

**Stormwater Management Policy
City of Athens, TN -- April 18, 2000**

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**Stormwater Management Policy
City of Athens, TN -- April 18, 2000**

1.0 GENERAL

1.1 Purpose

The intended purpose of this policy is to safeguard property and public welfare by regulating stormwater drainage and requiring temporary and permanent provisions for it's control. It should be used as a planning and engineering implement to facilitate the necessary control of stormwater.

1.2 Scope

This policy sets forth standards and design criteria for the temporary and permanent controls of stormwater drainage. This policy applies to all areas within the City Limits and all watersheds that presently drain or are proposed to drain into the City Limits and establishes administrative procedures.

1.3 Authority

This policy is developed, implemented, and recognized as a standard practice for the City of Athens, Tennessee. The City Council has approved this document for the management of stormwater within the Athens City Limits. It will be utilized in conjunction with the existing Site Plan Ordinance, Subdivision Regulations, Zoning Ordinance, and other such municipal codes and texts.

With City Council approval, the City Manager has charged the Community Development and Public Works Departments with the administration and enforcement of this policy in regard to the review and approval of the construction, and the maintenance of stormwater facilities and such management practices as described herein.

1.4 Definitions

- **Adverse Impact** – Any modifications, alterations, or effects on a feature or characteristic of community waters. The above include their quality, quantity, hydrodynamics, surface area, species composition, living resources, aesthetics, or usefulness for human or natural uses which are or may potentially be harmful or injurious to human health, welfare, safety, or property, to biological productivity, diversity, or stability, or which unreasonably interfere with the enjoyment of life or property, including outdoor recreational activities. The term includes secondary and cumulative, as well as direct impacts.
- **Capacity of a Storm Drainage Facility** – The maximum ability of a storm drainage facility to convey, detain, or retain stormwater flows without causing substantial damage to public or private property, and in the case of a pipe, without surcharging.

- **Channel** – A natural or artificial open watercourse with definite bed and banks that periodically or continuously contains moving water or which forms a connecting link between two bodies of water.
- **Control Device** – An element of a discharge structure that allows the gradual release of water under controlled conditions and rates.
- **Control Elevation** - The design elevation of a structure at which, or below which, water is contained behind the structure.
- **Detention** – The delay of stormwater runoff prior to discharge into receiving waters or other downstream area.
- **Detention Basin** – A facility designed, constructed, or modified to restrict the flow of stormwater to a prescribed maximum rate, and to concurrently detain waters in excess of the prescribed rate behind the outlet. These are constructed to protect downstream facilities by providing temporary storage of surface water run off.
- **Development** – The carrying out of any building operation or making any material change in the use or physical appearance of any structure or land. Changing the intensity or type of use of land, in such a way as subdividing land into two (2) or more parcels, increasing the number of building or dwelling units in an existing structure or on real property.
- **Discharge** – The rate of outflow of stormwater from a drainage or detention structure.
- **Drainage Area** – The area from which water is conveyed by a drainage system; a drainage basin, watershed or catchment area.
- **Drainage Facility** – An element in a drainage system which includes, but is not limited to any of the following: pipes, culverts, tile, or other closed conduit facility, canals, channels, streams, or other surface facility, and other such appurtenances as catchbasins, curb inlets, detention areas, and other such facilities designed to convey stormwater.
- **Drainage System** - The surface or subsurface system which conveys water from or over the land including all watercourses, water bodies, and wetlands (also referred to as the Stormwater Management System).
- **Elevation** – The height, typically in feet or meters, above mean sea level.
- **Floodplain** - The special flood hazard lands adjoining a watercourse, the surface elevation of which is equal to the base flood elevation of the 100 year flood. These are subject to periodic inundation during floods.

- **Floodway** – The channel of the watercourse and those portions of the adjoining floodplain which are reasonably required to carry and discharge the design flood.
- **Flood Fringe** – The higher portion of the floodplain, immediately adjacent to and on either side of the floodway. These areas are occupied by quiescent or slow moving waters during floods. Areas lying outside the designated floodway, but within the area subject to inundation by the 500 year flood.
- **Impervious Surface** – A surface that has been compacted to a point or covered with a layer of materials so that it is highly resistant to the infiltration of water. These surfaces include, but are not limited to, surfaced streets, roofs, sidewalks, parking lots, and similar areas.
- **One Hundred (100) Year Storms** – Rainstorms of varying durations and intensities that have a one (1) percent probability of recurring in any one year.
- **Overflow Elevation** – Design elevation of a discharge structure at which point, or above which point, water is discharged through a control device down to the control elevation.
- **Peak Flow** – The maximum rate of flow at a given point in a channel or conduit resulting from a predetermined storm or flood.
- **Post-development Conditions** – Those conditions which are expected to exist, or do exist after alteration, resulting from human activity, of the natural topography, vegetation, and the rate, volume, and direction of surface or groundwater flow.
- **Pre-development Conditions** – The conditions that exist, or existed, at the time prior to alteration, resulting from human activity, of the natural topography, vegetation, and the rate, volume, and direction of surface or groundwater flow.
- **Rational Method** – An empirical formula for calculating peak rates of runoff resulting from rainfall.
- **Retention** – The holding of stormwater runoff preventing discharge into receiving waters or other downstream area.
- **Retention Basin** – A facility designed, constructed, or modified to prevent the flow of stormwater to a downstream area. These are constructed to protect downstream facilities by providing storage of surface water run off. (The construction and use of permanent retention basins is discouraged.)
- **Site** – A specific location on which any of the following activities are underway: excavation, cutting, or filling of earth; construction or demolition of any structure or infrastructure; building, remodeling or other improvements.

- **Site Plan** – The graphical plan, usually in map form, prepared pursuant to Title 14, § 14-1, Zoning and Land Use Control, and Chapter 3, § 14-3, Site Plans and Land Development, of the *Athens Municipal Code*; and the *Subdivision Regulations* of the City of Athens.
- **Stormwater** – The waters derived from rain falling or snow melting within a tributary drainage basin, flowing over the surface of the ground or collected in a stormwater drainage system.
- **Technical Release 55 (TR-55)** – a method developed by the U.S. Department of Agriculture used to determine stormwater flow rates.
- **Ten (10) Year Storm** – This event has a ten (10) percent probability of being equaled or exceeded in any given year.

2.0 APPLICATIONS

An adequate drainage system shall be provided and properly installed to provide adequate drainage of all surface water. This policy is applicable but is not limited to the following activities:

- Altering, rerouting, deepening, widening, obstructing, or changing in any way an existing drainage system.
- Development for: residential or other subdivisions; commercial, institutional, industrial, utility or other activities
- Excavating, filling, grading, draining, or paving of lots, parcels, or other areas
- Commencing any other development which may: significantly increase or decrease the rate and/or quantity of surface water runoff; degrade the quality of water; adversely affect any sinkhole water course or waterbody
- Other improvement, demolition, or construction activity that may create situations such as earth/mud slides, rock falls/slides, erosion/siltation, and/or the destabilization of karst terrain.

3.0 STORM DRAINAGE SYSTEMS DESIGN

3.1 General Standards

The standards for the design of storm drainage systems are established to forestall flooding and ponding of water on streets, lots, building sites, dwellings, sites for individual sanitary sewerage facilities, and to prevent erosion. In addition, these standards are designed to prevent damage from increased stormwater runoff and changed drainage patterns created by subdivision and development of the land.

Land at a higher elevation has an implied easement to drain to and across land of lower elevation, however the lower ground is not obligated to receive surface water in different quantities, times, and velocities than would naturally flow before improvement or development of the higher ground occurred.

3.2 Technical Guidelines and Criteria

It is the responsibility of the developer or property owner to pick up or acceptably handle the stormwater runoff as it flows onto the property from the watershed above and conduct it to an adequate drainage outfall, as described above, at the property line at the lower elevation. The outfall must be sufficient capacity to receive the runoff without deterioration of the downstream drainageway. All storm drainage systems shall:

- Account for both onsite and offsite stormwater.
- Maintain natural drainage divides.
- Convey stormwater to a stream, channel, natural drainageway, or other existing facility at admissible velocities and existing locations.
- Ensure the design will not adversely affect adjacent or neighboring properties.
- Utilize energy dispersion systems where flows will be of sufficient velocities to cause erosion or other damage.

3.3 Site Plan or Drainage Plan Requirements

Title 14, Zoning and Land Use Control, Chapter 3, Site Plans and Land Development, of the *Athens Municipal Code* requires an approved site plan for the activities listed below unless excepted as described in §14-302 Exceptions.

- Erecting any building or structure
- Enlarging or altering any building or structure
- Disturbing land (Alter the grade of any land as to change the contours in excess of two (2) feet)
- Construction of any streets, alleys, sidewalks, curbs, gutters, retaining walls, drain or sewer, or off street parking lots
- Changing or diverting the flow of stormwater or natural water courses

If the site plan is inadequate in detail for stormwater management, a separate drainage plan will be required. A licensed civil engineer may be required to design stormwater systems and plans. These plans shall contain, as a minimum, the following items or information. (In addition to basic information such as owner name and address, date, scale, north indication, and etc., other information is required aside from drainage requirements. These requirements are listed in § 14-309 of the ordinance.)

- Total land area
- Existing and proposed topography of existing land and impervious areas shown in five (5) foot intervals (two (2) foot intervals may be required)
- Elevations of all existing and proposed streets, alleys, utilities, sanitary and stormwater sewers, and existing buildings and structures
- All existing and proposed impervious areas
- Natural or artificial watercourses
- Limits of flood plains (if applicable)
- Existing and proposed slopes, terraces, or retaining walls
- All existing and proposed stormwater drainage structures or features

- All stormwater structures and features immediately upstream and downstream of the site
- Erosion and siltation control plans
- Drainage calculations when required
- Drainage easements when required

3.4 Determination of Stormwater Flow Rates

The methods used to determine stormwater flow rates within the City of Athens are the **Rational Method** and the United States Department of Agriculture – Soil Conservation Service **Technical Release 55 (2nd Edition)** commonly referred to as “**TR-55**”.

Should the proposed development (with contributing watershed) be less than 100 acres, then the Rational Method should be used to determine peak flow rates and storage requirements. If the proposed development (with contributing watershed) exceeds 100 acres, then the Technical Release 55 (SCS TR-55 1986 edition) should be used.

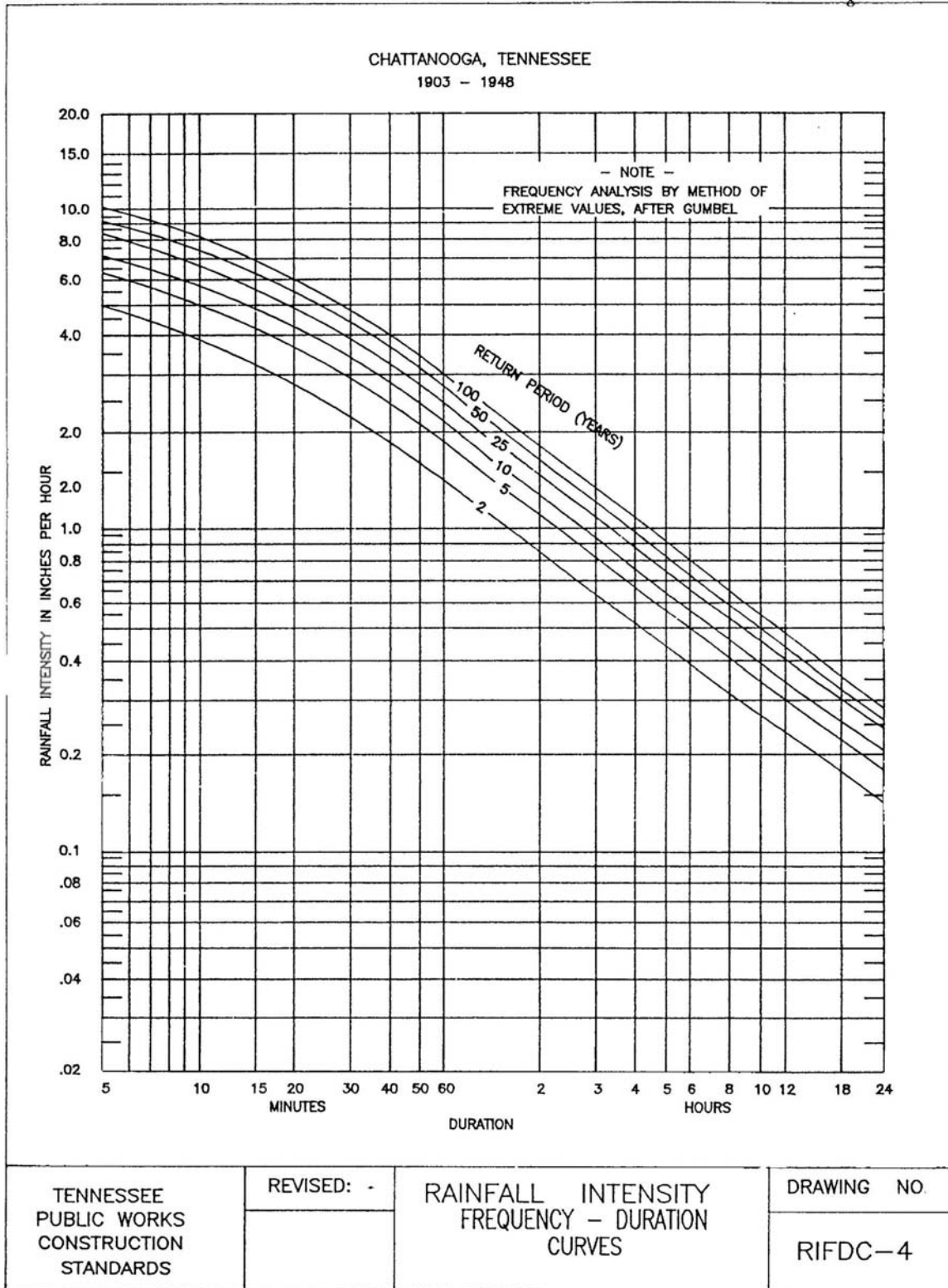
Rational Method Rainfall Intensity – The Rainfall Intensity (frequency/duration) Curves to be used in calculating peak flow using the rational method is the Chattanooga, TN curve, drawing no. RIFDC-4 included in this policy. (Local government public works standards and specifications.)

TR-55 Rainfall Amounts/Frequency -- Taken from TR-55, the 24-hour rainfall amounts for the different frequency storm events for the City of Athens, McMinn County, area are listed below. These shall be used in designing stormwater systems as specified in the next paragraph.

| <u>Frequency</u> | <u>Rainfall Amount</u> |
|------------------|------------------------|
| 2 year | 3.6 inches |
| 10 year | 5.0 inches |
| 25 year | 5.9 inches |
| 50 year | 6.6 inches |
| 100 year | 6.9 inches |

In selecting the design frequency storm, the following criteria shall be used:

- Longitudinal storm drains shall be designed for a 10-year frequency flood for a local street, providing that no structures are flooded by the 100-year frequency flood.
- Roadway cross drains shall be designed for a 10-year frequency storm for a local street, 25-year frequency storm for a collector street and a 50 year frequency storm for an arterial street, providing that no structures are flooded by the 100-year frequency flood.
- Stormwater detention facilities such as detention or retention ponds, basins, or other reservoirs shall be designed to discharge at the 10-year frequency flood rate associated with the original predevelopment conditions. Overflow or bypass capability shall be designed for a 100 year frequency flood.



City of Athens, TN Stormwater Management Policy
3.4 Determination of Stormwater Flow Rates

3.5 Stormwater System Material Requirements

Material for pipe or culvert used for the conveyance of stormwater within the City of Athens shall be in the concordance:

- Cross drains and other pipe located under the pavement surface of any public street, alley, or public parking lot shall be made of reinforced concrete pipe (RCP).
- Longitudinal stormwater lines installed in the public right-of-way may be constructed of 14 gauge (minimum) corrugated metal pipe (CMP) or smooth interior high density polyethylene pipe (HDPE) providing they are installed a minimum of two (2) feet laterally from any public street pavement surface.
- Stormwater pipe used under private driveways may be constructed of 14 gauge corrugated metal pipe (CMP) or smooth interior high density polyethylene pipe (HDPE) unless otherwise required by the Public Works Director. (In some cases involving high traffic volume, heavy vehicle loading, shallow cover, or other special situations, reinforced concrete (RCP) may be required.)
- All driveway tile and cross drains are to be a minimum of 15 inches in diameter.
- A concrete headwall or other rigid end treatment is recommended on the upstream end of all driveway tiles. Such headwalls or end treatments may be required in certain situations.
- An approved concrete headwall is to be installed on all exposed ends of drainage pipe installed under public streets and commercial entrances, and under private driveways when required.
- Area drain inlets and curb inlets installed on public streets, parking lots, and other publicly maintained areas shall meet the City of Athens standard specification for drainage basin appurtenances (pubwksst002).
- All catch basins and junction boxes installed under the pavement surface and along the right-of-way should be prefabricated reinforced concrete structures or an approved equivalent.

3.6 Installation Requirements

All pipe and drainage structures are to be installed to the manufacturer specification and as a minimum to the Tennessee Department of Transportation minimum design standards. In addition to these requirements, the following are general installation guidelines for the City of Athens.

- Minimum of 12 inches of cover over all drainage pipe.
- All pipe and structures installed underneath public streets will be bedded and backfilled completely with crushed stone and compacted properly.
- Pipe installed in the R.O.W. or within a drainage easement, but outside the street/curb areas, will be completely bedded and backfilled to a minimum of 12 inches above the top of the pipe with crushed stone.
- All junction and connection structures will have an approved manhole access.

3.7 Easement Requirements

Where a watercourse, drainageway, channel, or stream traverses a property, there shall be an easement of adequate width provided. The calculations used in the design of such drainage systems and plans shall clearly indicate the easements required in the construction and maintenance of the drainage system. Easements shall not be less than twelve (12) feet in width and shall be shown on the site and construction plans and the final plat.

3.8 Plan Submittal, Review, and Approval Process

Site and Drainage Plans shall be submitted to the Community Development Department. They are to be submitted in such time that the Public Works Director is to receive the submitted plans no less than five (5) working days prior to the intended date to begin site alterations.

The Community Development Department is the central point for receiving preliminary, revised, and final submittals. The issuance of permits is based upon approvals of submitted plans.

All drainage management plans and specifications are to be approved by the Public Works Director, the City Engineer, or the City Manager's designee.

A licensed civil engineer may be required to design stormwater systems when required by the Public Works Director, the City Engineer, or the City Manager's designee. Such requirements will be based upon the complexity of the conditions, the adjacent properties, and the site itself.

If an applicant determines that his/her site or drainage plan has been unjustly disapproved or that the Public Works Director or City staff has made requests that are considered above and beyond this policy, he/she may appeal the decision to the City Manager.

3.9 Other

- Other design and construction details shall follow standard engineering practice. Several reference texts are listed at the end of this policy.
- All supporting hydrologic and hydraulic calculations shall be submitted, as well as all maps and references used in calculations.

4.0 EROSION CONTROL

Developers and/or property owners shall use appropriate erosion and sedimentation control measures to ensure that erosion, or adverse conditions caused by erosion or sedimentation, is eliminated or held to an acceptable minimum and does not cross to an adjoining property, R.O.W., street, or stream.

When deemed necessary, the Public Works Director, Community Development Director, City Manager, and /or the Planning Commission may require that a detailed erosion and sedimentation control plan be submitted with the plat.

All control measures will be approved in the field by the appropriate city staff, typically the Public Works Director or his designee, and maintained by the developer.

4.1 Control Measures

The following control measures should be used as a minimum for erosion control:

- The smallest practical area of land should be exposed at any one time during development. Mulching or other protective measures should be used to protect exposed areas.
- Areas that will be exposed for more than three (3) months shall be seeded and mulched or landscaped.
- Temporary furrows, terraces, sediment or debris basins should be installed to prevent washing and erosion during construction.
- In areas where soil may wash onto the roadway or into a drainage basin, the developer will be required to install and maintain a silt fence, hay bales, or both.
- Final vegetation should be installed as soon as practical in the development after the land is exposed.
- A gravel construction entrance shall be constructed prior to any site work. This construction entrance will be maintained by the owner or his/her contractor throughout the construction process.
- Sediment washed onto roadways or into drainage ditches or basins, and soil tracked onto roadways by construction equipment/vehicles or daily ingress and egress onto the site shall be removed at the end of each working day by the contractor, developer, or property owner.

5.0 RESPONSIBILITY

5.1 Installation and Improvement – Drainage Pipe & Structures

The City of Athens assumes responsibility for the installation, improvement, and/or maintenance of storm sewers within the public R.O.W. when the same is for clearly defined general public welfare. This assumption of responsibility is effective after one (1) year of warranty and maintenance by the owner.

The City does not assume responsibility for installation or improvement of storm sewers on the R.O.W. or in a drainage easement as follows:

- Storm sewer desired by the adjacent property owner for aesthetics.

- Storm sewer desired by a property owner or required by the City to allow street access or to aid development or improvement of property.
- Subsurface storm sewer desired by an adjacent property owner as an alternative to a properly functioning ditch (existing or proposed).

At its option, the City may elect to assist single family residential property owners with the installation of pipe on the public R.O.W. Normally the extent of this assistance will be to provide placement without cost to the property owner with the owner providing the pipe and endwall materials when required.

Unless it is for the clearly defined general public welfare, the City will normally not participate in the installation of pipe on private property. Such participation is normally limited to the City installing pipe furnished by the property owner. An easement or right-of-entry shall be obtained before the start of any such approved project.

Unless it is for the clearly defined general public welfare, the City will normally not participate in the installation or improvement of pipe related to new building construction or the development or improvement of property by the owner.

5.2 Maintenance Responsibility – Drainage Pipe & Structures

The City of Athens assumes responsibility for maintaining drainage pipe and sewers installed within the public R.O.W. providing that such structures have been installed correctly in accordance with this policy and after *eighteen (18) months* warranty and maintenance by the owner. (rev.9/19/00)

The developer or property owner will be responsible for adequately maintaining all detention and retention facilities.

Adequate fencing *may* be required around any retention facility or detention facility over 2 feet deep *as determined necessary by the Public Works Director, City Manager, or their designee*. This fence shall be a minimum of 4 feet high and constructed of a chain link material or an approved equivalent. Maintenance of such fence will be the *responsibility* of the developer or property owner. (rev.9/19/00)

6.0 ENFORCEMENT of POLICY

This policy is adopted by the City Council of the City of Athens and by the Athens Regional Planning Commission by reference in §127 of the Athens Subdivision regulations.

Inspection and enforcement of the conditions described in this policy are the responsibility of, but not limited to, the Public Works Director, or his designee, or the City Building Inspector, or other person(s) as designated by the City Mgr.

Any site work not meeting the requirements of this policy will be stopped at the direction of the Public Works Director, his designee, the City Building Inspector, his designee, or the City Manager, or his designee. Such work may not resume until such time that all provisions are adequately met.

Intentional or continued violation of this policy is considered a civil offense as described in §5. Penalty clause, of the Athens Municipal Code and shall be punished by a civil penalty of not more than five hundred dollars (\$500.00) and costs for each separate violation.

7.0 REFERENCES

American Concrete Pipe Association. (1996). *Concrete pipe design manual*. 11th printing, rev., Irving, TX.

American Public Works Association. (1981). *Urban stormwater management - special report no. 49*. Chicago, IL.

American Society of Civil Engineers (ASCE) and Water Environment Federation (WEF). 1992. *Design and construction of urban stormwater management systems*. New York, NY and Alexandria, VA.

Archer, Edward C., Municipal Technical Advisory Service – University of Tennessee. 1994. *Local government public works standards and specifications*. Knoxville, TN.

Municipal Technical Advisory Service – University of Tennessee. 1991. *Drainage management participant manual*. Knoxville, TN.

United States Department of Agriculture – Soil Conservation Service. (1986). *Urban hydrology for small watersheds – technical release 55*. Second edition. Washington, DC.

Athens Tennessee City Council/Regional Planning Commission. February 2000. *Subdivision regulations*.

Athens Tennessee City Council/Regional Planning Commission. October 1998. *Zoning Ordinance*.

8.0 CITY OF ATHENS CONTACTS

Community Development Department

City Hall, 815 N. Jackson St., Athens, TN 37303

Planning Commission, Board of Zoning Appeals, Subdivisions, Development, Zoning, Codes Enforcement, Inspections, Permits, and related areas

| | | |
|---|---|--------------|
| Harold Hunter, Community Development Director | - | 423/744-2750 |
| Gene McConkey, Building Inspector | - | 423/744-2752 |
| Gayle Petitt, Codes Enforcement Officer | - | 423/744-2751 |

Fire Department

City Hall, 815 N. Jackson St., Athens, TN 37303

| | | |
|---------------------------|---|--------------|
| Bob Miller, Chief | - | 423/744-2760 |
| Jim Benton, Fire Marshall | - | 423/744-2761 |

Public Works Department

219 Alford Street, P.O. Box 849, Athens, TN 37371-0849

Streets, Sidewalks, Drainage, Traffic Control, Right of Way Maintenance, Sanitation, Animal Control, Fleet Maintenance, and related areas

| | | |
|---------------------------------------|---|--------------|
| Calvin Clifton, Public Works Director | - | 423/744-2745 |
| Harvel Henry, Street Superintendent | - | 423/744-2746 |

Athens Utilities Board

100 new Englewood Road, Athens, TN 37303

| | | |
|---|---|--------------|
| Water, Wastewater, Natural Gas, and Electric Services | - | 423/745-4501 |
|---|---|--------------|

**Stormwater Management Policy
City of Athens, TN**

Revision Log Sheet

| <u>Date</u> | <u>Revision Description</u> |
|--------------------|--|
| September 19, 2000 | Revisions to Section 5.2 (page 12) described in City of Athens Resolution No. 2000-41. (copy attached) |
| September 29, 2000 | Added <i>Revision Log Sheet</i> (page 15) to Policy |