

Appendix A –

NRCS Wisconsin Conservation Standard

606-Subsurface Drain

Standard 608- Subsurface Drain, Main or Lateral

DATCP Chapter 48 - Drainage Districts

SUBSURFACE DRAIN

(Feet)
Code 606

Natural Resources Conservation Service
Conservation Practice Standard

I. Definition

A conduit installed beneath the ground surface to collect and/or convey excess water.

II. Purpose

This practice may be applied as part of a resource management system to achieve one or more of the following purposes.

- Remove or distribute excessive soil water.
- Remove salts and other contaminants from the soil profile.

III. Conditions Where Practice Applies

This standard applies to agricultural land where a shallow water table exists and where a subsurface drainage system can mitigate the following adverse conditions caused by excessive soil moisture.

- Poor health, vigor and productivity of plants.
- Poor field trafficability.
- Accumulation of salts in the root zone.
- Health risk and livestock stress due to pests such as flukes, flies, or mosquitoes.
- Wet soil conditions around farmsteads, structures, and roadways.

This standard also applies where collected excess water can be distributed through a subsurface water utilization or treatment area.

IV. Federal, Tribal, State, and Local Laws

Users of this standard should be aware of potentially applicable federal, tribal, state and local laws, rules, regulations or permit requirements governing subsurface drains. This standard does not contain the text of federal, tribal, state, or local laws.

V. Criteria

The following criteria apply to all purposes.

A. Capacity

Design capacity shall be based on the following, as applicable.

1. Application of a locally proven drainage coefficient for the acreage drained. The minimum coefficients are shown in Tables 1 and 2.

Table 1
Drainage Coefficients
(No Open Inlets)

Soil	Field Crops (inches)	Truck Crops (inches)
Mineral	$\frac{3}{8}$ to $\frac{1}{2}$	$\frac{1}{2}$ to $\frac{3}{4}$
Organic	$\frac{1}{2}$ to $\frac{3}{4}$	$\frac{3}{4}$ to $1\frac{1}{2}$

The condition in Table 1 assumes that surface drainage is adequate. The selected drainage coefficient applies to the entire area being drained.

Table 2
Drainage Coefficients
(Surface Inlets in Subsurface Drains)

Soil	Field Crops		Truck Crops	
	Blind Inlets (inches)	Open Inlets (inches)	Blind Inlets (inches)	Open Inlets (inches)
Mineral	$\frac{1}{2}$ to $\frac{3}{4}$	$\frac{1}{2}$ to 1	$\frac{3}{4}$ to 1	1 to $1\frac{1}{2}$
Organic	$\frac{1}{2}$ to 1	$\frac{1}{2}$ to $1\frac{1}{2}$	$\frac{3}{4}$ to 2	2 to 4

Note: A $\frac{1}{2}$ -inch coefficient may be used if the organic soil occurs only as a small pocket in the vicinity of the inlet.

The selected drainage coefficient from Table 2 will apply to the entire watershed contributing runoff to the surface inlet, except where only a small amount of runoff will be impounded at the location of the inlet with the remainder flowing away in a confined channel. For the latter case, the drain (tile) shall be large enough to remove the impounded water in 24 hours, plus providing additional capacity for the

required internal drainage. Blind inlets should only be used in areas where surface drainage will handle most of the surface water.

2. Yield of groundwater based on the expected deep percolation of irrigation water from the overlying fields.
3. Comparison of the site with other similar sites where subsurface drain yields have been measured.
4. Measurement of the rate of subsurface flow at the site during a period of adverse weather and groundwater conditions.
5. Application of Darcy's law to lateral or artesian subsurface flow.
6. Contributions from surface inlets based on hydrologic analysis or flow measurements.

B. Size

The size of subsurface drains shall be computed by applying Manning's formula, using roughness coefficients recommended by the manufacturer of the conduit. The size shall be based on the maximum design flow rate and computed by using one of the following assumptions:

1. The hydraulic gradeline parallel to the bottom grade of the subsurface drain with the conduit flowing full at design flow (normal condition, no internal pressure).
2. The conduit flowing partly full where a steep grade or other conditions require excess capacity.
3. The conduit flowing under pressure with hydraulic grade line set by site conditions, which differs from the bottom grade of the subsurface drain.

For assumptions 1 or 2 above, the minimum size of subsurface drains may be determined using the drainage charts in the NRCS National Engineering Handbook (NEH) Part 650, Engineering Field Handbook, Chapter 14.

All subsurface drains shall have a nominal diameter that equals or exceeds 3 inches.

C. Internal Hydraulic Pressure

Drains are normally designed to flow with no internal pressure, and the flow is normally classified as open channel. The design internal pressure of drains shall not exceed the limits recommended by the manufacturer of the conduit.

D. Horizontal Alignment

A change in horizontal direction of the subsurface drain shall be made by one of the following methods:

1. The use of manufactured fittings.
2. The use of junction boxes or manholes.
3. A gradual curve of the drain trench on a radius that can be followed by the trenching machine while maintaining grade.

E. Location, Depth, and Spacing

The location, depth, and spacing of the subsurface drain shall be based on site conditions including soils, topography, groundwater conditions, crops, land use, outlets, saline or sodic conditions, and proximity to wetlands.

The minimum depth of cover over subsurface drains may exclude sections of conduit near the outlet or through minor depressions, providing these sections of conduit are not subject to damage by frost action or equipment travel.

Continuous pipe shall be used where it is not feasible to obtain cover as specified, such as where drain lines cross waterways, or roads, the outlet end of mains, or near structures. The continuous pipe shall be of sufficient strength and durability to withstand expected loadings and weathering.

In mineral soils, the minimum depth of cover over subsurface drains shall be 2.0 feet.

In organic soils, the minimum depth of cover after initial subsidence shall be 3.0 feet. If water control structures are installed and managed to limit oxidation and subsidence of the soil, the minimum depth of cover may be reduced to 2.5 feet.

For flexible conduits, maximum burial depths shall be based on manufacturer's recommendations for the site conditions, or based on a site-specific engineering design consistent with methods in NRCS National Engineering Handbook (NEH), Part 636, Chapter 52, Structural Design of Flexible Conduits.

For computation of maximum allowable loads on subsurface drains of all materials, use the trench and bedding conditions specified and the compressive strength of the conduit. The design load on the conduit shall be based on a combination of equipment loads, trench loads, and road traffic as applicable.

Equipment loads shall be based on the maximum expected wheel loads for the equipment to be used, the minimum height of cover over the conduit, and the trench width.

Equipment loads on the conduit may be neglected when the depth of cover exceeds 6 feet. Trench loads shall be based on the type of backfill over the conduit, the width of the trench, and the unit weight of the backfill material.

F. Minimum Velocity and Grade

In areas where sedimentation is not a hazard, minimum grades shall be based on site conditions and a velocity of not less than 0.5 feet per second. If a sedimentation hazard exists, a velocity of not less than 1.4 feet per second shall be used to establish the minimum grades.

Otherwise, provisions shall be made for preventing sedimentation by use of filters or by collecting and periodically removing sediment from installed traps, or by periodically cleaning the lines with high-pressure jetting systems or cleaning solutions.

G. Maximum Velocity

Design velocities for perforated or open joint pipe shall not exceed those given in Table 3, unless special protective measures are installed. Design velocities with protective measures shall not exceed manufacturer's recommended limits.

Table 3
Maximum Flow Velocities by Soil Texture

Soil Texture	Velocity (ft./sec.)
Sand and sandy loam Muck (sapric)	3.5
Silt and silt loam Mucky peat (hemic)	5.0
Silty clay loam	6.0
Clay and clay loam Peat (fibric)	7.0
Coarse sand or gravel	9.0

On sites where topographic conditions require drain placement on steep grades and design velocities greater than indicated in Table 3, special measures shall be used to protect the conduit or surrounding soil.

Protective measures for high velocities shall include one or more of the following, as appropriate:

1. Enclose continuous perforated pipe or tubing with fabric type filter material or properly graded sand and gravel.
2. Use non-perforated continuous conduit or a watertight pipe, and sealed joints.
3. Place the conduit in a sand and gravel envelope, or initial backfill with the least erodible soil available.
4. Select rigid butt end pipe or tile with straight smooth sections and square ends to obtain tight fitting joints.
5. Wrap open joints of the conduit with tar-impregnated paper, burlap, or special fabric-type filter material.
6. Install larger diameter drain conduit in the steep area to help assure a hydraulic grade line parallel with the conduit grade.
7. Install open air risers for air release or entry at the beginning and downstream end of the high velocity section.

Releases from drainage water management structures shall not cause flow velocities in perforated or open joint drains to exceed allowable velocities in Table 3, unless protective measures are installed.

H. Thrust Control

Follow pipe manufacturer's recommendations for thrust control or anchoring, where the following conditions exist.

1. Axial forces that tend to move the pipe down steep slopes.
2. Thrust forces from abrupt changes in pipeline grade or horizontal alignment, which exceed soil bearing strength.
3. Reductions in pipe size.

In the absence of manufacturer's data, thrust blocks shall be designed in accordance with NEH, Part 636, Chapter 52, Structural Design of Flexible Conduits.

I. Outlets

Drainage outlets shall be adequate for the quantity and quality of water to be discharged. Sinkholes and wells are not to be used as outlets.

Outlets to surface water shall be designed to operate without submergence under normal conditions.

For discharge to streams or channels, the outlet invert shall be located above the elevation of normal flow and at least 1.0 foot above the channel bottom.

Outlets shall be protected against erosion and undermining of the conduit, entry of tree roots, damaging periods of submergence, and entry of rodents or other animals into the subsurface drain.

A continuous section of pipe without open joints or perforations, and with stiffness necessary to withstand expected loads, shall be used at the outlet end of the drain line. Minimum lengths for the outlet section of conduit are provided in Table 4. Single-wall Corrugated Plastic Pipe is not suitable for the section that outlets into a ditch or channel.

For outlets into sumps, the discharge elevation shall be located above the elevation at which pumping is initiated.

Table 4
Minimum Length of Outlet Pipe Sections

Pipe Diameter (in.)	Min. Section Length (ft.)
8 and smaller	10
Larger than 8	20

The use and installation of outlet pipe shall conform to the following requirements:

1. If burning vegetation on the outlet ditch bank is likely to create a fire hazard, the material from which the pipe is fabricated must be fireproof.
2. At least two-thirds of the pipe section shall be buried in the ditch bank, and the cantilever section must extend to the toe of the ditch side slope, or the side slope shall be protected from erosion.
3. If ice or floating debris may damage the outlet pipe, the outlet shall be recessed to the extent that the cantilevered part of the pipe will be protected from the current of flow in the ditch or channel.
4. Headwalls used for subsurface drain outlets must be adequate in strength and design to avoid washouts and other failures.

J. Protection from Biological and Mineral Clogging

Drains in certain soils are subject to clogging of drain perforations by bacterial action in association with ferrous iron, manganese, or sulfides. Iron ochre can clog drain openings and can seal manufactured (fabric) filters. Manganese deposits and sulfides can clog drain openings.

Where bacterial activity is expected to lead to clogging of drains, access points for cleaning the drain lines shall be provided.

Where possible, outlet individual drains to an open ditch to isolate localized areas of contamination and to limit the translocation of contamination throughout the system.

K. Protection From Root Clogging

Problems may occur where drains are in close proximity to perennial vegetation. Drain clogging may result from root penetration by water-loving trees, such as willow, cottonwood, elm, soft maple, some shrubs, grasses, and deep-rooted perennial crops growing near subsurface drains.

The following steps may reduce the incidence of root intrusion:

1. Install a continuous section of non-perforated pipe or tubing with sealed joints, through the root zone.
2. Remove water-loving trees for a distance of at least 100 feet on each side of the drain, and locate drains a distance of 50 feet or more from non-crop tree species.
3. Provide for intermittent submergence of the drain to limit rooting depth by installing a structure for water control (e.g., an inline weir with adjustable crest) that allows for raising the elevation of the drain outlet.

L. Water Quality

Septic systems shall not be directly connected to the subsurface drainage system, nor shall animal waste be directly introduced into the subsurface drainage system.

M. Materials

Subsurface drains include flexible conduits of plastic, bituminized fiber, or metal; rigid conduits of vitrified clay or concrete, or other materials of acceptable quality.

The conduit shall meet strength and durability requirements for the site. All conduits shall meet or exceed the minimum requirements of the appropriate specifications published by the American Society for Testing and Materials (ASTM), American Association of State Highway Transportation Officials (AASHTO), or the American Water Works Association (AWWA); and the minimum requirements indicated in NRCS FOTG Section IV, Wisconsin Construction Specification 44, Corrugated Polyethylene Tubing.

N. Foundation

If soft or yielding foundations are encountered, the conduits shall be stabilized and protected from settlement. The following methods are acceptable for the stabilization of yielding foundations.

1. Remove the unstable material and provide a stable bedding of granular envelope or filter material.
2. Provide continuous cradle support for the conduit through the unstable section.
3. Bridge unstable areas using long sections of conduit having adequate strength and stiffness to ensure satisfactory subsurface drain performance.
4. Place conduit on a flat, treated plank. This method shall not be used for flexible (e.g., corrugated plastic pipe) without proper bedding between the plank and conduit.

O. Filters and Filter Material

Filters shall be used around conduits, as needed, to prevent movement of the surrounding soil material into the conduit. The need for a filter shall be determined by the characteristics of the surrounding soil material, site conditions, and the velocity of flow in the conduit. A suitable filter shall be used if any of the following conditions exist.

1. Local experience with soil conditions indicates a need.
2. Soil materials surrounding the conduit are dispersed clays, silts with a Plasticity Index less than 7, or fine sands with a Plasticity Index less than 7.
3. The soil is subject to cracking by desiccation.
4. The method of installation may result in inadequate consolidation between the conduit and backfill material.

If a sand-gravel filter is specified, the filter gradation shall be based designed in accordance with NEH, Part 633, Chapter 26, Gradation Design of Sand and Gravel Filters.

Specified filter material must completely encase the conduit such that all openings are covered with at least 3 inches of filter material, except where the top of the conduit and side filter material are to be covered by a sheet of plastic or similar impervious material to reduce the quantity of filter material required. In all cases, the resulting flow pattern through filter material shall be a minimum of 3 inches in length.

Geotextile filter materials may be used, provided that the effective opening size, strength, durability, and permeability are adequate to prevent soil movement into the drain throughout the expected life of the system. Geotextile filter material shall not be used where the silt content of the soil exceeds 40 percent.

P. Envelopes and Envelope Material

Envelopes shall be used around subsurface drains if needed for proper conduit bedding or to improve flow characteristics into the conduit.

Materials used for envelopes do not need to meet the gradation requirements of filters, but must not contain materials that will cause an accumulation of sediment in the conduit, or materials that will render the envelope unsuitable for bedding of the conduit.

Envelope materials shall consist of sand-gravel, organic, or similar material. One hundred percent of sand-gravel envelope materials shall all pass a 1.5-inch sieve; not more than 30 percent shall pass a Number 60 sieve; and not more than 5 percent shall pass the Number 200 sieve.

Organic or other compressible envelope materials shall not be used below the centerline of flexible conduits. All organic or other compressible materials shall be of a type that will not readily decompose.

Q. Placement and Bedding

Placement and bedding requirements apply to both excavation trenching and plow type installations.

Place the conduit on a firm foundation to ensure proper alignment.

Conduits shall not be placed on exposed rock, or on stones greater than 1½ inches for conduits 6 inches or larger in diameter, or on stones greater

than ¾ inch for conduit less than 6 inches in diameter. Where site conditions do not meet this requirement, the trench must be over-excavated a minimum of 6 inches and refilled to grade with a suitable bedding material.

If installation will be below a water table or where unstable soils are present, special equipment, installation procedures, or bedding materials may be needed. These special requirements may also be necessary to prevent soil movement into the drain or plugging of the envelope if installation will be made in materials such as soil slurries.

For the installation of corrugated plastic pipe with diameters of 8 inches or less, one of the following bedding methods shall be specified.

1. A shaped groove providing an angle of support of 90 degrees or greater shall be provided in the bottom of the trench for tubing support and alignment.
2. A sand-gravel envelope, at least 3 inches thick, to provide support.
3. Compacted bedding material beside and to 3 inches above the conduit.

For the installation of corrugated plastic pipe with diameters larger than 8 inches, the same bedding requirements shall be met except that a semi-circular or trapezoidal groove shaped to fit the conduit with a support angle of 120 degrees will be used rather than a V-shaped groove.

For rigid conduits installed in a trench, the same requirements shall be met except that a groove or notch is not required. For trench installations where a sand-gravel or a compacted bedding is not specified, the initial backfill for the conduit shall be selected material containing no hard objects (e.g., rocks or consolidated chunks of soil) larger than 1.5 inches in diameter. Initial backfill shall be carried to a minimum of 3 inches above the conduit.

R. Auxiliary Structures and Protection

The capacity of any structure installed in the drain line shall be no less than that of the line or lines feeding into or through them.

Structures for water table management, with provisions to elevate the outlet and allow submergence of the upstream drain, shall meet

applicable design criteria in Wisconsin NRCS FOTG Conservation Practice Standards 587, Structure for Water Control, and 554, Drainage Water Management.

If the drain system is to include underground outlets, the capacity of the surface water inlet shall not be greater than the maximum design flow in the downstream drain line or lines. Covers or trash racks shall be used to ensure that no foreign materials are allowed in the drain lines. Inlets shall be protected from entry of animals or debris. If sediment may pose a problem, sediment traps shall be installed.

The capacity of a relief well system shall be based on the flow from the aquifer, the well spacing, and other site conditions, and shall be adequate to lower the artesian water head to the desired level. Relief wells shall not be less than 4 inches in diameter.

Junction boxes, manholes, catch basins, and sand traps must be accessible for maintenance. A clear opening of not less than 2.0 feet will be provided in either circular or rectangular structures.

The drain system shall be protected against turbulence created near outlets, surface inlets, or similar structures. Continuous non-perforated or closed-joint pipe shall be used in drain lines adjoining the structure where excessive velocities will occur.

Junction boxes shall be installed where three or more lines join or if two lines join at different elevations. If the junction box is buried, a solid cover should be used, and the junction box should have a minimum of 1.5 feet of soil cover.

If not connected to a structure, the upper end of each subsurface drain line will be closed with a tight-fitting cap or plug of the same material as the conduit, or other durable materials.

Watertight conduits designed to withstand the expected loads shall be used where subsurface drains cross under irrigation canals, ditches, or other structures.

VI. Considerations

When planning, designing, and installing this practice, the following items should be considered.

- Protection of shallow drains, auxiliary structures, and outlets from damage due to freezing and thawing.
- Proper surface drainage to reduce the required intensity of the subsurface drainage system.
- Designs that incorporate drainage water management practices (or facilitate its future incorporation) to reduce nutrient loading of receiving waters.
- Drainage laterals oriented along elevation contours to improve the effectiveness of drainage water management structures.
- The effects of drainage systems on runoff volume, seepage, and the availability of soil water needed for plant growth.
- Confirmation of soil survey information with site investigation, including auguring and shallow excavations to identify soil profile hydraulic characteristics, soil texture layering, water table depth, etc.
- The effects of drainage systems on the hydrology of adjacent lands.
- Subsoiling or ripping of soils with contrasting texture layers to improve internal drainage.
- Installations in dry soil profile to minimize problems of trench stability, conduit alignment, and soil movement into the drain.
- The effects to surface water quality.
- Use of temporary flow blocking devices to reduce risk of drain water contamination from surface applications of manure.

VII. Plans and Specifications

Plans and specifications for installing subsurface drains shall be in keeping with this standard and shall describe the requirements for applying the practice to achieve its intended purpose.

At a minimum, plans specifications shall include, as applicable: location of drainage system; wetland delineation(s); conduit lengths, grades, sizes, and type of materials; structure locations, dimensions, and elevations; outlet locations, elevations, and

protection required; and normal water level elevations in outlet ditches or streams.

VIII. Operation and Maintenance

The Operation and Maintenance (O&M) Plan shall provide specific instructions for operating and maintaining the system to insure proper function as designed. At a minimum, the O&M Plan shall address:

- Necessary periodic inspection and prompt repair of system components (e.g., structures for water control, underground outlets, vents, drain outlets, trash and rodent guards).
- Winterization protection from freezing conditions for drainage systems in cold climates.

IX. References

USDA, NRCS, National Engineering Handbook, Part 624, Chapter 4, Subsurface Drainage.

USDA, NRCS, National Engineering Handbook, Part 633, Chapter 26, Gradation Design of Sand and Gravel Filters.

USDA, NRCS, National Engineering Handbook, Part 636, Chapter 52, Structural Design of Flexible Conduits.

USDA, NRCS, Wisconsin Field Office Technical Guide, Section IV, Conservation Practice Standards and Specifications.



**NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD
SURFACE DRAIN, MAIN OR LATERAL
CODE 608
(FT.)**

DEFINITION

An open drainage ditch for moving the excess water collected by a field ditch or subsurface drain to a safe outlet.

PURPOSE

This practice is applied for one or more of the following purposes:

- To convey excess surface or shallow subsurface water from a field ditch to a safe outlet.
- To convey excess subsurface water from a subsurface drain to a safe outlet.

CONDITIONS WHERE PRACTICE APPLIES

This standard applies to ditches that receive and convey drainage water from surface and subsurface drains.

This standard does not apply to collection of water from the surface or subsurface of the field. Use WI NRCS Conservation Practice Standard (WI NRCS CPS), Surface Drain (Code 607), or Subsurface Drain (Code 606), for that function.

CRITERIA

General Criteria Applicable to All Purposes

Design and install measures according to a site-specific plan in accordance with all local, State, Tribal, and Federal laws and regulations. Apply measures that are compatible with improvements planned or being carried out by others.

If wetlands are present, complete an appropriate wetland determination per established procedures.

Drainage Requirements. Locate and design mains and laterals to serve as integral parts of a surface or subsurface drainage system that meets the conservation and land use needs.

Capacity. Size the ditch capacity to provide for the removal of excess water, based on climatic and soil conditions and the needs of crops. Base the design capacity of the ditch on the watershed area; the topographic, soil, and land use information; and use of the appropriate drainage curves or coefficients.

Information on drainage curves may be found in NRCS National Engineering Handbook (NEH), Part 650, Engineering Field Handbook (EFH), Chapter 14, Water Management (Drainage).

In irrigated areas, the capacity analysis will include the effect of irrigation water deliveries, irrigation

canal or ditch losses, soil stratification and permeability, deep percolation losses, field irrigation losses, subsurface drain discharge, and quantity of surface water to be carried by the drainage ditch.

Whether the outlet is by gravity flow or by pumping, design the outlet to be sufficient for the quantity and quality of water conveyed.

Protect the structural integrity and flow capacity of existing structures such as bridges or culverts within the system.

Hydraulic Grade Line. Determine the hydraulic grade line for drainage ditch design from control points, including elevations of significant low areas served by the ditch and hydraulic grade lines of any tributary ditches and the outlet. Set the hydraulic grade line of the ditch low enough to provide positive drainage into the ditch during the design flow event, plus calculated freeboard, or a minimum of 0.5 feet.

Account for the effects of hydraulic losses caused by culverts, bridges, or other obstructions in the channel section in the design. Design culverts and bridges with sufficient hydraulic capacity and depth to satisfy drainage needs and to minimize obstruction to flow. Use WI NRCS CPS, Stream Crossing (Code 578).

Depth. Design the drainage ditch deep enough to allow for normal siltation. For a ditch that serves as an outlet for subsurface drains, design for a normal water surface at or below the invert of the outlet end of the drain. The normal water surface is the elevation of the usual base flow during the growing season. Where site conditions allow, design the flow line elevation of the main or lateral to be at least 1 foot lower than the invert elevations of subsurface drains or field ditches that outlet into the main or lateral.

Cross Section. Design the ditch cross section to meet the combined requirements of capacity, limiting velocity, depth, side slopes, bottom width, and, if needed, allowances for initial sedimentation, all below the design hydraulic grade line. Design side slopes based on site conditions to be stable and meet maintenance requirements.

Where a low-flow or two-stage channel is planned, use the design process in NRCS National Engineering Handbook (NEH), Part 654.1005.

Side slope limits for specific soils and/or geologic materials in the main or lateral shall be no steeper than those recommended for ordinary conditions in NRCS NEH, Part 650, Engineering Field Handbook, Chapter 14, Section 650.1412 (d). Account for side-slope stability during rapid drawdown conditions in the design.

Velocity. Ensure stability of the ditch bottom and side slopes. Base the maximum permissible design velocity, or maximum permissible stress, on site conditions. Avoid potential for excessive sedimentation accounting for the soils and sediment delivery amount for the particular location. Without site specific information, the minimum design velocity is 1.4 feet per second.

The velocity for newly constructed channels with drainage areas in excess of 1 square mile must meet the stability requirements specified for the WI NRCS CPS, Open Channel (Code 582).

Use Manning's equation to determine the design velocity. Select Manning's n value based on channel hydraulic radius, channel alignment, an aged channel condition, and probable vegetative growth expected under normal maintenance. Unless special site studies are available to justify other values, use the appropriate Manning's n factor in NRCS NEH, Part 650, Engineering Field Handbook, Chapter 14, Section 650.1412 (d), or in the local drainage guide, to determine the required design capacity.

Berms and Spoil Banks. Locate adjacent berms at a safe distance from the drain and shape berm-side

slopes as required to:

- Provide access for maintenance equipment; eliminate the need for moving spoil banks in the future;
- Provide for work areas and facilitate spoil bank spreading; prevent excavated material from washing or rolling back into ditches; and
- Lessen sloughing of ditch banks caused by heavy loads near the edge of the ditch banks.

Spread spoil material as soon as practical in accordance with WI NRCS CPS, Spoil Spreading (Code 572).

Where spoil material is placed along the ditch rather than spread over adjacent fields, ensure that the spoil banks have stable side slopes. Make provision to convey water flows through the spoil bank and into the ditch without causing serious erosion. Maximum berm height is 3 feet above original ground. Minimum berm width is shown in Table 1.

Table 1: Minimum berm width as a function of ditch depth

Ditch depth (ft)	Minimum berm width (ft)
<6	8
6–8	10
>8	15

Related Structures and Ditch Protection. Protect drainage mains and laterals against erosion where surface water or shallow ditches enter deeper ditches. Use suitable measures such as chutes, drop structures, pipe drops, grassed waterways, critical area planting, filter strips, or specially graded channel entrances to minimize side inlet erosion. Use grade control structures, bank protection, or other suitable measures if necessary to reduce velocities and control erosion. Grade control structures must meet the criteria in WI NRCS CPS, Grade Stabilization Structure (Code 410).

Protect structures from washout by flows exceeding design capacity.

Design each structure for an open-ditch system according to NRCS standards for the kind of structure and type of construction used.

Provide a travel way if needed for movement and operation of equipment required for maintenance of the channel.

Channel vegetation. Establish vegetation according to WI NRCS CPS, Critical Area Planting (Code 342). If natural revegetation will adequately control erosion, provide documentation regarding the time for establishment of protection and needed efforts to control invasive species.

CONSIDERATIONS

When planning this practice consider:

- The use of a low-flow or two-stage channel design.
- Impacts of sedimentation downstream.
- Possible damages above or below the point of discharge that might involve legal actions or other off-site impacts.
- Potential impacts on wetlands.

- Impacts on cultural resources.
- Use of riparian buffers, filter strips, and fencing.
- Potential water quality effects of soluble pollutants and sediment-attached pollutants.
- Impacts to wildlife.
- Impacts of invasive species movement and establishment through the drainage network.

PLANS AND SPECIFICATIONS

Prepare plans and specifications for constructing the drainage main or lateral in keeping with this standard and describing the requirements for constructing the practice to achieve its intended purpose.

The owner or operator is responsible for securing all required permits or approvals and for performing in accordance with such laws and regulations. The landowner and/or contractor is responsible for locating all buried utilities in the project area, including drainage tile and other structural measures.

Plans and specification shall include, but not limited to:

- Typical cross sections of the lateral.
- Grade of drains.
- Spacing of drains.
- Location of drains.
- Detail of structures.
- Vegetative requirements, if applicable.
- Outlet protection if needed.

OPERATION AND MAINTENANCE

Provide a site-specific operation and maintenance plan to the landowner or operator before the practice is installed.

Include guidance in the plan for the routine maintenance and operational needs of the drainage ditch. Include guidance on periodic inspections and post-storm inspections to detect and minimize damage to the drain.

REFERENCES

USDA NRCS National Engineering Handbook, Part 650, Engineering Field Handbook, Chapter 14, Water Management (Drainage).

USDA NRCS National Engineering Handbook, Part 654, Stream Restoration Design, Chapter 10, Two-Stage Channel Design.

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Chapter ATCP 48

DRAINAGE DISTRICTS

Subchapter I — Definitions

ATCP 48.01 Definitions.

Subchapter II — Assessing Drainage District Costs and Benefits

ATCP 48.02 Assessing costs against lands in a drainage district.
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Subchapter IX — Grants to County Drainage Boards

ATCP 48.60 Grants to county drainage boards.

Note: This chapter establishes legal obligations related to drainage districts:

Drainage districts are special purpose districts formed for the purpose of draining land, primarily for agricultural purposes. Lands within a drainage district are drained by means of common drains that cross individual property boundaries. Chapter 88, Stats., spells out procedures for creating, modifying and dissolving drainage districts.

County drainage boards are responsible for operating drainage districts in compliance with ch. 88, Stats., and this chapter. A county drainage board may levy assessments against landowners in a drainage district to pay for the design, construction and maintenance of district drains, and to pay other district operating costs. The county drainage board must allocate cost assessments between landowners based on a drainage district benefit assessment that complies with this chapter.

The state of Wisconsin department of agriculture, trade and consumer protection monitors county drainage board compliance with ch. 88, Stats., and this chapter. Drainage district specifications and construction projects must be approved by the department. Within the limits of available resources, the department also provides technical assistance to county drainage boards.

County drainage boards are primarily responsible for resolving drainage disputes within and between drainage districts. A landowner may petition a county drainage board to comply with applicable requirements under ch. 88, Stats., and this chapter. A landowner may also ask the department to order a county drainage board to comply.

A county drainage board may prevent municipalities and other persons from connecting their drains to district drains, except under terms prescribed by the county drainage board. A county drainage board may also require a person to disconnect a drain. If a proposed connection will increase costs to the drainage district, the county drainage board may assess costs to the person wishing to connect.

Landowners in a drainage district have certain rights and responsibilities prescribed by ch. 88, Stats., and this chapter. Drainage rights are based on drain specifications formally established by the circuit court (or by a county drainage board under this chapter). A county drainage board may not change established drain specifications without department approval. The county drainage board must comply with procedures designed to protect landowner rights.

A change of land ownership does not relieve or deprive a succeeding landowner of rights or responsibilities that run with the land under ch. 88, Stats., or this chapter.

A county drainage board must comply with public records and open meeting laws under ch. 19, Stats. A county drainage board must also comply with specific procedures required by ch. 88, Stats., and this chapter.

This chapter is adopted under authority of ss. 88.11 and 93.07 (1), Stats.

Questions related to drainage districts and this chapter may be referred to the county drainage board or to the department at the following address:

Wisconsin Department of Agriculture, Trade and Consumer Protection
 Division of Agricultural Resource Management
 Bureau of Land and Water Resources
 P.O. Box 8911
 Madison, WI 53708-8911

Subchapter I — Definitions

ATCP 48.01 Definitions. In this chapter:

(1) “Agricultural lands” means lands in agricultural use as provided under s. 91.01 (1), Stats.

(2) “Base flow” means the normal flow of water not associated with rainfall events.

(3) “Confirmed assessment” means an assessment of costs or benefits that has been confirmed by a circuit court under ch. 88, Stats., or an assessment of costs or benefits ordered by a county drainage board after May 12, 1994.

(4) “Construction costs” means costs incurred by a drainage district for a construction project. “Construction costs” includes damages awarded to landowners in a drainage district who are adversely affected by a construction project, but does not include maintenance, restoration or operating costs.

(6) “County drainage board” means the board created and appointed under s. 88.17, Stats.

(6m) “Cross-section” means a series of vertical sections of a drain, taken at periodic intervals along the length of the drain at right angles to the center line of the alignment of the drain.

Note: See s. ATCP 48.20 (1) (b).

(7) “Department” means the state of Wisconsin department of agriculture, trade and consumer protection.

(8) “District corridor” means the access corridor and buffer strip established and maintained around a district ditch under s. ATCP 48.24.

(9) “District ditch” means a district drain which is in the form of a ditch.

(10) “District drain” means a drain, including a main or lateral drain and all points of inlet to that drain, that is located within a drainage district and is designated as a district drain by one of the following:

(a) A court order.

(b) A county drainage board action that complies with s. ATCP 48.20 (5) or 48.21 (2).

Note: A drain is not necessarily a “district drain” merely because it is located on land within a drainage district, or merely because it provides drainage for more than

one landowner. In some cases, lands within a drainage district are drained by private drains that empty into district drains. Private drains are not operated or maintained by the county drainage board; nor is there any district corridor surrounding a private drain.

(11) “Drain” means any facility, including a ditch, tile, pipe or other facility, for draining water from land. “Drain” includes structures and facilities, such as dams, culverts, pumps, inlet facilities, dikes, dams and levees, that are appurtenant to a drain.

(12) “Drainage district” means a drainage district that is subject to ch. 88, Stats., regardless of whether the drainage district was formed under ch. 88, Stats., former ch. 89, Stats., or any other law.

(13) “Drainage ditch” or “ditch” means a drain which is in the form of an open surface channel. “Ditch” includes the ditch bed, ditch banks, and any structures and facilities that are appurtenant to the ditch.

(13m) “Grade profile” means a vertical section along the alignment of a drain.

Note: See s. ATCP 48.20 (1) (c).

(13r) “Formally established” means established or reestablished by any of the following:

(a) Circuit court order.

(b) County drainage board action that complies with s. ATCP 48.20 or 48.21.

(14) “Maintenance costs” means costs for the maintenance and repair of district drains and corridors under subch. IV.

(14m) “Navigable waters” has the meaning given in s. 30.01 (4m), Stats.

(15) “Nonagricultural lands” means lands other than agricultural lands, including lands in residential, commercial, industrial and transportation use.

(17) “Operating costs” means costs, other than construction, maintenance or restoration costs, that are lawfully incurred by a drainage district.

(18) “Parcel” means a tract of land, all of which is held by the same landowner or landowners.

(19) “Person” means any individual, partnership, corporation, firm, business trust, estate, trust, association, government, governmental subdivision or agency, or any other legal or commercial entity.

(20) “Private drain” means any drain other than a district drain. “Private drain” includes a drain operated by the state or by a county, town, village or city.

(21) “Restoration” or “restoration project” means dredging or other operations designed to bring the cross-section, grade profile or alignment of a district drain into closer conformity with the formally established cross-section, grade profile or alignment of that district drain.

(22) “Restoration costs” means costs incurred for the restoration of a district drain.

(23) “Stable” means resistant to erosion or deformation.

(24) “Ten-year peak discharge” or “10-year peak discharge” means the maximum flow of water resulting from a 10-year 24-hour rainfall event.

(25) “Wetlands” has the meaning given in s. 23.32, Stats.

(26) “Woody vegetation” means plants that contain substantial amounts of secondary xylem. “Woody vegetation” includes shrubs and trees but does not include herbs.

History: Cr. Register, June, 1995, No. 474, eff. 7-1-95; r. (5) and (16), cr. (6m), (13m), (13r), (14m), (26), r. and recr. (9) to (11) and (13), am. (21), Register, August, 1999, No. 524, eff. 9-1-99.

Subchapter II — Assessing Drainage District Costs and Benefits

ATCP 48.02 Assessing costs against lands in a drainage district. (1) GENERAL. Pursuant to ch. 88, Stats., and this chapter, a county drainage board may, after public hearing,

issue an order levying cost assessments against land in a drainage district to cover costs lawfully incurred by the drainage district, including construction, maintenance, restoration, legal and operating costs.

Note: See, e.g., ss. 88.23, 88.35, 88.45, 88.63, 88.70, 88.71, 88.72 and 88.78, Stats.

(2) CONSTRUCTION COST ASSESSMENTS; LIMITATIONS. (a) A county drainage board may not levy cost assessments to construct a new drainage district if the construction cost for that new district will exceed 75% of the total assessed benefits accruing to district landowners from the construction of that new district.

Note: See s. 88.36 (6), Stats. Benefits are assessed to landowners according to s. ATCP 48.06.

(b) A county drainage board may not levy cost assessments to construct enlarged or supplemental drains unless the drainage board finds that the benefits from the enlarged or supplemental drains will exceed the cost of construction.

Note: See s. 88.71 (1m), Stats. Benefits to landowners are assessed according to s. ATCP 48.06.

(c) A county drainage board may not, without obtaining the landowner’s consent and sufficient security under s. 88.23 (3), Stats., levy a construction cost assessment against any parcel of land if the amount of the assessment, when added to construction cost assessments previously assessed to that parcel of land, exceeds the last confirmed assessment of benefits for that parcel of land. This paragraph does not limit the assessment of maintenance, restoration or operating costs.

Note: See ss. 88.23 (3) and 88.63, Stats. See definitions of “construction costs,” “maintenance costs,” “operating costs,” and “restoration costs” under s. ATCP 48.01 (4), (14), (17) and (22).

(3) ALLOCATING COST ASSESSMENTS. Except as provided under sub. (4), a county drainage board shall allocate cost assessments among all of the parcels of land in a drainage district in proportion to the last confirmed assessment of benefits for each parcel. A county drainage board, when levying cost assessments, may allow a reasonable credit to a landowner who provides maintenance services or other “in kind” payments to the drainage district.

Note: A county drainage board assesses benefits to land parcels in a drainage district according to s. ATCP 48.06, and allocates cost assessments on the basis of those benefit assessments.

(4) CONSTRUCTION COSTS CAUSED BY INDIVIDUAL LANDOWNER.

(a) Except as provided under par. (c), a county drainage board may assess, to a specified parcel of land in a drainage district, the full amount of any construction costs incurred by the drainage district as a direct result of any of the following:

1. A request by the landowner for drainage improvements that are solely of benefit to that land.

Note: Under s. 88.70, Stats., landowners who seek additional drainage for part of a drainage district may also petition the county drainage board to create a subdistrict for that purpose. The county drainage board may create a subdistrict, and may levy additional assessments against lands in the subdistrict to cover the costs of providing additional drainage for that subdistrict.

2. A land use change or other action by the landowner that alters the flow of water into or from a district drain.

3. A land use change or other action by the landowner that increases soil erosion or the movement of suspended solids to a district drain.

4. A failure by the landowner to maintain a private drain on that land in compliance with s. ATCP 48.30 (5).

5. A failure by the landowner to implement necessary erosion control practices on that land, as required by the county drainage board under s. ATCP 48.30 (6).

6. The landowner’s extension of a private drain from the assessed land to land outside the district.

Note: If a private drain is extended or modified without approval, the county drainage board may also issue an order against the offending landowner or initiate an action for damages under s. 88.92, Stats. Alternatively, a county drainage board may annex the newly drained land under s. 88.78, Stats., and may assess the newly drained land according to s. 88.405, Stat.

(b) If, contrary to sub. (2) (c), a construction cost assessment under par. (a) will exceed the last confirmed assessment of benefits for the assessed parcel of land, the county drainage board may order a higher assessment of benefits for that land under s. ATCP

48.06 (2). The assessment of benefits may be increased by the full amount needed to accommodate the construction cost assessment under par. (a).

(c) Paragraph (a) does not apply to any of the following:

1. Maintenance, restoration or operating costs.
2. Construction costs incurred by a drainage district because the county drainage board has failed to comply with this chapter.

(5) ASSESSING COSTS TO STATE AND MUNICIPAL LANDS IN A DRAINAGE DISTRICT. (a) A county drainage board may levy cost assessments against agricultural lands in a drainage district that are owned by the state of Wisconsin, but may not levy cost assessments against other lands owned by the state.

Note: See s. 88.50, Stats.

(b) A county drainage board may levy cost assessments against lands in a drainage district that are owned by a county, town, village or city.

Note: See s. 88.48, Stats. Under s. 88.01 (11), Stats., "lands" include public streets and highways.

History: Cr. Register, June, 1995, No. 474, eff. 7-1-95; am. (3), Register, August, 1999, No. 524, eff. 9-1-99.

ATCP 48.04 Recovering costs from lands outside a drainage district. (1) GENERAL. Except as provided under subs. (2) and (3), a county drainage board may not levy a cost assessment on behalf of a drainage district against lands located outside the drainage district, but may do any of the following:

(a) Refuse to permit the connection of a private drain to a district drain, except as provided under s. 88.93, Stats.

Note: See s. 88.92, Stats.

(b) Initiate an action at law to recover damages, authorized by law, that are sustained by a drainage district as a result of an action or omission by an owner of land located outside the district.

(c) Enter into an agreement with any person under which that person agrees to compensate the drainage district for costs incurred by the drainage district because that person's private drain is connected to a district drain.

(d) Order the annexation, to a drainage district, of lands outside the district that benefit from the operation of any district drain.

Note: See s. 88.78, Stats.

(2) COST ASSESSMENTS AGAINST ANOTHER DRAINAGE DISTRICT. A county drainage board may levy cost assessments against a drainage district for the benefit of another drainage district.

Note: See ss. 88.49 and 88.69, Stats.

(3) ASSESSMENTS AGAINST MUNICIPALITIES FOR ENLARGEMENT OR MAINTENANCE OF DRAINS. A county drainage board may levy cost assessments against a municipality with territory upstream from any drain for any costs of enlarging or maintaining the drain that are attributable to increased water flow from land within the municipality.

Note: See s. 88.64, Stats.

History: Cr. Register, June, 1995, No. 474, eff. 7-1-95.

ATCP 48.06 Assessing benefits to lands in a drainage district. (1) INITIAL ASSESSMENT OF BENEFITS. When a drainage district is created, a county drainage board shall assess the benefits accruing from the drainage district to each parcel of land in the drainage district. The county drainage board shall assess benefits according to ch. 88, Stats., and this section. The drainage board's assessment of benefits shall provide the basis for the drainage board's allocation of cost assessments under s. ATCP 48.02 (3).

Note: See ss. 88.35 and 88.36, Stats.

(2) REASSESSING BENEFITS. (a) If a county drainage board determines that the last confirmed assessment of benefits for a drainage district no longer reflects the actual current benefits to parcels of land in that drainage district, the county drainage board may, after public hearing, issue an order reassessing benefits. A county drainage board may reassess benefits based on land use changes, the construction of new or modified district drains, the

subdivision of lands, or other factors affecting the allocation of benefits to landowners.

Note: A reassessment under par. (a) should adjust all assessed benefits in the district, as necessary, to correct any inequities and injustices found by the board. The adjustment need not be proportional to the former confirmed benefits. See s. 88.46 (2), Stats.

(b) A county drainage board may reassess benefits under par. (a) on its own motion, or in response to a petition from landowners under s. 88.46, Stats. A reassessment of benefits provides the basis for any subsequent allocation of cost assessments under s. ATCP 48.02 (3).

Note: A landowner petition filed with the drainage board under s. 88.46, Stats., must be signed by at least 1/10 of the owners of land in a drainage district, or by the owners of at least 1/10 of the land in a drainage district.

(3) METHOD OF ASSESSMENT OR REASSESSMENT. (a) Except as provided under par. (b), a county drainage board shall assess benefits to agricultural lands according to s. ATCP 48.08, and shall assess benefits to nonagricultural lands according to s. ATCP 48.10.

(b) In lieu of an assessment method specified under s. ATCP 48.08 or 48.10, a county drainage board may adopt an equitable method of assessment which is approved by the owners of at least two-thirds of the assessed lands in the district. The landowners' approval shall be confirmed in a written agreement signed by the approving landowners.

(4) PROTECTED WETLANDS EXCLUDED FROM ASSESSMENT. A county drainage board may not assess benefits under this section to wetlands that are legally protected against drainage.

Note: For purposes of this subsection, "legally protected" wetlands means wetlands that are all of the following:

- (1) Located outside the district corridor.
- (2) Clearly described by means of a survey, map, aerial photograph or other document that indicates the size and location of the wetlands.
- (3) Formally protected from drainage by at least one of the following means:
 - (a) A deed restriction.
 - (b) Enrollment in the federal wetlands reserve program, the federal water bank program, or another federal, state or county program that clearly protects the wetlands from drainage for a term of at least 10 years.
 - (c) A recorded easement for a term of at least 10 years.
 - (d) A master plan, approved by the Wisconsin board of natural resources, covering land owned by the Wisconsin department of natural resources.

(5) BENEFITS RELATED TO EXTENSION OF PRIVATE DRAIN. When assessing benefits to a parcel of land in a drainage district, a county drainage board may include any benefits accruing to lands outside the district which drain to district drains because a private drain has been extended from the assessed parcel to those outside lands.

Note: See also s. ATCP 48.02 (4) (a) 6.

History: Cr. Register, June, 1995, No. 474, eff. 7-1-95.

ATCP 48.08 Assessing benefits to agricultural lands. (1) FACTORS CONSIDERED. When assessing benefits to agricultural lands in a drainage district, a county drainage board shall consider all of the following factors:

(a) The estimated increase in land value resulting from drainage. When estimating an increase in land value, a county drainage board may consider the current and potential uses of the land, taking into account any deed restrictions, easements, restrictive covenants, or other use limitations recorded with the county register of deeds. A potential use does not include a use that is prohibited by law.

(b) The type, depth, quality and character of surface soil and subsoil on the assessed land, and the depth of the water table on that land.

Note: Soils with high water tables normally receive the greatest benefit from drainage.

(c) The amount of drainage required by, or provided to the assessed land.

(d) The thoroughness and reliability of drainage provided.

(e) The amount and frequency of flooding on the assessed land.

(f) The difficulty of draining the assessed land.

(g) Other factors which the county drainage board considers relevant.

Note: Information relevant to the assessment of benefits may be obtained from a variety of sources including soil survey reports, aerial photographs, topographic maps, cropping histories, wetland maps, maps of original benefitted acres, interviews with individual landowners and on-site investigations.

(2) BENEFITS ASSESSED BY 40-ACRE PARCELS. Benefits to agricultural lands shall be assessed parcel by parcel, with each parcel being not larger than 40 acres. If a landowner's parcel is larger than 40 acres, benefits shall be assessed for sub-parcels that are not larger than 40 acres each.

Note: See s. 88.35, Stats.

(3) ACREAGE EXCLUDED FROM ASSESSMENT. A county drainage board shall exclude the following acreage from any assessment of benefits under this subchapter:

(a) Acreage in a district corridor unless the county drainage board authorizes the landowner, under s. ATCP 48.24 (5), to engage in row cropping in the district corridor.

(b) Acreage permanently lost to the landowner because of the construction, restoration or maintenance of district drains or corridors, or the deposition of materials excavated in connection with that construction, restoration or maintenance.

(4) LAND USE CATEGORIES. When estimating land values under sub. (1) (a), a county drainage board may consider any of the following land use categories or other categories which the county drainage board considers appropriate:

(a) Residential uses.

(b) Commercial uses.

(c) Cropland, including dryland cropland, pasture, irrigated cropland or cranberry cropland.

(d) Abandoned cropland, including former agricultural land not currently used for agricultural, residential or commercial purposes.

(e) Woodland, including managed and unmanaged woodlands.

(f) Wetlands, including soils with standing water that have no significant agricultural value.

(5) DRAINAGE ASSUMPTIONS. When estimating land values associated with a potential use, a county drainage board may assume that the drained lands have access to an outlet at the formally established grade profile and cross-section, and that the necessary on-site drainage facilities are installed to permit the potential use.

History: Cr. Register, June, 1995, No. 474, eff. 7-1-95; am. (1) (a) and (b), r. (1) (g), renum. (1) (h) to be (1) (g), cr. (3) to (5), Register, August, 1999, No. 524, eff. 9-1-99.

ATCP 48.10 Assessing benefits to nonagricultural lands. (1) FACTORS CONSIDERED. When assessing benefits to nonagricultural lands in a drainage district, a county drainage board may consider all the factors specified for agricultural lands under s. ATCP 48.08 (1). The county drainage board may also consider the extent and frequency of additional discharges from the nonagricultural lands to district drains, and the drainage district's cost to accommodate those additional discharges. Additional discharges may include additional discharges of stormwater, wastewater, or precipitation runoff from impermeable surfaces.

Note: The county drainage board may also assess upstream municipalities for costs of enlarging or maintaining drains that are attributable to increased water flow from the municipality. See s. 88.64, Stats., and s. ATCP 48.04 (3).

(2) ALLOCATING ASSESSMENTS. A county drainage board may assess benefits to nonagricultural lands, including rural subdivisions or individual rural residences, based on a flat amount per lot, per acre, or per building or residence.

Note: See s. 88.35, Stats.

History: Cr. Register, June, 1995, No. 474, eff. 7-1-95.

Subchapter III — Inspecting drainage districts

ATCP 48.12 Inspection authority. (1) Pursuant to s. 88.13, Stats., a member of a county drainage board or an employee or other authorized agent of a county drainage board may enter any lands in a drainage district to perform an inspection under this subchapter, or to perform any other inspection of a district drain or corridor.

Note: A county drainage board may authorize a landowner in a drainage district to make an inspection as an agent of the board. See s. 88.63 (1m), Stats.

(2) Before a county drainage board or its agent performs an inspection on private lands, other than in a district corridor under s. ATCP 48.24, the county drainage board or its agent shall notify the landowner of the inspection. Notice may be given in person, by telephone, by mail or, if the landowner is not available, by posting notice at a conspicuous location at an entrance to the land. Notice under this section is adequate if given at any time prior to entry.

(3) A county drainage board may employ or contract with any person to perform an inspection on behalf of the county drainage board.

Note: Section 88.20, Stats., prohibits conflicts of interest by members of a county drainage board. See also s. 946.13, Stats.

History: Cr. Register, June, 1995, No. 474, eff. 7-1-95.

ATCP 48.14 Annual inspection. (1) REQUIREMENT. A county drainage board or its authorized employee or agent shall annually inspect every drainage district. The inspection shall include an inspection of all district drains and district corridors, and shall determine all of the following:

(a) Whether district drains are being maintained in compliance with this chapter.

(b) Whether a district corridor has been established and is being maintained around every district ditch in compliance with this chapter.

(c) Whether landowners are complying with applicable requirements under this chapter.

(d) Whether, and to what extent, sedimentation has occurred in district drains.

(e) Whether the cross-sections or grade profiles of district drains have changed significantly from the formally established cross-sections or grade profiles.

(f) Whether any drains should be restored, altered or improved to ensure proper drainage, to reduce soil erosion or sedimentation problems, or to comply with this chapter.

(g) Whether the district drainage system is operating effectively to achieve the goals which have been specified for the drainage district pursuant to s. 88.63, Stats., and s. ATCP 48.36 (1) (f).

Note: A county drainage board may perform an annual inspection in stages during the year. Reports covering the various stages of the inspection may be combined in a single report under sub. (3).

(2) LANDOWNER PARTICIPATION. The county drainage board shall, by publishing a class 2 notice under ch. 985, Stats., notify the landowners in each drainage district of the inspection under sub. (1). The notice shall inform landowners and land users that they may accompany the inspection under sub. (1) of lands owned or used by them, and may submit comments related to the performance of the district drainage system.

(3) INSPECTION REPORT. A county drainage board shall, in conjunction with its annual report for each drainage district under s. 88.24, Stats., prepare an annual report summarizing the results of its inspection under sub. (1), including any comments received under sub. (2). The county drainage board shall file a copy of its report with the county zoning administrator and with the department by December 1 of each year. Before filing the report under this subsection, the county drainage board shall present its report at a public meeting which is preceded by a class 2 notice under ch. 985, Stats. Notice of the meeting shall also be sent to all known landowners in the drainage district.

Note: The department will make available, to the state of Wisconsin department of natural resources, copies of the reports which the department receives under sub. (3).

(4) REPORT CONTENTS. The county drainage board's annual inspection report under sub. (3) shall report the board's inspection findings related to each of the items listed under sub. (1). For each item, the report shall identify any problems, violations or deficiencies noted by the county drainage board. The report shall also specify how the county drainage board will address each problem, violation or deficiency.

History: Cr. Register, June, 1995, No. 474, eff. 7-1-95; am. (1) (e), Register, August, 1999, No. 524, eff. 9-1-99.

ATCP 48.16 Inspection after major storm.

(1) REQUIREMENT. Within 3 weeks after a drainage district is affected by a storm that exceeds a 25-year 24-hour rainfall event for that county, the county drainage board or its authorized employee or agent shall inspect the district drains and corridors affected by the storm. The county drainage board shall inspect the district drains and corridors to determine the nature and extent of any storm damage, and to determine whether repairs are necessary. A 25-year 24-hour rainfall event is the amount of rain received over a 24-hour period as shown in Table 1.

TABLE 1
Probable 24-hour Rainfall Events, In Inches of rain, for counties in Wisconsin

	10-year	25-year		10-year	25-year
Adams	4.1	4.7	Outagamie	3.8	4.4
Ashland	3.9	4.3	Ozaukee	3.9	4.4
Barron	4.1	4.6	Pepin	4.3	4.8
Bayfield	3.9	4.4	Pierce	4.2	4.8
Brown	3.7	4.3	Polk	4.1	4.7
Buffalo	4.3	4.8	Portage	4.0	4.5
Burnett	4.0	4.6	Price	4.0	4.4
Calumet	3.8	4.4	Racine	4.0	4.6
Chippewa	4.1	4.7	Richland	4.3	4.9
Clark	4.1	4.7	Rock	4.1	4.7
Columbia	4.1	4.7	Rusk	4.1	4.6
Crawford	4.3	5.0	St. Croix	4.2	4.7
Dane	4.2	4.8	Sauk	4.2	4.8
Dodge	4.0	4.6	Sawyer	4.0	4.5
Door	3.6	4.1	Shawano	3.8	4.4
Douglas	3.9	4.4	Sheboygan	3.8	4.4
Dunn	4.2	4.7	Taylor	4.1	4.6
Eau Claire	4.2	4.7	Trempealeau	4.3	4.8
Florence	3.6	4.1	Vernon	4.3	4.9
Fond du Lac	3.9	4.5	Vilas	3.8	4.3
Forest	3.7	4.2	Walworth	4.1	4.6
Grant	4.3	5.0	Washburn	4.0	4.5
Green	4.2	4.8	Washington	3.9	4.5
Green Lake	4.0	4.6	Waukesha	4.0	4.6
Iowa	4.3	4.9	Waupaca	3.9	4.5
Iron	3.8	4.3	Waushara	4.0	4.6
Jackson	4.2	4.8	Winnebago	3.9	4.5
Jefferson	4.0	4.6	Wood	4.1	4.6
Juneau	4.1	4.7			
Kenosha	4.0	4.6			
Kewaunee	3.7	4.2			
LaCrosse	4.3	4.9			
Lafayette	4.3	4.9			
Langlade	3.8	4.3			
Lincoln	3.9	4.4			
Manitowoc	3.8	4.3			
Marathon	4.0	4.5			
Marinette	3.6	4.1			
Marquette	4.1	4.6			
Menominee	3.7	4.3			
Milwaukee	3.9	4.5			
Monroe	4.2	4.8			
Oconto	3.7	4.2			
Oneida	3.8	4.3			

Note: The data of table 1 were obtained by extrapolation from maps published by the National Weather Service in Technical Paper No. 40, "Rainfall Frequency Atlas of the United States."

(2) INSPECTION REPORT. A county drainage board shall prepare a report summarizing the results of its storm inspection under sub. (1). The report shall identify any significant storm damage identified in the inspection, and shall indicate how the board plans to repair the damage. The county drainage board shall file a copy of its storm inspection report with the department when the county drainage board files its annual report under s. ATCP 48.14.

History: Cr. Register, June, 1995, No. 474, eff. 7-1-95.

ATCP 48.18 Department review and action. (1) The department shall review inspection reports submitted by county drainage boards under this subchapter.

(2) The department may do any of the following which the department considers necessary:

(a) Inspect and copy county drainage board records, or issue an order under s. ATCP 48.52 requiring a county drainage board

to file with the department a copy of any record or report required under this chapter.

(b) Conduct inspections or other investigations to verify the findings made or reported by a county drainage board.

(c) Issue an order under s. ATCP 48.52 requiring a county drainage board to file a specific maintenance or repair plan. As part of the maintenance or repair plan, the department may require the county drainage board to include engineering specifications, specifications for the deposition of dredged materials, a financing plan and other relevant information.

(d) Issue an order under s. ATCP 48.52 which prohibits the construction or alteration of a district drain or corridor if the construction or alteration violates this chapter.

(e) Issue an order under s. ATCP 48.52 which requires a county drainage board to comply with applicable requirements under this chapter.

History: Cr. Register, June, 1995, No. 474, eff. 7-1-95.

Subchapter IV – District Map, Drains and Corridors

ATCP 48.20 Drainage district specifications. (1) SPECIFICATIONS REQUIRED. By December 31, 2000, every county drainage board shall adopt complete specifications for each drainage district under that board's jurisdiction. The department shall approve the specifications before the county drainage board adopts them. The specifications shall include all of the following:

(a) A map which clearly and accurately shows all of the following:

1. The boundaries of the drainage district, as last confirmed by the circuit court or as last revised by the county drainage board under ss. 88.77 to 88.80, Stats.

Note: If the existing boundary of a drainage district is not clearly documented by a circuit court order, or by a county drainage board order under ss. 88.77 to 88.80, Stats., the county drainage board should clarify that boundary by appropriate procedures under ss. 88.77 to 88.80, Stats. See s. ATCP 48.21 (1).

2. The intended alignment and extent of every district drain. If private drains are connected to district drains, the map shall clearly identify which drains, or portions of drains, are district drains.

3. The intended location and width of every district corridor required under s. ATCP 48.24.

(b) The intended cross-section of every district drain. Each vertical section in the cross-section of a district ditch shall include all of the following elements:

1. The intended top and bottom width of the ditch.
2. The intended depth of the ditch.
3. The intended side slope angle of the ditch.
4. Any drainage structures intersected by that vertical section.

Note: The vertical sections comprising the cross-section of a district drain should normally be taken at intervals of not more than 1/3 mile along the entire length of the drain, and at points where structures or changes in drain slope occur.

(c) The grade profile of every district drain. The grade profile of a district ditch shall include all of the following elements:

1. The intended grade elevations of the top and bottom of the ditch.
2. The estimated water surface elevations in the ditch at base flow. The county drainage board shall use a method described in ch. ATCP 48 Appendix A, or another method approved by the department, to estimate water surface elevations at base flow.
3. The peak water surface elevations in the ditch in the event of a 10-year 24-hour storm event. The county drainage board shall use the method described in ch. ATCP 48 Appendix A, or another method approved by the department, to estimate peak water surface elevations in the event of a 10-year 24 hour storm event.

Note: The formally established "grade profile" effectively determines drainage access and the depth of drainage provided to landowners. When a county drainage board documents the "grade profile" of a district drain, the county drainage board

may also wish to determine the elevations of known points at which private drains empty into that district drain.

(2) NOTICE TO LANDOWNERS; OPPORTUNITY TO OBJECT. Before a county drainage board applies to the department for approval of proposed drainage district specifications required under sub. (1), the county drainage board shall do all of the following:

(a) Mail or deliver, to every known landowner in the drainage district, written notice of the proposed specifications. The notice shall include the proposed specifications or shall explain how the landowner may obtain them. The notice shall also include an announcement of the meeting required under par. (c), including the date, time and place of the meeting.

(b) Publish a class 2 notice, under ch. 985, Stats., of the meeting under par. (c). The notice shall explain the purpose of the meeting, and shall include the meeting date, time and place.

(c) Hold a public meeting to explain and discuss the proposed specifications. The county drainage board shall make the proposed specifications available for public inspection at the meeting.

(d) Give landowners at least 30 days after the public meeting to file, with the county drainage board, written objections to the proposed specifications.

(3) DEPARTMENT APPROVAL. (a) To obtain the department's approval under sub. (1), a county drainage board shall file all of the following with the department:

1. The drainage district specifications for which the county drainage board seeks approval.

2. A description of how the county drainage board established the specifications.

3. Documentation showing that the county drainage board has complied with sub. (2).

4. Notice of every landowner objection filed under sub. (2) (d).

5. The county drainage board's position on every unresolved objection under sub. (2) (d).

6. Other relevant information required by the department.

(b) Within 90 days after a county drainage board files a complete application under par. (a), the department shall approve or disapprove the specifications proposed by the county drainage board. The department may, for good cause, extend the approval deadline to a date specified by the department.

Note: The department will consult with the department of natural resources before approving drainage district specifications proposed by the county drainage board. Among other things, the department will ask the department of natural resources to identify which, if any, drains in the district have a navigable stream history.

(4) FILING APPROVED SPECIFICATIONS. Within 30 days after the county drainage board adopts drainage district specifications under this section, the county drainage board shall file the specifications with the department, the county zoning administrator and the county register of deeds. Specifications are not formally established until they are approved, adopted and filed.

Note: A landowner may challenge formally established drain specifications that violate this chapter or ch. 88, Stats., even if the department has approved those specifications. (In some cases, the department may not be aware of a violation when it approves the specifications.)

(5) DESIGNATING DISTRICT DRAINS. A county drainage board may not, over the objection of any landowner who owns or holds an easement to the land on which a drain is located, designate that drain as a district drain under sub. (1) (a) 2. unless the drainage board does at least one of the following:

(a) Documents that a circuit court has, by order, designated that drain as a district drain.

(b) Documents that the drain has, historically, been operated and maintained as a district drain.

(c) Complies with s. ATCP 48.21 (2).

Note: A drain is not necessarily a "district drain" merely because it is located on land within a drainage district, or merely because it provides drainage for more than one landowner. In some cases, lands within a drainage district are drained by private drains that empty into district drains. Private drains are not operated or maintained

by the county drainage board; nor is there any district corridor surrounding a private drain.

(6) DRAIN CROSS-SECTION, GRADE PROFILE AND ALIGNMENT. (a) Except as provided in par. (b) or (c), the county drainage board shall adopt under sub. (1) the cross-sections, grade profiles and alignments last confirmed by the circuit court. If a county drainage board is unable to locate court specifications for a drain cross-section, grade profile or alignment, the drainage board may reconstruct those specifications based on physical evidence of historical conditions in the drainage district.

Note: For example, a county drainage board may be able to document a historical grade profile by physical evidence including soil conditions and invert elevations of historical structures along the alignment of the district drain.

(b) A cross-section, grade profile or alignment adopted under sub. (1) shall incorporate changes which the county drainage board, acting within its statutory authority, approved prior to September 1, 1999, except that a grade profile adopted under sub. (1) may not incorporate a change which the drainage board purported to approve prior to September 1, 1999, over the unresolved objection of a landowner whose access to drainage was affected by that change. A grade profile change is deemed to affect a landowner's access to drainage if it impedes gravity flow of water from his or her land, through a real or assumed drain, to any real or assumed outlet at the formally established cross-section and grade profile of the district drain.

(c) A county drainage board may proceed under s. ATCP 48.21 to change or clarify the cross-section, grade profile or alignment of a district drain.

History: Cr. Register, June, 1995, No. 474, eff. 7-1-95; r. and rec. Register, August, 1999, No. 524, eff. 9-1-99; corrections in (1) (c) 2., 3. made under s. 13.92 (4) (b) 7., Stats., Register April 2013 No. 688.

ATCP 48.21 Changing drainage district specifications. (1) **CHANGING A DRAINAGE DISTRICT BOUNDARY.** (a) A county drainage board may not change any drainage district boundary except by applicable procedures specified under ss. 88.77 to 88.80, Stats.

Note: If the existing boundary of a drainage district is not clearly documented by a circuit court order, or by a county drainage board order under ss. 88.77 to 88.80, Stats., the county drainage board should clarify that boundary by appropriate procedures under ss. 88.77 to 88.80, Stats.

(b) Whenever a county drainage board changes any drainage district boundary pursuant to ss. 88.77 to 88.80, Stats., the county drainage board shall file a record of the change with the department, the county zoning administrator and the county register of deeds. The record shall include all of the following:

1. A revised map of the drainage district, showing the new boundary.
2. Proof of compliance with par. (a).

(2) DESIGNATING PRIVATE DRAIN AS DISTRICT DRAIN. (a) A county drainage board may not designate a private drain as a district drain unless the county drainage board does at least one of the following:

1. Obtains the written consent of every landowner who owns or holds an easement to land on which the drain is located.
2. Purchases or condemns, pursuant to s. 88.21 (6), Stats., and ch. 32, Stats., all of the land newly required for that district drain and for any district corridor required for that drain under s. ATCP 48.24.
3. Properly designates the drain as a district drain in a proceeding under s. 88.73 or 88.77 to 88.80, Stats.

(b) Whenever a county drainage board designates a private drain as a district drain, the county drainage board shall file a record of that designation with the department, the county zoning administrator and the county register of deeds. The record shall include all of the following:

1. A revised map of the drainage district, showing the designated drain and any district corridor required under s. ATCP 48.24 for that designated drain.
2. Proof of compliance with par. (a).

Note: A drain is not necessarily a "district drain" merely because it is located on land within a drainage district, or merely because it provides drainage for more than one landowner. In some cases, lands within a drainage district are drained by private drains that empty into district drains. Private drains are not operated or maintained by the county drainage board; nor is there any district corridor surrounding a private drain. Under s. ATCP 48.24, a district corridor is required for a "district ditch" but not for other district drains.

(3) CHANGING A FORMALLY ESTABLISHED CROSS-SECTION. (a) A county drainage board may not change the formally established cross-section of a district drain without the department's approval under s. ATCP 48.34.

Note: A "formally established" cross-section is one established by circuit court order, or by county drainage board action under s. ATCP 48.20 or this section. See s. ATCP 48.01 (13r).

(b) Whenever a county drainage board changes the formally established cross-section of a district drain with department approval, the county drainage board shall file a clear record and description of the change with the department, the county zoning administrator and the county register of deeds.

(4) CHANGING A FORMALLY ESTABLISHED ALIGNMENT. (a) A county drainage board may not change the formally established alignment of a district drain unless the county drainage board does all of the following:

1. Obtains the written consent of each owner of land that is newly included in the district corridor because of the realignment, or condemns that newly included land pursuant to s. 88.21 (6), Stats., and ch. 32, Stats. This subdivision does not apply if the realignment brings no new land into the district corridor, or if no district corridor is required under s. ATCP 48.24.

2. Obtains the department's approval under s. ATCP 48.34.

Note: A "formally established" alignment is one established by circuit court order, or by county drainage board action under s. ATCP 48.20 or this section. See s. ATCP 48.01 (13r). Under s. ATCP 48.24, a district corridor is required for a "district ditch" but not for other district drains.

(b) Whenever a county drainage board changes the formally established alignment of a district drain, the county drainage board shall file a record of the change with the department, the county zoning administrator and the county register of deeds. The record shall specifically describe the change, and shall include a new map of the drainage district if the change affects a map previously filed under s. ATCP 48.20 or this section.

(5) CHANGING A FORMALLY ESTABLISHED GRADE PROFILE. (a) A county drainage board may not change the formally established grade profile of a district drain unless the county drainage board does all of the following:

1. Provides, to every landowner in the drainage district whose access to drainage will be affected by the proposed change, a written notice that clearly describes the proposed change and gives the landowner at least 30 days to object. A change is deemed to affect a landowner's access to drainage if it impedes gravity flow of water from his or her land, through a real or assumed drain, to any real or assumed outlet at the formally established cross-section and grade profile of the district drain.

2. Resolves, to the satisfaction of the objecting landowner, every timely objection filed with the county drainage board by a landowner who is entitled to notice under subd. 1.

3. Obtains the department's approval for the proposed change under s. ATCP 48.34.

Note: A "formally established" grade profile is a grade profile established by circuit court order, or by county drainage board action under s. ATCP 48.20 or this section. See s. ATCP 48.01 (13r). The department may not approve a change to a formally established grade profile if any objection by an affected landowner under par. (a) 1. remains unresolved. See ss. ATCP 48.34, 48.36 and 48.38.

(b) Whenever a county drainage board changes the formally established grade profile of a district drain with the department's approval, the county drainage board shall file a record of the change with the department, the county zoning administrator and the county register of deeds. The record shall clearly describe the change, if any, to each element of the grade profile under s. ATCP 48.20 (1) (c).

History: Cr. Register, August, 1999, No. 524, eff. 9-1-99.

ATCP 48.22 Construction and maintenance; general. (1) REQUIREMENT. A county drainage board shall design, construct, maintain, repair and restore district drains and corridors in compliance with this subchapter.

(2) COMPLIANCE PLAN. A county drainage board shall file with the department, by December 31, 2001, a plan showing how the county drainage board intends to bring district drains and corridors under its jurisdiction into compliance with this subchapter. The county drainage board shall file a separate plan for each drainage district in the county. The plan shall include all of the following:

(a) A professionally drawn map of the drainage district, showing all district drains. The map shall clearly identify the relevant features of the drainage district, including municipal and other connections to district drains, significant structures such as dams, and the location of existing spoil deposits.

(b) A restoration plan that identifies all of the following:

1. Drain segments that no longer conform to formally established cross-sections, grade profiles or alignments.

2. A priority sequence and schedule for restoring noncomplying drains to their formally established cross-sections, grade profiles and alignments.

3. An estimate of the amount of material to be removed from each drain scheduled for restoration.

4. The intended disposition of removed materials, including the locations at which the materials will be deposited.

5. The projected costs of restoration, and a plan for financing those costs.

(c) A repair and maintenance plan that includes all of the following:

1. A plan for routine maintenance of drainage structures.

2. A plan for maintaining district corridors and controlling woody vegetation in those corridors.

3. A plan for special repair and maintenance projects, if any.

4. The projected costs of repair and maintenance, and a plan for financing those costs.

(d) A plan for controlling soil erosion and runoff in the drainage district. The plan shall include the estimated cost to implement the plan.

(2m) HEARING ON COMPLIANCE PLAN. (a) Before a county drainage board files a compliance plan with the department under sub. (2), the county drainage board shall do all of the following:

1. Provide every known landowner in the drainage district with notice by mail announcing a public meeting at which a copy of the plan shall be available for inspection. The county drainage board shall also publish a class 2 notice of the meeting under ch. 985, Stats.

2. Give landowners at least 30 days after the public meeting to file, with the county drainage board, written objections to the compliance plan.

(b) Whenever a county drainage board files a compliance plan with the department under sub. (2), the county drainage board shall also file all of the following:

1. Documentation showing that the county drainage board has complied with par. (a).

2. Notice of any unresolved objections filed under par. (a) 2., and the county drainage board's position on those unresolved objections.

(2r) COMPLIANCE DEADLINE. A county drainage board shall bring every drainage district into compliance with this subchapter by December 31, 2004 unless the department, in response to unusual or unavoidable circumstances, extends the compliance deadline in writing.

(3) EMPLOYEES AND AGENTS. A county drainage board may employ or contract with qualified persons to survey, design, con-

struct, maintain, repair or restore district drains and corridors on behalf of the county drainage board.

Note: Under s. ATCP 48.36 (1) (f), a construction project must be designed by a qualified engineer. Sections 88.20 and 946.13, Stats., prohibit conflicts of interest by members of a drainage board. Under s. 88.145, Stats., a county drainage board may authorize any owner of land in a drainage district to undertake work approved by the drainage board. The liability of a landowner who does work with the approval of the county drainage board is limited by ss. 88.145, 893.80 and 895.46 (8), Stats.

(4) AUTHORITY TO ENTER LANDS. A member of a county drainage board or an employee or other authorized agent of a county drainage board may do any of the following:

(a) Enter onto any lands in a drainage district in order to survey, design, construct, maintain, repair or restore a district drain or corridor.

(b) Perform survey, construction, maintenance, repair and restoration operations on a district drain or corridor, including operations requiring excavation or modification of private land.

Note: See s. 88.13, Stats.

(5) NOTICE TO LANDOWNER. Before a county drainage board or its agent performs any survey, design, construction, maintenance, repair or restoration operations on private land, other than in a district corridor under s. ATCP 48.24, the county drainage board or its agent shall notify the landowner. Notice may be given in person, by telephone, by mail or, if the landowner is not available, by posting notice at a conspicuous location at an entrance to the land. Notice under this section is adequate if given at any time prior to entry.

(6) CONSTRUCTION PLANS. No county drainage board or its agent may, without the department's written approval, proceed with any construction project or other action under s. ATCP 48.34 for which that approval is required. No county drainage board or its agent may, without the department's written approval, deviate from the project plan and specifications approved by the department.

(7) OTHER AGENCIES; APPROVAL. Before starting any construction, maintenance, repair or restoration operation under this chapter, a county drainage board shall obtain from the appropriate government agencies all permits and approvals required for that operation.

Note: Certain construction, maintenance, repair and restoration operations in a drainage district may require permits or approvals from the army corps of engineers; the Wisconsin department of natural resources; the Wisconsin department of agriculture, trade and consumer protection or local zoning authorities.

History: Cr. Register, June, 1995, No. 474, eff. 7-1-95; r. and recr. (2), cr. (2m) and (2r), am. (6), Register, August, 1999, No. 524, eff. 9-1-99.

ATCP 48.24 District corridors. (1) CORRIDOR REQUIRED. A county drainage board shall establish and maintain a district corridor around every district ditch. The county drainage board shall maintain the district corridor, in compliance with this subchapter, for all of the following purposes:

(a) To provide effective access for the county drainage board and its agents, and for their vehicles and equipment, over the entire length of the district ditch.

(b) To provide a buffer against land uses which may adversely affect water quality in the district ditch.

(2) WIDTH OF CORRIDOR. A district corridor shall extend for 20 feet from the top of the ditch bank on each side of a district ditch. A county drainage board may, by giving specific notice to landowners, establish a wider corridor if necessary to permit vehicle access or to protect water quality in the district ditch.

Note: Under s. ATCP 48.28, a county drainage board is required to control the growth of woody vegetation in a district corridor, except that a county drainage board may allow the growth of woody vegetation in portions of a district corridor if it does not interfere with effective access to district drains.

(3) ACCESS TO CORRIDOR. Except as provided under sub. (4), a member of a county drainage board or an employee or other authorized agent of a county drainage board may, without prior notice to a landowner, do any of the following:

(a) Enter a district corridor, and bring vehicles and equipment into a district corridor, for the purpose of inspecting, surveying,

maintaining, repairing, restoring or improving a district drain or corridor.

(b) Perform operations in a district corridor related to the maintenance, repair, restoration or improvement of a district drain or corridor, including cutting, mowing, pesticide application, dredging, excavation and other operations.

(4) NOTICE OF ACTIVITIES IN THE CORRIDOR. Before a county drainage board or its agent does either of the following in a district corridor, the county drainage board or its agent shall notify the landowner by one of the methods specified under s. ATCP 48.22 (5):

(a) Cutting trees that are more than 6 inches in diameter measured at breast height.

(b) Excavating or depositing materials in the district corridor.

(5) ROW CROPPING AND OBSTRUCTIONS IN DISTRICT CORRIDOR.

(a) No person may do any of the following without written permission from the county drainage board:

1. Engage in row cropping in a district corridor.

2. Place in a district corridor any building or other obstruction that interferes with the county drainage board's ability to inspect, restore and maintain the district ditch and corridor.

(b) A county drainage board may give a person written permission to engage in activities under par. (a), subject to conditions or limitations which the drainage board specifies in writing.

Note: In deciding whether to authorize row cropping in a district corridor, a county drainage board should consider whether that row cropping will increase maintenance requirements, soil erosion, or movement of suspended solids to district drains. It may consider relevant factors such as the type of row cropping and tillage proposed, the topography of the district corridor, and the type, quality and character of the soil and subsoil in the district corridor.

(c) A person who engages in row cropping or places any obstruction in a district corridor under par. (a), with or without drainage board permission, waives any claim for damages to those crops or obstructions that may be caused by county drainage board activities authorized under ch. 88, Stats., or this chapter.

(d) This subsection does not require a landowner to remove any building or fixture constructed or installed in a district corridor prior to September 1, 1999. The owner of the preexisting building or fixture waives any claim for damages to that building or fixture that may be caused by county drainage board activities authorized under ch. 88, Stats., or this chapter.

Note: See s. ATCP 48.28 related to the control of woody vegetation in a district corridor.

History: Cr. Register, June, 1995, No. 474, eff. 7-1-95; r. and recr. (5), Register, August, 1999, No. 524, eff. 9-1-99.

ATCP 48.26 District drains; design, construction and maintenance. (1) DRAINAGE CAPACITY. Every district drain constructed after July 1, 1995 shall be designed and constructed so that it is capable of removing the volume of water from a 10-year 24-hour rainfall event within 48 hours after that rainfall event. For each county, a 10-year 24-hour rainfall event is the amount of rain shown in table 1 falling in 24 hours.

(2) DITCH STABILITY. (a) A county drainage board shall design and construct every district ditch, including the ditch bed, banks, and related structures such as culverts, bridges and inlets, so that the ditch will remain stable when subjected to a 10-year peak discharge under sub. (1). A district ditch is not required to contain the entire volume of water from the peak discharge. The stability standard under this paragraph does not apply to a district ditch or related structure constructed prior to July 1, 1995.

(b) A county drainage board shall repair and maintain every district ditch, as necessary, to restore and maintain the stability of that ditch.

(3) DISTRICT DRAINS MUST CONFORM TO SPECIFICATIONS. A county drainage board shall restore, repair, maintain and, if necessary, modify district drains so that each district drain conforms to the specifications formally established for that drain by court order, or by county drainage board action under s. ATCP 48.20 or

48.21. If the county drainage board levies any cost assessment for work needed to conform a drain to formally established specifications, it shall levy the assessment according to subchapter II.

(4) REMOVING OBSTRUCTIONS. A county drainage board shall remove sediment dams, windfalls, deadfalls, sand bars, beaver dams and other obstructions from district ditches. The county drainage board shall remove the obstructions annually, or more frequently as necessary. The county drainage board shall also remove submerged vegetation from district ditches as necessary.

(5) RESTORATION PROJECTS; NOTICE TO DEPARTMENT. A county drainage board shall notify the department in writing before the county drainage board initiates any restoration project in a drainage district which involves the removal of more than 3,000 cubic yards of material.

Note: A county drainage board does not need department approval for a restoration project, but may need a dredging permit from the Wisconsin department of natural resources under s. 30.20 or s. 88.31, Stats. A county drainage board may not, under the guise of a "restoration project," dredge below the bottom elevation specified as part of the formally established grade profile. See definition of "restoration project" under s. ATCP 48.01 (21).

History: Cr. Register, June, 1995, No. 474, eff. 7-1-95; r. and recr. (3), cr. (5), Register, August, 1999, No. 524, eff. 9-1-99.

ATCP 48.28 Controlling woody vegetation.

(1) REQUIREMENT. Except as provided under sub. (2), a county drainage board shall control the growth of woody vegetation in district ditches and corridors to ensure effective drainage and effective access for inspection, maintenance and repair. A county drainage board may control woody vegetation by one or more of the methods specified under sub. (3).

(2) EXCEPTION. A county drainage board may allow the growth of woody vegetation in portions of a district corridor, provided that the woody vegetation does not interfere with effective access to district drains. A county drainage board, when deciding whether to allow the growth of woody vegetation, shall consider how the woody vegetation may affect the cost of maintaining and cleaning district drains. Any portions of a corridor left in woody vegetation shall be maintained under a resource conservation plan developed in cooperation with the county land conservation department or the United States natural resources conservation service.

Note: In some parts of a district corridor, woody vegetation may have important value as wildlife habitat, or for controlling soil erosion. Ordinarily, ditches are not subject to local shoreland or wetland zoning ordinances. However, in a small number of situations, where ditches are considered natural navigable streams, local ordinances may limit the cutting of woody vegetation. See s. 281.31 (2m), Stats., and chs. NR 115 and 117.

(3) METHODS FOR CONTROLLING WOODY VEGETATION. A county drainage board may use any of the following methods to control the growth of woody vegetation in a district ditch or corridor:

(a) *Mowing.* A county drainage board may mow a district ditch or corridor to control the growth of woody vegetation. Mowing may include hand cutting where necessary. If only mowing is used to control the growth of woody vegetation in a district ditch or corridor, the county drainage board shall mow the ditch or corridor at least once every 5 years, and more often if necessary.

(b) *Pesticide applications.* A county drainage board may apply pesticides to control the growth of woody vegetation in a district ditch or corridor. Pesticides shall be applied according to label directions, and in compliance with ch. ATCP 29 and other applicable state and federal laws and regulations.

(c) *Burning.* Subject to applicable local regulations, a county drainage board may use controlled burning to control the growth of woody vegetation in a district ditch or corridor.

History: Cr. Register, June, 1995, No. 474, eff. 7-1-95.

ATCP 48.30 Controlling soil erosion and runoff.

(1) GENERAL. A county drainage board shall take appropriate measures to minimize soil erosion and the movement of suspended solids into district drains. A county drainage board may

monitor water in district drains to determine the amounts and sources of suspended solids in the water.

(2) CORRIDORS AND DRAINS. A county drainage board shall design, construct and maintain district drains and corridors to minimize soil erosion and the movement of suspended solids into district drains.

Note: Erosion control methods are described in the "Wisconsin construction site best management practices handbook" which is available for viewing at the county land conservation department, or for purchase from the Wisconsin department of administration, document sale division, 4622 University Avenue, Madison, WI 53705-2156.

(3) VEGETATIVE COVER. (a) A county drainage board shall maintain effective vegetative cover, or equally effective erosion control practices, in every district ditch and corridor. When ditch banks are planted with vegetation to stabilize those banks, the plant variety or seed mixture shall be one of those listed in the United States department of agriculture natural resources conservation service technical guide, critical area planting standard 342, 1985 edition, including supplements through 1988. The application rate shall also conform to critical area planting standard 342. If construction or maintenance activities disturb the vegetative cover in a district ditch or corridor, the drainage board shall promptly replant the disturbed area to restore an effective vegetative cover.

Note: The United States department of agriculture natural resource conservation service technical guide is on file with the department, the secretary of state and the legislative reference bureau. Copies of individual standards may be obtained from the United States department of agriculture natural resources conservation service field offices and from county land conservation department offices.

(b) A county drainage board may permit land uses in district corridors that provide effective vegetative cover and erosion control.

(4) INLETS TO DISTRICT DITCHES. Inlets to district ditches, whether from private or district drains, shall be designed and maintained to prevent soil erosion. Surface drainage entering a district ditch shall be controlled by means of buffer strips, pipe inlets, drop spillways or other devices to prevent soil erosion and uncontrolled flow over ditch banks.

(5) PRIVATE DRAINS. (a) Private drains that transport water to district drains, whether from agricultural or nonagricultural lands, shall be designed, constructed and maintained to prevent soil erosion, and to minimize the movement of suspended solids into district drains. A county drainage board may require that private drains carrying water from nonagricultural lands be designed according to a stormwater management plan, and equipped with facilities such as settling ponds or detention basins to minimize excessive discharges of water or suspended solids into district drains.

(b) If a private drain does not comply with par. (a), the county drainage board may do any of the following:

1. Refuse to permit any connection between the private drain and the district drain.
2. Order that the private drain be modified to comply with par. (a).
3. Order that the private drain be disconnected from the district drain.

4. Pursuant to s. ATCP 48.02 (4), assess the owner of the private drain for construction costs incurred by the drainage district because the private drain does not comply with par. (a).

Note: A county drainage board may also initiate a court action against the owner of the private drain. The county drainage board may ask the court to enjoin violations of par. (a), and may seek recovery of damages incurred by the drainage district

because of those violations. A person violating par. (a) may also be subject to a civil forfeiture under s. 88.11 (8), Stats.

(6) EROSION CONTROL PRACTICES ON DRAINED LANDS. (a) An owner of land in a drainage district shall implement appropriate erosion control practices on that land to minimize soil erosion and the movement of suspended solids into district drains. A county drainage board may require a landowner to implement erosion control practices recommended by the United States department of agriculture natural resources conservation service, the county land conservation department or an engineer approved by the department.

(b) If a landowner fails to implement erosion control practices required by a county drainage board under par. (a), the county drainage board may do any of the following:

1. Refuse to permit any connection between the landowner's private drain and the district drain.
2. Order the landowner to comply with par. (a).
3. Order that the landowner's private drain be disconnected from the district drain.

4. Pursuant to s. ATCP 48.02 (4), assess the landowner for construction costs incurred by the drainage district because of the landowner's failure to implement erosion control practices required by the county drainage board under par. (a).

Note: A county drainage board may also initiate a court action against a landowner who violates par. (a). The county drainage board may ask the court to enjoin violations of par. (a), and may seek recovery of damages incurred by the drainage district because of those violations. A landowner violating par. (a) may also be subject to a civil forfeiture under s. 88.11 (8), Stats.

History: Cr. Register, June, 1995, No. 474, eff. 7-1-95.

ATCP 48.32 Deposition of materials. (1) Materials dredged or excavated in connection with the construction, restoration, repair or maintenance of district drains may be spread on land or placed in piles according to this section. Berms, levees and other depositions in a district corridor shall comply with this section.

Note: The deposition of dredged or excavated material may be subject to additional restrictions under federal, state and local laws.

(2) The deposition of excavated materials, whether by land spreading or piling, shall conform as nearly as practicable to the american society of agricultural engineers engineering practice number 407.1, section 5, as reconfirmed in December, 1996.

Note: Copies of ASAE EP 407.1, section 5 are on file with the department and the legislative reference bureau. Copies may be obtained from the department. A county drainage board may also contact the United States department of agriculture natural resources conservation service or the army corps of engineers for technical assistance related to the deposition of removed materials. The department can provide the addresses of these agencies.

(3) If dredged or excavated materials are spread on land, the materials shall be graded and smoothed to blend into cultivated lands. The surface slope of the spread materials shall not exceed a slope of 8:1. Spread materials may not be more than 2 feet deep at the top of a ditch bank.

Note: See Figure 1.

(4) No portion of a pile of dredged or excavated materials may be closer than 12 feet to the top of a ditch bank. Materials shall be piled at a stable angle of repose for those materials. No slope of any pile may exceed a slope of 2:1.

(5) No dredged or excavated material may be placed in a wetland except in compliance with applicable federal, state and local permit requirements.

Note: Figure 1, which is based on ASAE EP 407.01, section 5, illustrates the requirements of this section:

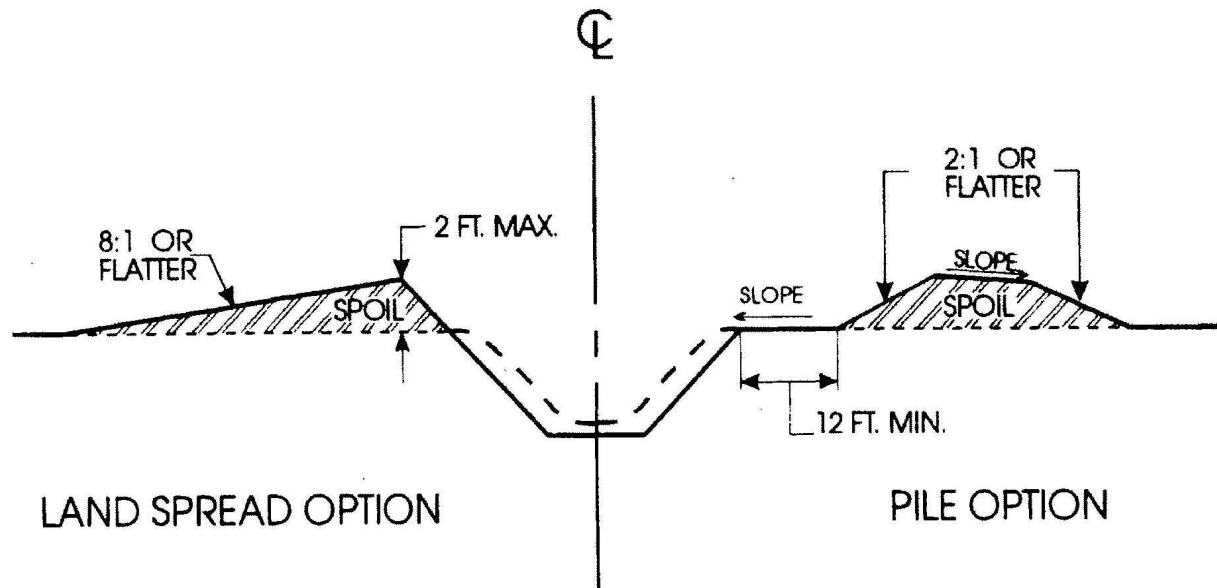


Figure 1. Methods of Material Disposal

History: Cr. Register, June, 1995, No. 474, eff. 7-1-95; am. (2), Register, August, 1999, No. 524, eff. 9-1-99.

ATCP 48.33 Structures impeding drainage. (1) PROHIBITION. Except as provided in sub. (2), no county drainage board may install or modify any structure in a district drain, or approve the installation or modification of any structure in a district drain, if the installation or modification causes or aggravates a deviation from the formally established grade profile of that district drain. An installation or modification is rebuttably presumed to cause or aggravate a deviation from the formally established grade profile if it raises the water level in a district drain, or slows the runoff of water from upstream lands in the drainage district.

Note: A "formally established" grade profile is a grade profile established by court order, or by the county drainage board under s. ATCP 48.20 or 48.21. A person installing or modifying a structure in a district drain may also need a permit from the state of Wisconsin department of natural resources if the district drain has a navigable stream history. See ss. 30.12, 30.18 (2), 30.20, 31.02, 88.31 and 88.62 (3), Stats. See also ch. 31, Stats.

(2) TEMPORARY MODIFICATIONS. Subsection (1) does not apply to any of the following which the county drainage board undertakes or approves:

(a) A temporary structure or modification that is reasonably necessary to protect the public health, safety or welfare in an emergency.

(b) A temporary structure or modification that is necessary for other lawful construction or maintenance operations under this chapter.

(c) A temporary structure or modification to provide essential crop irrigation during a drought if all of the following apply:

1. The county drainage board gives written notice of the proposed structure or modification to every upstream landowner whose access to drainage [will] be affected. A structure or modification is deemed to affect a landowner's access to drainage if it impedes gravity flow of water from his or her land, through a real or assumed drain, to any real or assumed outlet at the formally established cross-section and grade profile of the district drain.

Note: A missing word is shown in brackets.

2. The county drainage board resolves, to the satisfaction of the objecting landowner, every objection by an upstream landowner who is entitled to notice under subd. 1.

Note: For example, a county drainage board may resolve a landowner's objection, to the satisfaction of a landowner, by imposing conditions under subd. 3 which protect the interests of that landowner.

3. The county drainage board approves the structure or modification subject to written conditions that reasonably protect the public interest and the interests of all landowners in the drainage district.

Note: A landowner withdrawing water for irrigation may need to obtain a permit from the state of Wisconsin department of natural resources under s. 30.18 (2) (a) 2., Stats.

(d) A temporary structure or modification to provide water for cranberry harvest, or for cranberry winter ice cover, if all of the following apply:

1. The structure or modification is installed for not more than 14 days for cranberry harvest, and not more than 14 days for cranberry winter ice cover. The county drainage board may, for good cause, extend a 14-day period for up to 7 more days at the request of a cranberry grower.

2. The county drainage board gives written notice of the proposed structure or modification to every upstream landowner whose access to drainage will be affected. A structure or modification is deemed to affect a landowner's access to drainage if it impedes gravity flow of water from his or her land, through a real or assumed drain, to any real or assumed outlet at the formally established cross-section and grade profile of the district drain.

3. The county drainage board resolves, to the satisfaction of the objecting landowner, every objection by an upstream landowner who is entitled to notice under subd. 2.

4. The county drainage board approves the structure or modification subject to written conditions that reasonably protect the public interest and the interests of all landowners in the drainage district.

Note: A county drainage board may not authorize a cranberry grower to install a temporary structure under par. (d) for more than 14 days, except that the board may extend a 14-day authorization for up to 7 more days in response to a separate applica-

tion from the cranberry grower under par. (d) 1. An authorization under par. (d) does not extend from season to season, or from year to year.

A county drainage board might be able to resolve a landowner's objection under par. (d) 3., to the satisfaction of a landowner, by imposing conditions under par. (d) 4. which protect the interests of that landowner.

History: Cr. Register, August, 1999, No. 524, eff. 9-1-99.

Subchapter V — Construction Projects and Drainage Alterations; Department Approval

ATCP 48.34 Construction projects and drainage alterations; department approval required. (1) REQUIREMENT. Except as provided in sub. (2), a county drainage board may not do any of the following without the department's written approval:

(a) Construct or modify any district drain, or authorize any person to construct or modify a district drain.

(b) Install or modify any structure in a district drain, or authorize any person to install or modify any structure in a district drain.

(c) Authorize any person to connect a private drain to a district drain.

(d) Take any action under s. ATCP 48.20 or 48.21 that changes the formally established cross-section, grade profile or alignment of a district drain, regardless of whether that action involves any physical alteration to a district drain or structure.

(2) EXEMPTIONS. Subsection (1) does not apply to any of the following:

(a) Actions, such as routine maintenance or repair projects, that do not cause or aggravate any deviation from the formally established cross-section, grade profile or alignment of a district drain. An action is rebuttably presumed to cause or aggravate a deviation from a formally established grade profile if it raises the water level in a district drain or slows the runoff of water from lands in the drainage district.

(b) Restoration projects.

Note: A restoration project is exempt under par. (b) only to the extent that it is confined within the formally established cross-section, grade profile and alignment of a district drain, and does not go beyond those formally established specifications. See definition of "restoration project" under s. ATCP 48.01 (21).

(c) Temporary structures or modifications that a county drainage board installs or approves in compliance with s. ATCP 48.33 (2).

Note: A county drainage board should consult with the department to determine whether a particular county drainage board action requires department approval under this section. A county drainage board may seek the department's advice or assistance regarding any proposed construction, repair, restoration or maintenance action, regardless of whether the action requires the department's approval under this section. A county drainage board should consult with the department at the early planning stage to facilitate timely assistance and, if necessary, timely approval. A county drainage board may not deviate from approved project specifications without the department's approval.

A person may need to obtain a permit from the state of Wisconsin department of natural resources before undertaking a construction or restoration project in a district drain which has a navigable stream history. See ss. 30.12, 30.18 (2), 30.20, 31.02, 88.31 and 88.62 (3), Stats. See also ch. 31, Stats.

History: Cr. Register, June, 1995, No. 474, eff. 7-1-95; r. and recr. Register, August, 1999, No. 524, eff. 9-1-99.

ATCP 48.36 Applying for approval. (1) APPLICATION REQUIRED. A county drainage board shall apply in writing for department approval of a proposed action under s. ATCP 48.34. The application shall include all of the following information, in detail commensurate with the proposed action:

(a) *District name or number.* The name or number, or proposed name or number, of the drainage district.

(b) *Proposed action.* A statement describing the proposed action.

(c) *Objectives.* The objectives which the county drainage board expects to achieve by taking the proposed action. If the county drainage board expects to improve drainage, the county drainage board shall express its drainage objectives in terms of drainage volume, thoroughness of drainage, geographic scope of drainage, or other pertinent drainage measures.

(d) *Persons requesting action.* The persons, if any, who are asking the county drainage board to take the proposed action.

(e) *Estimated cost.* The estimated cost of the proposed action, including any damage awards to landowners who will be adversely affected.

(f) *Design specifications.* Design specifications for the proposed action, prepared by an engineer who is qualified under s. 88.21 (5), Stats. The design specifications shall comply with applicable standards under subch. IV. The engineer preparing the design specifications shall state whether, in the engineer's judgment, the proposed action as designed will be effective in achieving the county drainage board's stated objectives.

(g) *Lands and waters affected.* A map showing the location of the proposed action, and the location of the lands and waters affected by the proposed action. The map shall indicate all of the following if relevant:

1. The current and proposed use of the affected lands.

2. The topography of the affected lands.

3. The location of any affected wetlands.

4. The identity and location of any affected navigable waterway, stormwater management district, lake district, priority watershed or lake under s. 281.65, Stats., or wellhead protection area under ch. NR 811.

5. The identity and location of any affected building, transportation corridor or utility easement.

(h) *Hydrology analysis.* A hydrology analysis, prepared by an engineer who is qualified under s. 88.21 (5), Stats. The hydrology analysis shall analyze the effect of the proposed action, if any, on all of the following:

1. Water surface elevations in district drains at base flow. The hydrology analysis shall use a method described in ch. ATCP 48 Appendix A, or another method approved by the department, to estimate water surface elevations at base flow.

2. Peak water surface elevations in district drains in the event of a 10-year 24-hour storm event. The hydrology analysis shall use the method described in ch. ATCP 48 Appendix A, or another method approved by the department, to estimate peak water surface elevations in the event of a 10-year 24-hour storm event.

3. Peak water surface elevations in district drains in the event of a 25-year 24-hour storm event. The hydrology analysis shall use the method described in ch. ATCP 48 Appendix A, or another method approved by the department, to estimate peak water surface elevations in the event of a 25-year 24-hour storm event.

(i) *Construction plan.* A construction plan, if applicable, including all of the following:

1. A plan for controlling construction site erosion.

2. The estimated amount of material, if any, that will be removed.

3. A plan for depositing removed material, if any, including the location and configuration of any deposits.

(j) *Notice and public hearing.* A statement that the county drainage board has complied with the notice and public hearing requirement under sub. (2).

(k) *Formal changes to cross-section, grade profile or alignment.* All of the following information if the county drainage board proposes to change the formally established cross-section, grade profile or alignment of a district drain:

1. The cross-section, grade profile or alignment which the county drainage board proposes to change.

2. The new cross-section, grade profile or alignment proposed by the county drainage board. The new specifications shall be prepared by an engineer who is qualified under s. 88.21 (5), Stats.

3. If the county drainage board proposes to change a formally established alignment, a statement that the county drainage board has complied with s. ATCP 48.21 (4) (a) 1.

4. If the county drainage board proposes to change a formally established grade profile, a statement that the county drainage board has complied with s. [ATCP 48.21 \(5\) \(a\) 1.](#) and 2.

(L) *Assessment of benefits to landowners.* A statement explaining how the proposed action will affect the assessment of benefits to landowners under s. [ATCP 48.06](#), if at all.

Note: See s. [ATCP 48.06 \(2\) \(a\)](#) and s. [88.46](#), Stats.

(m) *Financing plan.* The drainage board's plan for financing the proposed action, including any proposed cost assessments to lands in the drainage district.

Note: See s. [ATCP 48.02](#).

(n) *Environmental effects.* An assessment of how the proposed action may affect the human and natural environment, including effects on all of the following:

1. Lands and land uses identified under par. (g).
2. Surface water levels, quality and temperature.
3. Groundwater levels and quality.

(o) *Alternatives.* An assessment of alternatives to the proposed action, including the alternative of doing nothing. The assessment shall discuss the relative benefits, costs and environmental effects of the alternatives.

(2) COUNTY DRAINAGE BOARD; NOTICE AND HEARING ON PROPOSED ACTION. Before a county drainage board submits an application to the department under sub. (1), it shall do all of the following:

(a) Publish a hearing notice and hold a public hearing on the proposed action. The notice and hearing shall comply with applicable requirements under s. [88.05](#) and [88.065](#), Stats. The hearing notice shall clearly describe the proposed action.

(b) Give members of the public at least 30 days, following the public hearing under par. (a), to comment on the proposed action.

(3) COPIES FILED WITH OTHER AGENCIES. Whenever a county drainage board files an application with the department under sub. (1), the county drainage board shall simultaneously file copies of the application with all of the following:

- (a) The Wisconsin department of natural resources.
- (b) The United States army corps of engineers.
- (c) The county zoning administrator.
- (d) The county land conservation committee.
- (e) Every municipality affected by the proposed action.
- (f) The county highway committee if the proposed action may affect a public highway.

(4) ADDITIONAL INFORMATION. The department may require a county drainage board to file additional information, as necessary, before approving or disapproving an application under sub. (1).

History: Cr. Register, June, 1995, No. 474, eff. 7-1-95; r. and recr. Register, August, 1999, No. 524, eff. 9-1-99; correction in (1) (g) 4. made under s. 13.93 (2m) (b) 7., Stats., Register January, 2002 No. 553; corrections in (1) (h) 1. to 3. made under s. 13.92 (4) (b) 7., Stats., Register April 2013 No. 688.

ATCP 48.38 Department approval or disapproval.

(1) APPROVING DRAINAGE ALTERATIONS. The department may approve, disapprove, or conditionally approve an action under s. [ATCP 48.34](#). The department may not approve any action under s. [ATCP 48.34](#) that causes the cross-section, grade profile or alignment of a district drain to deviate from the cross-section, grade profile or alignment formally established for that drain, but may do any of the following based on the county drainage board's application under s. [ATCP 48.36](#):

(a) Approve an action that formally reestablishes the cross-section of a district drain.

(b) Approve an action that formally reestablishes the alignment of a district drain if the department finds that the county drainage board has complied with applicable requirements under s. [ATCP 48.21 \(4\) \(a\) 1.](#)

(c) Approve an action that formally reestablishes the grade profile of a district drain if the department finds that the county drainage board has complied with s. [ATCP 48.21 \(5\) \(a\) 1.](#) and 2.

(2) DEADLINE FOR APPROVAL OR DISAPPROVAL. Within 45 days after a county drainage board files a complete application under s. [ATCP 48.36](#), including any additional information which the department requests under s. [ATCP 48.36 \(4\)](#), the department shall issue a written notice approving or disapproving the county drainage board's proposed action under s. [ATCP 48.34](#). The department may, for good cause, extend the deadline to a date specified by the department.

Note: See also ss. [88.32 \(3m\)](#) and [88.35 \(7\)](#), Stats.

(3) CONDITIONAL APPROVAL. The department may approve a proposed action under s. [ATCP 48.34](#) subject to conditions specified by the department.

(4) REASONS FOR DISAPPROVAL. If the department disapproves a proposed action under s. [ATCP 48.34](#), the department shall give the county drainage board written notice of the reasons. The department may disapprove a proposed action for any of the following reasons:

(a) The county drainage board has failed to provide information required under s. [ATCP 48.36](#).

(b) The proposed action would violate this chapter or ch. 88, Stats.

(c) The requested approval would violate this chapter or ch. 88, Stats.

(d) The proposed action is not technically feasible, is not technically sound, or is not adequately designed to achieve the county drainage board's stated objectives.

(e) The proposed action will have a substantial adverse effect on water quality, or on the human or natural environment.

(5) ENVIRONMENTAL ASSESSMENT. The department shall prepare an environmental assessment under s. [ATCP 3.02](#) before it approves a proposed action under s. [ATCP 48.34](#) if any of the following apply:

(a) The proposed action will drain more than 200 acres of land not previously drained, or will substantially alter drainage from more than 200 acres of land.

(b) The proposed action will drain more than 5 acres of wetlands.

(c) The proposed action involves the construction or modification of a dam in a drain with a navigable stream history.

(d) The proposed action involves a cold water fishery in a district drain with a navigable stream history.

(e) The proposed action will substantially affect the base flow in surface waters of the state.

(f) The department determines that an environmental assessment is needed to determine whether an environmental impact statement is required under s. [ATCP 3.03](#).

(6) ENVIRONMENTAL IMPACT STATEMENT. The department shall prepare an environmental impact statement under s. [ATCP 3.03](#) before approving a proposed action under s. [ATCP 48.34](#) only if the department determines that an environmental impact statement is required under s. [ATCP 3.03](#).

History: Cr. Register, June, 1995, No. 474, eff. 7-1-95; r. and recr. Register, August, 1999, No. 524, eff. 9-1-99.

Subchapter VI — Landowner Rights and Responsibilities

ATCP 48.40 Notice of landowner actions affecting drainage district. **(1) REQUIREMENT.** A landowner under sub. (2), including the state of Wisconsin or any county, town, village or city, shall notify the county drainage board before undertaking any action, including any change in land use, that will do any of the following:

- (a) Alter the flow of water into or from a district drain.

(b) Increase the amount of soil erosion, or the movement of suspended solids to a district drain.

(c) Affect the operation of the drainage district, or the costs incurred by the drainage district.

(2) APPLICATION. Subsection (1) applies to an owner of land that receives water from or discharges water to a drainage district, regardless of whether the land is included in the drainage district.

Note: A county drainage board may take various actions in response to landowner actions that adversely affect a drainage district. For example, see ss. ATCP 48.02 (5), 48.04, 48.06 (2), 48.30 and 48.44 (3). See also ss. 88.89 to 88.92, Stats.

History: Cr. Register, June, 1995, No. 474, eff. 7-1-95.

ATCP 48.42 Removing lands from drainage district.

No landowner, including the state of Wisconsin or any county, town, village or city, may do either of the following:

(1) Remove lands from inclusion in a drainage district without obtaining the approval of the county drainage board under s. 88.80, Stats.

(2) Disconnect a private drain from a district drain, except with the approval of the county drainage board.

History: Cr. Register, June, 1995, No. 474, eff. 7-1-95.

ATCP 48.43 Connecting private drains to district drains; extending private drains. No person may do either of the following without written approval from the county drainage board:

(1) Connect a private drain to a district drain.

(2) Extend a private drain that is currently connected to a district drain.

Note: Under s. 88.92 (1), Stats., a county drainage board may approve the connection of private drains to district drains, or the extension of private drains from district drains, and may establish conditions for approval. Under s. 88.92 (2), Stats., a person who connects or extends a private drain, or removes a spoil pile, without drainage board approval is liable for damages incurred by the drainage district as a result of that action. "Damages" include payments that the drainage district would have received during the time that the illegal connection or extension existed if the territory drained by the illegal connection or extension had been subject to assessment.

History: Cr. Register, June, 1995, No. 474, eff. 7-1-95; renum. from ATCP 48.44, Register, August, 1999, No. 524, eff. 9-1-99.

ATCP 48.44 Obstructing or altering district drains.

(1) **PROHIBITION.** Except as provided under sub. (2), no person may obstruct or alter a district drain without prior written approval from the county drainage board.

(2) **WITHDRAWING WATER; EXEMPTION.** An owner of land adjacent to a district drain may, without prior approval from the county drainage board, withdraw water from a district drain and place an obstruction in the district drain for that purpose while withdrawing that water if all of the following apply:

(a) The landowner notifies the county drainage board under s. ATCP 48.40 before withdrawing the water or placing the obstruction in the district drain.

(b) The landowner obtains a permit from the department of natural resources authorizing the withdrawal, if a permit is required under s. 30.18 (2) (a) 2., Stats.

(c) The obstruction does not elevate the water surface elevation in the district drain, at the point of the obstruction, above the base flow elevation specified as part of the formally established grade profile for that district drain.

(d) Neither the obstruction nor the withdrawal of water reduces the base flow, in a district drain that has a navigable stream history, below the minimum base flow which the state of Wisconsin department of natural resources has established for that district drain under s. 88.31, Stats..

Note: A "formally established" grade profile is a grade profile established by court order, or by the county drainage board under s. ATCP 48.20 or 48.21. A violation of par. (c) "materially defeats the purposes of drainage" within the meaning of s. 88.93, Stats.

(e) The withdrawal does not injure any district drain, or make any district drain more susceptible to injury. Injury to a district

drain includes, for purposes of this paragraph, any of the following:

1. Damage to any structure in a district drain.

2. The deposition of excavated materials in a district drain.

3. The weakening, undercutting or accelerated erosion of any side bank in a district drain.

(3) DRAINAGE BOARD MAY REVIEW. A county drainage board may do any of the following:

(a) Require a landowner to provide information showing that the landowner's withdrawal of water complies with sub. (2).

(b) Prohibit a landowner from withdrawing water under sub. (2) if the drainage board reasonably concludes that the withdrawal violates this chapter. The drainage board shall document, in writing, the basis for its conclusion.

History: Cr. Register, August, 1999, No. 524, eff. 9-1-99.

ATCP 48.45 Landowner rights. (1) **ACTION TO ENFORCE COMPLIANCE.** (a) An owner of land in a drainage district may file a written petition with the county drainage board asking the county drainage board to do any of the following:

1. Restore, repair, maintain or, if necessary, modify a district drain in order to conform the drain to the cross-section, alignment or grade profile formally established for that drain.

Note: Drain specifications are formally established by court order, or by drainage board action under s. ATCP 48.20 or 48.21. Deviations from formally established specifications may effectively deprive landowners of drainage to which they are legally entitled.

2. Remove an obstruction placed in a district drain in violation of this chapter or ch. 88, Stats.

3. Correct a violation of this chapter or ch. 88, Stats.

(b) A petition under par. (a) shall identify the grounds for the petition and the action requested of the county drainage board. A county drainage board may require the petitioner to provide further information which is reasonably necessary in order for the board to properly evaluate the petition.

(c) Within 60 days after a landowner files a complete petition with the county drainage board, the county drainage board shall provide the landowner with a written response that does all of the following:

1. Describes and explains the action, if any, which the county drainage board will take in response to the petition.

2. Explains the county drainage board's refusal to take action on the petition, if the county drainage board refuses to take action.

(d) A petitioner under par. (a) may, after receiving a county drainage board's response under par. (c), file a written petition with the department alleging that a county drainage board has violated this chapter or ch. 88, Stats. The department may conduct an investigation to determine whether the county drainage board has violated this chapter or ch. 88, Stats. If the department finds that a county drainage board has violated this chapter or ch. 88, Stats., the department shall issue an order under s. ATCP 48.52 which directs the county drainage board to correct the violation.

Note: The remedies provided to a landowner under sub. (1) are in addition to any other legal remedies which may be available to the landowner. A landowner is not required to pursue any of the remedies under sub. (1) before pursuing other legal remedies. A landowner may challenge a county drainage board action that violates this chapter or ch. 88, Stats., even if the department has approved that action. (In some cases, the department may not be aware of facts constituting a violation when it approves a county drainage board action.)

(2) **LAND OWNERSHIP CHANGE.** A change of ownership does not relieve or deprive a succeeding landowner of rights or responsibilities that run with the land under ch. 88, Stats., or this chapter.

History: Cr. Register, August, 1999, No. 524, eff. 9-1-99.

Subchapter VII – Drainage District Records and Financial Management

ATCP 48.46 Records required. (1) **ORDERS.** A county drainage board secretary and the county zoning administrator

shall maintain in perpetuity a copy of every order of the circuit court or the county drainage board that does any of the following:

(a) Creates, modifies, suspends or dissolves a drainage district. The record shall include maps or descriptions showing the district boundaries affected by the order.

(b) Approves the construction, enlargement, extension or modification of a district drain. The record shall include any information describing cross-sections, grade profiles and alignments of drains affected by the order.

(c) Confirms or orders an assessment, supplemental assessment or reassessment of benefits, damages or costs to landowners in a drainage district.

Note: Under s. 88.19 (4) to (7), Stats., the department may determine the records required to be preserved regarding drainage districts.

(d) Formally establishes any drainage district specifications under s. ATCP 48.20 or 48.21.

(2) DRAINAGE DISTRICT SPECIFICATIONS. A county drainage board shall have on file, at all times, drainage district specifications established by court order, or by the county drainage board under s. ATCP 48.20 or 48.21. Specifications shall include all existing specifications designating any of the following:

(a) Drainage district boundaries, district drains and district corridors.

(b) Cross-sections, alignments and grade profiles of district drains.

(4) REPORTS. A county drainage board secretary shall keep, for at least 10 years, a copy of every inspection report filed with the department under subchapter III, and every annual report filed with the county zoning administrator under s. 88.24, Stats. A county zoning administrator shall keep, for at least 10 years, a copy of every annual report filed under s. 88.24, Stats.

(5) MINUTES OF MEETINGS. A county drainage board secretary shall prepare minutes of the following meetings, and shall keep those minutes for at least 10 years:

(a) Every meeting of the county drainage board.

(b) Every meeting of district landowners held under the auspices of the county drainage board.

Note: Under county law or policy, a county drainage board may be required to retain the minutes of meetings for more than 10 years.

(6) CONSTRUCTION AND RESTORATION RECORDS. A county drainage board secretary shall keep a copy of every request for approval filed with the department under s. ATCP 48.36, and every approval or disapproval issued by the department under s. ATCP 48.38. Records under this subsection pertaining to each drainage district shall be retained for at least the life of that drainage district.

History: Cr. Register, June, 1995, No. 474, eff. 7-1-95; am. (1) (b), cr. (1) (d), r. and rec. (2), r. (3), Register, August, 1999, No. 524, eff. 9-1-99.

ATCP 48.48 Care and inspection of records. **(1) RECORDS ORGANIZED AND ACCESSIBLE.** Records required under s. ATCP 48.46 shall be organized by drainage district, and shall be readily accessible for inspection.

(2) DESTRUCTION OF RECORDS; NOTICE. A county drainage board shall notify the department and the state historical society in writing at least 60 days before the county drainage board destroys any record identified under s. ATCP 48.46. The department or the state historical society may take custody of any records proposed for destruction.

Note: See s. 88.19 (4) (d), Stats.

(3) DEPARTMENT MAY INSPECT RECORDS AND OBTAIN COPIES. The department may inspect and copy any drainage district record kept by a county drainage board, or by any person in this state, including any record required under s. ATCP 48.46. A county drainage board shall, at the department's request, allow the department to copy any drainage record kept by a county drainage board, including any record kept under s. ATCP 48.46. The department shall retain a copy of any record obtained under this subsection and shall deliver a copy to the county zoning administrator.

Note: See s. 88.19 (5), Stats.

(4) FILING RECORDS WITH DEPARTMENT AND COUNTY ZONING ADMINISTRATOR. The secretary of the county drainage board shall provide a copy of drainage board records under s. ATCP 48.46 (1) to (4) that are created after July 1, 1995 to the department and the county zoning administrator.

Note: See s. 88.19 (5) to (7), Stats.

History: Cr. Register, June, 1995, No. 474, eff. 7-1-95.

Subchapter VIII — Enforcement and Variances

Note: In addition to any other remedy specified under this chapter, the department may bring an action to recover a civil forfeiture under s. 88.11 (8), Stats., from any person who violates this chapter.

ATCP 48.49 Financial management. **(1) COUNTY TREASURER.** (a) Except as provided in sub. (2), the county treasurer shall serve as the county drainage board treasurer pursuant to s. 88.18, Stats. The county treasurer shall comply with applicable requirements under ch. 88, Stats., and this chapter.

(b) If the county treasurer serves as the county drainage board treasurer, the county treasurer may retain for the benefit of the county a portion of the interest received on drainage district funds held by the county treasurer, to cover county costs identified under s. 88.18 (1), Stats. The county treasurer may not retain an amount that exceeds the amount authorized under s. 88.18 (1), Stats.

Note: Section 88.18 (1), Stats., authorizes the county treasurer to deduct the following county costs from the interest received on drainage district funds:

The county treasurer's cost to provide services to the county drainage board.

The county zoning administrator's cost to maintain and provide copies of drainage board records under s. 88.19, Stats.

(2) APPOINTED TREASURER. (a) A county drainage board may appoint its own treasurer, pursuant to s. 88.18 (3), Stats. The appointed county drainage board treasurer shall act as the deputy of the county treasurer. The county drainage board may assign any or all of the county treasurer's duties under this section to the appointed county drainage board treasurer. The appointed treasurer shall comply with applicable requirements under ch. 88, Stats., and this chapter.

(b) If the county drainage board appoints its own treasurer under par. (a), the county drainage board shall:

1. Specify the treasurer's compensation in writing. Compensation shall include reimbursement of the treasurer's actual and reasonable expenses, as provided in s. 88.18 (3), Stats.

2. Require the treasurer to file a bond as provided in s. 88.18 (3), Stats.

(c) If the county drainage board appoints its own treasurer under par. (a), the county drainage board shall enter into a written agreement with the appointed treasurer and the county treasurer. The agreement shall do all the following:

1. Identify the duties under this section that the county drainage board has assigned to the appointed treasurer.

2. Identify the duties under this section, if any, that remain with the county treasurer.

(3) COUNTY DRAINAGE BOARD ACCOUNTS. The county drainage board treasurer shall keep county drainage board accounts. The treasurer shall keep a separate account for each drainage district as required by s. 88.18 (2), Stats.

(4) DEPOSITS. The county drainage board treasurer shall deposit, to the appropriate account under sub. (3), all funds received on behalf of the county drainage board or any drainage district. A person who receives funds on behalf of the county drainage board or any drainage district shall promptly deposit those funds with the county drainage board treasurer.

(5) EXPENDITURES. (a) No person may make any expenditure from a county drainage board account under sub. (3) unless the county drainage board treasurer signs the draft or specifically approves the expenditure in writing.

(b) Except as provided in sub. (1) (b), the county drainage board treasurer may not approve any expenditure under par. (a)

unless the county drainage board also approves that expenditure in writing.

(6) ACCOUNTING RECORDS. A county drainage board treasurer shall keep complete and accurate accounting records, and supporting documentation, for county drainage board accounts under sub. (3). Records shall include all the following:

- (a) Records of all receipts and deposits. Records shall identify the nature, source and amount of each receipt and deposit.
- (b) Records of all expenditure authorizations and expenditures. Records shall identify the purpose, recipient and amount of each expenditure.
- (c) Current account balances.
- (d) Monthly and annual reports summarizing revenues and expenditures during the reporting period, and account balances at the beginning and end of the reporting period.
- (e) A copy of every grant contract under s. ATCP 48.60 (5).

(7) RECORDS KEPT AS PUBLIC RECORDS. The county drainage board treasurer shall do all the following:

- (a) Keep the records under sub. (6) as county public records. Except as provided in ch. 88, Stats., or this chapter, the county drainage board treasurer shall treat the records as the county treasurer would treat comparable county accounting records for retention and disposal purposes.
- (b) Keep the records under sub. (6) in the office of the county treasurer, or in another place that the county treasurer approves in writing.
- (c) Make the records under sub. (6) available for public inspection and copying, as provided in subch. II of chapter 19, Stats.

(8) CONTROL AND AUDIT. The county drainage board treasurer shall do all the following:

- (a) Exercise sound fiscal control over funds received, to prevent misappropriation or misdirection of funds.
- (b) Account for all funds received and expended.
- (c) File periodic accountings with the county drainage board, as requested by the board.
- (d) Make records and accounts available, upon request, for audit by the state of Wisconsin, the county drainage board or the county.

History: CR 01-004: cr. Register January 2002 No. 553, eff. 2-1-02.

ATCP 48.50 Investigations. The department may investigate violations of this chapter. The department may conduct a preliminary investigation under s. 93.16, Stats., and may exercise its authority under ss. 93.14 and 93.15, Stats., in support of any investigation. Pursuant to ss. 88.13 and 93.08, Stats., the department or its agent may enter onto lands to inspect for compliance with this chapter.

History: Cr. Register, June, 1995, No. 474, eff. 7-1-95.

ATCP 48.52 Compliance orders. (1) AUTHORITY. The department may, without prior notice or hearing, issue an order which does any of the following:

- (a) Prohibits the construction or modification of a district drain or corridor if the department finds that the construction or modification violates this chapter. An order under this paragraph shall specify the activity prohibited by the order, and shall specify why that activity violates this chapter.
- (b) Requires a county drainage board to file with the department a specific maintenance and repair plan for a drainage district.
- (c) Requires a county drainage board to file with the department a copy of any record or report required under this chapter.
- (d) Requires a county drainage board to comply with applicable requirements under this chapter.

Note: See s. 88.11 (6) and (7), Stats.

(2) WHO MAY ISSUE. An order under sub. (1) may be issued by the administrator of the department's division of agricultural

resource management, or by a person designated in writing by that division administrator.

(3) VIOLATIONS PROHIBITED. No person may violate an order issued by the department under sub. (1).

(4) FORM AND CONTENTS. An order under sub. (1) shall be issued in writing, and shall include all of the following:

- (a) The name or number of the drainage district.
- (b) The name of the person to whom the order is issued.
- (c) Notice that persons adversely affected by the order may request a hearing to contest the order, or to demonstrate compliance with conditions specified for withdrawal of the order.

(5) SERVING THE ORDER. (a) An order under sub. (1) shall be served on the person to whom it is directed. An order may be served in person or by mail. If an order is directed to the county drainage board, the department shall serve the order on at least one member of the county drainage board. The department shall mail or deliver a copy of every order under sub. (1) to the county drainage board, regardless of whether the order is directed to the county drainage board.

Note: Any person, including but not limited to the county sheriff, may personally serve an order on behalf of the department. If necessary, the department may prove service by means of an affidavit of mailing, a certified mail return receipt, or an affidavit of service.

(b) An order under sub. (1) takes effect immediately after it is served on the person to whom it is directed.

(6) WITHDRAWING OR MODIFYING THE ORDER. A person adversely affected by an order under sub. (1) may request the department to withdraw or modify the order. A request under this subsection shall specify the reasons justifying the request. A request may be made orally, but the department may require the requester to confirm the request in writing. The department may withdraw or modify the order as appropriate.

History: Cr. Register, June, 1995, No. 474, eff. 7-1-95.

ATCP 48.54 Hearing on compliance order.

(1) REQUEST FOR HEARING. A person adversely affected by an order under s. ATCP 48.52 may request a hearing before the department to contest the order. A request may be made orally, but the department may require the requester to confirm the request in writing. A request for hearing does not automatically stay an order issued under s. ATCP 48.52.

(2) INFORMAL HEARING. (a) The department shall hold an informal hearing as soon as reasonably possible after it receives an oral or written hearing request under sub. (1), but not more than 10 days after it receives the request, unless the requester agrees to a later date for an informal hearing.

(b) The person presiding at an informal hearing under par. (a) shall be a department employee or official who was not personally involved in the investigation or decision to issue the order under s. ATCP 48.52, and who is authorized to withdraw or modify the order as necessary. The informal hearing shall be held by telephone or at a location determined by the department.

(c) Within 2 business days after the conclusion of the informal hearing, the presiding officer under par. (b) shall issue a brief written memorandum which summarizes the informal hearing, and any decision or action resulting from the informal hearing. A copy of the memorandum shall be provided to the person requesting the hearing. The memorandum shall include a notice of a person's right to request a formal contested case hearing under sub. (3).

(3) FORMAL HEARING. If a contest related to an order under s. ATCP 48.52 is not resolved after an informal hearing under sub. (2), the person adversely affected by the department's order may request a full contested case hearing on the order. The contested case proceeding shall comply with ch. 227, Stats., and ch. ATCP 1.

History: Cr. Register, June, 1995, No. 474, eff. 7-1-95.

ATCP 48.56 Variances. The department may authorize a variance from any standard or requirement under this chapter if

the department finds that the variance is consistent with the objectives of this chapter. A variance shall be issued in writing. A variance may be issued by the administrator of the department's division of agricultural resource management, or by a person designated in writing by that division administrator. The department may not grant variances from statutory requirements.

History: Cr. Register, June, 1995, No. 474, eff. 7-1-95.

Subchapter IX — Grants to County Drainage Boards

ATCP 48.60 Grants to county drainage boards.

(1) GENERAL. From the appropriation under s. 20.115 (7) (d), Stats., the department may award grants to county drainage boards to help those boards comply with ch. 88, Stats., and this chapter. The department shall award grants in each state fiscal year, subject to available funding. A grant may reimburse a county drainage board for up to 60 percent of the drainage board's costs to do any of the following:

Note: Section 20.115 (7) (d), Stats., was repealed by 2007 Wis. Act 20, and any future grants are contingent on a new appropriation.

(a) Develop and adopt drainage district specifications required under s. ATCP 48.20.

(b) Reassess benefits in a drainage district. The reassessment shall comply with ss. ATCP 48.02 to 48.10.

(c) Develop and adopt drainage district maintenance plans under s. ATCP 48.22.

Note: A grant under par. (c) may be used only for maintenance plans, not actual maintenance costs.

(d) Other eligible projects that the department identifies in its annual request for grant proposals under sub. (2).

(2) ANNUAL REQUEST FOR GRANT PROPOSALS. Before the department awards any grant under sub. (1) in any state fiscal year, the department shall publish an annual request for grant proposals and shall provide a copy to every county drainage board. The annual request for grant proposals shall include all the following:

(a) The amount of grant funds available for distribution in that state fiscal year ending June 30.

(b) Eligible project categories under sub. (1).

(c) The department's grant priorities, if any.

(d) The method that the department will use to allocate funds between competing grant proposals of equal priority, if it cannot fully fund all of those proposals.

Note: For example, the department may fund equally rated grant proposals on a "first come, first served" basis.

(e) General grant terms and conditions that may affect grant applications.

(f) Grant application procedures.

(g) A grant application deadline.

(h) A grant application form.

Note: Copies of a grant application form may be obtained from the department at its offices at 2811 Agriculture Drive, Post Office Box 8911, Madison, WI 53708-8911.

(3) GRANT APPLICATIONS. A county drainage board may apply for a grant under sub. (1). The county drainage board shall make the grant application on a form that the department provides under sub. (2) (h). The grant application shall be broken down by drainage district, and shall include all the following:

(a) A description of each drainage district project for which the county drainage board seeks a grant.

(b) The estimated cost of the project.

(c) The county drainage board's plan for financing the project.

(d) Competitive bidding or other procedures that the county drainage board will use to control project costs.

Note: A county drainage board is not required to select the low bidder for a funded project. But the department may make its grant award and payments based on the low bid cost.

(e) Other information required by the department.

(4) GRANT AWARDS. Within 90 days after the grant application deadline under sub. (2) (g), the department shall make its grant awards. The department shall give notice of its awards to all county drainage boards that applied for grants.

(5) GRANT CONTRACTS. Before the department pays any grant funds to a county drainage board, the department shall enter into a grant contract with that county drainage board. The contract shall specify the time period and other terms and conditions of the grant. The department shall make grant payments according to sub. (6) and the grant contract.

(6) GRANT PAYMENTS. (a) The department shall make grant payments after the county drainage board completes the funded project and pays its share of the project costs. The department may not pay for any project cost incurred after the end of the grant period specified in the grant contract.

(b) The county drainage board shall submit a payment request on a form provided by the department. In its request, the county drainage board shall document that it has completed the project and paid its share of the project costs.

Note: Copies of a payment request form may be obtained from the department at its offices at 2811 Agriculture Drive, Post Office Box 8911, Madison, WI 53708-8911.

(c) The department shall make grant payments to the county treasurer, for the benefit of the county drainage board. If the county drainage board hires an agent to complete a project on its behalf, the department may, at the request of the county drainage board, make a check jointly payable to the county treasurer and that agent.

History: CR 01-004: Cr. Register January 2002 No. 553, eff. 2-1-02.

Chapter ATCP 48

APPENDIX A

ESTIMATING WATER SURFACE ELEVATIONS

Water Surface Elevations; Base Flow

One may use any of the following methods to estimate the water surface elevation, at base flow, at any point along a district drain:

Base Flow Method 1

1. Identify the stream to which the district drain discharges. Select the data set from the corresponding drainage basin on pp. 25–401 of *Water Resources Data–Wisconsin Water Year 1997*.¹

2. Calculate the base flow rate by dividing the “90 percent exceeds” value for the period of record by the drainage area of the relevant drainage basin. The resulting value will be expressed in cubic feet per second per square mile (cfs/m).

3. Multiply the cfs/m value by the area of land (expressed in square miles) which is drained by the district drain to the relevant point along the drain. The resulting value is the base flow rate for the district drain at that point.

4. Calculate base flow depth (at the relevant point along the drain) using the base flow rate, the drain cross-sectional dimensions (at the relevant point along the drain), and Manning’s equation for open channel flow.

5. Add the base flow depth to the bottom elevation of the district drain at the relevant point. The resulting value is the base flow elevation at that point.

Base Flow Method 2

Conduct a field survey to measure the dominant discharge elevation in the district drain. The dominant discharge elevation is the lowest elevation at which vegetation is present. If vegetation has been disturbed, the dominant discharge elevation is the interface between unsaturated and saturated soils, as indicated by soil mottling.

Peak Water Surface Elevations; 10–Year 24–Hour Storm Event

One may use the following method to estimate the peak

water surface elevation, at any point along a district drain, in the event of a 10–year 24–hour storm event:

1. Determine, from *Flood Frequency Characteristics of Wisconsin Streams*,² page 7, the flood–frequency area in which the district drain is located.

2. Calculate the peak flow rate from a 10–year 24–hour storm event using, from *Flood Frequency Characteristics of Wisconsin Streams*, page 9, the Q_{10} equation for the relevant flood–frequency area.

3. Calculate the peak flow depth (at the relevant point along the drain) using this peak flow rate, the drain cross-sectional dimensions (at the relevant point along the drain), and Manning’s equation for open channel flow.

4. Add this peak flow depth to the bottom elevation of the district drain at the relevant point. The resulting value is the peak water surface elevation, at that point, in the event of a 10–year 24–hour storm event.

Peak Water Surface Elevations; 25–Year 24–Hour Storm Event

One may use the following method to estimate the peak water surface elevation, at any point along a district drain, in the event of a 25–year 24–hour storm event:

1. Determine, from *Flood Frequency Characteristics of Wisconsin Streams*,³ page 7, the flood–frequency area in which the district drain is located.

2. Calculate the peak flow rate from a 25–year 24–hour storm event using, from *Flood Frequency Characteristics of Wisconsin Streams*, page 9, the Q_{25} equation for the relevant flood–frequency area.

3. Calculate the peak flow depth (at the relevant point along the drain) using this peak flow rate, the drain cross-sectional dimensions (at the relevant point along the drain), and Manning’s equation for open channel flow.

4. Add this peak flow depth to the bottom elevation of the district drain at the relevant point. The resulting value is the peak water surface elevation, at that point, in the event of a 25–year 24–hour storm event.

¹ *Water Resources Data–Wisconsin Water Year 1997*, by B.K. Holmstrum, D.L. Olson, and B.R. Ellefson; U.S. Geological Survey; Water–Data Report WI–97–1; 1998.

² *Flood Frequency Characteristics of Wisconsin Streams*, by William R. Krug, Duane H. Conger and Warren A. Gebert; U.S. Geological Survey; Water Resources Investigations Report 91–4128; Madison, Wisconsin, 1992.

³ *Flood Frequency Characteristics of Wisconsin Streams*, by William R. Krug, Duane H. Conger and Warren A. Gebert; U.S. Geological Survey; Water Resources Investigations Report 91–4128; Madison, Wisconsin, 1992.