

# STORMWATER DRAINAGE POLICY

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## MEQUON, WISCONSIN

### I. GENERAL

- A. It is the intent of the City of Mequon to develop its stormwater drainage system as an open channel/open ditch system. While it may be necessary to install limited amounts of storm sewer to solve specific local problems, the City does not intend to initiate the construction of an overall piped storm sewer system.
- B. It is also the intent of this policy to provide guidance to resolve drainage problems in a manner considered to be equally fair to all affected parties.
- C. Existing and naturally occurring stormwater drainage patterns will be utilized whenever and to the greatest extent possible. Therefore, each "downstream" property owner must allow and maintain a reasonable drainage pattern through their property based on the natural topography of the area. In no case are trees, brush or shrubs allowed within the high water mark of an established drainageway. The surrounding property owners shall be notified in advance when substantial clearing of trees and shrubs is required, because of maintenance of or improvements to any existing drainage channel.
- D. It is not the intent of the City to acquire title to any drainage channel right-of-ways. However, the City will not enter onto private lands for the purpose of construction or maintenance of drainageways unless an easement covering such channel has been granted to the City. The granting of permanent easements, where and when required, shall be with the approval of the Common Council. Easements may be permanent or temporary as deemed necessary by the City to accomplish the required work.

The required right-of-way for all major, secondary, and local drainage channels, and/or storm sewers, shall be as determined by the City, but shall, whenever possible, be no less than 20 feet in width.

### II. PROCEDURES

- A. **Drainage Channel Classifications.** For the purpose of this policy, drainageways shall be classified as follows:
  - 1. **Major Drainage Channels.** Major drainage channels are those which carry drainage from a tributary area in excess of 80 acres.
  - 2. **Secondary Drainage Channels.** Secondary drainage channels are those which carry drainage from a tributary area in excess of 20 acres, but less than 80 acres.
  - 3. **Local Drainageways.** Local drainageways are those ditches, swales, channels, etc., which are not classified as either major drainage channels or secondary drainage channels and service a specific small local area.

#### B. **Channel Construction, Improvements & Maintenance**

##### 1. **Major Drainage Channels**

###### a. **Construction and Improvements**

The City shall be responsible, if deemed necessary, for the construction of or any improvements, such as replacing culverts, repairs of other structures involved in the drainageways and grading or regrading of major drainage channels, within recorded stormwater drainage easements. The City may, as a condition of approval of subdivisions, planned developments, land divisions and other development projects, require the developer to make reasonable and necessary improvements to any existing drainage channels on the property involved in order to adequately conduct upstream drainage.

The City may, at the discretion of the Common Council, levy a special assessment against all benefited properties for the purpose of construction of or improvements to major drainage channels when accomplished by the City. Such

assessments may be levied to cover the full cost of such improvements or a portion of such costs as may be determined by the Common Council. Such special assessment shall be levied in a fair and equitable manner in accordance with the requirements of the Wisconsin Statutes and City Ordinances.

All construction, alterations and improvements to existing or proposed major drainage channels shall proceed only with the approval of the Common Council and other regulatory agencies.

b. Maintenance

The City will be responsible for the periodic normal maintenance of all major drainage channels located in easements or right-of-ways. Normal maintenance is defined as keeping the drainageway clear of trees, brush, shrubs and other items that would tend to block the free flow of water in the channel, clearing the channel of debris that may be carried into it by the flow of stormwater, cleaning, thawing, and repairing culverts or structures, as may be required. The City will enter onto private lands for the purpose of such maintenance only, upon written request, where a written easement has been granted. It shall be the property owner's responsibility to make certain that no action occurs on his property to block the drainageway or in any other way impair the free flow of stormwater through it.

2. **Secondary Drainage Channels**

a. Construction and Improvements

The City shall be responsible for the construction of, or improvements, such as replacing culverts, repairs of other structures involved in the drainageways, and grading or regrading to secondary drainage channels if so requested by the surrounding property owners and deemed necessary by the City. Developers of subdivisions, planned developments, land divisions, or other developments will be required to make all necessary improvements existing secondary drainage channels on the property involved and to construct secondary drainage channels, where required, to comply with the City's latest edition, Standard Specifications for Land Development and Stormwater Runoff Ordinance.

The City reserves the right to levy a special assessment against all benefited properties for the purpose of construction of or improvements to secondary drainage channels when accomplished by the City. Such assessments may be levied to cover the full cost of such improvements or a portion of such costs as may be determined by the Common Council. Such special assessment shall be levied in a fair and equitable manner in accordance with the requirements of the Wisconsin Statutes and City Ordinances.

b. Maintenance

Normal maintenance of secondary drainage channels shall be the responsibility of the owner of the property on which the channel is located. Normal maintenance is defined as grass cutting, keeping the drainageway clear of trees, brush, shrubs and other items that would tend to block the free flow of water in the channel, and clearing the channel of debris that may be carried into it by the flow of stormwater, etc. The City will be responsible for such maintenance as cleaning, thawing, and repairing culverts and other structures involved in the drainageways. It shall be the property owner's responsibility to make certain that no action occurs on his property to block the drainageway or in any other way impair the free flow of stormwater through it.

3. **Local Drainageways**

a. Construction and Improvements

The construction of, or improvements to, local drainageways shall be the responsibility of the surrounding property owners upon whose property the local drainageway is situated. Upon petition by a property owner or owners to the Public Works Committee, it may be recommended to the Common Council that approval for City labor and equipment, to be used in the construction or improvements to local drainageways, be granted. Where the Common Council so determines, the method of payment of the costs involved shall also be determined by the Common Council.

b. Maintenance

All maintenance of local drainageways shall be the responsibility of the owner/s of the property involved. Maintenance is defined as grass cutting, keeping the drainageway clear of trees, brush, shrubs and other items that would tend to block the free flow of water in the channel, clearing the channel of debris that may be carried into by the flow of stormwater, and regrading of the drainageway as necessary. It shall also be the property owner's responsibility to make certain that no action occurs on his property to block the local drainageway or in any other way impair the free flow of stormwater through it.

### III. STORM SEWERS

#### A. Construction and Improvements

##### 1. **Private Property**

The construction of, or improvements to, storm sewers shall be the responsibility of the resident upon whose property the storm sewer is required or located unless it is located within a previously granted easement. Upon petition to and recommendation by the Public Works Committee, the Common Council may direct that City labor and equipment be used in the installation of or improvements to storm sewers. Where the Common Council so rules, the method of payment of the costs involved shall be determined by the Common Council.

##### 2. **Public Road Right-of-Ways**

The installation of storm sewer within public road right-of-ways is generally the responsibility of the property owner abutting the drainageway. However, if it is deemed necessary by the City that involvement would aid in avoiding complications because of difficult conditions, City labor and equipment may be furnished for the project upon Common Council approval. In no case shall storm sewer be installed without written permission from the City.

#### B. Maintenance

All maintenance of storm sewers shall be the responsibility of the City of Mequon in areas where the City has been granted a storm sewer easement or the storm sewer is in the road right-of-way. In commercial or industrial areas the City of Mequon shall be responsible for the maintenance of interceptor or trunk storm sewer mains located in easements or in the road right-of-way. The property owner in the commercial or industrial areas is responsible for the maintenance of storm sewer located on said property.

### IV. DESIGN CRITERIA

#### A. The computation of flood flows and the volume of storm water runoff shall be by means of the "Rational Method" expressed as:

$$Q = CiA, \text{ where;}$$

"Q" is the maximum rate of storm water runoff, expressed in cubic feet per second or "cfs".

"C" is a dimensionless coefficient of runoff.

"i" is the average rainfall intensity expressed in inches per hour during the time of concentration for a specific storm event; and,

"A" is the drainage area, expressed in acres, tributary to the point of discharge of the drainage system under consideration.

The design frequency utilized for the determination of required right-of-way and channel cross-section shall be for the 50 year, 24 hour, storm event. The design frequency utilized for the design of culverts, box culvert and other similar structures shall be for the 50 year 24 hour storm event.

Drainage channels shall be designed for a maximum water velocity of five feet per second, with drop structures or other such structures to be installed, where necessary, so as not to exceed the allowed maximum flow. In addition, major drainage channels shall be designed to provide a freeboard of at least one foot when flowing at design capacity.

- B. In newly constructed subdivisions the City's Standard Specifications allow for a standard residential cross-section consisting of curb and gutter with storm sewer or roadside drainage ditches.
  - 1. The new subdivisions utilizing the open ditch drainage system are required to fully comply with the latest edition of the City's Standard Specifications for Land Development.
    - a. All natural grass ditches shall have a minimum flow line gradient of 1% and a maximum of 5%. Less than 1% requires special design considerations and prior approval by the Engineering Department.
    - b. Restoration of ditches with a flow line gradient between 1% and 3% requires topsoil and seed restoration; between 3% and 5% requires sod, staked or stabilized; greater than 5% requires the installation of a storm sewer pipe.
    - c. The roadside ditches shall be a minimum of 27" deep and a maximum of 39" deep as referenced from the centerline elevation of the finished road. Ditches greater than 39" in depth shall be piped.
    - d. Crossroad culverts shall be designed to provide a minimum of 16" of cover as referenced from the centerline elevation of the finished road to the top of pipe.
    - e. All ditch sideslopes shall be graded no steeper than three foot of "run" (horizontal) to one foot of "rise" (vertical) - (3:1).
    - f. Drainageways not located in a road right-of-way, which affects the buildable area of any lot or is greater than 36" in depth and is located between the home sites, shall be piped. The Engineering Department requires a plan to be submitted for review and approval.
    - g. Any requests for modifications to these specifications shall be submitted in writing and approved by the City Engineer.
  - 2. In the event that a storm sewer is installed in a new subdivision the following specifications shall apply:
    - a. The materials and installation shall conform to the latest edition of the Standard Specifications for Sewer and Water Construction for the State of Wisconsin, and be subject to the City Engineer's approval.
    - b. Manholes and catch basins shall be designed and constructed to allow easy access for maintenance and cleaning, conforming to file number 28 of the Standard Specifications for Sewer and Water Construction, latest edition.
    - c. Endwalls, flared end sections, or junction structure shall be required at all crossroad culverts and piped installations through or between home sites. Rip-rap shall be required at outfalls with an upstream ditch gradient of 5% or more, a peak flow of 10 cfs or greater based on a 100 year, 24 hour, storm event.

## V. **PRIORITIZATION OF WORK SCHEDULE, REVIEW AND RESPONSE**

- A. Immediate potential for a threat to personal safety. Threat to personal health or safety is deemed to be of the utmost importance to resolve. If it has been determined that flooding is preventing safe passage for residents City involvement will be immediate, if possible.

*Example: Velocity and quantity of storm water prevents, over a prolonged period of time, entrance and egress from residence or place of business.*

- B. Immediate potential threat of substantial damage to property, i.e., buildings, structures and land. Stormwater runoff is regarded as a natural occurrence. The City assumes no responsibility for stormwater drainage problems on private

property, unless it is found that private development or prior City work was the major contributing cause of the problem. Where damage to homes or structures is imminent, City involvement to alleviate the flooding, within existing right-of-ways or easements, will be given top priority. City involvement to alleviate flooding problems on private property will be advisory "only," except in the most extreme cases where the Director of Public Works or City Engineer deems necessary.

*Example: Velocity and quantity of storm water is of such a degree as to be entering homes.*

- C. Recurrent flooding and/or icing of public roads and rights-of-ways under City jurisdiction. Storm sewer or roadside ditches are installed to provide positive stormwater drainage of the curbing, pavement and shoulder areas of City streets. Where flooding, icing and possible unsafe road conditions and road damage may occur, City involvement will be as rapid as possible.

*Example: Degree of flooding and/or icing presents a safety and/or maintenance concern due to slippery conditions or washed out roads.*

- D. Threat to personal health and safety. Standing water in a drainageway is of such a depth that children may be attracted to it.

*Example: After event storm water remains standing in drainageways at a depth in excess of 6" for longer than seven (7) days.*

- E. Driveway: culvert installation, relays and replacement

The City will entertain the installation, relaying and/or replacement of driveway culverts to facilitate the flow of storm water on an as needed basis. Driveway culverts are considered the private property of the homeowner, subject to City regulations and approval within public road right-of-ways. However, upon request and for an appropriate fee to cover the labor, equipment and materials costs, the City provides the installation service. The installation of driveway culverts often times requires ditching to achieve the minimum grade, resulting in contact with adjoining property owners to explain the need to ditch in front of these homes. The property owner or their contractor can also lay the culvert, but are responsible to achieve the minimum grade of 0.5%.

- F. Roadside ditch enclosure

The City will not at its cost enclose a roadside ditch without exhausting all other alternatives first.

- a. Enclosing a roadside ditch, with a pipe, is the responsibility of the property owner abutting the ditch. In no case shall a ditch enclosure within an easement or public right-of-way be done without a plan and written City permission.
- b. In those cases where City involvement has been determined to be prudent and cost sharing with the property owner is involved, the City will schedule the work as soon as possible behind other priorities. In cases where the City installs the pipe, final grading and restoration will be the property owner's responsibility. Possible reasons for city involvement are as follows:
  - 1. Ditch grade too minimal.
  - 2. Resolution to a valid drainage complaint.
  - 3. Excessive ditch depth.
  - 4. Traffic and personal safety concerns.
  - 5. All other methods to improve drainage and eliminate or reduce the potential for flooding have been explored.

- G. Standing nuisance water. Ditches with standing water or minor drainage problems will be handled on a case by case basis. An inspection will be conducted to determine the extent of the problem, and a determination whether the ditch meets the City's minimum allowable requirements will be made. If the roadside ditch is considered acceptable and

functional the City will not make any modifications. In some cases, the City may propose to install an underdrain if the situation is severe and ditching would not be an option that would correct the problem. In-depth and complicated cases that exceed where an in-house capability to resolve an issue will be forwarded to the Public Works Committee for review and contract action.

*Example: After event storm water that remains standing in an established drainageway to a depth less than 6" for a period of three (3) days.*

H. Low flow nuisance water

*Example: Soggy bottom drainageways resulting from continuous discharge of sump pump water. Drainageway is unable to be maintained in a fashion acceptable to the City.*

I. Roadside ditch drainage problems.

Roadside ditches will only be deemed to have a drainage problem should the ditch fail to properly convey its intended design flow. A roadside ditch which routinely has "after storm event" standing water will not necessarily be deemed to be a problem.

J. Off road drainage problems

The City will not involve itself in the resolution of off road (out of right-of-way) drainage problems unless it is absolutely necessary for the resolution of an upstream drainage problem that is impacting a public facility.

- a. Off road drainage problems on private property, within existing easements, shall be investigated on a complaint basis. The City would be involved with resolution of the problem only if the drainage problem affects upstream public facilities. In general, maintenance of drainageways shall be the responsibility of the property owner or City as directed elsewhere in the policy.

When a complaint is received concerning poor drainage in an off road drainageway an inspection will be made to determine if the minimum requirements are being met. Further City involvement will be on a case by case basis depending on number of affected property owners, nature of problem, how it affects other City facilities, potential safety and health concerns, and costs of improvement. Typically, City involvement will be in an advisory capacity only.

When a drainage investigation determines a problem to be beyond a homeowner's control and within existing easements, the City will work with the property owner or owners to rectify the situation. However, the nature of City involvement will be at the City's discretion; i.e. regrading a ditch to minimize standing water will not improve the situation because of active sump pumps discharging to the area, therefore, the same labor could be used to install an underdrain in the ditch. Allocation of costs for the work will be at the Public Works Committee's discretion.

Regrading of drainageways downstream of the complainants property will be kept to a minimum, and only done to provide minimum grade. In the case of new construction, silting may occur and require regrading of downstream ditches. When this occurs every effort will be made to hold the responsible party accountable for accomplishing the required work. As a last resort when it is determined that sediment is negatively impacting other properties, the City may provide assistance to regrade drainageways within existing easements where the sediment is not from the property that generated the request.

- b. Complaints concerning drainage problems on private property will be handled on a case by case basis. Inspections will be conducted to determine if further City involvement is warranted. If it is determined that further involvement is warranted survey work will be performed, as necessary, to design solutions. For the City to perform the work an easement will be required and any work proposed to be accomplished will be forwarded to the Public Works Committee for review and approval prior to scheduling.