

agricultural use value, diluting the interest in the program.

The Clean and Green Program has found widespread use in Wayne County, with over 116,000 acres, some twenty-four percent of the total land area, included in the Program. The acreage of *Clean and Green* parcels in 2006 in each Township are listed in the preceding *Agricultural Security Areas and Act 319 Enrollment Table*. The Townships must monitor the effect on the shift of the tax burden to non-319 properties and how the Program affects minimum lot sizes in future subdivisions. In Susquehanna County, for example, many subdivisions with a ten-acre minimum lot size have been platted to take advantage of the 319 Program, and land in the Act 319 Program is almost 75% of the total County land area.

Specific Agriculture Protection Actions

- Focus open land preservation efforts on the most productive agricultural land which is essential to maintaining the necessary agricultural land base.
- Encourage Wayne County to develop an *Agriculture Preservation Action Plan* and appoint a county-wide Agriculture Preservation Task Force to specifically address the preservation of agriculture.
- Support the Wayne County Agricultural Preservation Program and encourage the County Commissioners to increase County funding for acquisition of conservation easements.
- Carefully design any zoning ordinance to preclude provisions which may inhibit agriculture and include provisions to specifically promote agriculture.
- Include in zoning ordinances specific provisions which enable farmers to use their land for compatible commercial uses.
- Encourage the use of best management practices to reduce soil erosion and manure/fertilizer runoff.
- Allow for conservation subdivision design and transferrable development rights to give owners of large parcels flexible development options.



Forestry-Related Business, Damascus Township

Forestry

This *Comprehensive Plan* recognizes the historical and continuing importance of forestry enterprises to the local economy and quality of life, and encourages forestry activities throughout ECWC provided such operations are conducted in accord with sound forest management practices and environmental regulations. Landowners manage their forests for a variety of reasons including income from timber sales, wildlife habitat, recreation, water quality protection, biodiversity, and timber for long-term investment. Improper harvesting and management practices often raise stream water quality and other environmental concerns with local residents and local officials. It is critical for public acceptance of forestry, environmental quality and the long-term viability of the industry and forest resources that logging professionals and individual landowners use best management practices when harvesting and for long-term forest maintenance.

The Pennsylvania Municipalities Planning Code (MPC), at §603(c)(7), states that *zoning ordinances may not unreasonably restrict forestry activities* and goes on to require that in the Commonwealth, *forestry activities . . . shall be a permitted use by right in all zoning districts in every municipality*. The Code defines *forestry as the management of forests and timberlands when practiced in accord with accepted silvicultural principles, through developing, cultivating, harvesting, transporting and selling trees for commercial purposes, which does not involve any land development* (buildings such as sawmills and wood products manufacturing are treated as separate uses). Any zoning ordinances adopted by the townships will be consistent with the MPC by classifying forestry as a principal permitted use in all zoning districts.

Specific actions related to forestry enterprises . . .

- Include in any adopted zoning ordinance reasonable standards for timbering, but not so onerous as to discourage forestry enterprises . . .
 - requirements for logging plans and the use of good forest management practices
 - road and property line setbacks for landings
 - road access and drainage requirements
 - mandating compliance with environmental laws
- Provide ample opportunity for the location and development of *value added* enterprises that use the plentiful forest resources available in ECWC.
- Encourage the local economic development organizations to work with the forest industry to promote and grow forestry related enterprises, particularly in the realm of *value added* products.



Bedrock Quarries, Damascus Township

- Local road bonding must be equitable for all heavy trucks - timber, stone, etc. Weight limits should be flexible in terms of timing – travel should be permitted when roads are frozen.
- Local municipalities have limited funds for road improvements.
- Local road truck routes should be designated with available funding directed to those routes.

Mineral Extraction

The minerals of importance extant in ECWC and Wayne County are sand and gravel, quarry stone, and bluestone, with quarry stone and bluestone of primary importance. This *Comprehensive Plan* recognizes the economic value of the quarry and bluestone industry while understanding the necessity that the industry operate within the bounds of environmental regulations. The Pennsylvania Bluestone Association, with some 105 members primarily from Susquehanna County, but also Wayne County, Wyoming County, and New York State. Recent discussions with the Association indicate:

- The Association acknowledges the need for improved operation of some quarries with respect to environmental regulations and that many quarrymen operate without permits.
- The Pennsylvania Department of Environmental Protection (DEP) Bureau of Mining now maintains a satellite office in Wilkes-Barre and there has been more DEP enforcement.
- All DEP permit applications require notice to local municipalities.
- A need to address water use and recharge issues.

The Pennsylvania Municipalities Planning Code clearly recognizes mineral extraction as a lawful use. Along with other community effects, such uses can have impacts on water supply sources and are governed by state statutes that specify replacement and restoration of affected water supplies. In addition, the Planning Code now severely limits the range of development and operational standards which can be applied to mineral extraction by local municipalities, with location standards the primary tool available to the Townships. Planning Code §603(I) states that *zoning ordinances shall provide for the reasonable development of minerals in each municipality*. The Code definition of minerals is: *Any aggregate or mass of mineral matter, whether or not coherent. The term includes, but is not limited to, limestone and dolomite, sand and gravel, rock and stone, earth, fill, slag, iron ore, zinc ore, vermiculite and clay, anthracite and bituminous coal, coal refuse, peat and crude oil and natural gas*. The Code, at §603(b) allows zoning ordinances to regulate mineral extraction, but only to the extent that such uses are not regulated by the state Surface Mining Conservation and Reclamation Act, the Noncoal Surface Mining Conservation and Reclamation Act, and the Oil and Gas Act. These acts regulate such things as setbacks, dust, noise, blasting, water supply effects, and reclamation.

Bluestone . . .

from a recent report prepared by Shepstone Management Company for the New York Bluestone Association:

- Bluestone is the commercial name for a group of sandstones defined as feldspathic wacke. The sand-sized grains from which bluestone is constituted were deposited in the "Catskill Delta" during the Middle to Upper Devonian Period of the Paleozoic Era, approximately 370 to 345 million years ago.
- The Catskill Delta was created from run-off from the Acadian Mountains ("Ancestral Appalachians") which covered the area where New York City now exists. This Delta ran in a narrow band from southwest to northeast and today provides the base material for the high-quality bluestone which is quarried from the Catskills (and Northeast Pennsylvania).
- The term "bluestone" is derived from a deep blue colored sandstone first found in Ulster County.
- As the product became more popular as an architectural and building stone and demand grew, quarrying spread throughout south-central New York and northeast Pennsylvania.
- It is an evenly bedded product which tends to exhibit natural horizontal clefs allowing it to be removed in large flat sections suitable for flagstone, curbing and the like. Where the clefs are less well-defined the stone is removed in blocks which are then taken to processors . . . for cutting and refining.
- Bluestone is a high quality product due to its silica content, compact nature and fine grains. It is used for patios, architectural facings, fireplaces, sills, sidewalks, and other features as well as a basic building material for churches, institutions, homes and businesses.
- Many of the sidewalks in New York City were paved with Catskill and Pennsylvania bluestone. It is extremely durable and the quality of the product . . . is not found anywhere else in the United States or Canada.
- It is a unique commodity of particular value to the local economy

- This *Comprehensive Plan* recognizes the need to provide for *the reasonable development of minerals* in each Township, and similar to forestry enterprises, encourages mineral extraction provided such operations are conducted in appropriate locations and in accord with sound mining practices and environmental regulations.

Specific actions related to mineral extraction . . .

- Local municipal officials must confirm that mineral extraction operations comply with state and federal regulations.
- Zoning is the most effective means of managing the effects of mineral extraction on the local community. Zoning ordinances should:
 - Direct quarries to suitable areas where impacts will be minimized.

- Include provisions to require coordination with the plan information and standards applied by the Pennsylvania Department of Environmental Protection.
- Coordinate the adoption of any local regulations with the Pennsylvania Bluestone Association and other interested quarrymen.
- Encourage the local economic development organizations to work with the Bluestone Association to promote and grow the bluestone industry, particularly in the realm of *value added* products.

Ridge Lines and Scenic Vistas

An integral part of the community character of the ECWC Planning Area are the wooded ridge lines and scenic vistas visible from the major highways passing through the area. In addition, the *Upper Delaware Land and Water Use Guidelines* specifically address



Lordville Bridge and Manchester Township Ridge Line

ridge line protection in the Upper Delaware Corridor. Preserving these resources requires a balance between private property rights and the public good. Much of the value in a lot may be associated with the view it affords and zoning standards may affect that value.

Simply stated, the most direct means of preserving ridge lines and scenic vistas is via fee-simple public ownership of the land. However, given the cost of land this is really not an option. Conservation easements, which are far less costly, can afford the same protection as public ownership. Working with willing land owners who want to protect their property, Planning Area local officials, concerned citizens and local land trusts should cooperate to protect these properties with conservation easements.

Protecting ridge lines and scenic vistas through zoning is somewhat problematic given that regulating purely for aesthetics has long been found suspect by Pennsylvania courts unless directly related to the public health, safety and welfare. Zoning in a state-recognized historic district is a good example of aesthetic regulation upheld by the Commonwealth's courts. The ECWC Planning Area's reliance on the natural environment and open space for much of its economic well being and maintenance of property values may provide the foundation for some reasonable development standards for preservation of ridge lines and scenic views.

Ridge lines and scenic vistas are often associated with steep slopes. However, a community should not attempt to enact aesthetic criteria that would artificially limit density in the guise of steep slope protection, especially if density is already limited on this basis under other ordinance provisions.

Regulations that allow for the same density, but require design that addresses aesthetic issues on a secondary level, are far more likely to be supportable in court.

Ridge line development can be regulated at two levels - when existing lots are developed and when new building lots are created. The first is a matter of zoning and the second is typically addressed in subdivision regulations. Addressing ridge line protection in new subdivisions is a relatively straightforward matter with conservation subdivision design. Areas of concern can be mapped and protected with easements and the lots can then be clustered in other areas. Building and clearing restrictions can also be imposed (e.g., by designating building envelopes) as part of the subdivision approval. All this can be accomplished without necessarily affecting density.

Dealing with existing lots, however, is far more difficult. The lots may have been purchased or platted to maximize views. Any restriction on such views may be perceived as an infringement, not only on property rights, but also on the value of the land. It may not be possible on a given lot to achieve a design that will maximize the value of the views for all parties because it is too small, too steep or otherwise limited. In any case, ridge line and scenic vista protection standards for existing lots must be considered carefully in terms of balancing private property rights with a clearly stated public purpose. In doing so some communities have considered:

- Requiring conditional use approval for development site clearing in designated ridge line and scenic vista protection areas.
- Setting standards for the location of structures to allow for views from the structure but minimize exposure.
- Limiting lighting to minimize visual effects.
- Establishing structure screening standards and tree cutting and pruning limitations.

Environmental Protection

Development and environmental protection, as well as conserving open land and natural resources, need not be mutually exclusive. While a clean environment, abundant open land, and natural resources are key elements of the quality of life in ECWC, one must

recognize that growth is inevitable and can contribute positively to a healthy community. The goal is to strike a balance between development and preserving the essential character of the Planning Area. Development practices which recognize the importance of the local environment will ensure the continuation of the quality of life that residents enjoy and which is so attractive to new residents. Concurrently, land owners and developers will be able to provide the home sites and businesses that a growing population demands.

The intent is to ensure *environmentally friendly* development within the context of the existing zoning districts. State and federal regulations address many aspects of resource conservation and environmental protection, and these regulations should be the foundation - the base from which local municipal regulations should be built. Local standards must be consistent with and be coordinated with state and federal requirements. In some cases, the zoning ordinance can simply reference the other applicable standards.

Local Authority for Regulation

The Pennsylvania Municipalities Planning Code (MPC) authorizes land use planning and management tools for the Commonwealth's municipalities. Compliance with the MPC, along with case law, dictates the legality of local regulations. For this reason, it is very important to remember that all land use management tools must be prepared and administered within the bounds of the MPC and current case law. In addition, the Second Class Township Code provides authorization for special purpose ordinances aimed at protecting public health, safety and welfare. Other state laws, such as the Floodplain Management Act and Stormwater Management Act, mandate local regulation of resources. In all cases, the municipal solicitor should be involved in reviewing any changes to municipal plans and ordinances.

Integrated Approach

Given the range of authorizing state statutes, municipal open land, natural resource and environmental regulations are typically found throughout a number of ordinances. While this may appear problematic at first glance, the integration of such standards in various ordinances is important because a certain ordinance may govern one type of development while another governs a different type. For example, the subdivision

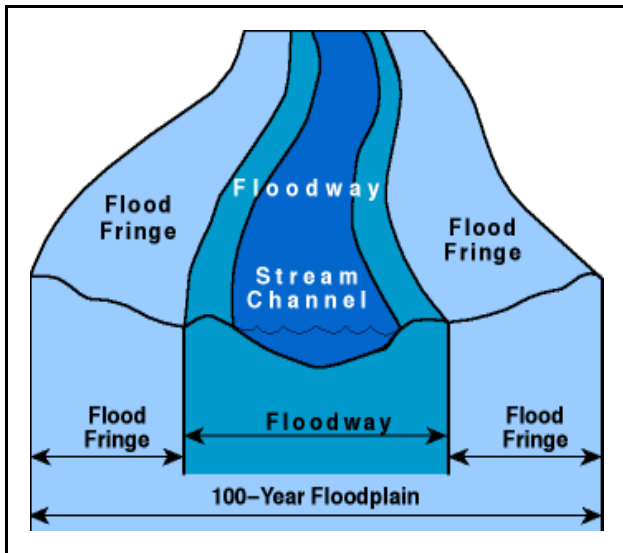
and land development ordinance governs how land is divided and improved while the zoning ordinance governs the specific uses on the land. In some cases a special purpose ordinance may be more effective than including standards in the zoning ordinance. The important point is consistency of standards in all ordinances.

The Damascus Township zoning ordinance includes, and any zoning ordinance adopted by Manchester Township or Oregon Township should include, a broad range of environmental standards. The Townships will periodically review and update local environmental standards to ensure the most effective protection. The possible range includes:

- Environmental impact analysis requirements for large scale and environmentally problematic uses.
- Retention of existing vegetation on development sites.
- Soil stabilization and landscaping.
- Stream, lake and wetland buffers.
- Stormwater best management practices including quality treatment and infiltration.
- Floodplain management.
- Hydrogeological studies for proposed uses with large groundwater consumption.
- On-site sewage disposal system management.
- Limitations and special standards for development on steep slopes.

Floodplain Maps and Management

Flood hazard areas are identified on the federally-issued Flood Insurance Rate Maps for the *100-year flood* issued by the Federal Emergency Management Agency (FEMA). The *100-year flood* is a flood event of a magnitude which is expected to be equaled or exceeded once on the average during any 100-year period. (See the *Environmentally Constrained Lands Map* which accompanies this *Plan*.) This is the average period between such floods; and such floods can occur at shorter intervals or conceivably in the same year. In recent years floods exceeding the *100-*



Floodplain Cross Section

year flood event have occurred resulting in substantial damage.

State and federal laws mandate the participation of local governments in the flood plain management program as a prerequisite to the purchase of flood plain insurance by individual property owners. The National Flood Insurance Program is administered by the FEMA which also has prepared and issued the maps which identify flood prone areas throughout the Country. The Pennsylvania Flood plain Management Act (Act 166 of 1978) requires local municipal participation in the flood plain management program, or state funding allocations such as Liquid Fuel Funds can be withheld. Local municipal regulations range from a total prohibition of flood plain development to requirements for flood-proofing and the elevation of buildings.

Improving Floodplain Management

The three Townships have adopted flood plain regulations which comply with the minimum required floodplain development standards required by state and federal flood insurance programs. In critical floodplain areas where the health, safety and welfare of residents are at stake, the Townships should go beyond these minimum standards and consider stronger floodplain regulations to protect residents over the long term. Given the extent of identified floodprone areas, the level of flooding, and the repetitive losses in recent years, the Townships should strengthen the floodplain regulations to increase limitations on development in the 100-year floodplain with an emphasis on:

- Minimizing dangers to public health and safety by protecting water supplies and maintaining natural drainage patterns.
- Minimizing increases in flood heights and downstream damage.
- Reducing financial burdens imposed on the Townships, its emergency services and its residents by preventing excessive development in areas subject to flooding.

Developments of Special Concern

At a minimum, floodplain standards should prohibit developments of special concern within the 100 year floodplain and in all areas subject to flooding. Developments of special concern include such facilities as:

- Hospitals, jails or prisons, nursing homes, senior citizen housing, and similar such facilities.
- Mobile home parks and subdivisions.
- Sewage treatment facilities.
- Any activity used for the production or storage of certain specified dangerous materials or substances; or any activity requiring the maintenance of a supply of a specified volume of any of the specified dangerous materials or substances.

Adopting regulations which prohibit these uses of special concern from areas subject to flooding will provide for the long term protection of the health, safety and welfare of residents and other downstream residents, and help minimize the risks to emergency service providers during flooding events.

Prohibition of Structural Development in the Floodplain

The Townships should also consider the prohibition of all structural development within critical floodplain areas including the 100 year floodplain areas as identified by the Township Flood Insurance Rate Map. Prohibition-type provisions can be justified if carefully tailored to specific conditions and the hazard potential of the Planning Area’s various floodplains and/or watersheds. Variance provisions would be included to provide relief for individual properties where the prohibition standards preclude the use of the lot.



Tammany Flats, Damascus Township

Inclusion of Floodplain Management into the Development Review Process

Land development techniques such as conservation design development and transferable development rights (TDR’s) can be effective for floodplain management by allowing some density credit for floodplain land and shifting the construction of the dwelling units to better suited areas of the development tract or other areas of the municipality.

Provisions for Buffers and Maintenance of Hydrologic Regime

If all structural development is not restricted from the floodplain, provisions for watercourse buffers should be provided. Development within the floodplain areas should be restricted to activities that are compatible with maintaining the existing hydrologic regime and which do not alter the cross sectional dimension of the floodplain and its storage capacity.

Well Construction in Floodplain

The Townships should consider standards for construction of public and private water wells throughout the Townships, but particularly within floodplain areas. Public water supply sources located within the floodplain should be protected from flood waters; municipal land use provisions should help in the long-term protection of these important resources.

Additional Flood Damage Mitigation Assistance

The Federal Flood Mitigation Assistance Program, administered by FEMA provides planning and project funding to assist communities in reducing or eliminating the long term risk of flood damage to buildings, manufactured homes, and other structures

insurable under the National Flood Insurance Program (NFIP). NFIP-compliant communities with approved flood mitigation plans can apply for grants for such

Zoning Versus Special Purpose Ordinances

Many municipalities have taken the approach of adopting special purpose ordinances instead of adopting zoning. A floodplain ordinance or an adult business ordinance are good examples. However, adopting zoning enables the municipality to consolidate all land use performance standards into one ordinance and coordinate all of the standards. In addition, special purpose ordinances do not permit the municipality to regulate land use district by district.

Short of zoning, it may be possible for a township to adopt a natural resources ordinance which would include many of the standards discussed in this section. However, given the nature of the standards – buffers, setbacks, and study requirements applied to certain uses – the Board of Supervisors should consult the Township Solicitor to determine if such an ordinance would constitute zoning and be subject to Article VI (Zoning) of the Pennsylvania Municipalities Planning Code.

projects as the elevation, acquisition, and relocation of NFIP-insured structures. Wayne County is in the process of preparing a hazard mitigation plan which is required for municipalities to become eligible for the Program. Unfortunately, funding for the Mitigation Assistance Program falls far short of requests for assistance, and prevention remains the best option for minimizing risks for flood damages.

Forest and Vegetation

Maintaining natural vegetation not only preserves rural character, but also has numerous environmental benefits, not the least of which are reducing stormwater, preserving surface water quality, and maintaining groundwater recharge. The Subdivision and Land Development Ordinance (SALDO) should include specific standards that govern preservation of vegetation during the development process. However, some development activities which are not governed by the SALDO, clearing for a parking lot for example, can be managed by a zoning ordinance with standards for preservation of natural vegetation. There are many local examples where a lot or large parcel have been totally stripped of vegetation with no development

plan and resultant soil erosion and stormwater.

The best approach is to set specific standards for maintaining natural vegetation and require the developer to show why the existing vegetation within prescribed setback or buffer areas, and the entire parcel for that matter, cannot be maintained to the greatest extent possible. In addition, clearing vegetation should be prohibited until a land development plan is approved. The section would be written to limit timber harvesting in the buffer to selective cut only in accord with a forestry management plan so as not to preclude reasonable forestry enterprise.

Groundwater - Zoning Ordinance

A zoning ordinance provides opportunities to protect groundwater by setting performance standards for commercial and industrial development. A zoning ordinance can require proposed commercial and industrial uses to address any potential groundwater contamination issues. The section would require the applicant to provide details of any material on site or any process which has the potential for contamination, along with the steps taken to minimize the threat and actions to be taken if a problem occurs. The section could also provide the authority to require surface water and groundwater monitoring.

Another zoning section could require a hydrogeologic analysis for any proposed development that would result in the withdrawal of a threshold of a certain number of gallons per day of groundwater. While state law prohibits local municipalities from denying a development application based on groundwater withdrawal, the section could include requirements for the developer to address the mitigation of any potential significant impact on existing water users revealed by the study. The ordinance could also classify any use withdrawing the same threshold of groundwater for off-site use as conditional uses which would afford clear authority for close scrutiny and attaching conditions of approval.

Groundwater - Wellhead Protection

Wellhead protection standards may be included in a zoning ordinance to establish potential contaminant source isolation distances for water wells serving as the source for public and community water systems. The wellhead protection zones should be based on a study of the aquifer and are often applied as an overlay district, and typically establish zones where the types

of uses prohibited are based on the potential for contamination. For example, only open space uses would be permitted in the immediate area of the well and perhaps low density residential in nearby recharge areas, with industrial uses restricted to areas more distant from the well and recharge areas.

Groundwater - Well Ordinance

A well ordinance is one of the best means to protect groundwater quality, especially because there is no state regulation for the construction of private wells. The ordinance could require permits for drilling and making major repairs to water wells. One of the most critical provisions would be to establish a 100-foot isolation distance from sewage disposal fields and a 50-foot setback from septic tanks because state law, while requiring sewage fields to maintain the 100-foot isolation distance from wells, sets no converse minimum. The well ordinance should also:

- Require isolation distances from other potential contamination sources such as buildings, driveways, sewer lines and underground petroleum storage tanks.
- Specify casing size, material, length and height above grade.
- Require a well cap and casing grouting.
- Set minimum water quantity and quality standards and require testing.
- Require disinfection prior to use.
- Require all water users located within the service area of a central water supply system to connect to such system except where the applicant provides documentation that the central system cannot provide an adequate and safe supply.

Surface Waters and Wetlands

Establishing buffers along streams and around lakes, wetlands and vernal pools is essential to maintaining water quality and ecological integrity of riparian systems. Buffers also provide key stormwater management and flood control benefits. Buffers should not be confused with building or other setbacks, which generally apply only to construction of certain buildings or improvements. To maximize buffer benefits, these should be no disturbance zones where existing vegetation is maintained to the greatest extent practicable. Buffer requirements are typically

included in the zoning ordinance, although some stormwater ordinances also include buffer provisions.

- Require an undisturbed buffer of a defined width along all streams, whether perennial or intermittent.
- Include a stream/water body buffer definition: the area of land immediately adjacent to any stream, wetland, lake, pond or vernal pool, measured perpendicular to and horizontally from the top-of-bank on both sides of a stream or the delineated edge of the wetland, lake, pond, or vernal pool.
- Limit earth disturbance, cutting of vegetation, and placement of fill (in addition to limiting buildings, structures and other impervious surfaces) in all buffer areas (streams, wetlands, other water bodies). Exceptions could include stormwater conveyance required by the township, stream crossings permitted by DEP, unpaved trails or the correction of hazardous conditions.
- Establish a buffer for ponds and lakes and add provisions to require the identification and buffering of vernal pools.
- Make wetland earth disturbance without appropriate state/federal approvals an ordinance violation to provide Township authority to proceed with enforcement action to address violations.

On-Lot Sewage Management

Improperly functioning on-lot sewage disposal systems can affect both surface and groundwater quality. Each ECWC Township applies state regulations through the local sewage enforcement program to ensure new on-lot disposal systems are installed properly. However, maintenance of on-lot systems is also critical and the ECWC Townships should consider an on-lot sewage management program. Homeowners, via township-licensed contractors, would be required to pump septic tanks and conduct periodic system inspections, and submit a confirmation to the Township. The program could be operated directly by the Township or by a Township-appointed authority. An on-lot management program would extend the useful life of systems and protect water quality.

Steep Slopes

Steep slopes present special development problems

and many zoning and subdivision ordinances include specific standards for steep slopes. The preferred approach would be conservation design which sets steep slopes aside as conservation areas. In addition, such standards should:

- Set a specific threshold to define steep slopes. Many municipalities use twenty-five percent as the threshold, while some use fifteen percent.
- Require the submission of detailed site, grading and drainage plans.
- Limit clearing of vegetation.
- Set a maximum building envelope size.
- Limit final slopes of cuts and fills to fifty percent.

Improving Stormwater Management

All of the streams in ECWC are classified by the Pennsylvania DEP as Special Protection Waters and land development projects in these Special Protection Watersheds are subject to a number of state and federal water quality standards that relate to stormwater management. Significant changes have recently be instituted in state requirements.

Any inconsistency between local and state requirements may result in project delays as applicants face conflicting design standards. In order to ensure that township stormwater management standards are consistent with State water quality antidegradation requirements, Act 167 (Stormwater Management Act), Federal National Pollutant Discharge Elimination System (NPDES) requirements for stormwater discharges associated with construction activities, and DRBC's Special Protection Waters regulations, each Township should adopt a stand-alone stormwater ordinance with comprehensive stormwater management standards that address the major elements discussed below.

Preserve Existing Hydrologic Conditions

The recommended approach is to promote development practices that will minimize post-development runoff rates and volumes and minimize the need for artificial conveyance and storage facilities. Preserving natural hydrologic conditions requires careful site design that includes the following:

- Preserving natural drainage features such as vegetated drainage swales, channels, valleys, or depressions where water normally ponds.
- Minimizing earth disturbance and preserving natural vegetation to the greatest extent possible by conforming plans to meet existing topography.
- Minimizing impervious surfaces to the maximum extent possible, including building footprints, sidewalks, roads, driveways and parking areas.
- Disconnecting impervious areas by directing runoff from impervious surfaces over pervious areas where it may either infiltrate into the soil or be filtered through vegetation.

Maintain Groundwater Recharge

Stormwater management standards should require the use of infiltration to provide groundwater recharge whenever possible in recognition that stormwater as an important resource to maintain groundwater supplies. Concurrently, a provision must be included to ensure that any infiltration does not pose a threat to groundwater quality. These simple provisions are critically important in developing areas where groundwater use is increasing dramatically and stormwater is too often simply considered a problem.

Protect and Maintain Water Quality -

To the extent that applicants cannot totally infiltrate stormwater to pre-development volumes due to site conditions or limitations, measures must be evaluated and employed to prevent degradation of surface water quality from pollutants carried in stormwater discharges. Some examples of structural best management practices used to improve stormwater discharge water quality include vegetative filter strips, infiltration basins, bioretention areas and wet detention ponds.

Reduce Erosion and Scour of Stream Banks and Stream Beds

As storm flows increase, the velocities in streams also increase. Both the volume and rate of stormwater discharges must be managed to prevent physical degradation of receiving waters, such as stream bank erosion and channel scour.

Control Flooding

Flooding and stormwater problems are caused by excess stormwater quantity. While some over-bank

(typically 2-year to 10-year storm events) and extreme (25, 50, and 100-year) flooding events are inevitable (thus the need for sound floodplain ordinances) the goal of stormwater management standards is to control the frequency of occurrences so that damages to existing infrastructure are not exacerbated by upstream development.

Define Inspection and Maintenance Responsibilities

Without regular inspections during construction and proper and long term maintenance, stormwater infiltration devices, detention basins, pollution control and other facilities will not function properly, often with problematic or even disastrous downstream effects. It is far too easy for a homeowners association or absentee landowner to postpone maintenance, particularly when much of the problem is experienced out of sight somewhere downstream. Even the addition of homes within a residential subdivision can have serious effects on neighbors if facilities are inadequately constructed and maintained. Standards should be included to address inspection during construction, long term ownership, maintenance agreements for privately owned stormwater facilities and specific maintenance schedules, making the failure to maintain any facility an ordinance violation and providing the authority to the Township to proceed with enforcement action to correct the problem.

NPDES Permit Coordination
 Coordination of Township approvals with the Conservation District review is most important for projects (potentially any project with 1 acre or more of earth disturbance) which require a National Pollutant Discharge Elimination System (NPDES) Permit for stormwater discharges associated with construction activities. Section 102.43 of the DEP Erosion Control Rules and Regulations, 25 Pa. Code 102.43 and Section 611 of The Clean Streams Law, the Act of June 22, 1937, PL 1987, as amended, 35 P.S. 691.611 prohibit the Township from issuing a building or other permit or final approval for earth disturbance activities requiring an NPDES Permit until DEP has issued the permit.

Soil Erosion and Sedimentation Control

Pennsylvania DEP Chapter 102 and other regulations administered through the Wayne County Conservation District govern soil erosion and sedimentation control, and there is no need for the Township to include detailed design standards in either the SALDO or a

zoning ordinance. The key is to include a requirement for an approved soil erosion and sediment control plan in the SALDO as a condition of preliminary plan approval for all major subdivisions and all land developments, and in a zoning ordinance for any use involving earth disturbance governed by Chapter 102. Under DEP Chapter 102, an erosion and sediment control plan is required for all earth disturbance activities in Special Protection Watersheds regardless of size.