervious Developed</u>	<u>Row Crops</u>	<u>Retirement</u>
									<u>Row Crops</u>
BEDFORD	Juniata	23	11	1,009	5,942	20	324	1,613	3,937
BEDFORD	Juniata	0	2	33	240	1	13	47	206
BEDFORD	Potomac	30	5	179	617	2	31	195	496
BEDFORD	Potomac	3	0	267	757	0	0	208	655

<u>COUNTY</u>	<u>Watershed</u>	<u>Conservation Tillage</u>	<u>No-Till</u>	<u>Nutrient</u>	<u>Nutrient</u>	<u>Nutrient</u>	<u>Yield Reserve</u>	<u>Yield Reserve</u>	<u>Yield</u>
		<u>Row Crops</u>	<u>Conservation Till</u>	<u>Management</u>	<u>Management</u>	<u>Management</u>	<u>Conventional Till</u>	<u>Conservation Till</u>	<u>Reserve</u>
				<u>Conventional Till</u>	<u>Conservation Till</u>	<u>Hay</u>			<u>Hay</u>
BEDFORD	Juniata	22,570	10,225	0	3,656	9,386	0	3,656	9,386
BEDFORD	Juniata	901	403	17	151	374	13	151	374
BEDFORD	Potomac	2,242	1,092	0	363	1,000	0	363	1,000
BEDFORD	Potomac	2,875	1,350	0	466	1,217	0	466	1,217

<u>COUNTY</u>	<u>Watershed</u>	<u>Managed Precision</u>	<u>Managed Precision</u>	<u>Managed</u>	<u>Non-Urban Stream</u>	<u>Non-Urban Stream</u>
		<u>Agriculture</u>	<u>Agriculture</u>	<u>Precision</u>	<u>Restoration</u>	<u>Restoration</u>
		<u>Conventional Till</u>	<u>Conservation Till</u>	<u>Agriculture</u>	<u>Conventional Till (ft)</u>	<u>Conservation Till (ft)</u>
				<u>Hay</u>		
BEDFORD	Juniata	0	10,969	28,159	0	787
BEDFORD	Juniata	0	453	1,121	9	9
BEDFORD	Potomac	0	1,090	3,000	0	0
BEDFORD	Potomac	0	1,397	3,651	0	0

*All units are in acres unless otherwise stated

<u>COUNTY</u>	<u>Watershed</u>	<u>Conservation (Farm)</u>	<u>Conservation (Farm)</u>	<u>Conservation (Farm)</u>	<u>Conservation (Farm)</u>	<u>Cover Crops (early)</u>	<u>Cover Crops (early)</u>	<u>Erosion & Sediment</u>
		<u>Plans</u>	<u>Plans</u>	<u>Plans</u>	<u>Plans</u>			
		<u>Conventional Till</u>	<u>Conservation Till</u>	<u>Hay</u>	<u>Pasture</u>			<u>Pervious Developed</u>
BEDFORD	Juniata	0	18,282	46,931	23,572	0	18,282	153
BEDFORD	Juniata	30	754	1,868	955	30	754	10
BEDFORD	Potomac	0	1,816	4,999	2,426	0	1,816	30
BEDFORD	Potomac	0	2,329	6,085	3,095	0	2,329	0

<u>COUNTY</u>	<u>Watershed</u>	<u>Off Stream Watering</u>	<u>Off Stream Watering</u>	<u>Rotational grazing</u>	<u>Precision Agriculture</u>	<u>Animal Waste</u>	<u>Mortality Composters</u>	<u>Urban Nutrient</u>
		<u>w/Fencing</u>	<u>w/o Fencing</u>			<u>Management Systems</u>		
		<u>Pasture</u>	<u>Pasture</u>	<u>Pasture</u>	<u>(Pasture)</u>	<u>Manure Acre</u>	<u>Manure Acre</u>	<u>Pervious Developed</u>
BEDFORD	Juniata	11,786	7,072	1,886	2,829	174	1	6,846
BEDFORD	Juniata	477	286	76	115	6	0	346
BEDFORD	Potomac	1,213	728	194	291	17	1	544
BEDFORD	Potomac	1,547	928	248	371	21	1	0

<u>COUNTY</u>	<u>Watershed</u>	<u>Horse Pasture</u>	<u>Abandoned Mined</u>	<u>Nutrient</u>	<u>Forest Harvesting</u>	<u>Urban Stream</u>	<u>Urban Stream Restoration</u>	<u>Street Sweeping</u>
		<u>Management</u>	<u>Land Reclamation</u>	<u>Management</u>	<u>Practices</u>	<u>Restoration</u>		
		<u>Mixed Open</u>	<u>Mixed Open</u>	<u>Mixed Open</u>	<u>Forest</u>	<u>Pervious Developed (ft)</u>	<u>Impervious Developed (ft)</u>	<u>Impervious Developed</u>
BEDFORD	Juniata	8,319	182	29,479	0	0	0	264
BEDFORD	Juniata	338	6	1,224	0	0	0	8
BEDFORD	Potomac	2,735	43	1,408	0	0	0	31
BEDFORD	Potomac	5,040	0	0	0	0	0	0

<u>COUNTY</u>	<u>Watershed</u>	<u>Non-Urban Stream</u>	<u>Non-Urban Stream</u>	<u>Non-Urban Stream</u>	<u>Non-Urban Stream</u>	<u>Dirt & Gravel Road</u>	<u>Dirt & Gravel Road</u>	<u>Septic Denitrification</u>
		<u>Restoration</u>	<u>Restoration</u>	<u>Restoration</u>	<u>Restoration</u>	<u>Practices</u>	<u>Practices</u>	
		<u>Pasture (feet)</u>	<u>Forest (feet)</u>	<u>Mixed Open (feet)</u>	<u>Hay (feet)</u>	<u>Forest (feet)</u>	<u>Mixed Open (feet)</u>	<u>Systems</u>
BEDFORD	Juniata	881	696	832	877	48,742	58,235	6,748
BEDFORD	Juniata	18	8	11	20	567	738	173
BEDFORD	Potomac	0	0	0	0	7,467	0	240
BEDFORD	Potomac	0	0	0	0	12,581	0	171

*All units are in acres unless otherwise stated

<u>COUNTY</u>	<u>Watershed</u>	<u>Ammonia Emission Reductions</u> <u>(lbs NH3-N/yr)</u>	<u>Swine Phytase (Cropland</u> <u>lbs TP/yr)</u>	<u>Precision Dairy Feeding (Pasture</u> <u>lbs TP/yr)</u>
		<u>NH3-N Deposition Reduction</u> <u>(lbs NH3-N/yr)</u>	<u>Cropland Application</u> <u>Reduction (lbs TP/yr)</u>	<u>Pasture Application Reduction</u> <u>(lbs TP/yr)</u>
BEDFORD	Juniata	172,702	33,638	12,935
BEDFORD	Juniata	7,365	1,356	521
BEDFORD	Potomac	35,603	3,686	1,418
BEDFORD	Potomac	39,620	4,513	1,735

<u>COUNTY</u>	<u>Watershed</u>	<u>Precision Dairy Feeding</u> <u>(Cropland lbs TN/yr)</u>	<u>Precision Dairy Feeding</u> <u>(Pasture lbs TN/yr)</u>	<u>Precision Dairy Feeding</u> <u>(Cropland lbs TP/yr)</u>
		<u>Cropland Application Reduction</u> <u>(lbs TN/yr)</u>	<u>Pasture Application</u> <u>Reduction (lbs TN/yr)</u>	<u>Cropland Application Reduction</u> <u>(lbs TP/yr)</u>
BEDFORD	Juniata	381,419	132,070	43,980
BEDFORD	Juniata	15,372	5,323	1,772
BEDFORD	Potomac	41,797	14,473	4,820
BEDFORD	Potomac	51,171	17,718	5,900

<u>COUNTY</u>	<u>Watershed</u>	<u>SWM - Wet Ponds & Wetlands</u>	<u>SWM - Wet Ponds & Wetlands</u>	<u>SWM - Infiltration practices</u>	<u>SWM - Infiltration practices</u>	<u>SWM - Filtration</u>	<u>SWM - Filtration</u>
		<u>Pervious Developed</u>	<u>Impervious Developed</u>	<u>Pervious Developed</u>	<u>Impervious Developed</u>	<u>Pervious Developed</u>	<u>Impervious Developed</u>
BEDFORD	Juniata	2,259	887	2,259	887	2,259	887
BEDFORD	Juniata	114	24	114	24	114	24
BEDFORD	Potomac	180	93	180	93	180	93
BEDFORD	Potomac	0	0	0	0	0	0

*All units are in acres unless otherwise stated

The following table is a model with the proposed percentage of the nitrogen, phosphorus, and sediment edge of bank loads to the bay and is to be used to determine how the county is going to determine which BMPs to address.

REGION	COUNTY	Nitrogen EOS - TN Total	Nitrogen District Percentage	Nitrogen Regional Totals	Phosphorus EOS - TP Total	Phosphorus District Percentage	Phosphorus Regional Totals	Sediment EOS - SED Total	Sediment District Percentage	Sediment Regional Totals
NCRO	BRADFORD	6,269,605	6%		350,763	6%		72,252	3%	
NCRO	CAMERON	924,093	1%		17,354	0%		12,783	1%	
NCRO	CENTRE	4,525,598	4%		201,627	3%		65,934	3%	
NCRO	CLEARFIELD	3,333,944	3%		104,927	2%		38,288	2%	
NCRO	CLINTON	2,840,576	3%		94,558	2%		35,273	2%	
NCRO	COLUMBIA	3,066,554	3%		164,407	3%		53,033	2%	
NCRO	ELK	738,542	1%		20,899	0%		10,253	0%	
NCRO	JEFFERSON	9,758	0%		607	0%		60	0%	
NCRO	LYCOMING	4,958,136	4%		215,903	3%		93,732	4%	
NCRO	MCKEAN	55,392	0%		913	0%		780	0%	
NCRO	MONTOUR	961,659	1%		53,839	1%		22,041	1%	
NCRO	NORTHUMBERLAND	3,231,429	3%		166,753	3%		57,222	3%	
NCRO	POTTER	1,962,724	2%		60,533	1%		27,245	1%	
NCRO	SNYDER	2,030,043	2%		132,383	2%		42,217	2%	
NCRO	SULLIVAN	1,268,272	1%		46,336	1%		25,512	1%	
NCRO	TIOGA	4,497,359	4%	42,575,861	210,822	3%	1,944,883	52,496	2%	652,517
NCRO	UNION	1,902,177	2%	38%	102,259	2%	31%	43,396	2%	30%
NERO	LACKAWANNA	1,813,251	2%		71,029	1%		17,802	1%	
NERO	LUZERNE	3,435,937	3%		136,091	2%		42,204	2%	
NERO	SCHUYLKILL	1,829,257	2%		99,425	2%		45,533	2%	
NERO	SUSQUEHANNA	4,031,214	4%		206,184	3%		43,931	2%	
NERO	WAYNE	229,236	0%	13,215,520	8,931	0%	604,224	2,422	0%	172,932
NERO	WYOMING	1,876,625	2%	12%	82,564	1%	10%	21,040	1%	8%

REGION	COUNTY	Nitrogen	Nitrogen	Nitrogen	Phosphorus	Phosphorus	Phosphorus	Sediment	Sediment	Sediment
		EOS - TN	District	Regional	EOS - TP	District	Regional	EOS - SED	District	Regional
		Total	Percentage	Totals	Total	Percentage	Totals	Total	Percentage	Totals
SCRO	ADAMS	3,115,364	3%		257,589	4%		79,367	4%	
SCRO	BEDFORD	3,938,278	3%		234,143	4%		98,194	5%	
SCRO	BERKS	538,393	0%		37,893	1%		18,932	1%	
SCRO	BLAIR	2,518,534	2%		137,586	2%		39,335	2%	
SCRO	CAMBRIA	1,384,895	1%		60,609	1%		14,374	1%	
SCRO	CHESTER	1,076,100	1%		69,946	1%		18,728	1%	
SCRO	CUMBERLAND	3,549,832	3%		213,567	3%		78,460	4%	
SCRO	DAUPHIN	2,934,171	3%		152,913	2%		53,937	2%	
SCRO	FRANKLIN	6,292,580	6%		434,072	7%		101,084	5%	
SCRO	FULTON	1,235,625	1%		65,389	1%		34,712	2%	
SCRO	HUNTINGDON	3,036,013	3%		156,882	3%		60,332	3%	
SCRO	INDIANA	284,588	0%		13,443	0%		3,081	0%	
SCRO	JUNIATA	1,886,454	2%		120,851	2%		36,022	2%	
SCRO	LANCASTER	11,664,423	10%		871,456	14%		349,658	16%	
SCRO	LEBANON	2,333,222	2%		171,244	3%		76,613	4%	
SCRO	MIFFLIN	1,975,657	2%		123,934	2%		31,097	1%	
SCRO	PERRY	2,498,758	2%		144,402	2%		52,118	2%	
SCRO	SOMERSET	422,494	0%	56,884,239	22,234	0%	3,665,906	5,233	0%	1,342,166
SCRO	YORK	6,198,858	6%	50%	377,753	6%	59%	190,889	9%	62%
Total		112,675,620			6,215,013			2,167,615		

Chesapeake Bay Program 2002 Credited Practices
Cumulative Total of Practices Reported from 1985 Through 2002

Practice	Units	BEDFORD
Abandoned Mine Reclamation	Acres	260
Animal Waste Management- AEUs	AEUs	15,853
Conservation Plans	Acres	49,224
Conservation Tillage	Acres	20,335
Erosion and Sediment Control	Acres	193
Forest Buffers	Acres	270
Grass Buffers	Acres	3
Land Retirement	Acres	4,415
Nutrient Management	Acres	38,448
Off-stream Watering With Stream Fencing	Acres	1,557
Off-stream Watering Without Fencing	Acres	73
Rotational Grazing	Acres	1,139
Septic Connections	EDUs	1,252
Tree Planting	Acres	1,561
Wetland Restoration	Acres	137

EDU= Equivalent Domestic Unit (Family Unit)

AEU= One thousand pounds live weight of livestock or poultry animals

Goals For Bedford County to meet:

Draft Tributary Strategy --- non-point source BMP implementation split out by counties

Date of file: 10-19-04

BMP numbers based on watershed model run #3 - (s45pats03)

Practice	Units	BEDFORD (Goal)	Accomplished
Abandoned Mined Land Reclamation	Acres	231	260
Animal Waste Management Systems	AEUs	31,715	15,853
Carbon Sequestration	Acres	7,556	
Conservation (Farm) Plans	Acres	113,145	49,224
Conservation Tillage	Acres	28,588	20,335
Cover Crops (early)	Acres	23,212	
Dirt & Gravel Road Practices	Feet	128,330	221,760
Erosion & Sediment Controls	Acres	194	193
Forest Buffers	Acres	6,923	270
Forest Harvesting Practices	Acres	0	
Grass Buffers	Acres	2,431	3
Horse Pasture Management	Acres	16,433	
Land Retirement	Acres	5,294	4,415
Managed Precision Agriculture	Acres	49,840	
Mortality Composters	AEUs	2	
Non-Urban Stream Restoration	Feet	4,147	
No-Till	Acres	13,069	
Nutrient Management	Acres	16,630	38,448
Off Stream Watering w/Fencing	Acres	15,024	1,557
Off Stream Watering w/o Fencing	Acres	9,014	73
Precision Rotational Grazing	Acres	3,606	
Rotational grazing	Acres	2,404	1,139
Septic De-nitrification (family units)	Units	7,333	1,252
Street Sweeping	Acres	304	
SWM - Filtration	Acres	3,557	
SWM - Infiltration practices	Acres	3,557	
SWM - Wet Ponds & Wetlands	Acres	3,557	
Tree Planting	Acres	1,563	1,561
Urban Growth Reduction	Acres	104	
Urban Nutrient Management	Acres	7,736	
Urban Stream Restoration	Feet	0	
Wetland Restoration	Acres	165	137
Yield Reserve	Acres	16,627	
Dairy -Precision Feeding	AEUs	19,120	
Dairy - Ammonia Emission Controls	AEUs	6,373	
Swine - Phytase Feed Additive	AEUs	5,118	
Swine - Ammonia Emission Controls	AEUs	2,611	
Poultry - Phytase Feed Additive	AEUs	12.9	
Poultry - Ammonia Emission Controls	AEUs	10.9	

NOTES:

The accomplished value under Nutrient Management exceeds the goal value because it was NOT broken down into Management Precision Ag.

1. BMP implementation is the total implementation, starting from 1985, needed to reach the agreed upon nutrient and sediment reductions. BMP implementation completed since 1985 can be credited against the numbers listed above.

2. AEU = One thousand pounds live weight of livestock or poultry animals, regardless of the actual number of individual animals comprising the unit.

3. Percent of total AEUs for which indicated practice applies:

Precision Dairy Feeding	---	75% of AEUs
Swine Phytase	---	98% of AEUs
Poultry Phytase	---	100% of AEUs
Ammonia Emission Reductions -		
Dairy	---	25% of AEUs
Ammonia Emission Reductions -		
Swine	---	50% of AEUs
Ammonia Emission Reductions -		
Poultry	---	85% of AEUs

4. Total AEUs based on projected 2010 animal units. Projected numbers were developed by Chesapeake Bay Program Office using USDA Agriculture Census data.

D. Sediment and Nutrient/Source Reductions (cont.):

b. Remaining and future needs:

Bay & Ag. Tech.

- i) Continue to implement BMP's on farms to help reduce Non-point pollution
- ii) To increase No-tilled acres in Bedford County and continue to keep existing acres planted
- iii) To increase cover crops planted
- iv) Conservation and Nutrient Management Plans written/updated and implemented
- v) To increase the acres in Managed Precision Agriculture
- vi) Increase the acres in Rotational Grazing
- vii) Increase Grass Buffers acreage
- viii) Increase acreage in off stream watering with fencing
- ix) Address Storm Water Management on farms
- x) Training/Education

E&S Technician

- i) Continue to be a Level III Delegated Conservation District with Chapter 102 enforcement, collect administrative fees pertaining to each compliance effort and look for ways to charge fees for each inspection
- ii) Continue to review erosion and sediment control plans and charge for plan review by keeping a current review fee schedule
- iii) Inspect earth disturbance sites to determine site compliance
- iv) Continue to administer the NPDES program by issuing general permits and collecting permit fees
- v) Continue to administer the Dirt and Gravel Roads Program
- vi) Provide assistance and tools for the implementation of E&S controls on timber harvesting sites
- vii) Require timbering sites of greater than one acre of disturbance to submit a timber harvest action packet and develop strategies for the proposed changes to Chapter 102 & 105.
- viii) More field presence

Watershed Specialist

- i) Increase awareness among municipal officials and general public of the importance of storm-water management that reduces intensity of peak flows, provides for infiltration to replenish groundwater, reduces soil erosion potential of bank full events, etc.
- ii) Storm-water management plans for all county watersheds and adoption of storm-water ordinances by townships where plans exist
- iii) Pursue better understanding of flow regimen on county streams, targeting Yellow Creek and Cove Creek watersheds as highest priority, to provide baseline data for N, P, and sediment loads, monitor progress in reducing loads, & validate modeling

c. Most effective approaches to address these needs:

Bay & Ag. Tech.

- i) Continue to receive cost-share money to help combine with other grants and programs to install BMP's
- ii) Provide No-till and manure equipment to farmers to help implement conservation and nutrient management plans
- iii) Purchase a No-till drill to provide to farmers
- iv) Have district personnel trained to write and implement plans
- v) Provide farmers the services that CMA offers so they may acknowledge the benefits the program has to offer and to assist CMA technician with current members as they continue their membership
- vi) Continue our membership with Project Grass and other programs that fund grazing projects
- vii) Assist various stream bank fencing programs
- viii) Implement BMPs that address keeping livestock out of the streams
- ix) Implement BMPs on farms that address storm water.
- x) Provide technical assistance to farmers and attend/hold various trainings and field days

E&S Technician

- i) Encourage the state conservation commission to increase dedicated funding for all delegated programs
- ii) Continue to develop MOU's with municipalities pertaining to earth disturbance activities, erosion, and sediment control plans
- iii) Offer assistance to the Planning Commission, municipalities, and watershed groups as it pertains to storm water runoff from future development and reduce the impact of development in floodplain areas
- iv) Continue to provide training to timber harvesters and Woodland Owners of the Southern Alleghenies (WOSA) Group as it pertains to regulations and reducing environmental impacts
- v) Assist municipalities and encourage additional funding sources for administration and implementation of the Dirt and Gravel Road Program. The program principles will also address sediment loss on farm lanes.
- vi) Obtain a hay/straw mulching machine and seeder and make it available to contractors and timber harvesters along with the current portable bridge rental program
- vii) Develop a certification program for timber harvesters and contractors for ways to obtain additional structure, also support legislation changes for timber harvest sites of one acre or more of earth disturbance
- viii) Streamline office time and report processing

Watershed Specialist

- i) Prepare storm-water presentation for county township officials' convention; storm-water management fact sheets, etc. for municipal officials and public, landowner streambank management manual, low impact development informational packets
- ii) Continue to work with county planning commission concerning storm water management planning
- iii) Encourage watershed groups to become involved in watershed assessment (SVAP, chemistry, flow) and assist in training, locating resources, grant writing, etc.
- iv) Acquire monitoring equipment for CD to assist watershed volunteer monitoring and to collect data in watersheds without active volunteer groups
- v) Encourage watershed groups to pursue funding to provide for USGS ratings on streams of concern (using C-SAW for installations)

E. County Bay Tributary Strategy:

a. Plan of actions to reduce sediment and nutrient loads to the Bay:

Year

- 2005-
- To have 1,400 acres of No-till implemented
 - To have 1,500 acres of cover crops planted
 - To increase the amount of land enrolled in CMA to 4,500 acres (Precision Agriculture)
 - Install 75 acres into Rotational Grazing (Based on Project Grass funding)
 - Install 576 AEU's Animal Waste Management Systems (through ACT 6, EQUIP, etc.)
 - Install 10 acres of Grass Buffers
 - Develop 100 acres Off Stream Watering w/ Fencing
 - Develop 1,500 acres of Nutrient Management Plans
 - Develop 3,500 acres of Conservation Plans
 - Educational Outreach (Envirothon, field days, etc.)
 - Offer technical services to farmers
 - Implement 26,400 ft of Dirt and Gravel Road improvements
 - Install 200 acres of E&S Controls of disturbed ground
 - Install 200 acres of SWM practices
 - Implement 500 acres of Forest Harvesting Practices
- 2006-
- To have 1,500 acres of No-Till implemented
 - To have 1,600 acres of cover crops planted
 - To increase CMA enrollment to 5,000 acres
 - Install 100 acres into Rotational Grazing
 - Install 600 AEU's Animal Waste Management Systems
 - Install 15 acres of Grass Buffers
 - Develop 100 acres Off Stream Watering w/ Fencing
 - Develop 1,500 acres of Nutrient Management
 - Develop 4,000 acres of Conservation Plans
 - Educational Outreach (Envirothon, field days, etc.)
 - Offer technical services to farmers
 - Implement 26,400 ft of Dirt and Gravel Road improvements
 - Install 200 acres of E&S Controls of disturbed ground
 - Install 200 acres of SWM practices
 - Implement 500 acres of Forest Harvesting Practices

- 2007- To have 1,600 acres of No-Till implemented
 To have 1,700 acres of cover crops planted
 To increase CMA enrollment to 6,000 acres
 Install 100 acres into Rotational Grazing
 Install 700 AEU's Animal Waste Management Systems
 Install 20 acres of Grass Buffers
 Develop 100 acres Off Stream Watering w/ Fencing
 Develop 1,500 acres of Nutrient Management
 Develop 4,500 acres of Conservation Plans
 Educational Outreach (Envirothon, field days, etc.)
 Offer technical services to farmers
 Implement 26,400 ft of Dirt and Gravel Road improvements
 Install 200 acres of E&S Controls of disturbed ground
 Install 200 acres of SWM practices
 Implement 500 acres of Forest Harvesting Practices
- 2008- To have 1,700 acres of No-Till implemented
 To have 1,800 acres of cover crops planted
 To increase CMA enrollment to 8,000 acres
 Install 200 acres into Rotational Grazing
 Install 800 AEU's Animal Waste Management Systems
 Install 25 acres of Grass Buffers
 Develop 100 acres Off Stream Watering w/ Fencing
 Develop 1,000 acres of Nutrient Management
 Develop 5,000 acres of Conservation Plans
 Educational Outreach (Envirothon, field days, etc.)
 Offer technical services to farmers
 Implement 26,400 ft of Dirt and Gravel Road improvements
 Install 200 acres of E&S Controls of disturbed ground
 Install 200 acres of SWM practices
 Implement 500 acres of Forest Harvesting Practices
- 2009- To have 1,800 acres of No-Till implemented
 To have 1,900 acres of cover crops planted
 To increase CMA enrollment to 9,000 acres
 Install 250 acres of Rotational Grazing
 Install 900 AEU's Animal Waste Management Systems
 Install 50 acres of Grass Buffers
 Develop 100 acres Off Stream Watering w/ Fencing
 Develop 1,000 acres of Nutrient Management
 Develop 5,500 acres of Conservation Plans
 Educational Outreach (Envirothon, field days, etc.)
 Offer technical services to farmers
 Implement 26,400 ft of Dirt and Gravel Road improvements
 Install 200 acres of E&S Controls of disturbed ground
 Install 200 acres of SWM practices
 Implement 500 acres of Forest Harvesting Practices

2010- To have 2,000 acres of No-Till implemented
To have 2,000 acres of cover crops planted
To increase CMA enrollment to 10,000 acres
Install 275 acres of Rotational Grazing
Install 1000 AEU's Animal Waste Management Systems
Install 50 acres of Grass Buffers
Develop 100 acres Off Stream Watering w/ Fencing
Develop 1,000 acres of Nutrient Management
Develop 6,000 acres of Conservation Plans
Educational Outreach (Envirothon, field days, etc.)
Offer technical services to farmers
Implement 26,400 ft of Dirt and Gravel Road improvements
Install 200 acres of E&S Controls of disturbed ground
Install 200 acres of SWM practices
Implement 500 acres of Forest Harvesting Practices

b. Resources/assistance needed:

*Note: The resources are listed according to importance; the first is of highest priority

- i) Continue to receive cost-share money to help combine with other grants and cost-share programs to install BMP's (\$150,000 Act 6, \$30,000 Chesapeake Bay, \$150,000 EQUIP, \$10,000 Project Grass, \$50,000 Growing Greener, etc.)
- ii) A Vermeer No-Till Drill (\$20,000)
- iii) Soil Sampling accessories (\$1,000 per year)
- iv) Transportation to accelerate soil sampling time and increase productivity (\$8,000)
- v) Chlorophyll meter for Nitrogen Testing (\$1,500)
- vi) A mulching machine and seeder (\$17,000)
- vii) Updating of existing conservation plans
- viii) Portable truck scales (\$25,000)
- ix) Training and certification to write conservation plans (\$1,000)
- x) Computer programs/accessories (Tool-kit, Arcview, GIS, etc.) (\$3,500)
- xi) Engineering services if Bay Engineering services are unavailable (\$1,500-\$3,500 per design)
- xii) Technical assistance from USGS to develop ratings at eight gauge monitoring sites (\$50,000)

i) Continue to write grants and work with other agencies to combine cost-share money to install BMPs.

ii) No-till drill acres planted each year depend on the number of factors such as weather conditions, forages needed, and equipment availability. As the number of drills has increased so have the acres planted. Reaching new people each year is an important priority of the district. New and repeat users keep this program expanding.

The district added an additional drill in 2004 and reached 12 new landowners and planted 500 more acres. This was done in a year where weather conditions were far from ideal for planting and corn silage acres were down. With an existing drill getting worn and the demand increasing, adding another drill will help reach additional people and plant more acres.

iii & iv) With the increase in demand for soil sampling and crop scouting due to crop management's role in record keeping and soil nutrient monitoring, a more time efficient approach is needed. Precision soil sampling and scouting many fields by foot is a very timely, inefficient process. Additional accessories and a small utility vehicle would greatly increase the number of fields monitored in a shorter time period and provide an effective approach to meet these needs. A vehicle of this sort would also reduce fuel expenses and wear on the district's vehicle. The Crop Management Association may provide additional equipment needed to maintain and transfer this vehicle.

*The CMA experimented with the use of an ATV provided by Penn State and found that it increased the number of farms reached per day by 65%. With many agencies having access to it, there was a time restraint that made it impossible to meet the demand in Bedford County. There was also much valuable time lost by transporting to and from State College.

- v) The nitrogen reduction graph illustrates how much reduction in applied fertilizer there was by testing corn leaves. With this one test, farmers were able to save money and reduce nutrients applied to the fields.
- vi) The district currently rents out portable bridges to Timber Harvesters and with the addition of a mulch machine and seeder would provide harvesters a way to implement additional E&S controls on timbering practices.
- vii) Updating of existing plans will be necessary in order to implement E&S controls
- viii) Portable truck scales would be used to calibrate manure spreaders and also used to calculate crop yields.
- ix) With the overload of work that NRCS experiences at times, we feel that having district personnel developing and implementing conservation plans would be a great benefit. Allowing district personnel to assist NRCS could speed the process of having conservation plans written/updated and implemented. Nutrient management plans have to be updated to address nutrient loadings; conservation plans need to be updated to address sediment loadings.
- x) A computer and the programs are essential for developing and updating conservation plans and to also show farmers the benefits of precision ag.
- xi) Engineering designs and cost-estimates are critical in reducing sediment and nutrient loads. BMPs are a way to reduce spreading during unfavorable conditions and cost-estimates play a major role in decision making for the farmers. If other funding sources through grants and other programs are combined with Bay funding, engineering assistance is needed.
- xii) The installation of staff plates would help monitor stream flows/loads. This could play an important role in giving actual data rather than relying on computer models and predictions.

c. Expected results:

Year	No-Till (ac.)	Cover Crops (ac.)	Precision Ag. (ac.)	Rotat. Grazing (ac.)	Animal Waste Mgmt. Systems (AEUs)	Grass Buffers (ac.)	Off Stream Watering w/ Fencing (ac.)	Nutrient Mgt. (ac.)	Conservation Plans (ac.)	Dirt & Gravel Roads (ft)	E&S Controls (acres)	SWM (acres)	Forest Harvesting Practices (acres)
2005	1,400	1,500	4,500	75	576	10	100	1,500	3,500	26,400	200	200	500
2006	1,500	1,600	5,000	100	600	15	100	1,500	4,000	26,400	200	200	500
2007	1,600	1,700	6,000	100	700	20	100	1,500	4,500	26,400	200	200	500
2008	1,700	1,800	8,000	200	800	25	100	1,000	5,000	26,400	200	200	500
2009	1,800	1,900	9,000	250	900	50	100	1,000	5,500	26,400	200	200	500
2010	2,000	2,000	10,000	275	1,000	50	100	1,000	6,000	26,400	200	200	500
Total Expected	10,000	10,500	42,500	1,000	4,576	170	600	7,500	28,500	158,400	1200	1200	3000
Credited	0	0	0	1,139	15,853	3	1,557	38,448	49,224	221,760	193	0	0
Combine Total	10,000	10,500	42,500	2,139	20,429	173	2,157	45,948	77,724	380,160	1,393	1,200	3,000
Goals	13,069	23,212	49,840	2,404	31,715	2,437	15,024	16,630	113,145	128,330	194	3,557	0

CMA Membership

Year	2005	2006	2007	2008	2009	2010
Total Acres	5,000	6,500	7,500	8,500	9,500	10,500
Corn Acres	2,000	2,750	3,000	3,500	3,800	4,200
N Reduction (lbs)	80,000	110,000	120,000	140,000	152,000	168,000
Soil Samples	300	400	500	600	700	800

Equipment Program

Year	No-till Drill Acres		Bedford County Cover crops (Acres)	Fulton County Cover crops (Acres)
	Spring	Fall		
2005	1100	2200	1500	500
2006	1150	2450	1500	750
2007	1200	2500	1600	750
2008	1300	2600	1650	800
2009	1400	2800	1800	800
2010	1500	3000	1900	900

F. Plan Development Process:

There were three meetings in which DEP representatives, the regional watershed coordinator, district board members, and staff members were present. A spokesman from PDA informed the directors that of the 10 counties he works with, Bedford County is the highest in getting agricultural loans through economical development. There were many in house discussions and staff meetings in which the district staff presented their ideas and information. The Crop Management Association provided us with information on precision agriculture and the benefits, The Penn State Extension Office and Farm Service Agency provided animal and farm numbers. The County Planning Commission and various watershed groups provided us with county descriptions and watershed assessments. District Board Members and a delegated board committee were involved in the development process. NRCS provided information on the various programs they offer and could combine Bay funding with. The farming community was addressed of the changes in the Bay Program on an individual basis through our Equipment Program and Crop Management Association. A Nutrient Management meeting held for farmers at the extension office provided an opportunity for the Bay Tech. to discuss with farmers the changes of the Bay program and the direction the district is preceding. Many phone conversations between DEP representatives and district personal were also held in process making