

MIDDLE-SNAKE-TAMARAC RIVERS WATERSHED DISTRICT

Amended Rules

Adopted: _____ 2017

THESE RULES INCLUDE PERMIT AND DRAINAGE GUIDANCE

The Board of Managers of the Middle-Snake-Tamarac Rivers Watershed District reviews and takes action on Permit applications at regular meetings and special meeting convened for the purpose of reviewing applications. All applications require a minimum of business days' review prior to consideration.

PERMIT APPLICATIONS MUST BE FILED WITH THE DISTRICT AT LEAST SIX (6) BUSINESS DAYS PRIOR TO THE MEETING AT WHICH THE APPLICATION IS TO BE CONSIDERED

If you have questions, please call 218-745-4741, or email info@mstrwd.org.

If you experience or are experiencing a drainage or flooding **EMERGENCY**, call the District administrator at 218-230-5703.

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II. Introduction

The Middle-Snake-Tamarac Rivers Watershed District (MSTRWD) was established by order of the Minnesota Water Resources Board on August 28th, 1970. The district encompasses portions of Marshall, Polk, Pennington, Kittson, and Roseau Counties in Minnesota.

I. Purpose

The purpose of these Rules are to implement the intent of the Minnesota Watershed Act, more fully set forth in Minnesota Statutes Chapter 103D, as said legislation affects the MSTRWD. Said Rules are adopted pursuant to the provisions of M.S. 103D.341 and are deemed to be necessary, proper and desirable to implement the provisions of M.S. 103D in any and all provisions for which the District was established.

II. Adoption of Rules

The Board shall comply with the following procedure in adopting rules.

- I. A copy of the proposed rules or amendments shall be submitted to each Manager of the District at least 30 days prior to its adoption by the Board.
- II. Any proposed rule or amendments shall be adopted by majority vote of the Board after a public hearing has been held on said proposed rule or amendment. The public hearing shall be at a date, time, and place set by the Board and notice of said hearing shall be given to the public by reasonable publication in a newspaper of general circulation in each county within the Watershed District.
- III. The original copy of the rules shall be kept in the files of the District and, in addition, copies shall be prepared for distribution to the County Auditors and County Commissioners of each affected county in the Watershed District, and to the Township Board Chairmen of each township being wholly or partially in the confines of the Watershed District. Copies shall also be distributed to all cities within the confines of the Watershed District and to the appropriate regional development commissions, Commissioner of the Minnesota Pollution Control Agency, the Commissioner of the Department of Natural Resources of the State of Minnesota, the Minnesota State Department of Health, the Minnesota Environmental Quality Board, the Minnesota Department of Transportation and the Minnesota Board of Water & Soil Resources.
- IV. Each rule adopted by the Board shall have the full force and effect of law.

III. Rules

The Board shall be empowered to amend the Rules of the District. Any interested person may petition the Board for an amendment to the Rules.

IV. Inconsistent Provisions

If any Rules herein contained are inconsistent with the provisions of M.S. 103D, or other applicable laws of the State of Minnesota, the provisions of said Chapter 103D or other applicable law shall govern.

V. Severability

In the event that any section, phrase, clause, or condition of these rules is declared to be invalid by a court of competent jurisdiction, the same shall not affect the validity of these rules as a whole and only the part so declared to be invalid shall be affected.

VI. Rights of Appeal

Any person believed to be adversely affected by the adoption or enforcement of these rules, or by any action of the Board arising out of the pursuant to the adoption or enforcement of said rules may appeal from the rules or any action taken thereon in accordance with appellate procedure under M.S. 103D.

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III. Policy Statement

I. General Policy

The Board of MSTRWD accept the responsibilities with which they are charged as a governing body by Minnesota Statutes. The Board, in the conduct of the duties and responsibilities conferred upon them, do not intend to usurp the authority or responsibilities of other agencies or governing bodies, however, they will not avoid their responsibilities and obligations. It is the stated intent of the Board herein that no person shall be deprived or divested of any previously established beneficial use or right, by any rules of the District, without due process of law. All rules of this District shall be construed according to this intention. Further, it is the intention of the Board to promote the use of the waters and related resources within the District in a reasonable and orderly manner so as to improve the general welfare and public health for the benefit of the residents of the District.

II. Interrelation with other units of government

It is the stated intention of the Board to cooperate with all federal, state, and local units of government and their respective agencies in the conservation of the natural water resources for the common good of the public, and also to act as a coordinating agency for said governmental units and agencies in the development and carrying out policies, procedures, and regulations concerning water and related resources within the District.

III. Related Ordinances

In the interest of public health and to prevent pollution of the waters of the District, the applicable county ordinances and rules of the State board of Health and the Minnesota Pollution Control Agency regarding the disposal of wastes, are by references hereby adopted as rules of the District within the limits of the statutory authority granted to the Managers.

IV. Review of local ordinances before passage

Copies of proposed county, municipal and township ordinances relating to surface water drainage, flood plains, and shoreland use within the District shall be submitted to the Board thirty (30) days prior to the first public hearing for review and comment.

V. Submission of local ordinances after passage

Ordinances relating to surface water drainage, flood plains, and shoreland use shall be submitted to the Board within thirty (30) days after passage.

IV. Permits

The Permit requirements are not intended to delay or inhibit development. Rather, Permits are necessary so that the Board is kept informed of planned work, can advise Permit applicants and, in some cases, provide assistance, and can ensure that land disturbing work and development occurs in an orderly manner and in accordance with the WMP.

I. Watershed District Permits

These rules apply to all owners of property within the jurisdictional boundary of the District; to all municipalities and Road Authorities within the jurisdictional boundary of the District; to all contractors performing work subject to permitting requirements under these rules; and to the State of Minnesota and its agencies – to the extent the State has subjected itself to the jurisdiction of the District.

I. Works Not Requiring Permits

No Permit from the District is required:

- I. To perform maintenance on an existing drainageway that is not under the authority of the District, so long as the work does not remove clay or virgin soils, alter the original alignment, depth or cross-section of the drainageway.
- II. To repair or replace damaged subsurface tile drainage within a private drainageway without altering the original permitted design of the system.
- III. To perform emergency work on drainageway to avoid substantial property damage due to flooding, subsidence or other causes. Approval should be sought from the District administrator, or if the District administrator cannot be contacted, the District must be notified, in writing, of the work and the reasons for emergency work as early as possible and within ten days of having performed the emergency work (i.e., the District must be notified prior to or within ten days following the performance of emergency work).
- IV. To disturb surface soils in the course of ordinary cultivation or other agricultural work.
- V. Nothing herein shall relieve the applicant of the responsibilities of obtaining any other authorization required by law or regulation, or alter the applicant's responsibility or liability under statutory or common law.

II. Works Requiring Permits

A Permit shall be obtained from the District prior to any work being commenced for:

- I. Any sanitary sewer, storm sewer or other major utility works contemplated by any political subdivision within the District
- II. Waste disposed of directly or indirectly into a natural or legal drainage system.
- III. Any public street, road, or highway construction work which by means of its construction has any effect on the quantity or quality of water runoff, or any other type of construction which may affect runoff or disposal site quantity or quality.
- IV. Any subsurface tile drainage system.
- V. Any subsurface tile drainage pump being changed or replaced to any capacity other than that originally permitted.

- VI. Any works which include dredging, draining or filling of any wetlands. (A Permit granted by the Board does not relieve an applicant from complying with all other laws, rules, and regulations concerning wetlands. See Appendix I for a list of potentially relevant government agencies)
- VII. Any bridge, dike, levee, culvert or drainageway across any natural drainageway, lake, or marsh.
- VIII. Any diking, excavating, levee construction or grading adjacent to any natural drainageway, lake or marsh. (This language does not apply to the regular maintenance of roadways).
- IX. All water uses other than for domestic purposes, provided however that a Permit shall not be required for the reasonable taking of water for purposes of lawns, noncommercial private gardens, decorative fountains or related minor uses.
- X. Any artificial drainageway cut across a subwatershed to thereby deliver water into another subwatershed.
- XI. Any diversion of water by artificial means into any legal drainage system from any land not assessed to that drainage system.
- XII. Any alteration from the original or approved existing design of any of the District's legal drainage system.
- XIII. Excavation of a new private drainageway located within any public right-of-way.
- XIV. Work below the top-of-bank of an existing public, legal or private drainageway located within any public right-of-way that disturbs soil or alters the dimensions or hydraulic profile of the channel.
- XV. Constructing, installing or altering a road or utility crossing beneath or over a public or legal drainageway.
- XVI. The pumping of water, including the use of temporary or portable pumps, into a legal drainage system or any other location from a landowner's property onto any property not owned by that landowner.
- XVII. To perform maintenance on an existing legal drainage system so long as the work does not remove clay or virgin soils, alter the original alignment, depth or cross-section of the drainageway.
- XVIII. Any utilities, above or underground, constructed or placed across any drainageway, lake or marsh.
- XIX. Any other act which, in the opinion of the District, may tend to alter the quantity of runoff, affect the public health or have any impact, whether adverse or not, upon the surface water or groundwater resources of the District.

A Permit granted by the District does not relieve the applicant of the responsibilities of obtaining any other authorization required by law or regulation, or alter the applicant's responsibility or liability under statutory or common law.

III. Works Administratively Approved

The District Administrator is authorized to approve the following Permit applications without Board consideration or approval:

- I. Emergency repairs requested by a governmental agency concerning public safety.
- II. Replacement of culverts with the same size, elevation, and location.

- III. Lengthening of an in-place culvert.
- IV. Requests from other governmental agencies (township, city, state) that include hydraulic analysis performed by a Licensed Professional Engineer.
- V. Culverts may be installed in open swales. Said installation will be guided by using the District's Culvert Size Chart contained in Appendix II.
- VI. Crossings may be relocated if the hydrology in a drainageway or waterway will not be altered.
- VII. Culverts less than eighteen (18) inches can be increased in size to eighteen (18) inches, which is the District's preferred minimum size for culverts.

In addition to the other guidelines and standards outlined herein, when considering the types of Permit applications described in paragraphs IV.I.III.I through IV.I.III.VII above the following rules shall apply:

- VIII. The District Administrator shall not approve Permit applications which propose to change the elevation or grade of legal drainage systems, drainage systems or waterways.
- IX. The District Administrator may add reasonable conditions to the approval of a Permit to address site-specific or work-specific concerns. All conditions of the Permit, to the extent possible, shall be met before the Permit can be deemed complete. Conditions requiring performance prior to the initiation of work shall be met before the applicant can begin work.
- X. If a Permit application meets the administrative approval requirements (IV.I.III.I through IV.I.III.VII) but the District Administrator determines that administrative approval is inappropriate due to unusual circumstances, the Permit application shall be brought before the Board for approval.
- XI. The District Administrator shall report to the Board a list of all administratively approved Permits.
- XII. The District Administrator shall not deny a Permit application. The District Administrator must instead bring the Permit application before the Board with a recommendation for denial of the Permit application, including reasons for denial.

II. Permit Requirements

- I. Permit applications must be submitted on the form provided by the District and must include all exhibits as set forth in these rules. Permit Application Forms are available on the District's website at: <http://mstrwd.org/drainage-permits/> or at the District office.
- II. The Board reviews and takes action on Permit applications at regular meetings and special meeting convened for the purpose of reviewing applications.
- III. PERMIT APPLICATIONS MUST BE FILED WITH THE DISTRICT AT LEAST SIX (6) BUSINESS DAYS PRIOR TO THE MEETING AT WHICH THE APPLICATION IS TO BE CONSIDERED.
- IV. No land-disturbing or other work that requires a Permit shall commence prior to receiving authority from the Board or the District administrator. If land-disturbing or other works occurs before a Permit is granted, the landowner will be required to apply for an after-the-fact Permit (See Section IV.VII).
- V. A Permit is valid for one year from the date of approval, unless specified otherwise or the Permit is suspended or revoked.

- VI. The District may suspend or revoke a Permit issued under these rules wherever the Permit is issued on the basis of incorrect information supplied to the District by the applicant.
- VII. A Permit is permissive, meaning that the works permitted are allowed but not obligatory. Obtaining a Permit from the District does not relieve the applicant from the responsibility to comply with any procedures or approvals that may be required by M.S. 103E or any other rules, regulations, requirements or standards of any applicable federal, state, county, township, local government or subdivision thereof, or local agency.
- VIII. By submitting a Permit application, the Permit applicant consents to entry and inspection of the subject property by the District and its authorized agents. Said inspection shall occur at reasonable times and as necessary to evaluate the Permit application and the propose work. Whenever possible, the District shall contact the landowner prior to entry for inspection.
- IX. If the nature of a Permit application involves extraordinary expenses to be incurred by the District, the applicant shall pay the field inspection fee or other necessary costs as determined by the Board in accordance with M.S. 103D.345, Subd. 2.
- X. M.S. 103D.345, Subd. 2, states that a watershed district may require a permit fee that covers the actual cost for the District to process a permit application and then to monitor compliance with the issued permit. This includes staff and consultant costs (including attorney costs, as allowed by law) and related administrative costs. However, if all rules are followed by the applicant while applying for a District permit, all fees will be waived and there will be no charge for the permit.
- XI. The District will comply with M.S. 15.99. Failure by the District to meet an approval deadline shall not authorize any work for which a Permit cannot be granted due to prohibition or illegality under applicable law.
- XII. The landowner must sign the application form. If another party (such as a contractor or renter) is the District's contact, it should be identified as the agent for the landowner and the District should document its authority to represent the landowner. This insures: (a) that any activity pursuant to a District permit occurs with the knowledge of the landowner and (b) that if compliance action is necessary, the District or the contractor will have access to the property.
- XIII. This information requested above (IV.II.XII) insures that any work pursued with a Permit occurs with the knowledge of the landowner and if compliance action is deemed necessary, the District and/or the contractor will have access to the property.
- XIV. If a Permit application will involve a culvert, please refer to the Culvert Size Chart in Appendix 2. These sizing guidelines are considered by District staff and the Board when reviewing Permit applications.
- XV. If the proposed work requires any other federal, state, or local permit (e.g., NPDES permit, wetland permit, public water permit, etc.), the permits or requirements of the permits shall be submitted with the application for a Permit. The requirements of any other federal, state, or local permit required for the proposed work are incorporated into the Permit. A violation of any other required permit is a violation of the Permit.
- XVI. Drawings or plans that adequately depict the work sought to be permitted must accompany the Permit Application Form. Drawings or plans are not required to be prepared by an engineer. Surface drainage, flood mitigation, and subsurface tile drainage works should contain the specific types of information outlined below.

- I. Surface drainage and flood mitigation: The following exhibits may be requested with the Permit application for surface draining and flood mitigation.
 - I. Map showing location of work area.
 - II. Plans and specifications for the work.
 - III. Existing and proposed cross sections and profile of affected area.
 - IV. Description of bridges or culverts required.
 - V. Narrative and calculations of hydrology and hydraulics describing wetland impacts and effects on water levels above and below the work area.
 - VI. Descriptions of erosion controls.
 - VII. List of owners of properties benefited by the drainageways affected by the proposed work.
 - VIII. Such other submittals as the District reasonably may require to evaluate.
 - IX. Information must be submitted on paper with a minimum size of 8 ½ inch by 11 inch.
- II. Subsurface tile drainage: The following exhibits must accompany the Permit application for subsurface tile drainage.
 - I. Site map to accurate scale showing location of all tiles, surface water inlets, outlet(s), lift stations, pumps, and flow control structures.
 - II. Description of the tile sizes and types (e.g. single wall, dual wall, perforated, non-perforated, plastic, cement, metal, silt sock, etc.).
 - III. If included in design, description of surface water inlet design, provision for diking of flow to inlets.
 - IV. Descriptions of erosion controls.
 - V. Subsurface tile drainage system operating plan (see Section VI).
 - VI. Information must be submitted on paper with a minimum size of 8 ½ inch by 11 inch.
- XVII. Refer to M.S. 15.99 for additional information regarding the submission of applications.

III. Permit Procedures

- I. The District will seek to approve or deny a Permit application within 60 days after receipt of a complete application and full payment of all fees in accordance with M.S. 15.99.
- II. Prior to the submission of any application, an applicant is encouraged to contact and meet with District staff to discuss the details of the proposed action and Permit. Pre-application discussions may be conducted in-person, over the telephone, via email, or by other means that are sufficient to ensure the applicant is aware of the scope of the District's rules, the application requirements, and the standards for approval of an application.
- III. The application must be complete and submitted on the application form supplied by the District. M.S. 15.99, provides that once an application is submitted, the District must approve or deny the application within sixty (60) days or else the Permit is deemed granted. Therefore, it is important that an application be clearly identified as an application, and not, for example, merely a pre-application inquiry.
 - I. The time frame provided M.S. 15.99 begins to run once the District receives a completed application containing all information required by law or by a previously adopted rule, ordinance, or policy of the District

- IV. If the District receives a Permit application that does not contain all required information the District must send a letter informing the applicant what information is needed. The sixty (60) day limit starts over only if the District sends written notice within fifteen (15) business days to the applicant.
- V. If the District employee is not familiar with the area of a Permit application, the District may require a site inspection. A Permit application that requires a site inspection is not deemed complete until a site inspection is performed by District staff. When weather, or other uncontrollable conditions, make a site inspection temporarily impossible, then the timeline under this section and M.S. 15.99 is suspended until conditions allow the site inspection to occur. If a site inspection is necessary, the District will notify the Permit applicant within fifteen (15) business days of receiving an application.
- VI. If a state, federal law or court order requires a process to occur before the District acts on an application, or if an application requires prior approval of a state or federal agency, any applicable deadline for the District to approve or deny is extended to sixty (60) days after completion of the required process or the required prior approval is granted.
- VII. Before the expiration of the initial sixty (60) days, the District may extend any applicable initial sixty (60) day period to one-hundred twenty (120) days by providing written notice of the reason(s) for the extension to the applicant.
- VIII. The Board shall review the staff recommendations for all Permit applications that are not administratively approved.
 - I. When the Board considers a Permit application, the Permit applicant, or a representative of the applicant, may attend the meeting in order to address any questions or concerns.
- IX. The Board will take one of the following actions upon receiving a Permit application:
 - I. Approve the application;
 - II. Approve the application with conditions;
 - III. Deny the application, or
 - IV. Table the application pending additional information.
- X. If a Permit application is approved, the District administrator will issue the Permit.
- XI. A Permit may be approved subject to reasonable conditions necessary to ensure compliance with the requirements and intent of these rules. All conditions of the Permit required prior to commencement of work must be satisfied before the Permit is deemed to be issued. All conditions required during or after the work must be implemented for the Permit to remain valid. All conditions of the Permit must be met before the Permit can be deemed complete.
 - I. The Board shall consider erosion and sedimentation issues as part of its review of a Permit application. If necessary, erosion and sedimentation control measures may be made a condition of a Permit approval.
 - II. As a condition of a Permit, the Board may require monitoring of the work proposed by a Permit applicant. If the Board determines that the monitoring of a Permit applicant's works is appropriate, the Permit applicant shall be responsible for all monitoring costs and expenses incurred. Notwithstanding the foregoing, the Board may, and has a right to, determine that is in the interest of the District to cover part or all of the expense of monitoring a Permit applicant's works.
- XII. If the Board denies an application, written reasons for the denial will be provided.

- XIII. If the Board tables an application, a written request for additional information will be provided to the applicant.
- XIV. Obtaining a Permit from the District does not relieve an applicant from the responsibility of obtaining any other authorization required by law, or regulation or alter the applicant's responsibility or liability under statutory or common law. The District will endeavor to inform the applicant of permits which may be required. The District, however, will not be responsible if the applicant fails to obtain any required permits.
- XV. A Permit applicant that receives a Permit shall notify the District once the applicant has completed the work subject to the Permit. The Permit applicant must complete the Completion Form provided in Appendix III and submit said form to the District office.
- XVI. The Board may require an as-built inspection to be performed by District staff.

IV. Permit Extension

Permit extensions may be granted by the District Administrator and/or the Board. Extension requests must be made in writing at least 30 days before the expiration of the Permit. Additional conditions may be added to the Permit when an extension is requested. To request an extension of a Permit, the permittee shall provide an explanation for the extension request. An applicant wishing to continue to pursue work for which Permit approval has expired shall reapply for a Permit from the District and pay fees, if applicable.

V. Permit Transfer

A permittee may transfer or assign a Permit to another party only upon approval of the District. A request to transfer or assign a Permit must be made in writing by the Permit hold and contain an explanation for the transfer or assignment. No assignment or transfer of a Permit is allowed that changes or alters previously approved plans or designs. Any change to approved plans requires a new Permit application. If a Permit is allowed to transfer, the responsibilities and obligations of the Permit automatically extend to the transferee, unless authorized by the District or the Permit is currently in violation. A Permit transfer shall be approved if the following conditions are met:

The proposed transferee agrees in writing to assume responsibility for compliance with all terms, conditions and obligations of the Permit as issued.

There are no pending violations of the Permit or conditions of approval.

The proposed transferee has provided any required financial assurance necessary to secure performance of the Permit.

The District may impose different or additional conditions on the transfer of a Permit or deny the transfer if it finds that the proposed transferee has not demonstrated the ability to perform the work under the terms of the Permit as issued. The transfer of a Permit transfer does not extend the Permit term. The District may suspend or revoke transfer or assignment whenever the transfer or assignment is granted on the basis of incorrect information supplied to the District by the applicant.

VI. Permit Reconsideration

A Permit decision becomes final unless appealed or unless a request for reconsideration is filed with the District within 30 days of the Permit decision. A request for reconsideration will toll any un-run

portion of the 30-day appeal period until a decision is made on the reconsideration. Reconsideration may be made of a Permit denial or conditions added to a Permit. To make a request for reconsideration, a Permit applicant shall complete and submit the Request for Reconsideration Form provided by the District. The Permit applicant must submit the completed Request for Reconsideration Form within thirty (30) days of the date of the Permit decision. An applicant requesting reconsideration should include the specific findings or conditions for which reconsideration is requested, along with any additional submittals or argument supporting the Permit applicant's request. The request for reconsideration must include a waiver of decision timelines required by M.S. 15.99.

The District shall give the Permit applicant due notice of when the Board will reconsider the Permit decision. The Board shall decide the Permit issue on reconsideration within 120 days of the request for reconsideration. The appeal period for a Permit decision under reconsideration is deemed tolled during the reconsideration period and shall resume the first calendar day following a decision on reconsideration.

VII. After-the-fact Permits

The District may consider granting an "after-the-fact" Permit in certain situations. The work sought to be permitted by an "after-the-fact" Permit must have been capable of receiving a Permit prior to performance of the work. In addition to any other conditions or requirements that may be ordered by the District, a \$500.00 late filing fee plus any direct costs incurred by the District, shall be assessed against an applicant seeking an "after-the-fact-Permit".

If the work does not qualify for a Permit, no "after-the-fact" Permit shall be issued and corrective actions may be sought pursuant to M.S. 103D.545 and M.S. 103D.551.

Before considering an after-the-fact Permit application, the District may require that the property be returned to the condition that existed before the unpermitted work was performed.

The District may also require the applicant pay all engineering, staff, and attorneys' fees allowed by law that are incurred by the District.

V. Surface Drainage and Flood Mitigation

It is the policy of the Board to promote the use of the waters and related resources within the District in a provident and orderly manner in order to benefit the general welfare and public health of residents within the District. The Board also regulates new construction, improvements, repairs and maintenance of public and private drainageways for the following purposes:

- I. To preserve the capacities of drainage systems to accommodate future needs.
- II. To improve water quality and minimize localized flooding.
- III. To minimize the loss of drainage capacity.
- IV. To avoid drainage conditions that cause or aggravate erosion or sedimentation of downstream drainageways or waterbodies.
- V. To hold responsible parties accountable for accumulation of pollution, debris, soil, and sediment in drainageways.

I. Surface Drainage

The following criteria apply to applications under this rule other than those for the construction, alteration or removal of a dike:

- I. An applicant shall not dispose of or alter the flow of surface water so as to unreasonably burden another landowner.
- II. Surface water shall not be artificially directed from upper land to and across lower land without adequate provision on the lower land for its passage.
- III. Surface water shall not be artificially directed into a legal drainage system from land not assessed to that system unless express authority from the drainage authority is obtained as required under M.S. 103E.401.
- IV. Temporary storage and retention basins on any parcel or parcels proposed to be drained shall be used to the extent feasible for upstream storage and to maintain peak flows, prevent erosion and avoid increased demand on public systems.
- V. To control and alleviate soil erosion and the siltation of the drainageways and lakes of the District, the Board requires the adoption of proper land use practices and other methods as outlined in the District's Watershed Management Plan. Erosion and downstream siltation shall be controlled by the following means:
 - I. All work involving exposed or stockpiled soil or materials subject to erosion will conform to an erosion and sediment control plan approved by the District.
 - II. Open drainageways shall be stabilized with vegetation above the low water mark or other best management practices to reduce channel erosion.
 - III. Side slopes, above the low water mark, shall be planted with permanent grasses and no agricultural works, other than those required for maintenance of permanent growth of grass, shall be permitted. The area to be planted to grass, as herein provided, is a minimum requirement and may be enlarged in any work of improvement or new construction. All works or repairs on any legal drainage system will require the foregoing practice. Property owners have a right to harvest grass in any manner that is not harmful to the grass or the drainageway.

- IV. Drainageways shall be constructed with side slopes designed in accordance with proper engineering practice to minimize erosion, giving due consideration to the intended capacity of the drainageway; its depth, width and elevation; and the character of the soils to be drained.
- V. Water inlets, culvert openings, bridge approaches, sloping lands, abutting drainage systems, lakes, ponds, wetlands or reservoirs shall have adequate shoulder and bank protection to minimize land and soil erosion.
- VI. The height of field outlets is subject to District staff review. A minimum height of one and one-half feet (1.5'), measured from the bottom of the drainageway, is generally considered an acceptable height.
- VII. Channels and outlets shall be designed to be stable.
- VIII. No one shall destroy all or any portion of the required sixteen and one-half foot (16.5') grass strip on drainage systems where such grass strips have previously been established under M.S. 103E. Where grass strips have been partially or completely destroyed, landowners shall be required to restore the destroyed area at their own expense. If the area is not restored, within a reasonable period of time after the provision of notice by the District, the necessary work shall be performed by the District and the costs subsequently collected with the landowner's real estate taxes in the following year.
- VI. No proposed work shall negatively affect downstream water quality or quantity.
- VII. Any soils not incorporated or reincorporated into the work will be spread over the landowner's property. Soils shall not be added to the spoil bank without District permission.
- VIII. Obtaining a Permit from the District does not relieve the Permit applicant from responsibility to comply with any procedures or approvals that may be required by M.S. 103E or any other rules, regulations, requirements or standards of any applicable federal, state, county, township, local government or subdivision thereof, or local agency.

II. Dikes

The following criteria apply to the construction, alteration or removal of a dike:

- I. A dike shall not unreasonably restrict flow onto downgradient property.
- II. The dike shall not be constructed or maintained within the 100-year floodplain unless plans and specifications, signed by a licensed professional engineer, are submitted showing that: The work will not impede 100-year flood flows outside of the delineated retention area, or raise the 100-year flood level or increase flood peak downstream; and overflow sections are designed to handle overtopping during major floods without significant erosion or risk of failure and without sandbagging or other manual measures before or during a flood.
- III. The dike shall remain one (1) foot lower than any road or spoil bank.
- IV. Outlet drainage shall be sized accordingly to drainage area and culvert sizes upstream and downstream of the outlet. The Culvert Size Chart (see Appendix II) provides a list of recommended flow areas for selected frequencies.
- V. A Permit to construct or maintain a dike shall be conditioned on the applicant's granting the District the right in perpetuity to install and maintain traps and/or gates to restrict or eliminate outflow from the diked area during and after overtopping flood events.

- VI. All work involving exposed or stockpiled soil or materials subject to erosion shall be covered and/or reseeded and if vegetation has not returned, the area shall be reseeded.
- VII. No one shall destroy all or any portion of the required sixteen and one-half foot (16.5') grass strip on drainage systems where such grass strips have previously been established under M.S. 103E. Where grass strips have been partially or completely destroyed, landowners shall be required to restore the destroyed area at their own expense. If the area is not restored, within a reasonable period of time after the provision of notice by the District, the necessary work shall be performed by the District and the costs subsequently collected with the landowner's real estate taxes in the following year.
- VIII. Obtaining a Permit from the District does not relieve the applicant from responsibility to comply with any procedures or approvals that may be required by M.S. 103E or any other rules, regulations, requirements or standards of any applicable federal, state, county, township, local government or subdivision thereof, or local agency.

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VI. Subsurface Tile Drainage

I. Application

An application for a subsurface tile drainage or lift station Permit must meet the following requirements:

- I. If neighboring landowners may be affected by any proposed tile plans, the Permit applicant shall contact and acquire the signature of the potentially impacted neighbors.
- II. Accompanying the subsurface tile drainage Permit application will be an 8 ½ inch by 11-inch map of the area(s) proposed to be tiled. This map must show the number of acres proposed to be tiled.
- III. District staff and/or the District Engineer shall view the subsurface tile drainage system and/or lift station to see if the proposed work will overburden the capacity of the downstream drainageway or culverts.
- IV. The Permit application must identify the proposed tile size(s), the tile spacing depth(s), and the estimated drainage coefficient.
- V. All subsurface tile outlets, including pumps, shall be located outside of a legal drainage system and governmental right-of-way, unless approved by the District or other appropriate government entity. All outlets and pumps must be visibly marked.
- VI. All systems using a gravity outlet shall have a control structure installed to prevent flows during flooding or freezing conditions.
- VII. All systems using pumps shall have either a Board approved integrated on/off technology or a gap design. The best option for each system should be determined in coordination with the tile contractor and other knowledgeable parties.
 - I. Integrated on/off technology: The integrated on/off technology allows for the contractor to be more free in the design of the structure. However, there must be a sensor positioned into the outlet ditch at an elevation determined by the Board. This sensor is set to automatically trigger the pump to start operating in minimum maintenance mode during flooding conditions. This technology also allows for the pump to be controlled remotely.
 - II. Gap Design: The Board approved Gap design includes a minimum vertical separation between the pump's pipe and the underground road or spoil pipe of 3 inches. The underground road or spoil pipe must not be higher than 6" above natural ground elevation. The diameter of the underground road or spoil pipe must be larger than that of the pump's pipe (see Appendix III for a diagram of the design).
- VIII. If a proposed system will use a pump, the Permit applicant shall provide the horsepower and capacity (expressed in gallons per minute) of the pump.
- IX. The height of subsurface tile outlets are subject to District staff review. A minimum height of one and one-half feet (1.5'), measured from the bottom of the drainageway, is generally considered an acceptable height.

- X. If the tile design is to include surface water inlets, a tile pump ditch override pressure switch must be installed to control the amount of water released from the pump during high water events. Managers and staff will set the elevations of the pressure switch.
- XI. A Permit applicant shall describe a plan to minimize erosion at the system's outlet. The Watershed requires geotextile fabric and riprap to minimize erosion. For guidance, see the Erosion Control: Rip rap and Geotextile charts in Appendix IV.
- XII. Obtaining a Permit from the Board does not relieve the applicant from the responsibility of obtaining any other additional authorization or permits required by law. (EX. NRCS, SWCD, Township, County, State, etc.)

II. Operating Plan

An operating plan shall be signed and submitted along with the Permit application. Operating Plan Templates are available on the District's website at: <http://mstrwd.org/drainage-permits/> or at the District office. The Operating Plan Template describes how the pump will be managed and who is to be contacted in the event of problems or emergencies.

I. Template

The operating template must include:

- I. The type of pump setup the landowner has: integrated on/off technology, or gap design (see Appendix III)?
- II. Who shall be the first to call when pumps need to be managed? Second, and so on?
- III. Installation Contractor's information.
- IV. Can the tile contractor shut off pump if person(s) in b. cannot be contacted?

II. Procedures/Guidance

- I. If none of the persons listed in the template can be reached, Watershed staff or a Watershed designated third party may be contacted to assist in turning off the pump. Landowner will be charged costs.
- II. Landowner shall be responsible for monitoring weather conditions.
- III. No pumping during freezing conditions or when the downstream culverts could be plugged with snow or ice. Freezing conditions are defined as when the drainageways, culverts, bridges, etc. have ice building up. Subsurface tile drainage that close in the winter shall remain closed until spring floodwater conditions recede below Flood Stage at the closest mainstem downstream Prediction Site.
- IV. No pumping during flooding conditions or during critical spring flood periods. When a system or the outlet of a system is experiencing flooding, all pumping shall cease in that system until waters have subsided.
- V. The land owner shall be responsible to monitor National Weather Service Flood Probability for the Red River for the closest downstream mainstream Prediction Sites at: <http://water.weather.gov//ahps2/index.php?wfo=fgf>
- VI. Subsurface tile drainage flows should be closed when the National Weather Service Flood Probability Prediction reaches Flood Stage at the closest mainstream downstream Prediction Site. In Table 1, the prediction sites that are of importance to the MSTRWD are listed along with their moderate flood stage and flood stage measurements. Landowners

should be aware of the closest downstream prediction site and operate pumps accordingly to decrease impacts on the Red River.

NATIONAL WEATHER SERVICE FLOOD PROBABILITY

PREDICTION SITE	“Moderate” Flood Stage (ft)	“Flood Stage” (ft)
@ EAST GRAND FORKS	40.0	28.0
@ OSLO	30.0	26.0
@ DRAYTON	38.0	32.0

Table 1 National Weather Service Prediction Site Flood Probability

- VII. It is recommended that after harvest, tile outlet controls, including pumps, be opened or turned on to remove water from the system except when flooding or freezing conditions exist or are likely. This is to create storage capacity for spring melt and rain events.
- VIII. Consideration shall be made for turning off pumps for short period of times during the summer so maintenance can be performed on public, legal, and private drainageway, such as road drainageways or private natural field drainageways.
- IX. By signing the Operating Plan Template, the landowner is acknowledging that he/she understands the procedures, rules, and guidance of drain tile systems.

VII. Enforcement and Financial Assurance

I. Manner of Enforcement

In the event of a violation or threatened violation of a District rule, Permit, order, stipulation, or a provision of M.S. 103D, the District may take action to prevent, correct, or remedy the violation or any harm to water resources resulting from it. Enforcement action includes, but is not limited to injunction; action to compel performance, abatement or restoration; and prosecution as a criminal misdemeanor in accordance with M.S. 103D.545 and M.S. 103 D. 551.

No additional Permit shall be issued to any applicant who is in violation of District rules or a previously issued Permit until such violation has been remedied to the satisfaction of the Board.

II. Investigation of Noncompliance

The District's authorized representatives may enter and inspect a property in the watershed to determine the existence of a violation or threatened violation.

III. Administrative Compliance Order

The District may issue orders directing correction of violations of these rules or directing a property owner or entity to show cause why the District should not initiate enforcement actions. If a show cause order is issued, a landowner or entity shall be given an opportunity to be heard by the Board at its next regular meeting. If a violation or threatened violation of these rules presents a serious threat of adverse effect on water resources, the District may proceed directly to the District Court for an injunction to stop or correct the violation.

IV. Board Hearing

After due notice and a show cause hearing at which evidence may be presented, the Board shall make findings. If the Board finds a violation exists and no good cause is shown to prevent the initiation of enforcement actions, it shall issue an order: requiring that the property owner, entity or responsible contractor to cease the violating work, apply for an after-the-fact Permit, or take corrective or restorative action; authorizing the initiate of enforcement actions in the District Court; or directing other action to compel compliance with these rules.

V. Liability for enforcement costs

In any civil action arising from or related to a rule, order, or stipulation agreement made or a Permit issued or denied by the Board under this chapter, the court may award the prevailing party reasonable attorney fees and costs.

VI. Contractor Liability

Any individual, firm, corporation, partnership, association or other entity contracting to perform work subject to one or more District rules, shall be responsible to ascertain that the necessary Permit has been obtained and that the work being performed complies with the Permit conditions, rules, statutes and any applicable District orders or stipulations. A contractor that, itself or through a subcontractor, engages in work constituting a violation or threatened violation shall be the responsible contractor for purposes of this rule.

VIII. Appendix

I. Other Permitting Bodies Contact Information

Agency	Contact/Position	Address	Phone	E-mail
MN DNR	Stephanie Klamm/ DNR Waters Area Hydrologist for Marshall County	246 125 th Ave NE Thief River Falls, MN 56701	218-681- 0947, ext 223	Stephanie.klamm@state.mn.us
	DNR Aquatic Plant Management for Marshall County	2115 Birchmont Beach Rd NE Bemidji, MN 56601	218-308- 2623	
	DNR Lands and Minerals for Marshall County	2115 Birchmont Beach Rd NE Bemidji, MN 56601	218-308- 2627	
USACE	Bemidji Field Office	4111 Technology Drive, Suite 295 Bemidji, MN 56601	651-290- 5337 or 218-444- 6381	mvp-reg-inquiry@usace.army.mil
MPCA	MPCA Detroit Lakes Office	714 Lake Ave, Suite 220 Detroit Lakes, MN 56501	218-847- 1519	
NRCS	Marshall County Warren Field Office- Matthew Waterworth	105 S Division St Warren, MN 56762	(218) 745- 4351	matt.waterworth@mn.usda.gov
	Polk County Crookston Field Office:	528 Strander Ave Crookston, MN 56716	(218) 281- 1445	
	Pennington County Thief River Falls Office: Luther Newton	201 Sherwood Ave S Thief River Falls, MN 56701	(218) 681- 1612	luther.newton@mn.usda.gov
	Roseau County Roseau	502 7 th St SW #8 Roseau, MN 56751	(218) 463- 1862	

	Kittson County Hallock Field Office: James Schwab	410 S 5 th St, Suite 106 Hallock, MN 56728	(218) 843- 2619	jim.schwab@mn.usda.gov
MNDOT	Brad Knutson- Engineering Specialist	1320 Sunflower St Crookston, MN 56716	277-7965	Brad.knudson@state.mn.us
Marshall County	Lon Aune- County Engineer	208 E Colvin Avenue, Suite 13 Warren, MN 56762	201-1422	Lon.aune@co.marshall.mn.us
Polk County	Richard Sanders- County Engineer	820 Old Highway 75 South Crookston, MN 56716	470-8253	rsanders@co.polk.mn.us
Pennington County	Mike Flaagan- County Engineer	250 125th Ave NE Thief River Falls, MN 56701	686-1268	mlflaagan@co.pennington.mn.us
Roseau County	Brian Ketring – County Engineer	407 5 th Ave NW Roseau, MN 56751	(218) 463- 2063	Brian.ketring@co.roseau.mn.us
Kittson County	Kelly Bengtson- County Engineer	401 2 nd Street SW Hallock, MN 56728	(218) 843- 2686	kbengtson@co.kittson.mn.us

Township Officials	County	Website
	Marshall	http://www.co.marshall.mn.us/Officials%20List.pdf
	Polk	http://www.co.polk.mn.us/index.asp?SEC=AC93F3AC-0382-422F-A809-49BEF6B5DEB0&Type=B_BASIC
	Pennington	http://co.pennington.mn.us/ (click on the Township Officers Link under County Quick Links)
	Roseau	http://www.co.roseau.mn.us/document_center/Township%20Officers-2016.pdf
	Kittson	http://www.visitnwmnnesota.com/Kittson.htm#Township Chairman

II. Culvert Size Chart

Recommended Flow Areas for Selected Frequencies (assumes an average velocity 3.5 feet per second)									
	12A ^{5/6}	(Ft ³ /sec)/3.5		23A ^{5/6}	(Ft ³ /sec)/3.5		32A ^{5/6}	(Ft ³ /sec)/3.5	
DA (sq mi)	2 Yr	Rec. Area (sq ft)	Culvert Diameter (inches)	5 Yr	Rec. Area (sq ft)	Culvert Diameter (inches)	10 Yr	Rec. Area (sq ft)	Culvert Diameter (inches)
0.10	1.8	0.5	18	3.4	1.0	18	4.7	1.3	18
0.20	3.1	0.9	18	6.0	1.7	18	8.4	2.4	24
0.30	4.4	1.3	18	8.4	2.4	24	11.7	3.4	24
0.40	5.6	1.6	18	10.7	3.1	24	14.9	4.3	30
0.50	6.7	1.9	24	12.9	3.7	24	18.0	5.1	30
0.60	7.8	2.2	24	15.0	4.3	30	20.9	6.0	36
0.70	8.9	2.5	24	17.1	4.9	30	23.8	6.8	36
0.80	10.0	2.8	24	19.1	5.5	30	26.6	7.6	42
0.90	11.0	3.1	24	21.1	6.0	36	29.3	8.4	42
1.00	12.0	3.4	30	23.0	6.6	36	32.0	9.1	42
1.10	13.0	3.7	30	24.9	7.1	36	34.6	9.9	42
1.20	14.0	4.0	30	26.8	7.6	42	37.3	10.6	48
1.30	14.9	4.3	30	28.6	8.2	42	39.8	11.4	48
1.40	15.9	4.5	30	30.4	8.7	42	42.4	12.1	48
1.50	16.8	4.8	30	32.2	9.2	42	44.9	12.8	48
1.60	17.8	5.1	30	34.0	9.7	42	47.3	13.5	54
1.70	18.7	5.3	36	35.8	10.2	48	49.8	14.2	54
1.80	19.6	5.6	36	37.5	10.7	48	52.2	14.9	54
1.90	20.5	5.9	36	39.3	11.2	48	54.6	15.6	54
2.00	21.4	6.1	36	41.0	11.7	48	57.0	16.3	54
2.10	22.3	6.4	36	42.7	12.2	48	59.4	17.0	60
2.20	23.1	6.6	36	44.4	12.7	48	61.7	17.6	60
2.30	24.0	6.9	36	46.0	13.2	48	64.1	18.3	60
2.40	24.9	7.1	36	47.7	13.6	54	66.4	19.0	60
2.50	25.8	7.4	42	49.4	14.1	54	68.7	19.6	60
2.60	26.6	7.6	42	51.0	14.6	54	71.0	20.3	60
2.70	27.5	7.8	42	52.6	15.0	54	73.2	20.9	66
2.80	28.3	8.1	42	54.2	15.5	54	75.5	21.6	66
2.90	2.90	8.3	42	55.9	16.0	54	77.7	22.2	66
3.00	30.0	8.6	42	57.5	16.4	60	79.9	22.8	66
3.10	30.8	8.8	42	59.0	16.9	60	82.2	23.5	66
3.20	31.6	9.0	42	60.6	17.3	60	84.4	24.1	66
3.30	32.5	9.3	42	62.2	17.8	60	86.5	24.7	72
3.40	33.3	9.5	42	63.8	18.2	60	88.7	25.4	72
3.50	34.1	9.7	42	65.3	18.7	60	90.9	26.0	72
3.60	34.9	10.0	48	66.9	19.1	60	93.1	26.6	72
3.70	35.7	10.2	48	68.4	19.6	60	95.2	27.2	72
3.80	36.5	10.4	48	70.0	20.0	60	97.3	27.8	72
3.90	37.3	10.7	48	71.5	20.4	66	99.5	28.4	72
4.00	38.1	10.9	48	73.0	20.9	66	101.6	29.0	72
4.10	38.9	11.1	48	74.5	21.3	66	103.7	29.6	78
4.20	39.7	11.3	48	76.1	21.7	66	105.8	30.2	78
4.30	40.5	11.6	48	77.6	22.2	66	107.9	30.8	78
4.40	41.2	11.8	48	79.1	22.6	66	110.0	31.4	78
4.50	42.0	12.0	48	80.6	23.0	66	112.1	32.0	78

4.60	42.8	12.2	48	82.0	23.4	66	114.1	32.6	78
4.70	43.6	12.5	48	83.5	23.9	66	116.2	33.2	78
4.80	44.3	12.7	48	85.0	24.3	66	118.3	33.8	78
4.90	45.1	12.9	48	86.5	24.7	72	120.3	34.4	84
5.00	45.9	13.1	48	87.9	25.1	72	122.4	35.0	84
5.20	47.4	13.5	54	90.9	26.0	72	126.4	36.1	84
5.40	48.9	14.0	54	93.8	26.8	72	130.5	37.3	84
5.60	50.4	14.4	54	96.7	27.6	72	134.5	38.4	84
5.80	51.9	14.8	54	99.5	28.4	72	138.5	39.6	84
6.00	53.4	15.3	54	102.4	29.2	72	142.4	40.7	
6.20	54.9	15.7	54	105.2	30.1	78	146.4	41.8	
6.40	56.4	16.1	54	108.0	30.9	78	150.3	42.9	
6.60	57.8	16.5	54	110.8	31.7	78	154.2	44.1	
6.80	59.3	16.9	60	113.6	32.5	78	158.1	45.2	
7.00	60.7	17.4	60	116.4	33.3	78	162.0	46.3	
7.20	62.2	17.8	60	119.2	34.0	78	165.8	47.4	
7.40	63.6	18.2	60	121.9	34.8	84	169.6	48.5	
7.60	65.0	18.6	60	124.7	35.6	84	173.4	49.6	
7.80	66.5	19.0	60	127.4	36.4	84	177.2	50.6	
8.00	67.9	19.4	60	130.1	37.2	84	181.0	51.7	
8.20	69.3	19.8	60	132.8	37.9	84	184.4	52.8	
8.40	70.7	20.2	60	135.5	38.7	84	188.5	53.9	
8.60	72.1	20.3	66	138.2	39.5	84	192.3	54.9	
8.80	73.5	21.0	66	140.9	40.2		196.0	56.0	
9.00	74.9	21.4	66	143.5	41.0		199.7	57.1	
9.20	76.3	21.8	66	146.2	41.8		203.4	58.1	
9.40	77.6	22.2	66	148.8	42.5		207.1	59.2	
9.60	79.0	22.6	66	151.5	43.3		210.7	60.2	
9.80	80.4	23.0	66	154.1	44.0		214.4	61.2	
10.00	81.8	23.4	66	156.7	44.8		218.0	62.3	
10.50	85.1	24.3	66	163.2	46.6		227.1	64.9	
11.00	8.5	25.3	72	169.7	48.5		236.0	67.4	
11.50	91.9	26.2	72	176.1	50.3		244.9	70.0	
12.00	95.2	27.2	72	182.4	52.1		253.8	72.5	
12.50	98.5	28.1	72	188.7	53.9		262.6	75.0	
13.00	101.7	29.1	72	195.0	55.7		271.3	77.5	
13.50	105.0	30.0	78	201.2	57.5		280.0	80.0	
14.00	108.2	30.9	78	207.4	59.3		288.6	82.4	
14.50	111.4	31.8	78	213.6	61.0		297.1	84.9	
15.00	114.6	32.7	78	219.7	62.8		305.7	87.3	
15.50	117.8	33.7	78	225.8	64.5		314.1	89.7	
16.00	121.0	34.6	78	231.8	66.2		322.5	92.2	
16.50	124.1	35.5	78	237.8	68.0		330.9	94.5	
17.00	127.2	36.3	78	243.8	69.7		339.3	96.9	
17.50	130.3	37.2	78	249.8	71.4		347.5	99.3	
18.00	133.4	38.1	78	255.7	73.1		355.8	101.7	
18.50	136.5	39.0	78	261.6	74.8		364.0	104.0	
19.00	139.6	39.9	78	267.5	76.4		372.2	106.3	
19.50	142.6	40.8	84	273.4	78.1		380.3	108.7	
20.00	145.7	41.6	84	279.1	79.8		388.5	111.0	

English & Estimated Metric Dimensions
Selected Circular & Arch Culverts

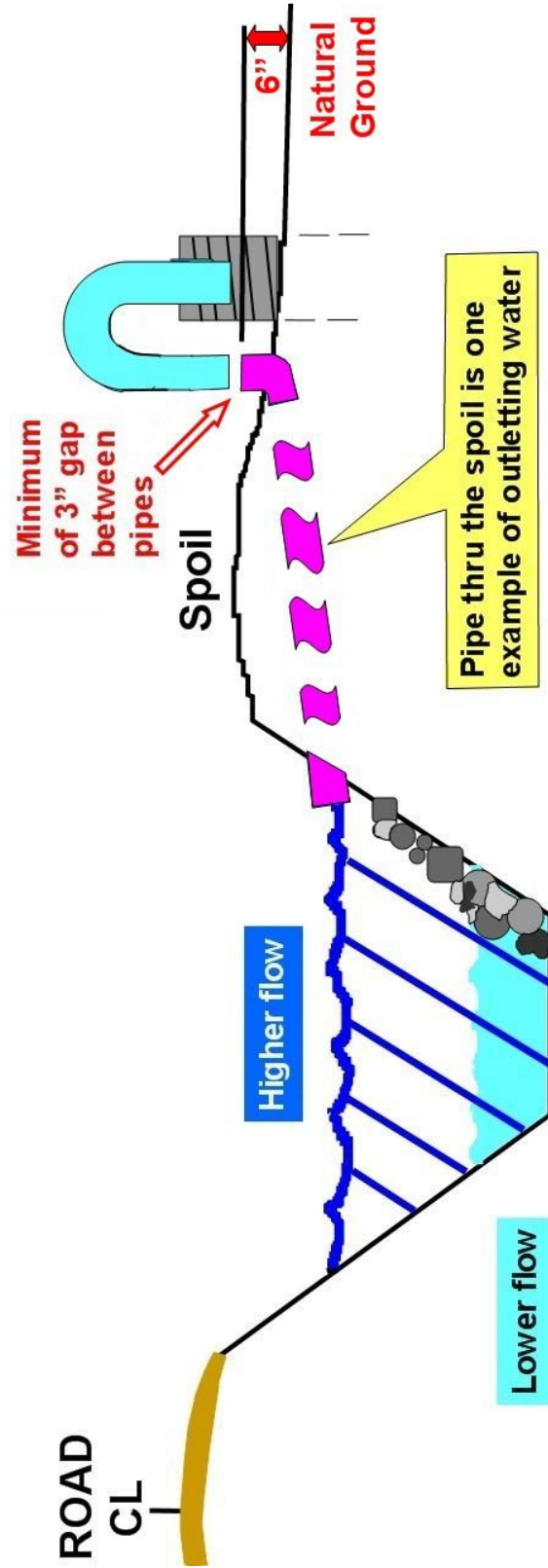
Circular Diameter (inches)	Area (sq-ft)	Reinforced Concrete Arch			Circular Diameter (mm)	Area (sq-m)	Reinforced Concrete Arch		
		Rise (inches)	Span (inches)	Area (sq-ft)			Rise (inches)	Span (inches)	Area (sq-ft)
12	0.79				300	0.073			
15	1.23	11.00	18.00	1.10	380	0.114	280	450	0.102
18	1.77	13.50	22.00	1.65	460	0.164	340	550	0.153
21	2.40	15.50	26.00	2.20	530	0.223	390	660	0.204
24	3.14	18.00	28.50	2.80	610	0.292	460	720	0.260
30	4.91	22.50	36.25	4.40	760	0.456	570	920	0.409
36	7.07	26.38	43.75	6.40	910	0.656	670	1110	0.595
42	9.62	31.31	51.13	8.80	1070	0.893	800	1290	0.818
48	12.56	36.00	58.50	11.40	1220	1.17	910	1480	1.059
54	15.90	40.00	65.00	14.30	1370	1.48	1020	1650	1.329
60	19.63	45.00	73.00	17.70	1520	1.82	1140	1850	1.644
72	28.26	54.00	88.00	25.60	1830	2.63	1370	2230	2.378
84	38.47	62.00	102.00	34.60	2130	3.57	1570	2590	3.214
90	44.16	72.00	115.00	44.50	2290	4.10	1830	2920	4.134
96	50.24	77.25	122.00	51.70	2440	4.67	1960	3090	4.803
108	63.59	87.13	138.00	66.00	2740	5.91	2210	3500	6.132
120	78.50	97.88	154.00	81.80	3050	7.29	2490	3910	7.599
132	94.99	106.50	168.75	99.10	3350	8.82	2710	4280	9.207

Circular Diameter (inches)	Area (sq-ft)	Corrugated Steel Pipe Arch			Circular Diameter (mm)	Area (sq-m)	Corrugated Steel Pipe Arch		
		Rise (inches)	Span (inches)	Area (sq-ft)			Rise (inches)	Span (inches)	Area (sq-ft)
12	0.79				300	0.07			
15	1.23	13.00	17.00	1.10	380	0.11	330	430	0.102
18	1.77	15.00	21.00	1.65	460	0.16	380	530	0.153
21	2.40	18.00	24.00	2.20	530	0.22	460	610	0.204
24	3.14	20.00	28.00	2.80	610	0.29	510	710	0.260
30	4.91	24.00	35.00	4.40	760	0.46	610	880	0.409
36	7.07	29.00	42.00	6.40	910	0.66	740	1060	0.595
42	9.62	33.00	49.00	8.80	1070	0.89	840	1240	0.818
48	12.56	38.00	57.00	11.40	1220	1.17	970	1440	1.059
54	15.90	43.00	64.00	14.30	1370	1.48	1090	1620	1.329
60	19.63	47.00	71.00	17.70	1520	1.82	1190	1800	1.644
66	23.75	52.00	77.00	21.90	1680	2.21	1320	1950	2.035
72	28.26	57.00	83.00	25.60	1830	2.63	1450	2100	2.378
3x1 Corrugations									
54	15.90	48.50	58.50	15.60	1370	1.48	1230	1480	1.449
60	19.63	54.00	65.00	19.30	1520	1.82	1370	1650	1.793
66	23.75	58.25	72.50	23.20	1680	2.21	1480	1840	2.155
72	28.26	62.50	79.00	26.50	1830	2.63	1590	2000	2.378
78	33.17	67.25	86.50	32.10	1980	3.08	1710	2190	2.982
84	38.47	71.75	93.50	37.00	2130	3.57	1820	2370	3.437
90	44.16	76.00	101.50	42.40	2290	4.10	1930	2570	3.939
96	50.24	80.50	108.50	48.00	2440	4.67	2040	2750	4.459
102	56.72	84.75	116.50	54.20	2590	5.27	2150	2950	5.035
108	63.59	89.25	123.50	60.50	2740	5.91	2270	3130	5.621
114	70.85	93.75	131.00	67.75	2900	6.58	2380	3320	6.214
120	78.50	98.00	138.50	74.50	3050	7.29	2490	3510	6.921

III. Subsurface Tile Drainage Diagram

- When implementing a tile outlet pipe thru a road or spoilbank into a ditch there must be a gap of 3" between the pipe that comes from the sump hole (BLUE) and the pipe that goes thru the road or spoil (PINK).
- The inlet end of the pipe that goes thru the road or spoil cannot project higher than 6" from the natural ground in the vicinity.
- The diameter of the pipe that goes thru the road or spoil (PINK) must be larger than the diameter of the pipe that comes from the sump hole (BLUE)

Doing so will prevent water from entering the ditch during higher flows when the ditch has reached its capacity.



IV. Erosion Control: Riprap and Geotextile Charts

Table 3601-1 Random Riprap Gradation Requirements						
Weight, lb [kg]	Size, in [mm]*	Approximate Percent of Total Weight Smaller than Given Weight				
		Class of Riprap				
		I	II	III	IV	V
2,000 [900]	30 [750]	--	--	--	--	100
1,000 [450]	24 [600]	--	--	--	100	--
650 [300]	21 [525]	--	--	--	--	75
400 [180]	18 [450]	--	--	100	--	--
250 [113]	15 [375]	--	--	--	75	50
120 [55]	12 [300]	--	100	75	50	--
50 [22]	9 [225]	--	75	50	--	--
15 [7]	6 [150]	100	50	--	--	10
5 [2]	4 [100]	--	--	--	10	--
2 [1]	3 [75]	50	--	10	--	--
--	2 [50]	--	10	--	--	--
--	1 [25]	10	--	--	--	--

* Weight to size conversion based on a specific gravity of 2.60 and a volume average between a sphere and cube

Note: Areas boxed in by a red line indicate the typical requirement used in the District.

Table 3733-1 Geotextile Properties									
Geotextile Property	Test Method (ASTM)	Type (a)							
		Units	1		3	4	5	6	7(c)
			Fabric	Knit sock (b)					
B1 Grab Tensile Strength minimum, each principal direction	D4632 lb. [kN]	100 [0.45]	--	100 [0.45]	200 [0.90]	200 [0.90]	(d)	300 [1.3]	
B2 Elongation minimum, each principal direction	D4632 percent	--	--	50	50	--	(d)	50	
B3 Seam Breaking Strength minimum (e)	D4632 lb. [kN]	90 [0.40]	--	90 [0.40]	180 [0.80]	180 [0.80]	(d)	270 [1.2]	
B4 Apparent Opening Size (AOS) maximum (f)	D4751 U.S. Std. sieve size [mm]	40 [0.425]	40 [0.425] as applied	50 [0.30]	50 [0.30]	30 [0.60]	20 [0.85]	50 [0.30]	
B5 Permittivity minimum (g)	D4491 falling head sec ⁻¹	0.7	2.75 relaxed	0.5	0.5	0.05	0.05	0.5	
B6 Puncture strength minimum	D6241 Lb [N]	--	180 [800]	--	--	--	--	--	
B7 Wide Width Strip Tensile Strength minimum each principal direction	D4595 lb/ft [kN/m]	--	--	--	--	--	(d)	--	

(a) Minimum Average Roll Values (MARV) based on average of at least three tests per swatch.
(b) Provide socks made of knit polymeric materials and meeting the requirements of ASTM D6707-06, for Type H: fabric. Ensure the sock exhibits minimum snag or run potential, is factory-applied to maintain uniform installed mass, and conforms to the outside diameters of the tubing with a snug fit.
(c) Needle-punched nonwoven. Do not use thermally bonded (heat-set) fabric.
(d) Requirements are site-specific and will be as specified in the contract. The property values for B1 and B3 may not be less than shown for Type 5. If the contract does not specify either B1 or B7, use default value of 300 lb [1.3 kN] for B1. If the contract does not specify seam strength, use a default value of 270 lb [1.2 kN] for B3.
(e) Adhere to this requirement if the contract requires or allows seams. Strength specifications apply to factory and field seams. Use thread for sewing that has strength of at least 25 lb. [110 N]. Sew seams with a Federal Type 401 stitch using a two-spool sewing machine, and install seams facing upward. For seaming with adhesives, see the Approved/Qualified Products List available at the Department's website.
(f) For U.S. sieve sizes, the AOS Number must be equal to or greater than the number specified.
(g) Permittivity: $P = K/L$, where K = fabric permeability and L = fabric thickness.

Note: Areas boxed in by a red line indicate the typical requirement used in the District.

3733 Geotextiles
3733.1 SCOPE
Provide geotextiles (permeable fabrics) for the typical uses classified as follows:
(1) Type I for wrapping subsurface drain pipe, joints of concrete pipe culvert, or other drainage applications;
(2) Type II. The Department no longer uses this classification. If the contract specifies Type II, use Type III propriety requirements;
(3) Type III for use under Class I and Class II random riprap, gabions, and revet mattresses;
(4) Type IV for use under Class III and Class IV random riprap and hand-placed riprap on slopes no steeper than 3:1, horizontal to vertical;
(5) Type V for separating materials for stabilization;
(6) Type VI for earth reinforcement;
(7) Type VII for use under Class III and Class IV random riprap on slopes steeper than 3:1, horizontal to vertical, and under Class V random riprap.

Note: Areas boxed in by a red line indicate the typical requirement used in the District.

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V. Definitions

For the purpose of these regulations, certain words and phrases shall be defined as follows:

Administrative Compliance Order shall be an order by the District Administrator, pending a Board hearing to determine if there is a violation in which a compliance order of indefinite duration will be ordered and the property owner will then have to apply for an after-the-fact Permit and take corrective or restorative action.

After-The-Fact Permit shall mean a permit that is given to a land-owner when land-disturbing work occurred before the landowner received authority to commence the work, as long as the work is permissible.

Artificial Drainageway shall mean a watercourse artificially constructed by human beings where a natural watercourse was not previously located.

As-Built shall mean the original design drawings revised to reflect any changes made in the field.

Board shall mean Board of Managers of the Middle Snake Tamarac Rivers Watershed District.

Contractor shall mean a person or company that undertakes a contract to provide materials, labor, a service and/or to do a job.

Control Structure shall mean structure that is placed in a subsurface drainage conduit (drain tile or tubes) which provide control of the stage or discharge of surface and/or subsurface drainage.

Compliance shall mean the action or fact of complying with a wish or command.

District shall mean the Middle-Snake-Tamarac Rivers Watershed District.

Dike shall mean any embankment or structure above natural ground for controlling or holding back water.

DNR shall mean the Department of Natural Resources.

Drainage Authority shall mean the Board or joint county drainage authority having jurisdiction over a drainage system or project.

Drainage Capacity shall mean the maximum amount of the water that a drainage system can contain.

Drainage Coefficient shall mean the design capacity of the drainage system and is typically expressed as a depth of water removed in 24 hours (inches/day).

Drainage System shall mean a system of ditch or tile, or both, to drain property, including laterals, improvements, and improvements of outlets, established and constructed by a drainage authority. "Drainage system" includes the improvement of a natural waterway used in the construction of a drainage system and any part of a flood control plan proposed by the United States or its agencies in the drainage system.

Drainageway shall mean a route or course along which water moves or may move to drain a region, such as a ditch.

Dredging shall mean to clean out the bed of by scooping out mud, weeds, and rubbish with a dredge.

Flooding Conditions shall mean when ditches reach full capacity or culverts are running full and /or local river has hit moderate flood stage.

Flood Mitigation shall mean the act of alleviating the effects of floods and flooding by moderating or reducing the severe damages resulting from floods through structural and nonstructural flood management measures.

Freezing Conditions shall mean when the drainageway, culverts, bridges, etc. have ice building up.

General Welfare shall include any act or thing, tending to improve, benefit or contribute to the safety or wellbeing of the general public or benefit the inhabitants of the District.

Groundwater shall mean water held underground in the soil or in pores and crevices in rock

Hydraulics shall mean the branch of science and technology concerned with the conveyance of liquids through pipes and channels.

Hydrology shall mean the science that encompasses the occurrence, distribution, movement and properties of the waters of the earth and their relationship with the environment.

Improve has the meaning set forth at M.S. 103E.215, subdivision 2, which states that improvement means tiling, enlarging, extending, straightening, or deepening of an established and constructed drainage system.

Integrated on/off shall mean technology that allows the contractor to be more free in the design of the structure. However, there must be a sensor positioned into the outlet ditch at an elevation determined by the Board. This sensor is set to automatically trigger the pump to start operating in minimum maintenance mode during flooding conditions. This technology also allows for the pump to be controlled remotely.

Landowner shall mean an individual or entity that is not prohibited from owning agricultural land under section 500.24 and either owns eligible land or is purchasing eligible land under a contract for deed.

Lateral shall mean any drainage construction by branch or extension, or a system of branches and extensions, or a drain that connects or provides an outlet to property with an established drainage system.

Legal Drainage System shall mean a watershed, county, judicial or other drainage system established under M.S. 103D or M.S. 103E.

Legal Drainageway shall mean a route or course along which water moves or may move to drain a region established under M.S. 103D or M.S. 103E.

Levee shall mean a bank or mound of earth that is built or placed in a manner to keep the flow of water in the continual direction it hydraulically flows to, to protect an area from flooding.

Licensed Professional Engineer (PE) shall mean the engineering profession's highest standard of competence, a symbol of achievement and assurance of quality. The National Society of Professional Engineers provides its members, whether already licensed or soon-to-be licensed, with the information and resources they need to earn and maintain the respected PE seal.

May shall mean permissive.

M.S. shall mean Minnesota Statute.

Misdemeanor shall mean a minor wrongdoing.

MPCA shall mean the Minnesota Pollution Control Agency.

Natural Drainageway shall mean a natural channel that has definable beds and banks capable of conducting confined runoff from adjacent land.

NPDES shall mean National Pollutant Discharge Elimination System.

NRCS shall mean the Natural Resource Conservation Service.

Operating Plan shall mean a document that describes how a pump will be managed and who is to be contacted for problems.

Permissive shall mean allowed but not obligatory; optional.

Permit shall mean an official document from MSTRWD giving someone authorization to do something.

Permit Application Form shall mean a document which an applicant must completely fill out to begin the process of obtaining a permit from MSTRWD.

Permittee shall mean the person to which a permit is issued.

Person shall mean an individual, firm, partnership, association or corporation, but does not include public or political subdivisions.

Political Subdivision shall mean a county, town, school district or a political division or subdivision of the State.

Power of Attorney shall mean the authority to act for another person in specified or all legal or financial matters.

Private Drainageway shall mean a drainage way other than a legal drainageway constructed on private property.

Public Health shall mean an act or thing that tends to improve the general sanitary condition of the community by drainage, relieving low wetland or stagnant and unhealthful conditions, or preventing the overflow of any property that produces or tends to produce unhealthful conditions.

Public Corporation shall mean a County, Town, School District or political subdivision or agency of the state. Public Corporation except where the context clearly indicates otherwise does not include the District.

Reservoir shall mean a large natural or artificial lake used as a source of water supply.

Retention Basin shall mean to manage storm water runoff to prevent flooding and downstream erosion, and improve water quality in an adjacent river, stream, lake or bay.

Right-of-way/Public Right-of-way shall mean the legal right to pass along a specific route through grounds or property belonging to another.

Runoff shall mean the draining away of water (or substances carried in it) from the surface of an area of land, a building, or structure, etc.

Shall is mandatory, not permissive.

Siltation shall mean the process by which water becomes dirty because of fine mineral particles in the water.

Subsidence shall mean the gradual caving in or sinking of an area of land.

Subwatershed shall mean a hydrologic area less than the entire area under the jurisdiction of a drainage authority.

Surface Water shall mean water that collects on the surface of the ground.

SWCD shall mean the Soil and Water Conservation District.

Tables shall mean to postpone consideration of permit until the following Board meeting.

Transferee shall mean a person to which a permit is transferred.

Top-of-Bank shall mean the first major change in the slope of the incline from the ordinary high water level of a water body.

Subsurface tile drainage shall mean an agriculture practice that removes excess water from soil subsurface.

Surface drainage shall mean the removal of surface water by development of the slope of the land utilizing systems of drains to carry away the surplus water.

USACE shall mean U.S. Army Corps of Engineers.

Waste shall mean garbage, municipal refuse, sewage sludge, chemical, agricultural wastes or other substances which may or tends to cause pollution of the waters of the District. Waste does not include animal manure when used as a fertilizer, earthen fill, rocks, boulders or other material normally used in construction operations.

Waterway shall mean a route for travel by water

Wetlands shall mean a lowland covered with shallow and sometimes temporary or intermittent water. This includes wetlands as described in U.S. Fish and Wildlife Circular No. 39 including Types 1 thru Type 8.

Work or Works shall mean any construction, maintenance, repairs or improvements.

100-year Floodplain shall mean the area within and adjacent to a watercourse or water basin, as those terms are defined in M.S. 103G that is inundated during the 24-hour precipitation event with a recurrence interval of 100 years.

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