Rural Drainage Systems

AGENCIES AND ORGANIZATIONS REACH CONSENSUS ON WAYS FORWARD

NW Ohio drainageway with tile outlet concerns

One-sided ditch construction, achieving freeboard for tile outlets

Traditional ditch transitioning into a 2-stage ditch

Flooding conditions often result in petition for drainage improvement

Rural drainage systems are too often a forgotten and failing infrastructure. The situation leaves Ohio's agricultural producers, rural residents and communities, as well as our economy and environment at risk.

JANUARY 2008

Broad-based Group Tackles Rural Drainage Issues

What if someone told you that infrastructure critical for daily life and commerce on over 2/3 of Ohio, or over 17 million acres was at risk? Would you be concerned? The ODNR Division of Soil and Water Conservation and the Ohio Federation of Soil and Water Conservation Districts and their partners are, and hope you are too.

That infrastructure is drainage and it is important across Ohio to protect homes, businesses, highways and agricultural lands from frequent periods of "excess" water. Many Ohio soils, too, are poorly drained. But nowhere is drainage more important than in the flatter glaciated parts of western and northwestern Ohio. And important lately, we have been realizing that drainage systems can also provide environmental services.

But Ohio's drainage systems are at risk. They are critical infrastructure serving cropland and rural residences, but attention to these systems seldom reflects that status. In fact, in rural areas landowners must petition to have group projects constructed, and benefiting landowners pay for the projects through assessments.

Approximately 30,000 miles of group projects (tile mains and open drainageways) have been constructed since the 1840s, but it is estimated that only one-third of these projects are under county maintenance. They are increasingly failing. New projects are harder to get approved: costs are increasing; landowners, sometimes unaware of the importance of drainage to their land and community, are objecting; time and costs for reviews are growing; and environmental concerns are sometimes an issue.

Understanding the connection of drainage systems to our environment is also important for a full understanding of this issue. These same systems that help avoid wet yards, flooded basements, local flooding, and diminished crop productivity also enhance success of some important conservation practices, especially conservation tillage and grassed waterways. And "blowouts" of failing tile create direct conduits for sediment and pollutants to drainageways.

But "improving" receiving waterways to provide outlets has often resulted in environmental damage including the loss of substantial wetland acres. Research and demonstrations in recent years are showing that alternative designs can actually reduce delivery of sediment and nutrients and minimize biodiversity impacts compared to traditional designs, but at higher project construction costs.

In late 2005, both the Division of Soil and Water Conservation and the Ohio Federation of Soil and Water Conservation Districts recognized that they were among the entities that had allowed drainage to become "forgotten" infrastructure. The Division had lost the capital improvements funding for projects that had been appropriated in the 70s and 80s. USDA eliminated most support for drainage projects. The Division and OFSWCD shifted focus to Farm Bill conservation practices and Ohio's agricultural pollution abatement programs. So in January 2006, a broad based advisory committee was formed to recommend means to better support construction and maintenance of drainageway systems, and to achieve a high level of environmental stewardship in drainage programs and projects.

In September 2007, the Rural Drainage Advisory Committee reached consensus on a broad and important set of recommendations addressing almost all of the original goals. Their report follows. Please understand that much hard work remains: to provide the recommended outreach, information, and training; to determine how to meet environmental goals; and to find means to financially support our drainage infrastructure and environmental needs. Please don't miss reading the back cover of this report to learn more about what you can do to help Ohio meet these important needs and challenges.

Sean Logan, Director
Ohio Department of Natural Resources

David Hanselmann, Chief
ODNR Division of Soil and Water Conservation

Clark Sheets, President
Ohio Federation of Soil and Water Conservation Districts

WHY? Listen to past OFSWCD president and initiative co-leader Ken Riedlinger as he explains. "As a Wyandot County crop producer I've personally seen group drainage projects become even more challenging to construct – projects critical to crop production as well as my ability to continue conservation practices like no-till. These challenges are all the more frustrating since I know that our well-designed projects with BMPs can also protect streams and water quality."

After becoming OFSWCD president, Riedlinger learned more:

- 2/3 of Ohio cropland requires drainage to improve production
- 40% of surface ditches and sub-surface tile mains are in poor to non-functioning condition
- 30,000 miles of public drains and ditches have been constructed via county petitions, while only approximately 11,000 miles are on public maintenance
- Increasing public scrutiny and number of landowners who do not understand or want to pay for drainage, are resulting in growing project delays
- Environmental concerns have been growing along with formal complaints and lawsuits

"With all these concerns in mind, ODNR's David Hanselmann and I decided we needed to organize a substantial effort to find solutions – the results of which we are pleased to share in this report."

Committee members view petition ditches in Defiance County

ADVISORY COMMITTEE MEMBER GROUPS

Allen SWCD
Auglaize County Engineer
County Commissioners Association of Ohio
County Engineers Association of Ohio
Darby Watershed Project
Defiance SWCD
Delaware SWCD
Fairfield SWCD
Madison County Engineer
ODNR Division of Natural Areas and Preserves
Ohio Association of Soil and Water Conservation District Employees
Ohio Department of Agriculture
ODNR Division of Soil and Water Conservation
Ohio Environmental Council
Ohio EPA Division of Surface Water
Ohio Farm Bureau Federation
Ohio Federation of Soil & Water Conservation Districts
Ohio Land Improvement Contractors Association
Ohio Soil and Water Conservation Commission
OSU Dept. of Agricultural, Environmental, and Developmental Economics
OSU Dept. of Food, Agricultural, and Biological Engineering
Ottawa County Engineer
Seneca SWCD
The Nature Conservancy, Ohio Chapter
USDA – Agricultural Research Service
USDA-Natural Resources Conservation Service
Wood County Engineer & Staff

Advisory Committee **OBJECTIVES**

Document status of Ohio's deteriorating rural drainage system

Determine reasons for multiple year backlog for public drainage petition projects

Develop 1st ever Ohio Drainage Manual outlining standards for constructing and maintaining drainage improvements, including environmental stewardship standards

Determine applicability of state and federal water quality laws to project construction and maintenance

Recommend solutions for both drainage infrastructure and environmental challenges

Total miles under maintenance
(open ditches, subsurface mains, and grassed waterways)

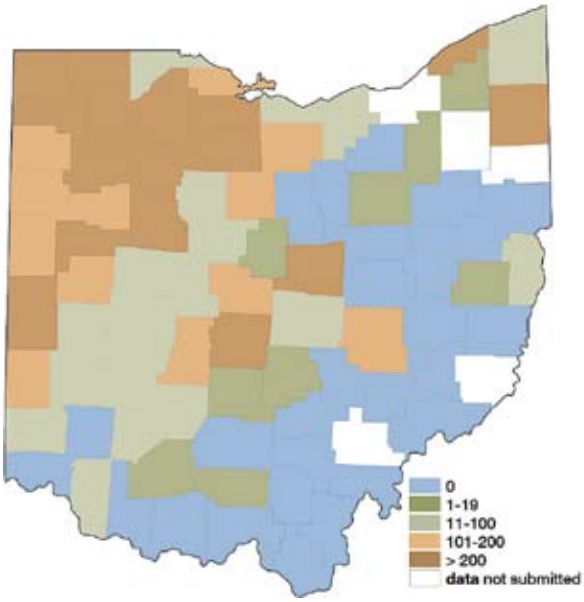


Chart developed from 2006 ODNR-DSWC survey of county drainage programs

The ODNR and OFSWCD express sincere appreciation to Kirk Hines, P.E. for facilitating work and meetings of the advisory committee, and to DSWC engineers Terry Mescher, Mark Seger, Dan Mecklenburg, to Amy Boyer, and to George Elmaraghy, Dan Dudley, Jeff DeShon at Ohio EPA for very significant contributions to project success.

Feel like you don't really understand rural drainage?
HERE IS A 5-MINUTE PRIMER.

Typical open drainageway

Failing network of clay tile

Nutrient assimilation occurring in drainageways

What are rural drainage systems, anyway?

These "systems" include the networks of tile (clay until about 1960, now usually plastic) and open drainageways (ditches) that receive water from individual farms, home lots and small rural communities. They generally cross multiple private properties and often extend several miles to "find" an outlet.

Where are these systems?

They are common in the glaciated parts of Ohio, generally north and west of I-71 on the extensive areas of low grade (<1%), and in similar, although generally smaller areas elsewhere. Ohio has a higher percentage of land that needs or benefits from drainage than any other state. Settlers realized this in the early 1800s when the first drainage systems were installed.

What good do they do?

FOR AGRICULTURE AND CONSERVATION

Over 7.4 million acres of current (and potential) cropland benefits from drainage – that drains "excess" water out of the soil profile during the growing season, through on-farm tile systems that landowners have installed, and continue to install today at a typical investment over $600/acre. These on-farm systems seldom can function without connecting to a group project. Increased value of Ohio crop production due to drainage is often worth over $100/acre. Importantly, these on-farm systems are also essential for certain cropland conservation practices, especially conservation tillage.

FOR HOMEOWNERS AND RURAL COMMUNITIES

Estimates indicate more than 500,000 rural homes/lots rely on group drainage projects for outlets for their yard, downspouts, and foundation and basement drains. While not recommended, tens of thousands of on-site septic systems and perimeter drains also tie into group drainage systems. The lots and businesses in many small rural communities often unknowingly also tie into these systems that were installed by farmers decades ago.

Many of these lot owners and small community residents live in "ignorant bliss" of this reliance, until the system fails and their basement floods or their septic systems fail.

Tile outlets with freeboard obtained in concert with one-sided construction

Filter strip along drainageway with one-sided construction

"Drainage is a big boost to a crop farmer's bottom line, but I know drainage projects benefit more than just our producers. So I'm pleased this report supports landowners rights to meet drainage needs yet emphasizes conditions where additional environmental protection is most critical – two goals consistent with state policy our members have adopted". –

Jack Fisher, Executive Vice President,
Ohio Farm Bureau Federation

How are these group drainage systems installed and maintained?

Until the mid 1800s most projects were constructed by groups of farmers on their own. In 1859 the state legislature gave authority to boards of county commissioners to construct drainage improvements for groups of landowners. Landowners that needed improved drainage were required to petition commissioners in their county to begin the process. Upon approval of the project to be constructed by county commissioners, benefiting landowners were assessed. Townships also implemented projects in the early 1900s. Finally in 1957 maintenance provisions were added to ditch laws. In 1969 SWCDs were given authority for project construction and maintenance upon county approval. Landowners can petition the county or SWCD requesting an improvement project. A project design is proposed along with a schedule of landowner property tax assessments; public viewings and hearings are held. Upon county commissioner approval, a project for large tile mains, open channels, or both, is bid and constructed, then maintained with future maintenance assessments.

One-sided construction

Traditional two-sided construction

It is estimated that 10,000 miles of group tile projects have been constructed, and 20,000 miles of open channel. Estimates indicate that only one-third of these systems are on county maintenance. Many of the rest are at a high risk of collapse and failure. – i.e. over 20,000 miles!

Can projects cause environmental problems?

Projects installed without Best Management Practices (BMPs) often cause environmental problems. Until about 1970 some projects created an outlet watercourse to handle increased rates of runoff, sometimes converting a stream or wetland area into a ditch, replacing trees and shrubs with grass. This "hydromodification" has been identified as the leading cause of water quality impairment in Ohio since it is so widespread, including in rural and urban areas, and is a leading cause of aquatic wildlife diversity impact. Hydromodification could be changing the flow of a stream or diminishing its habitat by excavation or by installing restrictions such as culverts. Habitat is degraded, streams have less water during dry weather periods and nutrients and sediment are more easily transported, negatively affecting the health of the downstream watershed. Newer, alternative drainageway designs, i.e. designs that incorporate or restore natural stream characteristics and functions, can meet nutrient processing and wildlife biodiversity goals, yet still provide drainage of runoff water. Construction costs can be higher, but maintenance costs may be less.

Clear & snag project in larger watershed in lieu of more extensive clearing and grading

Before…

After…

"The environmental community recognizes that private drainage projects can cause far greater impact than petitioned group projects. I'm pleased a consensus emerged that leads to greater environmental stewardship and still encourages projects to go through SWCDs and county engineers using Best Management Practices." – *Keith Dimoff, Executive Director, Ohio Environmental Council*

Hydromodification on private project that used inadequate design/construction standards

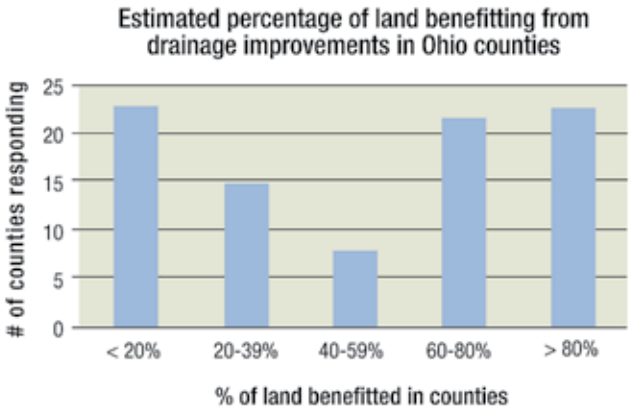
Survey of SWCDs and County Engineers

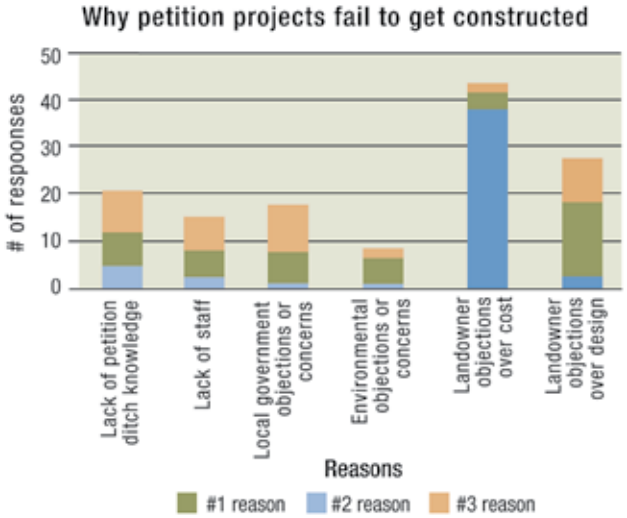
In November 2005, ODNR DSWC sent a drainage survey to all 88 soil and water conservation districts and county engineers. The purpose of the survey was to evaluate the status and condition of Ohio's rural drainage infrastructure and the environmental sensitivity of local governments regarding public drainageways.

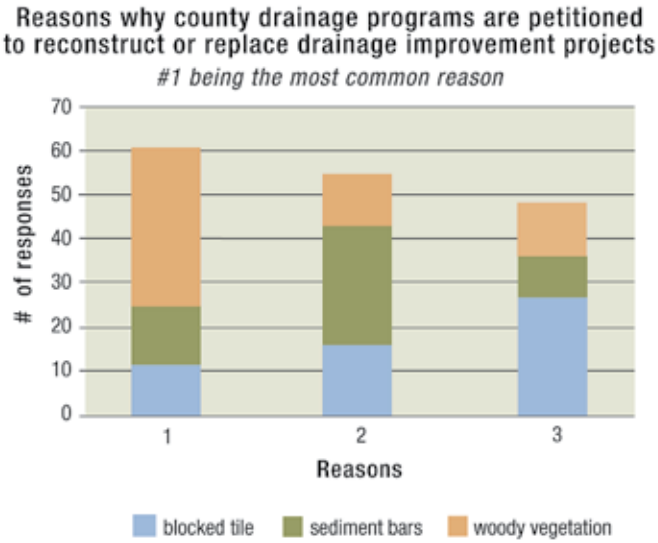
Anecdotal and survey information reveals a lack of knowledge and appreciation of Ohio's drainage systems. Many citizens do not understand how drainage systems work, how landowners and agencies interact to provide for drainage, and how and why environmental problems can and need to be minimized. The lack of public knowledge of the issues often makes it challenging for officials to approve projects and assessments in the face of objections that may well arise from lack of understanding. Most objections relate to assessments, but environmental concerns are growing.

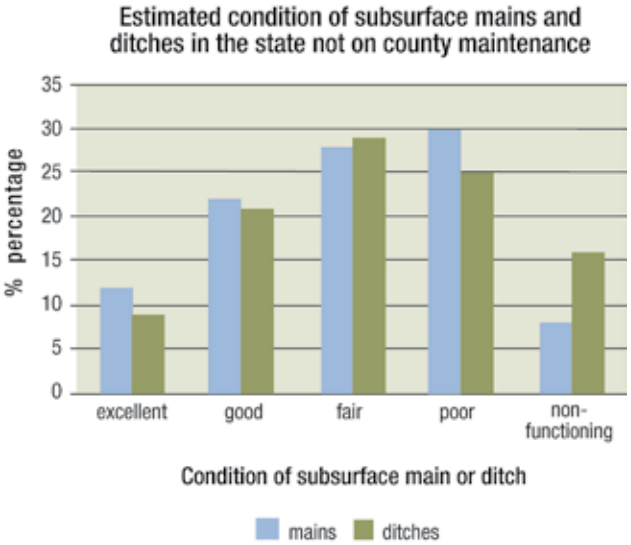
It is also noted that many local agencies are not fully aware of drainage program legal and administrative requirements and procedures including water quality laws. When SWCDs and county engineers were asked, "What type of assistance would best help in the repair or replacement of aging drainage systems in your county?" Financial assistance ranked first, but administrative assistance and project design assistance were also frequently identified.

In most counties, either the SWCD and county engineer work together or the county engineer takes the lead in public drainage projects. Ohio Revised Code Chapters 6131 and 1515 provide the legal processes utilized to construct petition drainage projects. Approximately 50% of Ohio's counties reported a backlog of petitioned projects awaiting planning and design. The following graphs and charts represent early 2006 results from the survey.









Recommendations

OUTREACH, INFORMATION AND EDUCATION RECOMMENDATIONS

- Encourage county engineers, commissioners, and township trustees to discuss drainage issues at local and state annual meetings.
- Schedule presentations at local, regional and statewide meetings of local officials to increase awareness of responsibilities and to promote interaction and cooperation.
- Have Division of Soil and Water Conservation provide training to SWCDs and local officials on a broad range of programs, procedures and legal requirements.
- SWCDs and county engineers should meet with newly elected local officials to review county drainage programs, and new and proposed projects; providing good documentation on costs and benefits is essential.
- SWCDs should routinely organize tours emphasizing problems, economic impacts and water quality issues associated with local drainage needs.
- SWCDs need to ensure their staffs are adequately trained; SWCDs need to communicate to local elected officials any shortcomings in staff availability and training.
- Local agencies need to provide better information and consultation for rural and urban landowners, especially if they are splitting or purchasing lots, on actions that affect drainage, effects on downstream neighbors, costs for prevention vs. remediation, environmental concerns, etc.
- Local development agencies such as regional planning commissions and local zoning boards should increase outreach and education to the development community (developers, bankers, realtors, contractors) emphasizing increased cooperation, participation in tours highlighting drainage issues, collaborative ways to solve or prevent problems, etc.

"County commissioners understand the need and value of drainage improvements to farmers, but are often criticized by other local residents who are also assessed for project benefits. I'm pleased to see the report recognize those involved in drainage improvements, including commissioners, need to do a better job educating the public about the importance of drainage to everyone in the watershed." –
Larry Long, Executive Director,
County Commissioners Association of Ohio

- Encourage planning/construction/funding of more environmentally beneficial designs which produce better aquatic wildlife habitat, reduce sedimentation, nutrient delivery and maintenance costs.

INFRASTRUCTURE RECOMMENDATIONS

- Increase funding for local technical services, personnel, improved ditch project design/construction, and implementation (See specific funding recommendations below).
- Streamline the review process by regulatory agencies (Ohio EPA, Army Corps, ODNR), while still meeting environmental and legal requirements.
- Develop an appeals process for landowners/petitioners using the SWCD Conservation Works of Improvement process involving local courts of common pleas.
- In consultation with drainage, legal and environmental experts, develop a more consistent and uniform method of performing cost vs. benefit analyses.

FUNDING AND INCENTIVES RECOMMENDATIONS

- Seek additional state and local appropriations for additional state and local staff to assist communities and landowners on drainage projects; increase training; conduct research and legal reviews; develop legislation; improve environmental designs and implementation.
- Authorize SWCDs to charge fees to cover local engineering and technical assistance costs of petition ditch projects.
- Develop low interest rotary loan funds or cost-share funds for county drainage programs; consider linking cost-share eligibility with communities proposing to implement the recommendations and guidelines as set forth in the Ohio Drainage Manual.
- Seek funding to reduce ditch maintenance assessments for local landowners when and where designs employ self-forming, and natural channel designs that will typically result in reduced long-term maintenance costs.
- Engage in negotiations with USDA to explore expanding eligible Farm Bill and other practices to include and cover costs for alternative (e.g. self-forming, natural channel) designs.
- Incorporate self-forming, natural channel designs and related practices in water quality trading programs
- Take full advantage of existing programs such as 401/404 permit mitigation, USEPA 319 grants, ODOT and other mitigation funding, and Clean Ohio Funds.
- Consider the feasibility of utilizing state capital improvement funds and/or OPWC Issue 1 monies to fund rural drainage infrastructure improvement projects.

Drainage Manual and Drainage Needs Assessment

The new Ohio Drainage Manual, the first ever in Ohio provides a reference guide for drainage work to county commissioners, county engineers, soil and water conservation district staff and board supervisors, stream/wetland mitigation entities, contractors, private landowners and residents involved in the design, construction or maintenance of drainage improvements.

The manual identifies the methods and procedures communities and/or landowners can follow to protect the integrity of Ohio's rural drainage infrastructure in a socially, economically, and environmentally responsible manner.

Several different topics are covered in the manual. Of interest to drainage designers and maintenance personnel will be Section 4, Best Management Practices. This section reviews design approaches and maintenance methods which minimize the environmental impact or "footprint" left by those activities.

Another component of the Drainage Manual, the **Drainage Needs Assessment** will help ensure projects have a true documented drainage and hydraulic need and if so, are designed to a scope and scale that minimizes environmental impacts.

First, the assessment will identify current drainage concerns, document current drainage capacity, and determine the anticipated necessary capacity for the system. Second, this assessment will document the current channel setting and record the current state of the drainage system as related to the environmental review tables on pages 9-11.

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Ohio Drainage Manual

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County drainage program staff performing a drainage needs assessment

ODNR-DSWC staff assessing the current condition of a drainageway

Protocol for Environmental Review

Balancing socio-economic drainage needs (local flooding, row crop production, etc.) with environmental responsibilities is challenging and complicated, as evidenced in the preceding discussion. To better illustrate the environmental part of this equation, Ohio EPA, with support from ODNR and the Rural Drainage Advisory Committee, developed the three following tables. These tables were helpful to the group and led to a consensus that will allow local drainage projects to meet local, practical drainage needs and meet clearly laid out requirements of state and federal water quality related laws.

A key to reaching consensus was Ohio EPA's proposal to create a new aquatic life use sub-category, "General Aquatic Life", which would apply by rule to drainageways under 2000 acres of drainage area. All existing chemical water quality criteria would remain in effect but new biological data and biocriteria will not be applicable. Drainage improvement projects in these settings would be subject to general BMPs outlined in the Drainage Manual.

Achieving consensus on the conceptual approach was an important milestone. However, putting the approach on the ground will take additional steps. Ohio EPA is conducting further analyses to draft and justify the administrative rule language that would implement the necessary changes in Ohio Water Quality Standards. Consultation on the specific rule language with all parties that have an interest in this topic will begin in the first quarter of calendar year 2008 in anticipation of a rule to be proposed later in 2008.

The Rural Drainage Advisory Committee concluded the approach laid out in these three tables strikes a fair balance that allows drainage projects to continue, focuses environmental requirements on projects in larger watersheds, and increases the likelihood of gradually building healthier drainageways in smaller watersheds. There was a strong commitment by group members to seek resources that would allow environmentally enhanced designs and to seek incentives, as shown in Table 3, that would help provide environmental services such as lessening downstream delivery of sediment and nutrients.

All three tables contain considerable information. If a project planner wants to quickly determine how they apply to a proposed project, just look at the 2nd and 7th columns (shaded darker). Additional general guidance and explanation shown on the following pages is applicable to all three tables; please be sure to read the table explanations.

Table 1

No "existing use" complications

Framework and decision making matrix for drainage projects (part 1 of 3). Pertains to situations where there is no scientific biological field data to assign a sub-category of aquatic life use as an "existing use" which requires protection.

Position on Agricultural Landscape	Defined by watershed area (acres)	Primary Water Quality Concerns	Primary Socio – Economic Concerns	Preferred WQS Use Designations	Criteria Types Applied	Minimum Drainage Design for New Project
Upland Areas (often ephemeral)	< 2,000	Protect downstream uses; Public health	Cropland Drainage, Flooded Roads & Cropland	Drainage; General Aquatic Life	Chemical Only	Traditional Design
Transition Zone (often intermittent, sometimes ephemeral)	2,000 to 6,400	As above, plus: Increase pollutant assimilation; Feeder streams with some aquatic life	Water Conveyance Flooded Roads & Cropland	Drainage; Modified Warmwater Habitat	Chemical and Biological	One-sided Design
Lowlands	> 6,400	As above, plus: Pollutant loads; Year round aquatic habitats	Flooded Roads & Cropland	Warmwater Habitat	Chemical and Biological	Limited Snag & Clear; Natural Channel

Additional General Guidance/Explanation for Tables 1-3

Reference Maps – In the future Ohio EPA and the Division of Soil and Water Conservation hope to have detailed reference maps available to facilitate the ability of county officials to determine the proximity of drainage improvement projects to important near field and downstream water resource features such as water supplies, wetlands and designated aquatic life uses.

Table 2

addressing "existing use" protection

Framework and decision making matrix for drainage projects (part 2 of 3). Pertains to typical in-field situations that do have scientific biological field data indicating a sub-category of aquatic life use (General Aquatic Life; Modified Warmwater or Exceptional) exists and requires protection.

Position on Agricultural Landscape	Defined by watershed area (acres)	Primary Water Quality Concerns	Primary Socio – Economic Concerns	Uses Attained	Existing Uses Protected	Minimum Drainage Design for New Project
Upland Areas (often ephemeral)	< 2,000	Protect downstream uses; Public health	Cropland Drainage Flooded Roads & Cropland	Drainage; General Aquatic Life	Drainage; General Aquatic Life	Traditional Design
Transition Zone (often intermittent, sometimes ephemeral)	2,000 to 6,400	As above, plus: Increase pollutant assimilation Feeder streams with some aquatic life	Water Conveyance Flooded Roads & Cropland	Drainage; Modified Warmwater	Drainage; Modified Warmwater	One-sided Design
	2,000 to 6,400		Water Conveyance Flooded Roads & Cropland	Drainage; Warmwater	Drainage; Warmwater	Over wide channel Design
Lowlands (perennial water)	> 6,400	As above, plus: Pollutant loads; Year round aquatic habitats	Flooded Roads & Cropland	Warmwater; Modified Warmwater w/ higher potential	Warmwater	Limited Snag & Clear; Natural Channel
	> 6,400		Flooded Roads & Cropland	Modified Warmwater (w/o higher potential)	Modified Warmwater	One-sided Design

Additional General Guidance/Explanation for Tables 1-3

General Aquatic Life Use Designations – For upland or headwater landscapes (typically < 2000 drainage acres), a General Aquatic Life Use designation will typically replace the current Aquatic Life Use (ALUs) options of Warmwater Habitat (WWH), Modified Warmwater Habitat (MWH), & Limited Resource Water (LRW), through a new rule to be proposed by Ohio EPA. For these drainageways assignment of the General Aquatic Life Use will not require a "use attainability analysis" and most drainageways will not require biological criteria. The current ALUs will be protected for larger drainageways.

Upland or Headwaters < 2000 Drainage Acres w/ Existing Biological Data – Although it is a fairly uncommon occurrence, an upland/headwater drainageway with biological data that confirms WWH, must protect that use. Under current law this existing use (e.g., WWH) must be protected, and it is not possible to designate it with a General Aquatic Life Use designation. In these situations, it will be necessary to implement a design that protects the existing use. Design requirements in these situations will be determined on a case-by-case basis.

Maintenance as Part of a Petition Project – With few exceptions, routine on-going maintenance that is typically performed as part of ORC Chapter 6137 will not be affected by the conditions outlined in these tables. This maintenance work will continue without any additional oversight. The new Drainage Manual describes maintenance BMPs that typically would be utilized. As is currently the situation, reconstruction of a drainageway or extensive stabilization work may require a 404/401 permit.

Construction Storm Water Permits and Notice of Intents – Construction work on drainageways that disturbs greater than one acre requires an Ohio EPA Construction StormWater Permit. As the Drainage Manual is further developed, ODNR-DSWC and Ohio EPA will work to develop BMPs that, when followed, will serve as the Storm Water Pollution Prevention Plan required as part of a Construction Storm Water Permit.

Table 3

mid to longer range objectives

Framework and decision making matrix for drainage projects (part 3 of 3). A framework to develop incentives and an economic "trading market-driven" approach to drainage ditch design in the upland and transition landscapes of agricultural watersheds. Research and development of new nutrient WQS criteria and TMDL modeling approaches are underway and may influence this effort.

Position on Agricultural Landscape	Defined by watershed area (acres)	Primary Water Quality Concerns	Primary Socio – Economic Concerns	Preferred Use Designations	Nutrient Criteria / TMDL Applied	**Marketed Drainage Design**
Upland Areas (often ephemeral)	< 2,000	Protect downstream uses; Public health **Increase pollutant assimilation**	Cropland Drainage Flooded Roads & Cropland	Drainage; General Aquatic Life	New nutrient criteria apply at outlet of upland catchments; **TMDL "credits"** for in-channel processing and trading with other downstream sources	**Water Quality Trading; other incentives** **2-stage or self-forming over wide channel** *Natural Channel*
Transition Zone (often intermittent, sometimes ephemeral)	≥2,000 to 6,400	Feeder streams with some aquatic life	Water Conveyance Flooded Roads & Cropland	Drainage; Modified Warmwater Habitat	Chemical and Biological	
Lowlands (perennial water)	> 6,400	As above, plus: Pollutant loads; aquatic habitats	Flooded Roads & Cropland	Warmwater Habitat	Chemical and Biological	*Limited Snag & Clear; Natural Channel*

Additional General Guidance/Explanation for Tables 1-3

Minimum Drainage Designs and Design Flexibility for New Projects – The drainage designs listed in this column indicate the minimum design intended to protect water quality and existing use. Alternative designs may be developed and implemented as long as the existing use is protected. Appropriate alternatives (design flexibility) should be outlined by designers and presented to the appropriate reviewers.

Documenting Historically Channelized Drainageways & the Drainage Needs Assessment – As part of the conditions of utilizing these tables, it is assumed that the drainageway has a history of channelization and that the drainage needs have been assessed and documented. Procedures for providing this documentation are outlined in the Drainage Manual. Typically this documentation will be easier to produce in glaciated areas of Ohio as compared to the non-glaciated areas. In the non-glaciated areas of Ohio, there are fewer group petition projects that have been constructed as the topography often provides necessary drainage relief. It will not be common to see projects in this area of the state that can document the need and show a history of channelization.

Existing Permit Requirements – Projects that fall within the existing permit requirements (i.e., 404 & 401 permits) will not be excluded from the conditions of these permits as a result of protocols described in the tables. These projects will need to be evaluated by normal protocols. A recent U.S. Supreme Court ruling has caused the Army Corps of Engineers to implement new guidance on waters that are subject to permitting. However, the broad set of exemptions from dredge and fill permits granted to projects that restore original drainage improvement features in upland soils remain in place.

Adjacent Wetlands and Oversight - Wetlands will continue to be regulated by EPA and as part of the Farm Bill. These tables are not intended to provide any exemptions to wetland regulations, and normal protocols will need to be implemented.

You've read recommendations for "The Way Forward"...

The Division of Soil and Water Conservation and the Ohio Federation of Soil and Water Conservation Districts appreciate you taking time to read the report of the Rural Drainage Advisory Committee. We hope you have a better understanding of the importance of these drainage systems that serve so many people and purposes, and the challenges faced in meeting the associated infrastructure and environmental goals. We hope too that you found the recommendations appropriate and compelling. Clearly we need the involvement and assistance of many organizations and agencies to successfully implement the recommendations over the next few years. Therefore, in conclusion, we offer a few ideas for you to consider as we seek to implement "the way forward" outlined by committee members. In advance, we thank you for your assistance.

... now we need your help.

Agricultural organizations can help inform their members about the issues and recommendations and ask them to inform decision makers and the media locally. They can help gain state funding support, perhaps including an initiative associated with CAUV, to cover part of project infrastructure and environmental costs.

County commissioners can help support adequate SWCD staff to plan projects, in counties where SWCDs have that role. They can advise SWCDs and county engineers regarding outreach and other ways to build community support that will help them when they consider approving projects. They can support state funding initiatives as they are considered.

County engineers, in counties where they have a drainage role, can have staff participate in training regarding the new Ohio Drainage Manual, and newer alternative stream channel designs. They can help drainage projects achieve a higher priority for OPWC Issue 1 funding, and support other state funding ideas. They can help build public understanding and support for drainage and related environmental protection alternatives and requirements.

Environmental organizations can help educate members on the importance of drainage infrastructure and the broader public on the importance of environmental stewardship in project design and maintenance. They can work toward state or other funding increases to help cover cost of environmental enhancements, especially where such measures are voluntary.

Legislators can learn more about drainage infrastructure and environmental stewardship issues, and the consensus contained in this report. They can be open to ideas for project funding, related legislation, and to the Ohio EPA rule revision proposed herein.

Researchers and their institutions can help with further development of alternative drainage project designs and better document their effectiveness and costs.

SWCDs can help educate local agency officials and staff, the media, the public, developers, and others about drainage and its social, economic and environmental benefits. They can employ and train staff to better meet local drainage needs.

Please feel free to contact David Hanselmann, Kirk Hines, or Terry Mescher at the Division of Soil and Water Conservation (614/265-6610), or Mindy Bankey, CEO, Ohio Federation of Soil and Water Conservation Districts (614/784-1900) for further information, to arrange for presentations, etc.

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