DEVELOPMENT PROCEDURES FOR PROJECTS IMPACTING COUNTY DRAINS

Gratiot County Edition
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Development Procedures for Projects Impacting County Drains

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PHASE I - PRELIMINARY PLANNING AND DESIGN

1. Notify Drain Commissioner of upcoming project and provide information that is currently known related to the townships and sections of land potentially affected by the proposed development.

2. A cooperation agreement shall be prepared by the Drain Commissioner and executed by the Developer. This agreement will include the developer providing a deposit which may vary based on project size and location.

3. All costs incurred by Drain Commissioner will be paid by the Developer including, but not limited to, legal, site review, engineering, drain repairs, and inspection fees.

4. Coordinate initial meeting with the Drain Commissioner and the Drain Commissioner's consulting team.

5. Provide preliminary maps with displaying the participating properties to the Drain Commissioner.

6. A map will be prepared by the Drain Commissioner or their consultant, displaying the limits of the development project over the County Drain Drainage Districts in the area of the development.

7. The Drain Commissioner will provide information relating to the boundary of the drainage district to the Developer. If these boundaries have not been recently updated to reflect existing field conditions, or if known errors exist in the current boundary, Section 197 of the Michigan Drain Code may need to be utilized to update the boundaries prior to review and approval of the development's stormwater management plan.

8. The Drain Office will provide the legal route and course of drain impacted by the development.

9. The Drain Commissioner will identify the drain right-of-way widths recorded in the existing easements and provide them to the Developer for all drains that will have right-of-way across participating parcels.

10. The Drain Commissioner will review historical files and field conditions of any impacted county drains and provide a summary of any concerns with the existing drain's capacity to the developer's engineering team.

11. The Developer and their consultants will review the stormwater design guidelines and stormwater management documents that have been adopted by the county and consult with the Drain Commissioner and their consultants regarding any questions. The Gratiot County Drain Commissioners Stormwater Rules and Guidelines can be found attached in Appendix B.

a. Developments in Michigan have proven to potentially represent a significant change in runoff characteristics and hydrologic properties of the Drainage District. The construction impacts including compaction of soils, concentration of flows, and alteration of the time of concentrations (amongst other impacts) represent a change in hydrologic conditions that must be accounted for and offset to protect landowners and infrastructure in the drainage district.

b. Consult with the County Drain Commissioner on how the hydrologic and stormwater runoff impacts will be accounted for in the design calculations for the development's design calculations.

c. If necessary, determine the stormwater regulatory authority and SESC enforcing agent to determine if they need to be included in the discussion.

12. The Developer's Engineer will utilize the Drainage District, drainage route, and course, and drain easements to develop a conceptual layout for the development and conceptual ideas for the stormwater management plan. The conceptual plan will need to consider the following items:

    a. Drainage shall be directed to a county drain or other approved outlet.

    b. No runoff from the development shall be directed towards non-participating parcels.

    c. Emergency overflow measures shall be accounted for and are not allowed to be directed towards a non-participating parcel.

    d. The primary outlet shall be sized to accommodate the allowable discharge for the development for the given design storm for that County, Township, or Drain Office. Each County, Township, or Drain Office may have different conditions regarding whether or not a public outlet is required. This should be considered early in the design as it may require easements and extending or adding branches to the existing county drain.

    e. Subsurface drainage measures that are currently existing serve a major role in conditioning the existing soils which significantly impact the runoff characteristics and hydrology of the existing drainage districts. These subsurface drainage measures are to be maintained in existing conditions (or better) as part of the project's stormwater management plan.

    f. Developments in Michigan have proven to potentially represent a significant change in runoff characteristics and hydrologic properties of the drainage district. The construction impacts including compaction of soils, concentration of flows, and alteration of the time of concentrations (amongst other impacts) represent a change in hydrologic conditions that must be accounted and offset to protect landowners and infrastructure in the drainage district.

g. Consult with the Drain Commissioner on how the impacts listed above will be accounted for in the design calculations for the development's design calculations.

h. The proposed drainage plan shall not alter the boundaries of the existing Drainage District. If this is determined to be unavoidable in the Drain Commissioner's opinion, the Drain Commissioner may allow the district to be changed at their discretion. If changes in the district are allowed, the Developer will be liable for all costs required to update the drainage district based on the procedures required in Section 197 of the Drain Code.

i. The Drain right-of-ways and/or drainage easement shall not be encroached upon unless specifically allowed by the Drain Commissioner. Any exceptions to this rule shall be documented in an agreement prepared by the Drain Commissioner. There will be no Gas Lines, Fiber Optic, Overhead and Buried Electrical Lines, Buried and Overhead Collection and Distribution Lines parallel to a drain within a Drain R.O.W./Easement.

j. The development's site plan shall not restrict access to the County Drain right-of-ways or drainage easements. Any potential restrictions shall be reviewed and approved at the Drain Commissioner's discretion and documented in an agreement.

k. Any proposed drain crossings will require permission from the Drain Commissioner and potentially EGLE. Situationally dependent, an agreement, with exhibit(s), may need to be prepared by the Drain Commissioner and executed by the developer. It will be up to the Drain Commissioner's discretion as to whether a formal agreement is required or if a permit will suffice. All cost associated with the agreement is solely the developer's financial responsibility with no cost to the applicable Drainage District(s).

    i. Utility bores crossing the drain must be installed at the minimum depth below the original stream grade (channel hardpan) or tile/culvert invert the entire width of the Drain R.O.W./Easement. as specified in the County Drain Commissioner's design requirements.
    ii. All temporary crossings will require a signed agreement from the landowner verifying their understanding that the crossing will be removed after construction. This agreement must be on file at the Drain Office prior to construction. If the landowner requests that their temporary crossing be left in place, the Developer must follow all rules and regulations for permanent crossing placement.

13. A conceptual design review meeting will be held between the Drain Commissioner's team and the Developer's team. This meeting shall be held prior to hydrologic and hydraulic calculations and detailed design layouts are performed in order to mitigate potential rework in the design.

a. The Developer will provide PDF (and paper copies, if desired) of the concept plan to the Drain Commissioner's team to review during the meeting. Conceptual design to include layout of preliminary flow paths to receiving watercourse for both metered and emergency overflow discharge from development.

b. Following the meeting, the Drain Commissioner will provide written feedback regarding the plan to the Developer.

c. Follow up meetings may need to be arranged to discuss the feedback and provide direction for the concept plan.

d. The revised concept plan shall continue to be submitted and reviewed until acceptance by the Drain Commissioner is achieved.

14. In tandem with the development and approval of the conceptual design plan, the Drain Commissioner will identify improvements to the existing county drain system that will need to be completed at the Developer's expense in order to accommodate the proposed project.

    a. These improvements will be reviewed, negotiated, and accepted by both parties prior to any work occurring.

    b. The Drain Commissioner may wish to have these items incorporated into the proposed developers plan or carried out as an independent project implemented by the Drain Commissioner but funded by the Developer.

15. Following the approval of the concept plan, the Developer's Engineer shall prepare a preliminary basis of design map as well as preliminary hydrology and hydraulic calculations for each portion of the project located in each Drainage District.

    a. The Drain Commissioner's Engineer will review the preliminary basis of design and calculations for the portions of the development located in each Drainage District.

    b. Feedback will be provided to the Developer and alterations will be made by the Developer's Engineer to ensure calculations are consistent with county standards.

    c. Once approval of preliminary calculations are accepted by the Drain Commissioner, the Developer's Engineer shall proceed with preliminary design drawings for the site.

16. Once the Developer's Engineer has a 50% complete preliminary site plan and Stormwater Management Plan developed based on the approved concept plan and preliminary stormwater design calculations, they shall be submitted to the Drain Commissioner.

    a. The plans shall be provided in a PDF format (as well as paper or another digital format if requested).

b. The Developer's Engineer will clearly identify in writing and on the plans, deviations from the previously approved concept plans and stormwater design calculations.

c. The plans will identify the following items at a minimum:
    i. The Drainage District Boundary, Drain Route and Course, Drain R.O.W./Easement.
    ii. Proposed stormwater outlet and emergency overflow.
    iii. Existing and proposed contours of the ground. Grading as necessary to avoid undesired ponding of water.
    iv. Proposed stormwater management facilities such as detention/retention areas. Dimensions, locations, storage elevations, overflow elevations, sizes, control structure types and grades shall be identified to the extent that a constructability review can be conducted. Delineate sub-catchment for each stormwater detention area. Sub-catchment area to include runoff from all hard development areas, at a minimum. Generally, this includes all areas of the proposed development footprint.
    v. Proposed stormwater conveyance system such as tiles, storm sewers, ditches, swales, and overland flow paths to receiving watercourse. Dimensions, locations, elevations, sizes, and grades shall be identified to the extent that a constructability review can be conducted.
    vi. Any proposed R.O.W./Easement, encroachments, and obstructions.
    vii. Include distance to Drain R.O.W./Easement where development feature (berm, fence, trees, etc.) is less than 50 feet from R.O.W./Drainage Easement.

d. Detailed design calculations shall be provided to demonstrate compliance of the proposed drainage system with County, Township, or Drain Office standards.

17. A 50% design review meeting will be held. Preliminary comments and questions will be addressed.

    a. Following this meeting, the Drain Commissioner will provide written feedback and redlined plans to the Developer that identify any concerns, issues, or deviations from county policies that are preventing the plans from being approved.

    b. Follow up meetings may need to be held following this meeting if the review comments cannot be addressed without further direction or discussion.

    c. Following all of the comments being addressed, the Drain Commissioner will give preliminary acceptance of the plan pending further development of the plans.

PHASE II - FINAL DESIGN AND PLAN APPROVALS

1. Final plans to include access roads and any temporary laydown areas and include stormwater design for laydown areas. Stormwater design is required for laydown areas even if they are temporary sites.

2. Plans to include details as necessary to ensure site is constructed as design intended. Typical details include berm geometry, access roads, inlet/outlets, emergency spillways, SESC measures, swales/ditches, drain crossings/bores, etc.

3. Include benchmarks as necessary to allow for verification of critical hydraulic components (detention ponds, emergency overflow weirs, inlets, etc.) during construction.

4. Individual specific drawing details to be finalized.

5. Provide required permits, hydraulic certifications, agreements, and exhibits to support final plans.

6. Plans need to be preliminarily approved by the Drain Commissioner. This includes county drains, county drain right-of-way impacts, and stormwater designs as applicable. Drain agreements with exhibits need to be drafted and approved. Drain agreement fees must be paid. Drain impacts include crossing a county drain, connecting to a county drain, and/or work within the drain right-of-way.

7. The Stormwater Administrator needs to be identified. If the Drain Office is the administrator, approval comes from them. If not, the approval comes from the entity that administers the stormwater ordinance. If applicable, new drain easements need to be acquired from the landowners prior to approval. Upon easement acquisition, stormwater drain designs need to be completed.

8. Acquire Soil Erosion and Sedimentation Control Permit from the County Enforcing Agent.

9. Sites containing hazardous materials must provide an approved chemical spill/response/detainment plan.

10. Site plan approval is needed from the county Zoning Department. Once signed copies of approved Plans, Permits, and Drain Agreements with exhibits are obtained, plan approval can be given and permission for construction can be issued.

PHASE III - CONSTRUCTION COORDINATION

1. Coordinate with Drain Office or their representative prior to construction.

2. A pre-construction meeting may be required.

3. Provide a schedule of construction activities.

    a. Coordinate with Drain Office or representative for inspection when working in R.O.W./Drainage Easement.

4. Regular scheduled construction progress meetings will be administered by the Developer and attended by the Drain Office or representative.

    a. Field review of installed stormwater conveyance infrastructure will be conducted at regular intervals and feedback provided to Developer and construction crew.

5. Regular updates of all proposed construction activities must be provided to the Drain Office at an interval specified by the Drain Commissioner.

6. Developer to notify the Drain Office or representative of any deviation to plans, whether existing or proposed conditions, so that any necessary modifications to design can be identified and implemented as soon as possible and to avoid rework.

7. When construction is completed, a site walkthrough will be performed by Drain Office or representative and punch list generated. Developer to address punch list items in a timely manner. A follow up onsite meeting with Developer and contractor may be required to discuss scope of punch list items.

8. Developer to provide Drain Office with As-Built plans. As-Builts will be required prior to return of developer's bond and/or deposit at time of project closeout.

9. Drain Commissioner will retain deposit until site has been stabilized, establishment of vegetation, removal of temporary SESC measures, removal of construction debris, punch list items are addressed, and all required submittals are submitted.

10. OTHER ITEMS POSSIBLY REQUIRED DURING CONSTRUCTION AS DICTATED BY THE DRAIN COMMISSIONER AND STORM WATER ADMINISTRATOR:

    a. CONSTRUCTION INITIAL MEETING
    b. REGULARLY SCHEDULED CONSTRUCTION MEETINGS
    c. CONSTRUCTION INSPECTION SCHEDULE AND COORDINATION
    d. PERMIT CLOSEOUT NOTICES AND/OR MEETINGS
    e. BONDS/ SECURITY FUNDS (POST CONSTRUCTION/ UNTIL DECOMMISSIONING)

f. POST CONSTRUCTION BARE EARTH LIGHT DETECTION AND RANGING (LiDAR) TO BE PROVIDED BY DEVELOPER FOR CONSTRUCTION OVER 3 ACRES
g. FOLLOW UP TESTING REQUIREMENT FOR WATER QUALITY/WATER CHEMISTRY

Appendix A

Summary Requirements of Requirements
for Development Projects

DEVELOPMENT REQUIREMENTS

SOLAR PROJECTS	
Deposit Requirement	**$100,000**
Hydrologic Impacts	The impacts to hydrologic characteristics of the proposed solar development shall be accounted for by calculating the stormwater runoff of the developed area within participating parcels being **30%** impervious post development.
Detention Requirements	Detention will be required based on calculations provided in the stormwater regulatory authorities rules and guidelines.
Inspection Requirements	• All work within the Drain R.O.W./Easements • All proposed stormwater facilities including conveyance and detention/retention systems
Drain Crossing Agreement Requirements	• All drain crossings within a Solar Development shall have a Drain Crossing Agreement • Agreements/Exhibits Include: proposed culverts, proposed utility crossings, proposed storm water inlets/outlets, modification to existing storm water facilities, and other appurtenances constructed within the Drain R.O.W./Easement
Establishment of a New County Drain or County Drain Branch	Based on coordination with the Drain Office, the establishment of a new County Drain may be required to support the establishing an approved drainage outlet.
Right of Way	All Drain R.O.W./Easements shall remain accessible by the County Drain Commissioner.

WIND PROJECTS	
Deposit Requirement	**$100,000**
Hydrologic Impacts	Hydrologic impacts of these projects are anticipated to be minor in nature for wind turbines. Laydown areas, office areas, and other permanent or temporary developments on the participating parcels will need to be evaluated on a project by project basis based on size of impact and project schedule.

Detention Requirements	Permanent or temporary detention facilities may be required based on calculations provided in the stormwater regulatory authorities rules and guidelines for permanent or temporary developments on participating parcels as part of the project. Detention will not be required for impacts due to wind turbines.
Inspection Requirements	• All work within the Drain R.O.W./Easements • All proposed stormwater facilities including conveyance and detention/retention systems
Drain Crossing Agreement Requirements	• All drain crossings within a Wind Development shall have a Drain Crossing Agreement • Agreements/Exhibits Include: proposed culverts, proposed utility crossings, proposed storm water inlets/outlets, modification to existing stormwater facilities, and other appurtenances constructed within the Drain R.O.W./Easement.
Establishment of a New County Drain or County Drain Branch	Based on coordination the Drain Office with the establishment of a new County Drain may be required to support the establishing an approved drainage outlet for parking lots/building sites.

BATTERY PLANT/TRANSFORMER/OTHER ENERGY SITE DEVELOPMENT PROJECTS	
Deposit Requirement	**$25,000**
Hydrologic Impacts	Additional runoff caused by development will be calculated and accounted for based on calculations provided in stormwater regulatory authorities rules and guidelines based on impervious surface and changes in runoff conditions.
Detention Requirements	Detention will be required based on calculations provided in the stormwater regulatory authorities rules and guidelines.
Inspection Requirements	• All work within the Drain R.O.W./Easements • All proposed stormwater facilities including conveyance and detention/retention systems

Drain Crossing Agreement Requirements	• All drain crossings will require a permit from the Drain office. Projects incorporating large crossing, complex crossings, or multiple drain crossings may require a Crossing Agreement at the discretion of the Drain Commissioner • Agreements/Exhibits Include: proposed culverts, proposed utility crossings, proposed storm water inlets/outlets, modification to existing storm water facilities, and other appurtenances constructed within the Drain R.O.W./Easement.
Establishment of a New County Drain or County Drain Branch	Based on coordination with the Drain Office, the establishment of a new County Drain may be required to support the establishing an approved drainage outlet.

UTILITY PROJECTS	
Deposit Requirement (per crossing) Application Fee	**$1,500** **$250**
Hydrologic Impacts	Underground and aerial utility installations typically do not cause hydrologic or runoff impacts.
Detention Requirements	Detention will not be required.
Inspection Requirements	• All work within the Drain R.O.W./Easements • Any proposed changes to the existing drainage system that are incorporated into the project
Drain Crossing Agreement Requirements	• All drain crossings will require a permit from the Drain office. Projects incorporating large crossing, complex crossings, or multiple drain crossings may require a Crossing Agreement at the discretion of the Drain Commissioner • Agreements/Exhibits Include: proposed culverts, proposed utility crossings, proposed storm water inlets/outlets, modification to existing stormwater facilities, and other appurtenances constructed within the Drain R.O.W./Easement
Establishment of a New County Drain or County Drain Branch	Establishment of a new County Drain will not be required.

COMMERICAL/INDUSTRIAL DEVELOPMENT PROJECTS	
Deposit Requirement	**$20,000**
Hydrologic Impacts	Additional runoff caused by development will be calculated and accounted for based on calculations provided in stormwater regulatory authorities rules and guidelines based on impervious surface and changes in runoff conditions.
Detention Requirements	Detention will be required based on calculations provided in the stormwater regulatory authorities rules and guidelines.
Inspection Requirements	• All work within the Drain R.O.W./Easements • All proposed stormwater facilities including conveyance and detention/retention systems
Drain Crossing Agreement Requirements	• All drain crossings will require a permit from the Drain office. Projects incorporating large crossing, complex crossings, or multiple drain crossings may require a Crossing Agreement at the discretion of the Drain Commissioner • Agreements/Exhibits Include: proposed culverts, proposed utility crossings, proposed storm water inlets/outlets, modification to existing stormwater facilities, and other appurtenances constructed within the Drain R.O.W./Easement.
Establishment of a New County Drain or County Drain Branch	Based on coordination with the Drain Office and Road Commission, the establishment of a new County Drain may be required to support the establishing an approved drainage outlet and/or approval of the proposed plat if a Commercial or Industrial Park is proposed.

MULTI UNIT RESIDENTIAL DEVELOPMENTS	
Deposit Requirement	**$10,000**

Hydrologic Impacts	Additional runoff caused by development will be calculated and accounted for based on calculations provided in stormwater regulatory authorities rules and guidelines based on impervious surface and changes in runoff conditions.
Detention Requirements	Detention will be required based on calculations provided in the stormwater regulatory authorities rules and guidelines.
Inspection Requirements	• All work within the Drain R.O.W./Easements • All proposed stormwater facilities including conveyance and detention/retention systems
Drain Crossing Agreement Requirements	• All drain crossings will require a permit from the Drain office. Projects incorporating large crossing, complex crossings, or multiple drain crossings may require a Crossing Agreement at the discretion of the Drain Commissioner • Agreements/Exhibits Include: proposed culverts, proposed utility crossings, proposed storm water inlets/outlets, modification to existing stormwater facilities, and other appurtenances constructed within the Drain R.O.W./Easement.
Establishment of a New County Drain or County Drain Branch	Based on coordination between the Drain Office and the Road Commission the establishment of a new County Drain may be required to support the establishment of a new Plat and County Road.

Appendix B

REQUIREMENTS AND GENERAL COMPLIANCE GUIDELINES
FOR STORMWATER DRAINAGE SYSTEM DESIGN
FOR DEVELOPMENT AND REDEVELOPMENT
WITHIN GRATIOT COUNTY

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ORDER OF ADOPTION OF RULES AND GUIDELINES

WHEREAS, the Michigan Drain Code, Public Act 40 of 1956, as amended, the Land Division Act, Public Act 288 of 1967, as amended and Article VII, § 29 of the Michigan Constitution of 1963 provides for the promulgation and publication of Rules by the Gratiot County Drain Commissioner; and

WHEREAS, the Gratiot County Drain Commissioner conducted a review of previously adopted Administrative Guidelines for Storm Water Management, dated January 2014; and

WHEREAS, the Gratiot County Drain Commissioner is adopting Rules and Guidelines of the Gratiot County Drain Commissioner that incorporates and revises its Administrative Guidelines for Storm Water Management.

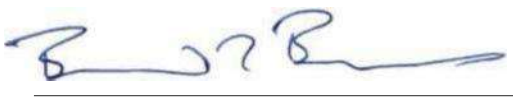
NOW, THEREFORE, IT IS HEREBY ORDERED, that the "Rules and Guidelines of the Gratiot County Drain Commissioner," pursuant to the Michigan Drain Code, Public Act 40 of 1956, as amended, the Land Division Act, Public Act 288 of 1967, as amended, Article VII, § 29 of the Michigan Constitution of 1963, and other applicable statutes, shall be hereby adopted, and shall be followed in the processing of all storm water plans, easements, easement crossings and encroachments that come under the jurisdiction of the Gratiot County Drain Commissioner, including, but not limited to, site condominiums, developments on lands discharging directly to County Drains, and any other review required by local government ordinances.

IT IS FURTHER ORDERED, that Appendices illustrating the application of these Rules are also adopted, but are not part of these published Rules, and may be modified, added to, or deleted in the future without prior notice.

IT IS FURTHER ORDERED, that notice of the availability of these published Rules shall be placed in a newspaper of general circulation in the County of Gratiot within two weeks of this order.

IT IS FURTHER ORDERED, that the Rules be available for download on the Gratiot County Drain Commissioner website and published in a booklet form and be made available to all interested parties for the cost of reproduction from the Office of the Gratiot County Drain Commissioner.

IT IS FURTHER ORDERED, that the Rules shall take immediate effect.



IT IS FURTHER ORDERED, that any prior published Rules, either adopted or draft, are hereby repealed.

Bernard J. Barnes

Gratiot County Drain Commissioner

904 E. Center Street

Ithaca, MI 48847

(989) 875-5207

Dated this 1" day of October, 2017.

I. INTRODUCTION

These Rules and Guidelines have been prepared and adopted by the Gratiot County Drain Commissioner pursuant to the Michigan Drain Code, Public Act 40 of 1956, as amended, the Land Division Act, Public Act 288 of 1967, as amended and Article VII, § 29 of the Michigan Constitution of 1963 and in cooperation with the Municipal entities within Gratiot County. The goals of these Rules and Guidelines include:

- The ease of understanding and use of the Rules and Guidelines,
- A practical approach to the proper management of storm water within Gratiot County, and
- An incentive-based approach to using low impact design approaches and shared/regional storm water detention basins.

The purpose of the Rules and Guidelines is to establish requirements and general compliance guidelines for storm water management practices in Gratiot County. The Rules and Guidelines establish the framework through which detention and/or retention measures will be implemented and details the process that must be followed to gain approval for new developments or redevelopment drainage systems. The purpose of the Rules and Guidelines is to accomplish, among others, the following objectives:

- To reduce artificially induced flood damage;
- To minimize increased storm water runoff rates and volumes from identified new land development;
- To minimize the deterioration of existing watercourses, culverts and bridges, and other structures;
- To encourage water recharge into the ground where geologically favorable conditions exist;
- To prevent an increase in non-point source pollution;
- To maintain the integrity of stream channels for their biological functions, as well as for drainage and other purposes;
- To minimize the impact of development upon stream bank and streambed stability;
- To reduce erosion from development or construction projects;
- To preserve and protect water supply facilities and water resources by means of controlling increased flood discharges, stream erosion, and runoff pollution;
- To reduce storm water runoff rates and volumes, soil erosion, and non-point source pollution, wherever practicable, from lands that were developed without storm water management controls meeting the purposes and standards of this ordinance; and

- To reduce the adverse impact of changing land use on water bodies and, to that end, the Stormwater Ordinance establishes minimum standards to protect water bodies from degradation resulting from changing land use where there are insufficient storm water management controls.

This document covers the following topics:

- A summary of the procedures to be followed under the administrative guidelines, including requirements, review procedures, inspection requirements, fee schedule, and other agency requirements;

- A description of design requirements and engineering calculations; and

- A description of minimum design criteria and rules to be followed for design of new drainage systems within Gratiot County.

II. ADMINISTRATIVE GUIDELINES

A. Definitions:

1. Allowable Discharge: The restricted discharge from a site after development or redevelopment as calculated in accordance with this Stormwater Management Plan.

2. Base Flood: The flood having a 1-percent chance of being equaled or exceeded in any given year.

3. Base Flood Elevation: The elevation delineating the flood level having a one-percent probability of being equaled or exceeded in any given year (also known as the 100-year flood elevation), as determined from Flood Insurance Rate Maps (FIRMs) or the best available information.

4. Base Floodplain: The area inundated by the Base Flood.

5. Best Management Practices (BMPs): A practice, or combination of practices and design criteria that comply with the Michigan Department of Environmental Quality's Guidebook of BMPs for Michigan Watersheds, (including, but not limited to minimizing storm water runoff and preventing the discharge of pollutants into storm water) as determined by the Drain Commissioner and/or designee, and where appropriate, the standards of the Gratiot County Drain Commissioner.

6. Bioretention Areas: Areas designed to use soil and plant material to mimic natural processes and store, filter, and infiltrate storm water into the ground. These areas may be used anywhere to achieve a degree of storm water treatment.

7. Building Opening: Any opening of a solid wall such as a window or door, through which floodwaters could penetrate.

8. Clean Water Act: The Federal Water Pollution Control Act, 33 USC Sec 1251 et seq., as amended, and the applicable regulations promulgated thereunder.

9. Detention: A system that is designed to capture storm water and release it over a given period of time through an outlet structure at a controlled rate.

10. Detention Facility: A facility constructed or modified to restrict the flow of storm water to a prescribed maximum rate and to concurrently detain the excess waters that accumulate behind the outlet.

11. Detention Storage: The temporary detaining or storage of storm water in storage basin, on rooftops, in streets, parking lots, school yards, parks, open space, or other areas under predetermined and controlled conditions, with the rate of drainage regulated by appropriately installed devices.

12. Developed or Development: The installation or construction of impervious surfaces on a development site that require, pursuant to state law or local ordinance, the County's approval of a site plan, plat, site condominium, special land use, planned unit development, rezoning of land, land division approval, private road approval or other approvals required for the development of land or the erection of buildings or structures; provided, however, developed or development shall not include the actual construction of, or an addition, extension or modification to, an individual single-family or a two-family detached dwelling.

13. Developer: Any person proposing or implementing the development of land.

14. Developer/Owner Engineer: The engineering company formally designated by the Developer/Owner to act as their Engineer.

15. Development Site: Any land that is being or has been developed, or that a developer proposes for development.

16. Discharge: The release or outflow of water from any source.

17. Discharger: Any person or entity that directly or indirectly discharges storm water from any property. Discharger also means any employee, officer, director, partner, contractor, or other person who participates in, or is legally or factually responsible for, any act or omission that is or results in a violation of the stormwater ordinance.

18. Drain: Any drain as defined in the Drain Code of 1956, as amended, being MCL 280.1, etc. seq., other than an established county or intercounty drain.

19. Drainage: The collection, conveyance, or discharge or ground water and/or surface water.

20. Drainage Area: The area from which storm water runoff is conveyed to a single outlet (i.e. a watershed or catchment area).

21. Drainageway: The area within which surface water or ground water is carried from one part of a lot or parcel to another part of the lot or parcel or to adjacent land.

22. Drain Commissioner: The Gratiot County Drain Commissioner or his designee.

23. Drainage District/Watershed: All drainage areas contributing surface water runoff upstream of a discharge location of the proposed development.

24. Drains (Privately-Owned): Those drains under private ownership and not under the control of the Drain Commissioner's office or any other public entity.

25. Earth Change: Any human activity, which removes ground cover, changes the slope or contours of the land, or exposes the soil surface to the actions of wind and rain. Earth change includes, but is not limited to, any excavating, surface grading, filling, landscaping, or removal of vegetative roots.

26. EPA: The United States Environmental Protection Agency.

27. Erosion: The process by which the ground surface is worn away by action of wind, water, gravity, or a combination thereof.

28. Excess Storm Water Runoff: The volume and rate of flow of storm water discharged from a drainage area, which is in excess of the allowable discharge.

29. Exempted Discharges: Discharges other than storm water.

30. Federal Emergency Management Agency (FEMA): The agency of the federal government charged with emergency management.

31. Flood or Flooding: A general and temporary condition of partial or complete inundation of normally dry land areas resulting from the overflow of water bodies or the unusual and rapid accumulation of surface water runoff from any source.

32. Floodplain: The special flood hazard lands adjoining a watercourse, the surface elevation of which is lower than the Base Flood Elevation and is subject to periodic inundation.

33. Flood Proofing: Any structural and/or non-structural additions, changes, or adjustments to structures or property that reduce or eliminate flood damage to land, or improvements utilities and structures.

34. Flood Protection Elevation (FPE): The Base Flood Elevation plus I foot at any given location.

35. Floodway: The channel of any watercourse and the adjacent land areas that must be reserved to carry and discharge a base flood without cumulatively increasing the water surface elevation more than one-tenth of a foot due to the loss of flood conveyance or storage.

36. Forebay: Man-made surface waters used as pretreatment systems. They are designed to temporarily store the first flush of runoff from a storm event and provide for pollutant removal through settling. A forebay or other pretreatment system is recommended at each inlet to a detention system or retention basin.

37. Forebay Outlets: Outlets that convey flow from a forebay into detention systems and retention basins. They must include a flow restrictor for restricted flow and a weir for unrestricted flow.

38. Freeboard: A volume of additional storage designed within a detention basin. A "Safety Factor" within a stormwater detention system that is based on 1.0-foot detention volume above the proposed high-water elevation of a detention pond. This volume provides additional storm water detention in the event that a storm exceeds the design capacity.

39. Grading: Any stripping, excavating, filling, and stockpiling of soil or any combination thereof and the land in its excavated or filled condition.

40. GCDC: Gratiot County Drain Commissioner.

41. Green Roofs: These roofs are constructed of a lightweight soil medium, layered over a drainage layer and a waterproofing membrane. The soil is planted with a specialized mix of plants that can thrive in a roof environment. These types of roofs are also known as vegetated roof covers, eco-roofs, or nature roofs.

42. Illicit Connection: Any method or means for conveying an illicit discharge into water bodies or the County's stormwater system.

43. Illicit Discharge: Any discharge to water bodies that does not consist entirely of storm water, discharges pursuant to the terms of an NPDES permit, or exempted discharges as defined in the Stormwater Ordinance.

44. Impervious Surface: Surface that does not allow storm water runoff to slowly percolate into the ground.

45. Infiltration: A process whereby precipitation seeps into the ground.

46. Infiltration Trench: Linear trenches or ditches that collect and store storm water until the collected water can infiltrate into the ground. This type of trench is not considered a preferred means of discharging storm water.

47. Leaching Basin: A catch basin or similar structure designed with openings allowing collected storm water to infiltrate into the ground. This type of basin is not considered an effective means of controlling and treating storm water runoff.

48. Low-Impact Design (LID): A stormwater management strategy that aims to control water, both rainfall and storm water runoff, at the source.

49. Lowest Floor: The lowest floor or the lowest enclosed area (including a basement), but not including an unfinished or flood-resistant enclosure that is usable solely for parking of vehicles or building access.

50. MDEQ: Michigan Department of Environmental Quality.

51. NPDES: National Pollution Discharge Elimination System.

52. NREPA: Natural Resources and Environmental Protection Act, Act 451.

53. O&M Plan: Operations and Maintenance Plan describes resource organization, responsibilities, policies, and general procedures.

54. Overland flow-way: Surface area that conveys a concentrated flow of storm water runoff.

55. Owner: Any person or entity having legal or equitable title to property or any person or entity having or exercising care, custody, or control over any property.

56. Peak Discharge: The maximum rate of flow of storm water runoff at a given location.

57. Peak Flow: The maximum rate of flow of storm water runoff at a given location.

58. Permit: A permit issued by the Gratiot County Drain Commissioner or representative to be placed with SESC permit or site visible.

59. Person: An individual, firm, partnership, association, public or private corporation, public agency, instrumentality, or any other legal entity.

60. Pervious Pavement: A unique environmentally friendly porous pavement that allows rainwater to pass directly through into the soil naturally.

61. Plan: Written narratives, specifications, drawings, sketches, written standards, operating procedures, or any combination of these that contain information pursuant to the Stormwater Ordinance.

62. Pollutant: A substance discharged which includes, but is not limited to the following: any dredged spoil, solid waste, vehicle fluids, yard wastes, animal wastes, agricultural waste products, sediment, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological wastes, radioactive materials, heat, wrecked or discharged equipment, rock, sand, cellar dirt, and industrial, municipal, commercial and agricultural waste, or any other contaminant or other substance defined as a pollutant under the Clean Water Act.

63. Property Owner: Any person having legal or equitable title to property or any person having or exercising care, custody, or control over any property.

64. Rain Garden: A landscaping feature planted with perennial native plants. It is a bowl-shaped or saucer-shaped garden, designed to absorb storm water runoff from impervious surfaces such as roofs and parking lots.

65. Redevelopment: Altering, improving, or otherwise changing the use of an existing developed property. A site will be considered a redevelopment for this Stormwater Management Plan when an area greater than or equal to 5% of the existing developed site or an area greater than 500 square feet is increased with additional roof, pavement, or any other impervious surface.

66. Retention: A system that is designed to capture storm water and contain it until it infiltrates the soil or evaporates.

67. Soil Erosion: The stripping of soil and weathered rock from land creating sediment for transportation by water, wind or ice, and enabling formation of new sedimentary deposits.

68. State of Michigan Water Quality Standards: All applicable State rules, regulations, and laws pertaining to water quality, including the provisions of Section 3106 of Part 31 of 1994 PA 451, as amended.

69. Storm Drain: A system of open or enclosed conduits and appurtenant structures intended to convey or manage storm water runoff, ground water, and drainage.

70. Stormwater Permit: A permit issued pursuant to these guidelines.

71. Storm water Runoff: The water from a rain storm, snow melt or other natural event or process, which flows over the surface of the ground or is collected in a drainage system.

72. Stormwater Runoff Facility: The method, structure, area, system, or other equipment of measures which are designed to receive, control, store, or convey storm water.

73. Stream: A river, stream or creek which may or may not be serving as a drain, or any other water body that has definite banks, a bed, and visible evidence of a continued flow or continued occurrence of water.

74. Permit to Connect: A permit issued by the Gratiot County Drain Commissioner when a landowner is outletting to an open or closed county drain.

75. Time of Concentration: The elapsed time for storm water runoff to flow from the most distant point in a drainage area to the outlet or other predetermined point.

76. Twenty-five-year Design Storm: A precipitation event with a duration equal to the time of concentration, having a four percent chance of occurring in any one year.

77. Underground Detention Systems: An underground system consisting of one or more underground pipes or structures that are designed to provide the required volumes for storage for a development project, including bankfull flood and flood control volumes.

78. Upland Area: Land located in the upper portion of a watershed whose surface drainage flows toward the area being considered for development.

79. Urbanization: The development, change, or improvement of any parcel of land consisting of one or more lots for residential, commercial, industrial, institutional, recreational, or public utility purposes.

80. USACE: United States Army Corps of Engineers is responsible for investigating, developing, and maintaining the nation's water and related resources.

81. Vegetated Swales: Channels that are broad and shallow lined with vegetation that slow and filter storm water runoff and promote infiltration.

82. Water Body: A river, lake, stream, creek or other watercourse or wetlands.

83. Watercourse: Any natural or artificial stream, river, creek, channel, ditch, canal, conduit, culvert, drain, waterway, gully, ravine, street, roadway, swale, or wash in which water flows in a definite direction, either continuously or intermittently.

84. Watershed: A region draining into a water body.

85. Wetlands: Land characterized by the presence of water at a frequency and duration sufficient to support wetland vegetation or aquatic life.

86. Weir: A notch of regular form through which water flows. The term is also applied to the structure containing such a notch. A weir may be a depression in the side of a tank, reservoir, or channel, or it may be an overflow dam or other similar structure.

B. Permit Application Requirements and Review Procedure:

1. Conceptual Review Prior to Permit Application

a. Contact the Drain Commissioner's Office and/or Gratiot County web site (http://www.gratiotmi.com/201/Drain-Commissioner) to obtain the latest version of the Administrative Guidelines.

b. Prior to the permit application, the Owner/Developer shall submit to the Drain Commissioner or his designee the conceptual design and layout of the proposed development. The Developer/Owner shall also submit copies of the conceptual design and layout to the Township or Municipality where the development is proposed for preliminary review and comment. This conceptual design and layout, at a minimum, shall include the following items:

- Small location map showing the section and part of the section in which the site is situated,
- Location and description of all activities that may impact or be impacted by the proposed development or redevelopment both on and off the site,
- Acreage of the total site and acreage of the area being effected by the development, and
- If known, a conceptual layout of the proposed drainage system for the development or redevelopment.

The Owner/Developer or the Design Engineer shall submit information including a description of the drainage district/watershed, allowable discharge, impervious factor, etc. with the conceptual design and layout of the proposed development.

c. The Drain Commissioner or his designee and/or the township or municipality where the development is located will review the conceptual design information to determine if it is consistent with these Guidelines and applicable local agency ordinances. All site plans must meet local zoning ordinances.

d. The Owner/Developer and the Design Engineer must meet with the Drain Commissioner and/or his designee, the Gratiot County Road Commission, the Gratiot County Permits Office, the Township or Municipality, and applicable utility companies where the project is proposed. The intention of these meetings is to obtain uniform direction and communication to minimize misdirection of early construction and minimize financial losses to proprietors, developers, and consultants.

e. If the conceptual layout of the storm drainage system is approved, the Owner/Developer shall begin completing final design plans and calculations for application submittal under these Guidelines.

2. Permit Application Submittal

The Owner/Developer or the Design Engineer on behalf of the Owner/Developer shall submit permit applications to the Drain Commissioner. Application for a permit shall be made prior to the start of any work on the proposed development requiring a permit under these Guidelines. Soil test borings, vegetative cutting solely for land surveys, percolation tests, and normal maintenance shall not be considered a start of work under these Guidelines.

3. Sequential Applications

For projects on a site which are so large or complex that a plan encompassing all phases of the project cannot reasonably be prepared prior to initial work, application for permit on successive major construction activities may be allowed. Requests for sequential applications shall be approved by the Drain Commissioner prior to submittal of the initial permit application.

4. Application Submittal Requirements

a. The Owner/Developer or Design Engineer shall submit two sets of plans, two sets of calculations, and any other supporting information for the site to the Drain Commissioner or his designee with the application. Alternatively, applicant may submit information via email to the Drain Commissioner's Office. Contact the Drain Commissioner's Office to obtain the appropriate email address. One set of plans must be submitted to the Drain Commissioner's office and one set must be submitted to the reviewing engineer. The plans and calculations shall comply with the requirements of these Guidelines. The checklist, design requirements, and design guidelines that will be used during the review process of the drainage construction plans are established by these Guidelines. The application submittal shall include the following items:

- The location of the development site and water bodies that will receive storm water runoff;
- The existing and proposed topography, if required, of the development site, including the alignment and boundary of the natural drainage courses, with contours having a maximum interval of 1 foot (using USGS datum). The information shall be superimposed on the pertinent Gratiot County soil map;
- The development tributary area to each point of discharge from the development;
- Calculations for the final peak discharge rates;
- Calculations for any facility or structures size and configuration;

- A drawing showing all proposed stormwater runoff facilities with existing and final grades;
- The sizes and locations of upstream and downstream culverts serving the major drainage routes flowing into and out of the development site. Any significant off-site and on-site drainage outlet restrictions other than culverts should be noted on the drainage map;
- An implementation plan for construction and inspection of all stormwater runoff facilities necessary to the overall drainage plan, including a schedule of the estimated dates of completing construction of the storm water runoff facilities shown on the plan and an identification of the proposed inspection procedures to ensure that the stormwater runoff facilities are constructed in accordance with the approved drainage plan;
- A plan to ensure the effective control of construction site storm water runoff and sediment track-out onto roadways;
- Drawings, profiles, and specifications for the construction of the stormwater runoff facilities reasonably necessary to ensure that storm water runoff will be drained. stored, or otherwise controlled in accordance with these Guidelines.
- The name of the engineering firm and the Design Engineer that will inspect final construction of the storm water runoff facilities;
- Deposit/fee for plan review and inspection in accordance with the fee schedule provided herein; and
- Any other information necessary for the Drain Commissioner or his designee to verify that the drainage plan complies with these Guidelines. All design information must be compatible for conversion to the Gratiot County Geographic Information System.
- No meeting will be considered until a deposit for review has been received.

b. A maintenance agreement, in form and substance acceptable to the Drain Commissioner, shall be required for ensuring maintenance of any privately owned stormwater runoff facilities. The maintenance agreement shall include the Owner/Developer's written commitment to provide routine, emergency, and long-term maintenance of the facilities and, in the event that the facilities are not maintained in accordance with the approved drainage plan, the agreement shall authorize the Drain Commissioner to maintain any on-site stormwater runoff facility as reasonably necessary, at the Owner/Developer's expense. The completed, signed, notarized recordable maintenance agreement shall be submitted to the Drain Commissioner's office along with the applicable fee on the Gratiot County fee schedule. Hard copy is to be picked up at the Gratiot County Drain Commissioner's office.

5. Permit Application Review

The Drain Commissioner or his designee will review all plans, calculations, and other information for compliance with these Guidelines. All materials will be reviewed for completeness. Calculations will be checked. The minimum design requirements and

- Guidelines as outlined in these Guidelines will be used as a reference. The drainage plan checklist will be reviewed. The Drain Commissioner shall approve, approve with conditions, or disapprove an application within 21 days. The review period begins upon the receipt of a completed application, plan and fees. Copies of the approval, approval with conditions, or disapproval will be provided to the Township or municipality where

the proposed development is located**. THE GRATIOT COUNTY DRAIN COMMISSIONER AND/OR HIS AGENT OR DESIGNEE DOES NOT ACCEPT ANY LIABILITY FOR THE DESIGN OR FUNCTION OF THE STORMWATER COLLECTION AND RETENTION/DETENTION SYSTEM. THE REVIEW IS FOR COMPLIANCE WITH THE ADMINISTRATIVE GUIDELINES FOR STORM WATER MANAGEMENT ONLY. IT IS THE REGISTERED PROFESSIONAL ENGINEER THAT HAS SIGNED AND SEALED THE FINAL PLANS AND/OR THE APPLICANT'S RESPONSIBILITY FOR THE FUNCTIONALITY OF THE DESIGN.**

a. Upon a determination by the Drain Commissioner or his designee that the permit application has met all of the requirements of these Guidelines, the Drain Commissioner will issue a permit specifying the work approved. An $8^1/_2$ x I 1 weatherproofed permit must be posted on the site in plain view, along with an approved soil erosion and sedimentation control plan permit which must be obtained from the Gratiot County Permits Office. The Drain Commissioner shall notify the Owner/Developer of the approval or approval with conditions. An executed and signed maintenance agreement must be forwarded to the Gratiot County Drain Commissioner's Office. The Owner will be emailed (or mailed hard copy) an approval letter.

b. If the proposed drainage system is disapproved, four sets of plans and calculations may be resubmitted with the appropriate revisions.

c. Approval or Approval with Conditions. Upon a determination by the Drain Commissioner or his designee that the application has met all of the requirements of these Guidelines, the Drain Commissioner or his designee will issue a letter specifying the work approved and a permit that is to be posted on the site. The Drain Commissioner or his representative shall notify the Owner/Developer or authorized representative of the approval or approval with conditions via email. If original copies are required, please respond to email approval and original hard copies will be mailed by USPS first class mail.

d. Disapproval. If the proposed drainage system is disapproved, two sets of plans and calculations may be resubmitted with the appropriate revisions,

e. Multiple-Phase Projects. When additional phases are planned, an approval with conditions will be given addressing the overall stormwater requirements of the site. The Drain Commissioner encourages submittal of all phases of a multi-phased project at the onset of a proposed project.

6. Changes to Plan after Approval

a. Any proposed changes made to the approved plan shall be submitted to the Drain Commissioner and/or his designee for review and approval. Changes made without approval may result in revocation of approval. Revocation of the SESC permit may also be considered.

b. Upon receipt of this information, the Drain Commissioner will determine whether additional information, such as calculations, will be required or whether modifications to the permit will be necessary.

7. Global Positioning System (GPS) Location and As-Built Drawings

A deposit in accordance with the Gratiot County fee schedule will be required prior to issuance of a permit. The fee will be returned when the Geographic coordinates based upon the Michigan State Plane Coordinates, international feet, are certified by a licensed Engineering or Surveyor to have a horizontal and positional accuracy of 3 feet or better, and are provided for the outlet of the drainage system and on the as-built drawings to the Drain Commissioner's office. If the information is not obtained within 90 days after completion of the construction or within one (1) year of the issuance of the permit (upon expiration of the permit), then the Drain Commissioner will complete the as-built drawings and the GPS coordinates coordination, and the deposit will be forfeited.

8. Permit Expiration

Permits shall expire automatically upon the project completion date provided on the permit. Permits shall also terminate automatically if construction has not commenced within one year of the date of issuance. The Drain Commissioner may extend a permit for a period not to exceed one year upon the request of the Owner/Developer at the Drain Commissioner's discretion.

9. Permit Revocation

Any permit issued by the Drain Commissioner under these Guidelines may be revoked or suspended if there is a violation of the conditions of the permit or if there is a misrepresentation or failure to disclose relevant facts in the application submittal. The Drain Commissioner will provide the Owner/Developer notice of any revocation of the permit via email followed by an original copy by USPS first class mail.

10. Appeal Process

If a Developer does not agree with the rules of the Administrative Guidelines for Stormwater Management of the Gratiot County Drain Commissioner, the Developer will contact the County Board of Commissioners and request to overrule the Gratiot County Drain Commissioner, thereby modifying the requests for the site development. A letter from the Municipality requesting that the Drain Commissioner not require the site development to comply with the requirements within the Administrative Guidelines must be obtained. In the event that there is another local governmental entity(s) within the drainage district, the effected governmental entity(s) will be notified of the request.

11. Other Permits and Approvals

Approvals under these Guidelines shall not relieve Owner/Developer of the need to obtain other applicable permits or approvals as required by federal, state, county and local agencies. Examples of other permits or approvals that may be required include:

a. Permits to Connect

a. Permits to Connect to existing open drain or storm sewer requires a 72-hour notice to the Gratiot County Drain Commissioner's office prior to installation.

b. The Gratiot County Permits Office is the County Enforcing Agent for Gratiot County, (989) 875-5201, and a permit must be obtained when applicable for Soil Erosion and Sedimentation Control (SESC). Except for the City of St. Louis, where a permit can be obtained at the permits office within the City of St. Louis, (989) 681-2137.

c. Site Plan Approvals. Municipalities and/or townships may have an ordinance(s) in place; check with local authorities. All site plans must meet local zoning ordinances.

d. Gratiot County Road Commission has or shares jurisdiction over drainage along county roads and county rights-of-way within Gratiot County. Sites located along county road rights-of-way and discharging to Road Commission drainage systems must obtain a permit from the Road Commission. When a crossing is installed over a county roadside drain, a permit must be obtained from the Road Commission. An application is included in Appendix A.

e. Michigan Department of Transportation (MDOT) has or shares jurisdiction over drainage along state highways and state rights-of-way within Gratiot County. Sites located along MDOT rights-of-way and discharging to MDOT drainage systems must obtain a permit from MDOT.

f. Michigan Department of Environmental Quality (MDEQ)
(Joint permit with the USACE) which has jurisdiction over proposed work within the 100-year floodplain, inland lake and stream areas, navigable waterways, critical dunes, and wetland areas. A permit must be obtained for work proposed in these areas. In addition, the MDEQ is responsible for implementing the National Pollution Discharge Elimination System (NPDES) Storm Water Permitting Program.

C. Inspection Requirements:

Inspection of storm drainage systems and/or detention facilities is required on all development and redevelopment projects. As-built drawings will be required on all projects prior to final inspection. Descriptions of the inspection requirements are outlined below. The fees associated with this inspection are provided in the Gratiot County fee schedule. It is not the intent of these Guidelines to review single-family residential development.

1. <u>Developments</u> - Site inspections of the storm drainage, outlet, and detention storage areas will be required. These inspections will occur during construction as determined necessary by the Drain Commissioner or his designee. The Owner/Developer and/or the Design Engineer will be informed at what stage of construction these inspections will be required. The Drain Commissioner or his designee shall be informed 72 hours in advance for these site inspections. Daily inspection reports will be completed by the Design Engineer as needed. At a minimum, the inspection reports will include the information shown on the sample daily inspection report included in the Appendix.

A final inspection by the Drain Commissioner or his designee will take place at the completion of the project after as-built drawings have been received by the Drain Commissioner or his designee. A final inspection report (See Appendix) will be completed by the Drain Commissioner or his designee. Subsequent inspections may be required if deficiencies exist.

2. **Residential and Condominium Projects** - Inspection of storm drainage and drainage system construction will be required. This inspection shall be performed by the Design Engineer or the Drain Commissioner or his designee as determined by the Drain Commissioner. Daily Inspection reports shall be completed for all days on which construction of the storm drainage system occurs. Copies of these reports shall be submitted to the Drain at the beginning of each week. At a minimum, the daily inspection reports shall include the information shown on the sample daily inspection report included in the Appendix. Subsequent inspections may be required if deficiencies exist.

   A final inspection by the Drain Commissioner or his designee will take place at the completion of the project after as-built drawings have been received by the Drain Commissioner or his designee. A final inspection report (See Appendix) will be completed by the Drain Commissioner or his designee. Subsequent inspections may be required if deficiencies exist.

3. **Redevelopment Projects** - Site inspections of the storm drainage, outlet, and detention storage areas will be required. These inspections will occur during construction as determined necessary by the Drain Commissioner or his designee. The Owner/Developer and/or the Design Engineer will be informed at what stage of construction these inspections will be required. The Drain Commissioner or his designee shall be informed 72 hours in advance for these site inspections. Daily inspection reports will be completed as needed. At a minimum, the inspection reports will include the information shown on the sample daily inspection report included in the Appendix.

   A final inspection by the Drain Commissioner or his designee will take place at the completion of the project after as-built drawings have been received by the Drain Commissioner. A final inspection report (See Appendix) will be completed by the Drain Commissioner or his designee. Subsequent inspections may be required if deficiencies exist.

4. Any infrastructure that would come under the jurisdiction of the Gratiot County Drain Commissioner must be inspected at the time of installation. If a take-over of an existing stormwater system is requested, as-built drawings must be accompanied by recent video documentation and reviewed, accepted, and submitted by a licensed Professional Engineer (P.E.), registered in the State of Michigan.

D. Fees:

All fees required by these Rules and Guidelines shall be set by the Gratiot County Board of Commissioners and will be available in a corresponding fee schedule.

III. STORM DRAINAGE SYSTEMS WITHIN GRATIOT COUNTY

The County Drain Commissioner encourages the use of Low Impact Design (LID) approaches to manage storm water. Such approaches may include pervious pavement, rain gardens, green roofs, etc. Some of the following requirements can and will be waived if a LID approach is taken. For example, the requirement for a 1.0 foot of freeboard may be reduced to 0.5 feet if a proposed detention basin is designed and constructed as a wetland complex, rain garden, or other LID approach. The proposed type of site development should be reviewed at the design concept

review meeting with the Municipality and the Drain Commissioner to evaluate the design options.

The County Drain Commissioner encourages the implementation of regional stormwater detention basins and/or the sharing of detention basins between two or more developments. Several areas within Gratiot County are not incorporated into established country drainage districts. The Michigan Department of Environmental Quality, Michigan Department of Transportation, or the Gratiot County Road Commission regulates storm flow areas that are not Gratiot County drainage districts. (See Section II.B.11. - Permits and Approvals).

A. Allowable Discharge (Qa)/ Detention Requirements

The peak stormwater discharge from any proposed development or redevelopment as required in these Guidelines shall be restricted to an allowable discharge (Qa). The allowable discharge from the proposed area of development or redevelopment cannot exceed the calculated discharge from the proposed site based on one of the following methods. The method resulting in the lowest allowable discharge from the site shall be used in determining the required detention.

a. 0.15 cubic feet per second per acre of contributing area. <i.e. 0.15 cfs/acre*10-acre site = 1.5 cfs Qa

b. The existing discharge from the site calculated under the existing design storm for the 10-year recurrent interval as calculated with the Rational Method. Qa=CIA

c. The percentage of capacity available in the downstream receiving storm drainage and/or water course, i.e. capacity of outlet storm drainage is 10 cfs, there is a total of 100 acres within the contributing district, the proposed site has 20 acres (20 acres of site/I00 acres of contributing watershed * 10 cfs, capacity = Qa of 2 cfs).

Excess storm water runoff must be detained on site. Equations for determining the required volume of detention storage are outlined in Section IV. Detention storage calculations must be included with review submittals.

B. Stormwater Detention Requirements:

The stormwater detention storage required for a site is to be calculated using the Gratiot County Drain Commissioner's excel spreadsheet, which can be obtained at http://www.gratiotmi.com/201/Drain-Commissioner. This must meet the 25-year maximum storage storm. The allowable discharge is a maximum of 0.15 cfs per acre unless there is a restricted outlet condition based upon the above referenced allowable discharge requirements.

If there are known existing flooding problem areas that will be impacted by a proposed development, the required detention volume will be 6.15 inches of runoff (100-year storm event).

In order to meet the stormwater quality discharge requirements of Phase II of Section 10 of the Clean Water Act and to meet the Environmental Protection Agency's stormwater guidelines, designs must provide for storm water treatment. This can be accomplished by implementation of one of the following measures:

1. On systems that utilize a stormwater detention basin a sediment forebay retention area can be utilized within the detention facility. This retention area is required in addition to the stormwater detention requirements equal to 0.5 inches of runoff from the site area (See the calculation spreadsheet in the Appendix). The forebay must be designed to remove a minimum 80% of total suspended solids.
2. Rain gardens or an equivalent low impact design approach can be utilized that provides a soil or media filter for the water prior to entering the storm drainage system or storm detention system. The utilization of this type of treatment measure does not require the additional capture of 0.5 inches of runoff above the detention requirement for the site.
3. Mechanical treatment devices designed to remove suspended solids and other debris. Mechanical treatment devices include specially designed treatment units that will remove 80% of the total suspended solids for a 2-year 24-hour storm event.

C. Discharge Restrictor Requirements:

Restrictors are required to regulate the discharge of storm water to the allowable discharge rate established for a site. The circular in-line restrictor is sized based on the orifice formula.

$$a = Qa/[\ 0.62\ (64.4(h))^{1/2}\ I$$

a = area of orifice (square feet).

1111 = head differential from center of orifice to Hydraulic Grade Line of detention pond at maximum capacity, (feet).

D. Stormwater Retention Requirements:

Stormwater retention basins/systems must be designed to store runoff of the 100-year 24-hour storm event. The rainfall amount for the 100-year storm is 6.15 inches. Retention calculations must be completed using the Gratiot County Storm Water Management Guidelines Spreadsheet (Appendix D).

One soil boring must be provided for each 5,000 square feet of retention basin proposed, unless otherwise determined by the Drain Commissioner based upon known/presented conditions. A practicing soils engineer must evaluate the borings to assure that there is adequate hydraulic capacity of the soils to receive the proposed storm water. The capacity of the site soils must be a minimum of 0.15 cfs X the contribution acreage (i.e. contributing area 10 acres X 0.15 cfs = 1.5 cfs.). Reduction in the retention volume for systems with higher infiltration capacities will not be allowed. The existing seasonally high-water table must be below the bottom of the proposed basin/system to assure that there is an adequate hydraulic outlet.

IV. MINIMUM DESIGN REQUIREMENTS AND GUIDELINES FOR STORM DRAINAGE SYSTEMS

The following is an outline of requirements for the design of stormwater management systems. Engineering judgment must be utilized to accomplish the overall goals of these Guidelines.

A. Requirements:

1. General Requirements

a. Stormwater detention requirements for any new construction development, redevelopment, or land use change occurring within Gratiot County will be determined according to the storm water discharge permit procedure.

b. A stormwater discharge permit will be required for all site development and demolition except residential sites for single-family or two-family dwellings on any parcel of one acre or less in size. The County may require side lot or rear lot drainage to be installed if the County determines it necessary. This activity will be regulated under the building permit.

d. The peak runoff rate during a 10-year storm event from a developed or improved site shall not exceed the allowable discharge rate (Qa). This rate is determined using the design impervious factor ()F) established by the County for the site. The impervious factor of demolished sites is assumed 0%. Either detention storage with a regulated discharge must be provided or all impervious surfaces must be removed from the site.

e. There shall be no detrimental effect on the floodway or the floodplain elevation during a 25-year design storm upstream or downstream of the proposed development area as a result of the proposed development.

f. The drainage area used for computation will be the total area tributary to the site outlet, including off-site properties that drain onto the site.

g. Engineering calculations must be submitted with the stormwater discharge permit application. The calculations shall follow the procedures outlined in this document.

h. Roof drains may be connected to a sewer system if the flow through the outlet to the County system is properly treated and restricted. Unrestricted runoff from roof drain will not be accepted; there are no exemptions.

i. The Drain Commissioner and/or designee shall make a determination as to whether any or all of the facilities proposed are to become private or part of the Gratiot County Drainage system or any other regulating agency.

j. The Drain Commissioner and/or designee shall in the case of a proposed subdivision, make a determination as to those control elevations that shall be entered on the final plat or make a determination as to the necessity for deed restrictions on any particular

lot in the subdivision requiring the preservation of mandatory drainage facilities. Where a non-subdivided parcel of land is proposed for development, the Drain Commissioner and/or designee shall make a determination as to the need for covenants to maintain responsibility for mandatory drainage facilities. All the facilities in the subdivision shall be located in easements dedicated to the public, and shall be subject to continual inspection during the construction period. All drainage systems and detention facilities within proposed subdivision or condominium developments shall be established as county drains under the Drain Code of 1956, MCL 280.1 *et seq.,* as amended.

Proposed storm drainage enclosures must be designed so they will not adversely impact any adjacent properties, upstream or downstream, and must be designed to the impervious factors of the lands based upon future land use, not necessarily existing conditions.

k. SESC measures must be implemented.

2. <u>Storm Drainage Piping Requirements</u>

a. Proposed storm drainage shall be designed to have minimum capacity to pass 10-year design storm runoff rate (Qd).

b. All storm drainage materials must comply with the authority having jurisdiction over the storm drainage system.

c. Provide two (2) feet minimum cover or comply with the authority having jurisdiction over the storm drainage system.

d. Provide twelve (12) inch vertical separation between all other public utilities including sanitary drainages and water mains.

e. Provide ten (10) feet horizontal separation from other public utilities.

f. Manholes/catchbasins shall be placed at a maximum distance of four hundred (400) feet from any other manholes/catchbasins for access/maintenance purposes.

g. Provide a sump discharge outlet for each individual lot or all developments. This outlet shall be a catchbasin (minimum four (4) feet diameter) and/or provide a stormwater lead to each lot. Manufactured tees or cored and booted leads, six (6) inch minimum to each lot are acceptable.

h. Minimum pipe grades must be such to produce minimum couring velocity of 2.5 ft/sec when pipe is flowing full without surcharging.

i. For storm drainage systems, plastic pipe may be used. This plastic pipe shall be either schedule 80 PVC, smooth walled HDPE, or SDR 35. If pipe is perforated a manufacturer's "Sock" shall be used over the pipe.

j. Minimum pipe diameter for catchbasin leads is twelve (12) inches.

k. Minimum pipe size for storm drainage is twelve (12) inches.

l. Pipe should be sized for a 10-year design storm without surcharging when possible.

m. When two pipes or more of different sizes come into a structure, the 8/10th flow lines shall match when possible.

n. Catchbasins should have a minimum sump depth of twenty-four (24) inches.

o. Minimum diameter of catchbasins shall be four (4) feet.

3. <u>Detention Requirements</u>

a. Proposed storm drainage detention facilities shall be designed to have capacity to detain at minimum the 25-year recurrence interval design storm runoff volume in excess of the allowable discharge from the site. The detention requirement must be discussed with the County Drain Commissioner and/or designee. There are areas within the county that are more restrictive than the 25-year recurrence interval.

b. The maximum design storage elevation in a detention area must be a minimum of 1.0 foot below the lowest ground elevation adjacent to the detention area. The 0.5-foot freeboard requirement may be eliminated if LID measures are utilized for the stormwater detention. Examples of LIDs include rain gardens, pervious pavement, underground detention storage, green roofs. The freeboard requirement will be discussed at the pre-design meeting and adjusted accordingly to account for the LIDs proposed. The Municipalities and the County Drain Commissioner also want to encourage the implementation of regional stormwater detention basins and/or the sharing of detention basins between two or more developments. The 1.0 foot of freeboard requirement will be waived for basins that service two or more properties.

c. The design maximum storage elevation in a detention area must not be closer than 12 inches below the minimum finish floor elevation of the proposed structure(s) or existing facilities.

d. Designs of detention facilities will incorporate features that facilitate their inspection and maintenance. The designer shall submit an Operation and Maintenance (O&M) Plan and/or provide maintenance agreement, as necessary, for any detention facility prior to its acceptance by the County.

e. Designs of detention facilities shall incorporate safety features, particularly at inlets, outlets, on steep slopes, and at any attractive nuisances. These features may include, but not be limited to, fencing, handrails, lighting, steps, grills, signs, and other protective or warning devices so as to restrict access. If the Owner/Developer does not implement recommended safety features, liability for the detention facilities will be the responsibility of the Owner/Developer.

f. Side slopes and the bottom of detention basins shall be fop soiled, to a minimum of 3 inches, and seeded. Soil erosion control blankets must be installed to protect slopes if adequate vegetation does not exist between September 1" to May 1".

g. The side slopes and bottom of the basins shall be shaped with maximum slopes of 1 vertical to 4 horizontal to allow mowing of these surfaces.

h. Detention basins and restrictors shall be maintained as necessary. The owner will have 30 days to complete necessary maintenance on a detention basin that has not been maintained or a restrictor that has been removed or not maintained. If this maintenance is not completed, the County will have any necessary maintenance completed at the Owner's expense, unless other arrangements have been agreed to in writing in an executed maintenance agreement.

i. Detention basins shall be constructed with the top of banks a minimum of 5 feet from any pedestrian walkway (i.e. public and private sidewalks/bike paths).

Underground stormwater detention systems will be accepted. Stormwater cleaning structures will be required at the inlets of these basins.

4. <u>Rear Lot Drainage Requirements</u>

a. Rear lot tile drains with contributing drainage areas up to one-half acre shall have a minimum diameter of 6 inches and a minimum pipe slope of 0.5 percent.
b. Rear lot tile drains with contributing drainage areas greater than one-half acre and less than 1 acre shall have a minimum diameter of 8 inches and a minimum pipe slope of 0.3 percent.
c. Rear lot tile drains with a contributing area greater than 1 acre shall be considered main line storm drainage and shall be designed according to corresponding requirements. Calculations shall be submitted to verify the rear lot drains have the capacity to pass the 10-year design storm event.
d. All lots must be provided with rear lot drainage.
e. Rear lot drainage tiles shall have a minimum cover of 2 feet.
f. The Drain Commissioner and/or designee shall approve rear lot drainage tile and catchbasin material. The minimum diameter of a rear lot catchbasin shall be 2 feet.

B. General Compliance Guidelines:

The following guidelines are recommended, but are not a requirement of this plan. These guidelines are provided for reference.

1. <u>Minimum Surface Slopes</u>

a. The minimum surface slopes for overland drainage are as follows:

- For bituminous paved surfaces, 1 percent.
- For concrete paved surfaces, 0.5 percent.
- For concrete curb and gutter, 0.28 percent.
- For drainage swales and valley shaped ditches, 0.5 percent.
- For rear lot drainage swales and valley shaped ditches, 0.5 percent.
- Landscape grading, 2 percent.

2. Maximum Surface Slopes

a. The maximum surface slopes for overland drainage are as follows:

- For bituminous, concrete paved surfaces, 6 percent.
- For concrete curb and gutter, 6 percent.
- For drainage swales and valley shaped ditches, 6 percent.
- For rear lot drainage swales and valley shaped ditches, 5 percent.
- Drainage swales and valley shaped ditches shall have maximum side slopes of 3 horizontal to 1 vertical.
- Landscape grading, 1 vertical to 4 horizontal.

C. Variations from Requirements:

1. Discharge and/or Detention Requirements Waivers

The Drain Commissioner may issue a stormwater discharge permit that waives allowable discharge requirements and/or detention requirements. Variation from these requirements shall require the approval of Gratiot County Drain Commissioner whose actions shall be conditioned upon the following:

- The Drain Commissioner has determined that the overall stormwater management for drainage system is best suited to allow the site to drain unrestricted so that the timing of the discharge will not adversely impact upstream lands;

- The Owner/Developer shall provide evidence in writing outlining in detail the rationale for the proposed design changes including hydraulic and or hydrologic computations. This document must be signed and sealed by a licensed professional engineer; and

- Granting of the variance will not be detrimental to the public health, safety, or welfare, or injurious to other property in the territory in which said property is located.

V. CROSSINGS, CONNECTIONS AND ENCROACHMENT PERMITS

All persons intending to cross, to connect, or to encroach upon a drain or drain easement must apply for and obtain a permit from the Gratiot County Drain Commissioner prior to commencement of any proposed work. Crossing permits are required to cross over or under a drain, or to install a culvert in a drain. Connection permits are required to connect to or tap into an open or enclosed drain or any of its structures for purposes of discharging stormwater. Any use of a drain easement or right of way that will interfere with the operation of the drain or will increase the cost to the Drainage District of performing any maintenance or improvement to the drain is deemed to be inconsistent with the easement. In such a case, a Permit to Encroach may be issued at the discretion of the Gratiot County Drain Commissioner upon such conditions, as the Gratiot County Drain Commissioner considers appropriate to protect the Drainage District's ability to maintain and improve the drain.

The following items apply to Crossings, Connections, and Permits to Encroach:

1. Permittee will release, waive, and discharge Gratiot County and the Gratiot County Drain Commissioner, its employees and agents, and the drainage district from any and all liability to permittee arising under or in any manner related to the privileges granted under the permit.

2. With acceptance of the permit, the property owner agrees to hold harmless, indemnify, and defend Gratiot County and the Gratiot County Drain Commissioner, its employees, agents and the drainage district from any and all claims for injury to persons or property arising from the permitted crossing of or connection to the drain.

3. Permittee is required to obtain all Federal, State, and local permits necessary prior to construction, and to provide copies to the Gratiot County Drain Commissioner. The Gratiot County Drain Commissioner reserves the right to require copies of environmental permits prior to crossing permit issuance.

A. Crossings:

1. General Crossing: Crossing means going through, under, or over the right of way of an established county drain. All crossings must comply with the requirements in these Rules.

a. A complete application includes a completed form, payment of applicable fees, and three copies of a scaled drawing, sealed by a registered professional engineer, of the crossing in both plan and profile perspective showing the vertical separation distance and the width of the drain easements. This requirement for an engineer's seal may be waived for residential and agricultural crossings.

b. Crossings must not interfere with safe maintenance and/or improvement of the established drain.

c. A Drain Office inspector must be present at all times during any crossing construction. The drain office must receive notice three (3) business days before the inspection services are required.

d. Upon completion of the construction of the crossing, the permittee must provide the Gratiot County Drain Commissioner with a certified "as-built" of the crossing. If at any time it is determined that the facilities were installed inconsistent with the approved plan, or with any written approved changes to the plan, permittee shall be responsible for all costs associated with reconstruction of said crossing to comply with the terms of the permit.

e. The permit holder must provide confirmation of elevations to the nearest 0.1 foot.

f. Soil borings may be required at the discretion of the Drain Office.

g. The permit shall be posted at the site of the work and available for inspection at all times during the construction.

h. Permanent markers must be installed above all crossings at the edges of the right-of-way or as close to that as possible.

i. All utilities crossing easements shall be encased in larger pipes detectable by a metal detector.

2. Culvert Crossing:

a. Any application for crossings involving culverts shall include upstream and downstream elevations and hydraulics, and on the plan shall include measures for re-establishment of the stream bank and erosion control at the culvert ends. Flared end sections may be required along with additional information including, but not limited to elevations, size of upstream and downstream culverts, and confirmation of elevation of established drain.

b. All culverts are privately owned and installed at the owner's expense.

c. The Gratiot County Drain Commissioner's office will approve the culvert size. Oval shaped pipes may be used when elevations are critical. Pipes must be installed according to manufacturer's specifications.

3. Other Drain Crossings:

a. Drain crossings must be at least ten (10) feet below the elevation of the drain as it was established (the invert elevation for enclosed drains must be used) for the entire width of the easement. All crossings over a drain will be reviewed and requirements determined on a case-by-case basis.

h. All crossings of open drains must be bored or directional drilled unless special permission is obtained from the Gratiot County Drain Commissioner. If special permission is received, additional standards will be required, including but not limited to standards which will maintain the hydraulics of the drain, reconstruct the drain to its established-profile, temporarily and permanently stabilize the earth disturbance, and post bonds to insure that all work is completed.

c. Open cut crossings require washed aggregate backfill compacted to 95% modified proctor.

d. Special permission can be given by the Gratiot County Drain Commissioner for encasement of utility lines in concrete or sleeve with ductile iron pipe when crossing under the drain.

e. In no case will less than 18 inches of separation be allowed.

f. Sanitary sewers must be ductile iron pipe for the full width of the drain maintenance easement.

B. Connections:

1. All persons requesting a connection to a county drain must have permission from the Gratiot County Drain Commissioner. The Gratiot Drain Commissioner on a case-by-case basis will determine requirements for residential and agricultural applications.

2. Each connection requires a Permit to Connect or Agreement.

3. The Permit to Connect process includes submission of a completed application, three copies of the required drawings, and payment of all applicable fees. All inspection fees must be paid prior to permit approval.

4. Inspection by the Drain Office at the time of connection is required. A 72-hour notification must be provided.

5. Stormwater leads connected into manholes, catch basins, and pipes must be cored and lined with a rubber boot.

6. A scale drawing of the connection in plan and profile view must be submitted with the application showing: the diameter of the pipe; diameter of the hole to be cored; the type of boot for stormwater lead; the method of connecting to the boot; location of any other pipes in the structure; backfill material 6" around the pipe for two feet from the structure; and compaction of backfill material adjacent to the structure to 95% of modified proctor density.

7. All connections to an open drain require a rodent guard.

8. Outlets to ditches will be placed at the average low water elevation of the watercourse. Outlet velocities will be non-erosive.

C. Permits to Encroach:

All encroachments in drain maintenance easements for structures or land use changes that impair or impede the maintenance of the drain shall be reviewed and approved by the Gratiot County Drain Commissioner. The written documentation supporting a permit shall be prepared by the Gratiot County Drain Commissioner's Office or can be prepared by the property owner and reviewed by the Gratiot County Drain Commissioner's Office on a case-by-case basis. All costs associated with the review and/or preparation of a Permit to Encroach shall be the responsibility of the applicant of the Permit to Encroach.

If said encroachment creates an increase in the maintenance costs, the property requesting the encroachment is subject to an increased assessment reflective of that cost.

D. Variances:

Variances may be granted by the Gratiot County Drain Commissioner upon a finding of practical difficulty, hardship or physical constraint of a property, not self-created that makes it infeasible to fully comply with these Rules and Guidelines. Variances may also be granted upon a finding that proposed improvements do not comply with these Rules and Guidelines but are in accordance with intent and purpose. The burden is on the applicant/proprietor/landowner to demonstrate to the Gratiot County Drain Commissioner's satisfaction one or more of these requirements for granting a variance. Variance requests shall be submitted in writing.

VI. RULE INTERPRETATION

Nothing in these Rules shall be interpreted as precluding the Gratiot County Drain Commissioner from including additional requirements to any request or from modifying or rejecting any proposed plan or work involving any item within the Gratiot County Drain Commissioner’s jurisdiction.