



Environmental
Protection Agency

Division of Surface Water

Summary of Comments

December 2011

Rule: OAC 3745-1 (Water quality standards rules)

Agency Contact for this Package

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Ohio EPA made available for review and comment draft changes to 18 water quality standards rules in OAC 3745-1 in August 2008. The comment period ended on June 6, 2011. This document identifies all the comments and questions received during this comment period on topics that are currently on hold. These comments will be considered in future rulemakings. However, a few responses have been included for comments that were previously addressed in a 2010 interim response to comments. In addition, a few other responses were included to provide additional input/clarification.

In an effort to help you review this document, the comments and questions are grouped by topic and organized in a consistent format. The name of the commenter follows the comment in parentheses.

Note: The following draft rule changes are on hold until a future rulemaking:

- Drainage beneficial use
- Navigation beneficial use
- Nutrient criteria for lakes
- Update of special high quality waters listing
- Update of human health criteria for Ohio River and Lake Erie basins

General Comments

Ditches and New Use Designations

Comment 1: The Fact Sheet states "water quality standards are state regulations or rules that protect lakes, rivers or streams and other surface water bodies from pollution". Traditional ditching will not protect water quality as stated in several of OEPA documents. Providing drainage improvements with concepts utilizing 2 stage channel design or modern practices will allow drainage, flood storage and consider pollutant removal. (Brian Prunty, Stark Soil and Water Conservation District)

Response 1: Except as otherwise noted below and in other responses, the comments from Mr. Prunty are still under consideration within the context of either the WQS rules or the Rural Drainage Manual.

Mr. Prunty provided extensive commentary on the August 2008 set of draft rules. The comments focused on draft rule changes that address how Water Quality Standards interface with Ohio's petition ditch laws. Ohio EPA has drafted rule changes on this subject as a result of our participation on the Rural Drainage Advisory Committee. This was a workgroup convened in 2006 by the Ohio Federation of Soil and Water Conservation Districts and the Ohio Department of Natural Resources, Division of Soil and Water Conservation. This workgroup documented the deteriorating condition of agricultural drainage improvements across the State and the need to provide more technical assistance on petition requests, including the protection of water quality. To help meet this need Ohio DNR has drafted a document entitled the Rural Drainage Manual that provides voluntary guidelines for local drainage project staff and engineers. Among other things the Rural Drainage Manual recommends how to properly consider the WQS regulations and available water quality information in the evaluation of petition ditch projects. Some of the Mr. Prunty's comments deal with information in the draft Rural Drainage Manual.

A number of different comments made by Mr. Prunty repeat the themes that the WQS rules for drainage ditches are not protective of water quality and the idea that the regulations should mandate specific drainage practices to protect water quality. Ohio EPA has not revised the draft rules to address these comments but the Agency has endeavored to clarify that while waters designated as Upland Drainage and Water Conveyance serve drainage purposes, these waters must also maintain a level of water quality that support aquatic life. Any water with a drainage use will also be subject to either the Base Aquatic Life use or another aquatic life use.

The Agency does not agree with the idea that WQS regulations should include specific drainage ditch design practices. But, as explained in the previous paragraph, it is important to stress that any watercourse with a

drainage use must also protect water quality. The Rural Drainage Manual is the crosswalk between the WQS rules and the design of new drainage projects. This presentation of voluntary guidelines for drainage project is appropriate given the fact that the majority of petition ditch work carried out today does not need authorization under Sections 404 and 401 of the Clean Water Act. For situations where drainage projects place fill in surface waters of the State the person responsible for the project must obtain authorization for the work under State and federal law. The Agency will utilize this regulatory authority to impose more influence regarding ditch design specification. The Agency has drafted several new rules that cover stream impacts such as ditch projects and acceptable techniques for stream mitigation design (see rule 3745-1-56 and the rules in Chapter 3745-32).

Comment 2: Therefore, as a way of submitting comments concerning the proposed new rules, this Office can only say, we are very concerned that little regard has been given to those that use and/or benefit from good drainage. Therefore, it is difficult for us to register valid comments until such time the apparent lack of understanding between OEPA, other State & County agencies, Section 6111, and 6131 of the Ohio Revised Code (ORC) is resolved or changed. I'm sure there are other sections of the law that may apply to this issue.

This office has dealt with ORC 6131 from its inception resulting in some 560 miles of Wood County open water courses (natural & man made) to be placed in the County maintenance program with six more petitions pending. This alone will increase our responsibility to over 600 miles. Needless to say, we know and understand the petitioning process and the importance of good drainage to the Agricultural community as well as the County as a whole. As a result, we take the words of the State statute seriously and therein lies our dilemma.

Recognizing fully the importance of the Clean Water Act of 1972 and Section 6111 of the code, we are trying to cope with the differences of 6111 and 6131 and at the same time, not run afoul of the law by exercising our statutory duty to follow Section 6131 of the code. Having said this, we can offer this comment for your consideration – we are not in a position to offer detailed comments until such time that OEPA, the Army Corp of Engineers, and any other agency claiming authority in this issue has a chance to sit down with all interested agencies and discuss the fundamental issues listed on the following page:

1. Why are we talking about this issue?
2. What are the problems causing this discussion?
3. What are the goals after the discussion?
4. Will these draft rules become law?
5. Where do we start?
6. Who do we talk to?

7. What permits, if any, are needed?
8. What fees will be involved?
9. What do we tell people relying on drainage?
10. If these proposed rules are made law, will they apply equally to everyone involved in disturbing soil?
11. And the list goes on!

We have talked to at least four other Counties in northwest Ohio and they are interested in clarification of the rules that have been proposed.
(Raymond Huber, Wood County Engineer)

Comment 3: The Fact Sheet states "Local Governments & businesses that operate waste water treatment facilities could see changes in discharge permit limits as a result of these rules". I agree with changes in Phosphorus being below (1) but allowing changes for drainage use designations that continue current ditching practices will not lower pollutant loads in surface waters. Current agricultural ditching practices will contradict stiff rules on WWT facilities. Then Ohio EPA will not meet their goals in maintaining and restoring water quality. (Brian Prunty, Stark Soil and Water Conservation District)

Comment 4: The OEC supports those provisions in this rule package that:

- recognize and protect the important functions of our small primary headwater streams;
- guarantee the protection of all "waters of the state" of Ohio through Section 401 Certification and the newly created state water quality permit; and
- establish a stream mitigation protocol based on sound science.

However, the OEC is concerned with the provisions regarding the establishment of a "base aquatic life use" and a drainage use designation in the draft water quality standards since they may foster a downgrading of water quality which will directly contradict the goals of the Clean Water Act ("CWA"). The OEC seeks to ensure the goals of the CWA are properly implemented in Ohio. The objective of the CWA is to restore and maintain the chemical, physical, and biological integrity of the Nation's waters. In order to achieve this objective, the CWA declares, wherever attainable, an interim goal of water quality should be established which provides for the protection and propagation of fish, shellfish, and wildlife and provides for the recreation in and on the water.

Ohio has been conducting standardized biological monitoring of rivers and streams since the late 1970's to serve multiple purposes including the identification of point and non-point impacts to the biological integrity goal of the Clean Water Act. ¹ According to the draft rules, a watercourse designated as a drainage use (Upland Drainage or Water Conveyance) will

not have the protection of chemical, bacteriological, or biocriteria if they are considered a historically channelized water course. (Ohio Environmental Council)

Rule 3745-1-02 Definitions.

- Comment 5:** 3745-1-02 (B)(31) "Ditch maintenance program"
Comment: The following language should be added to this definition, "...repair of drainage improvements authorized and carried out by the state of Ohio or pursuant...". ODOT must be able to maintain roadside ditches to ensure public safety, whether or not they are assigned to be petition, jurisdictional, or non jurisdictional ditches. (ODOT)
- Comment 6:** 3745-1-02(8)(48): "Historically channelized watercourse"
EPA Comment - The definition of "historically channelized watercourse" is very open-ended and captures any water body that has any evidence of ever being historically channelized, regardless of the current condition of the water, and the rules rely on this characteristic as a screen for moving waters into lower protection throughout the rules, absent additional information. This could lead to conflicts with existing use protection provisions of Ohio's antidegradation policy and the Federal regulations as well as conflicts with section 101(a)(2) of the CWA and Federal regulations at 40 CFR 131.10. These could be avoided by limiting this designation to waters that have not recovered from channelization. (U.S. EPA, Region 5)
- Comment 7:** 3745-1-02(B)(48) "Historically channelized watercourse". Will this definition apply to ditches that also have a defined bed and bank (i.e., captured stream or petition ditches)? Clarifying this definition is critical as it is incorporated into the upland drainage designation 3745-1-07(G)(1), and may have far reaching implications towards the regulation of roadway drainage ditches that do not possess bed and bank (non-stream drainages). This definition should include historically constructed water courses (ditches) constructed by ODOT for the purposes of stormwater management. (ODOT)
- Comment 8:** The proposed definition of historically channelized within 3745-1-02 (B)(48) Page 10 relies on only two means of determining whether or not a ditch was historically channelized. The OEPA proposed definition limits the evidence to 1) proof (via historical records) of construction pursuant to ORC 1515, 6131, or 6133 as defined in divisions (C)(2) to (C)(4) or 20 visual observations of side cast soil.
1. This proposed language is problematic due to the availability of other definitions provided under OAC 6131(C)(1). Section (C)(1) speaks to the location, construction, reconstruction, reconditioning, widening, deepening, straightening, altering, boxing, tiling, filling, walling, arching, or any change in the course, location, or terminus of any ditch, drain,

watercourse, or floodway, yet this subsection has been omitted from the OEPA proposed definition.

2. The OEPA proposed definition addresses the visual observation of “sidecast soil” yet many ditches have had the sidecast spoils worked back into the adjacent lands and will not present evidence of past channelization.
3. The definition needs to be expanded to include all of the definitions and the consideration of evidence of examples listed within this existing ORC definition. Through the expansion of the definition to include exhibiting evidence outlined within section (C)(1), the definition of historically channelized ditches will be adequately addressed.

Therefore the definition of a historically channelized watercourse within 3745-1-02(B)(48) Page 10 should be stated as:

“Historically channelized watercourse” means the portion of a watercourse, exclusive of adjacent wetlands, on which drainage improvements were constructed pursuant to Chapter 1515., 6131., or 6133. Of the Revised Code, or were constructed under a similar state law that preceded any of those chapters. A drainage improvement is defined in divisions (C)(1) to (C)(5) of section 6131.01 of the Revised Code. If historical records cannot be located, then visual observations of past drainage improvement activity as defined in divisions (C)(1) to (C)(5) shall suffice as evidence that the watercourse was historically channelized. (Delaware Soil and Water Conservation District)

Comment 9: The proposed definition of historically channelized within 3745-1-02 (B)(48) Page 10 relies on two means of determining whether or not a ditch has been historically channelized. The proposed definition limits the evidence of channelization to:

1. Proof (via historical records) of construction pursuant to ORC 1515, 6131 or 6133 as defined in divisions (C)(2) to (C)(4)
2. Visual observation of side cast soil

This proposed definition contradicts an already established definition under ORC 6131 (C)(1) to (C)(5) which is broader in its definition. This section speaks to the location, construction, reconstruction, reconditioning, widening, deepening, straightening, altering, boxing, tiling, filling, walling, arching or any change in the course, location, or terminus of any ditch, drain, watercourse, or floodway.

The proposed definition addresses the visual observation of side cast soil. It is a typical practice to work side cast soil back into adjacent lands after a ditch cleaning and therefore the side cast soil will not always be present as evidence to previous channelization. However it may be and should be included in the definition.

The proposed definition should be expanded to include the existing definition located in ORC 6131(C)(1) to (C)(5) to adequately address the definition of historically channelized ditches.

Delaware SWCD has suggested the proposed definition be stated as follows:

Historically channelized watercourse means the portion of a watercourse, exclusive of adjacent wetlands, on which drainage improvements were constructed pursuant to Chapter 1515, 6131, or 6133 of the Ohio Revised Code, or were constructed under a similar state law that preceded any of those chapters.

A drainage improvement is defined in ORC 6131(C)(1) to (C)(5). If historical records cannot be located, then visual observations of past drainage improvement activity as defined in ORC 6131(C)(1) to (C)(5) shall suffice as evidence that the watercourse was historically channelized.

The Seneca SWCD Board of Supervisors and staff agree with the suggested change to the definition. (Seneca SWCD)

Comment 10: 3745-1-02(B) Technical words used in Chapter 3745-1 of the Administrative Code

(48) Historically channelized watercourse - The definition of "Historically channelized watercourse" should clearly establish where the "historic" drainage improvements begin and end. There is risk that a proposed drainage project could try to extend additional drainage/channelization upstream or downstream of historically channelized reaches. Any activity beyond the segments that are defined as "historically channelized" should be determined to be a new project, and subject to full compliance review, and should not be designated as "base use" or "drainage use." "Historically channelized" should end exactly where the last spoil bank is observed and recorded. Ditch project managers should provide ditch records as part of determining a historically channelized watercourse; complete records should be established for each county. (The Nature Conservancy)

Comment 11: "Historically channelized watercourses" should only be based on drainage areas that have public record and eliminate visual observations in the definition. I have personally seen many recovered streams that have visual observations of side cast spoil banks or have been modified but recovered and now fall under Rosgen's E channel. (Brian Prunty, Stark Soil and Water Conservation District)

Comment 12: "Snags" should be defined as a ditch maintenance term stating what is allowed and should specify critical and subcritical flows within that definition. The snags that are proposed to be removed do they impact the

flow regime during critical flows or only during subcritical flows. Debris is critical for habitat as stated in QHEI and HHEI. There should be some compromise based on critical and subcritical flow criteria. As stated in the Rural Drainage Manual all snags can be removed and it doesn't specify critical and subcritical flows. (Brian Prunty, Stark Soil and Water Conservation District)

Rule 3745-1-07 Beneficial use designations.

Comment 13: 3745-1-07(F)(6) "Small drainageway maintenance. These are highly modified surface water drainageways (usually less than three square miles in drainage area) that do not possess the stream morphology and habitat characteristics necessary to support any other aquatic life habitat use. Opportunity for improved habitat conditions must be restricted by the operations of a ditch maintenance program as defined in rule 3745-1-02 of the Administrative Code."

Comment: Does this term describe roadside ditches? If so, they will be required to be mitigated as a Category 1 Stream under the proposed stream rules. How does this new term relate to existing USACE terminology for surface waters? (ODOT)

In Response to Comments 14 through 40 on 3745-1-07(G) – "Drainage use designations"

The Agency received many lengthy comments regarding the new category of drainage beneficial use. The Agency drafted these rule changes as a result of the past events that are summarized below. However, it is apparent from the comments that additional work and dialogue on the matter is needed. Ohio EPA will be re-evaluating the issue and may re-engage with elected officials, other State agencies, organizations and other interested parties if further discussion and rule development is deemed necessary. While responses to specific comments are not available at this time, all comments received have been compiled below.

Root Problem

The earliest petition ditch laws in Ohio were created over 150 years ago. Then as now the underlying premise behind these laws holds that water in excess quantities is the common enemy to be removed for the general public welfare. As the State's water quality agency Ohio EPA does not dispute the legitimate rights and interests of local governments, agri-businesses and citizens to pursue drainage improvements so as to protect property and limit damage to crops. However, the Agency has different legal mandates that are not always compatible with the desire to carry out drainage improvements. One particularly problematic concept found in federal and state WQS regulations is the protection of "existing uses". This principle categorically prohibits the director from allowing the loss of a beneficial use if that use is documented as an "existing use" any time after 1975.

How the application of this principle to petition ditches or any farm ditch is seen in very different viewpoint by different interest groups. The Ag-producer viewpoint looks at the

ditch as a man-made construct designed to drain the landscape; any other use is of secondary importance. The viewpoint of the environmentalist looks at the present day condition of the watercourse and if the ditch has taken on stream-like characteristics and supports an aquatic life community (e.g., Warmwater Habitat), then that is an existing use that should be protected. This conflict of viewpoints can only be partially bridged through changes in Ohio's system of beneficial uses and voluntary adherence to newer drainage design specifications that reduce aquatic system impacts. Ultimately the end solutions may have to come from the Courts or new legislation.

Past Events

In 1999 the Ohio General Assembly passed legislation that defined "historically channelized watercourse" (HCWC) as any waterway that was ever the subject of drainage improvements made under Ohio's various petition ditch laws. As initially crafted the legislation would have allowed un-restricted modifications of HCWCs without attention to the existence of other beneficial uses assigned under the Clean Water Act. This problem was corrected in the final bill through imposition of numerous restrictions on what and where the special antidegradation review exclusions apply.

In 2006 the Ohio Federation of Soil and Water Conservation Districts and Ohio DNR convened a Rural Drainage Advisory Committee to assess the situation and make recommendations. A component of this work was an attempt to bridge commonly encountered drainage practices with requirements found in the Clean Water Act and Ohio's Water Quality Standards. A report on the work of the committee describes the consensus reached on several key principles (Rural Drainage Systems – Agencies and Organizations Reach Consensus on Ways Forward, Ohio DNR 2008).

Drainage Uses Introduced and Tabled

Ohio EPA used those key principles to draft rule language that established a drainage use designation for small upland watersheds where chemical water quality criteria would apply but biocriteria would not (unless documented through site specific use attainability analysis). The draft rule also included a drainage use for larger streams that have a tiered aquatic life use and biocriteria and are under a channel maintenance program.

It is clear from comments received that a rule to establish drainage uses raises more concerns and questions and is not ripe for adoption at this time. The Agency will re-evaluate the matter and determine if legislative or administrative rule changes are necessary.

This is most evident in situations where drainage ditches are re-located or modified because Section 404 and 401 permits are required for placing fill in surface waters. In recent years many "ditch clean out" efforts get exempted from direct individual permit regulation if the work only removes the accumulated bottom sediment and limited quantities of localized fill (bank repairs and stabilization). However, the underlying fact that major "ditch clean out" practices can eliminate an "existing aquatic life use designation" adopted pursuant to the Clean Water Act remains.

There continues to be concern over the age and deteriorating condition of many drainage improvements made under Ohio's petition ditch laws.

Comment 14: 3745-1-07(G) - The use of the terms "upland drainage" and "water conveyance" for types of constructed water bodies that are "historically channelized watercourses" may lead to confusion as the terms are used differently by the Corps of Engineers. (USACE)

Comment 15: Paragraph (G). For the same reasons discussed in our comments about "Base Aquatic Life" use, WWH aquatic life criteria should not apply to "streams" that would receive "Upland Drainage" and/or "Water Conveyance" use designations. (John McManus, Clermont County Water & Sewer District)

Response 15: The application of warmwater habitat chemical criteria to all surface water not otherwise designated is currently in OAC 3745-1-07(A)(4)(a), "The "Inside Mixing Zone Maximum" and "Outside Mixing Zone Maximum" water quality criteria identified for the warmwater habitat use designation apply to water bodies not assigned an aquatic life use designation." The rule revisions, with the inclusion of the new Base Aquatic Life use", should make to current requirements more clear. Ohio EPA cannot remove this requirement without first determining that a lower use designation is appropriate through a use attainability analysis, which has to be performed on a case by case basis.

Comment 16: OAC 3745-1-07(G) Drainage use designations. How will these rules encourage drainage project managers to implement more environmentally-friendly drainage channel designs? The Agency should explain how and when the rules would encourage or require a more environmentally-friendly design, such as, but not limited to, one-sided construction, logjam removal, or natural channel design.

Establishment of design goals for drainage projects and primary headwaters protection could lessen some of the continuing impacts of agricultural drainage and development. Ohio EPA and ODNR should publish design options to assist managers and designers of projects.

The Agency should ensure a drainage project does not proceed without a review by Ohio EPA and ODNR. (The Nature Conservancy)

Comment 17: The use "water conveyance" seems to describe the same feature commonly referred to by the USACE and the regulated community as a "captured stream". OEPA should take into consideration the existing and commonly used terminology that is available to describe these features. Using existing terms would alleviate confusion that would be incurred by the regulated community. Fact Sheet Attachment 2 states that these features will be subject to an "abbreviated antidegradation review". It is

ODOT's concern that without further definition of these features, it is unclear when review within the antidegradation portion of an application to impact such waters would be necessary. Currently these are features that are not determined as such by the jurisdictional determination process conducted by the USACE. Is it OEPA's intention to require an "OEPA waters of the state determination" in addition to the USACE jurisdictional determination? A clear and precise definition and the process for determining what constitutes waters of the state, including these new "drainage uses", should be made part of the new rules and made available for comment. (ODOT)

Comment 18: EPA Comment – Federal regulations at 40 CFR 131.10(a) state: "Each State must specify appropriate water uses to be achieved and protected. The classification of the waters of the State must take into consideration the use and value of water for public water supplies, protection and propagation of fish, shellfish and wildlife, recreation in and on the water, agricultural, industrial, and other purposes including navigation. In no case shall a State adopt waste transport or waste assimilation as a designated use for any waters of the United States." It is not clear to EPA how the proposed "drainage use designations" in 3745-1-07(G) are not designations of "waste transport" as the term is used in 40 CFR 131.10(a). The drainage use created by proposed OAC 3745-1-07(G) appears to be solely concerned with facilitating the transport of storm water off of the landscape. This conclusion seems to be supported by the name of the category of drainage use in proposed OAC 3745-1-07(G)(2), "water conveyance," and by the language of proposed OAC 3745-1-07(G)(4) which states, "There are no chemical, bacteria or biological criteria designed for the drainage use designation." As the term is used in the Act and the Federal regulations, designated uses are intended to be water management goals for surface waters for which water quality must be at least as good as the associated water quality criteria for the use to be attained and protected. In addition, the drainage use designation seems designed to limit the applicability of protections required by the Act and Federal regulations, specifically aquatic life use protections provided by Ohio's system of tiered aquatic life uses, and those provided by Ohio's antidegradation policy and implementation procedures. EPA requests further discussion of this provision with Ohio EPA to better understand the intent of proposed OAC 3745-1-07(G)(4) and its relationship to other provisions of Ohio's water quality standards that are required by the Act and Federal regulations. To the extent that this use is equivalent to waste transport, EPA cannot approve the proposed drainage use designation under section 303(c) of the Act.

Under the proposed rules, waters to which the drainage use is applied are subject to "abbreviated antidegradation review" and reduced applicability of biological criteria to protect aquatic life uses. EPA reviewed the rules and supporting documentation to determine whether the record supports the

conclusion that aquatic life uses mandated by the Act are attained at a lower rate than other waters for reasons other than human disturbance. The information prepared by Ohio EPA to support the public review of the proposed rules does not include data or analyses to support the conclusion that the Clean Water Act goals of protection of aquatic life and recreation in and on the water are substantially less likely to be attainable in waters that would be covered by the proposed drainage use. Analyses of Ohio data conducted for EPA suggest that the drainage area and gradient criteria in the proposed rule are not good predictors of attainability of aquatic life uses. These analyses are still undergoing final review. EPA will make them available to Ohio EPA as soon as they are finalized. While it is clear that channelization can have substantial impacts on attainment of aquatic life uses as measured using biological assessment tools, the Act and federal regulations provide mechanisms for determining whether or not human disturbances of this type preclude attainment of the uses mandated by the Act. (U.S. EPA, Region 5)

Comment 19: Drainage Use Designation - The inclusion of the new drainage use designations (upland drainage and water conveyance) in Rule 3745-1-07 is a positive. The current agricultural system in Ohio is extremely dependent upon the agricultural drainage infrastructure consisting of tiles and ditches for the conveyance of excess surface and subsurface water.

Many agricultural and rural drainage ditches were created under Ohio's agricultural drainage laws that have existed for over 150 years. Ohio's petition ditch laws create a public process for drainage channel construction and maintenance projects conducted by the county engineer, county soil and water conservation district or conservancy district and paid for through public and landowner assessments. The primary goal of Ohio ditch law is to keep the water flowing by constructing efficient ditch systems and ensuring that they are maintained and cleaned out when needed.

The proposed drainage use designation acknowledges that differences exist between manmade ditches, streams that have been altered or modified to improve drainage and offer flood control, and natural stream systems. Agricultural drainage ditches, urban storm drains and roadside ditches should be assigned appropriate designated use based upon their primary purpose - conveyance of excess surface and subsurface water. (Ohio Farm Bureau)

Comment 20: --3745-1-07(G) "Drainage use designations"
Comment: One of the outcomes of the 2006 U.S. Supreme Court decision in *RAPANOS v. UNITED STATES* (Nos. 04-1034 and 04-1384) was the requirement that the U.S. Corps of Engineers (USACE) determine jurisdiction (applicability) of any 'water of the U.S.' under Section 404 of the Clean Water Act. This defined a new resource that required analysis, documentation, and permitting through the 404 and 401 WQC processes;

namely the 'jurisdictional ditch'. ODOT owns and maintains literally thousands of miles of ditches throughout the state. The ditches have been built and continue to be maintained as stormwater conveyances. These features, if reshaped or moved, will recover exactly the same functions and values in a very short time period. ODOT's recent I-90 improvement project in Lorain County included relocation of approximately 1,000 linear feet of roadside ditch to accommodate the infrastructure improvement. The USACE determined the ditches to be jurisdictional, however no mitigation was required. OEPA stated that since the ditches were determined to be waters of the U.S. they automatically became 'waters of the state' and any impact would need to be permitted and mitigated, even though no regulations exist requiring ditch mitigation. ODOT strongly suggests that impacts to roadside ditches, whether jurisdictional or not, require no mitigation. To clarify this approach, we propose the creation of a new drainage use designation "Roadside ditch".

From the information provided in this rule, it appears that roadside ditches are not included in this use designation. ODOT suggests that roadside ditches be considered under the drainage use designation and the language modified to incorporate these features as a special case within the rule. ODOT suggests the creation of a "Roadside ditch" drainage use designation. This "Roadside ditch use" would be defined in 3745-1-07(G) and we suggest the following definition:

3745-1-07(G)(3) "Roadside ditch"

- (a) These are water bodies constructed in uplands adjacent to public roadways solely as stormwater conveyances.
- (b) The roadside ditch use designation shall apply to all features that:
 - i. Are or were previously constructed in uplands specifically to convey stormwater away from public road surfaces.
 - ii. Are maintained regularly to sustain public safety. (Maintenance may include vegetation management, sediment removal, slope failure repair, etc). (ODOT)

--3745-1-07(G): "Drainage Use Designations"

Comment: Clarification is needed on how these use designations will be reviewed under 3745-32-04. For example, on a recent ODOT project (LOR-90), an upland roadside jurisdictional ditch was regulated and required mitigation for 401 purposes and NPDES purposes, yet was not a wetland, stream, or isolated wetland. Therefore, while the intent may be to not extend OEPA's jurisdiction, these rules open the door for further jurisdictional "creep" and further regulatory burden, mitigation, and public infrastructure project delays.

--3745-1-07(G) "Drainage use designations"

Definitions for "upland drainage", "water conveyance", and "water course" should be provided in Rule 02. From the information provided in this rule, it appears that roadside ditches are not included in this use designation, rather the farm drainage ditches common in NW Ohio are what OEPA is referring to as "upland drainages". Clarification should be provided. (ODOT)

--3745-1-07(G) "Drainage use designations"

Comment: Somewhere in rule, how these "features" will be reviewed and included or not under the SWQP should be clarified. (ODOT)

Comment 21: 3745-1-07(G) Drainage use designations: The drainage practices should be more stringent than shown in the Rural Drainage Manual, which defaults to traditional methods that have a track record of failing for over the past 100 years and require more maintenance than new designs. The practices have to change with the times and studies have shown other modern practices, such as but not limited to, 2 stage and self forming channels perform better than the traditional methods trapezoidal or one side clean outs that are proposed in the drainage manual. Majority of the ditch maintenance projects will fail under traditional methods and only go over and beyond if required or the owner is subsidized. (Brian Prunty, Stark Soil and Water Conservation District)

Comment 22: 3745-1-07(G) General Comments: Every heading for all use designations have named specific watershed at the beginning, except for drainage use designation. Since the definition of "Historically Channelized Watercourses" states based on drainage areas that have public record, do the homework and request all ditch maintenance programs submit their records by a certain date to be listed just like the other use designations have a list of specific watersheds or courses. (Brian Prunty, Stark Soil and Water Conservation District)

Comment 23: 3745-1-07(G) General Comments: If you are going to create this new bias use designation for agricultural areas create some water quality responsibility for the ditch maintenance programs. There should be some form of chemical, biological and bacteria criteria. They should be mandated to create self forming, 2-stage channels or over wide channels when maintenance occurs, especially on smaller watershed. The Rural Drainage Manual from ODNR admits there are environmental impact from traditional ditching methods and there are better alternative methods. You should be protecting these smaller drainage areas (3.1 square miles) since they are the majority of stream surface miles. These benefits are not accomplished through one sided cleanouts or trapezoidal dredging. The Ohio EPA, ODNR, US EPA, Center of Watershed Protection and many other organizations can provide studies and records pointing that traditional

ditching methods have not worked and they impact the watershed downstream. Studies should be provided or submitted to the OEPA for downstream quantity and quality impacts when allowing drainage improvements. The Governmental and university studies on the dead zones and soluble phosphorus levels in Lake Erie point directly to agricultural land use, ditching and subsurface tiles from the Western Lake Erie Basin. Nitrogen loads in the Mississippi River Basin are connected to agricultural land use and field tiles draining crop fields. The article **Reducing Nitrogen Loading to the Gulf of Mexico from the Mississippi River Basin: Strategies to Counter a Persistent Ecological Problem** by William Mitsch, John Day, Gyles Randall and many others, state re-establishing both flood storage and wetlands through the methods of high flow wetlands or intercepting field tiles will result in nitrogen reductions. The US EPA's National Management Measure to Control NPS from Hydromodifications states that channelization and channel modification is number one cause for hydromodification Nonpoint Source Pollution. By removing the habitat and vegetation you will not have biology in channels. By cleaning the ditches out, the routing time for surface water is shorten and impacts or floods downstream. Ohio EPA's Division of Surface Water: Nonpoint Source websites states "protecting the best and restoring the best" and this will not be accomplished by adopting the new drainage use designation. If you choose to keep the Drainage use designation, then mandate restoration through 2 stage, over-wide, natural or self-forming designs. These modern or alternative designs will assist or increase nutrient assimilative capacity and this will increase water quality. I ask Division of surface water to consider their own statement:

The Division of Surface Water is responsible for **restoring and maintaining the quality** of Ohio's rivers and streams. The goal of Ohio's surface water program, restoration and maintenance of Ohio's water resources, reflects the national water quality objective as contained in the Federal Clean Water Act (CWA).

When reviewing the 3745-1 rule changes and addressing public comments. Thomas Jefferson once said "I am not an advocate for frequent changes in laws and constitutions, but laws and institutions must go hand in hand with the progress of the human mind. As that becomes more developed, more enlightened, as new discoveries are made, new truths discovered and manners and opinions change, with the change of circumstances, institutions must advance also to keep pace with the times. We might as well require a man to wear still the coat which fitted him when a boy as civilized society to remain ever under the regime of their barbarous ancestors."

When looking at water quality or degradation there is strong science, facts and theories that show past and current choices will depend on the quality of our watersheds. I feel it is time to wash ourselves from the barbaric

times and is time for the institutions to advance with the progress of the human mind. (Brian Prunty, Stark Soil and Water Conservation District)

Comment 24: 3745-1-07(G) – Drainage use & waiver of restrictions. The draft rules state drainage use designations for “upland drainage” (G)(1) and for “water conveyance” (G)(2) but then proceed, in (G)(3), to give the Director the discretion to waive the gradient and drainage area restrictions for the drainage uses specified in (G)(1) and (G)(2) of this draft rule. By giving the Director the discretion to waive the drainage use requirements stated in (G)(1) and (G)(2) of the draft rule, the result would be a removal of the upland drainage use designation and the water conveyance use designation restrictions if the Director chooses to exercise the discretion. By codifying this discretion, there is no true limit on the size and gradient applicable for drainage use designations. The potential area subject to this classification is detrimentally broad. The OEPA should remove the provision that gives the Director the discretion to waive the gradient and drainage area restrictions, and OEPA should limit the scope of this rule and impose a more stringent size for the gradient and drainage area requirements.

The consequence of the OEPA enacting the draft “drainage use designation” portion of the rule would be a lowering of water quality standards in violation of the CWA. Since the Ohio EPA’s 1981 public notice, the default use designation for undesignated streams has traditionally been warm water habitat which requires consideration of bio-criteria in determining the water quality. With discretion given to the Director to waive the drainage use requirements, the OEPA may cease to conduct bio-assessments on streams greater than 3.1 square miles. Since comprehensive determinations of water quality are required in the rules the OEPA proposes to rescind, the result of the OEPA enacting these draft rules would be a backsliding of water quality standards in violation of the CWA.

A major concern OEC has with the development of Drainage Ditch use designations involves the breadth of the proposed rule. Previous experience with monitoring drainage improvement projects shows that in instances where a previously channelized watercourse has not been maintained, it was allowed to develop back into a vegetated and meandering stream. Such recovery has included rehabilitation of the territory and aquatic life characteristics of warm water habitat or even led to exceptional warm water streams. One recovered stream in Marion County, Bee Run, thanks to a verified complaint filed against the County by OEC, was investigated by the Agency and concluded to be a warmwater stream notwithstanding its historic channelization. There are many other examples, known and yet to be discovered, that mirror Bee Run. If the implementation of Drainage Uses result in the loss of stream habitat condition in small streams that are considered “historically channelized,” but which have

actually recovered substantial habitat features that support sensitive aquatic species, then the presumption of protection of downstream uses may not be valid. The allowance of large recovered or functionally recovered stream habitats to be subjected to traditional trapezoidal (or even overwide constructed) ditches and ditch management may result in changing subwatersheds that currently support aquatic life uses in local and downstream areas to lose local support of aquatic life use and degradation to downstream uses.

Notwithstanding our firm objection to the Drainage Use Designation as a whole, the OEC would like to suggest, at a minimum, that the OEPA reduce the scope of the base aquatic life use and the drainage use designations. If solely for the sake of efficiency, the Agency should expend their efforts on limiting the scope of these use designations in the rules rather than having to complete the scores of UAAs that would be needed with the far-reaching scope of the uses as currently proposed in order to comply with the CWA for each lowering or removing of a use designation. While other commentators on these rules may have a better sense of the number of stream miles that are affected statewide by the drainage use designations, it is clear that its impact will be wide reaching. The OEC proposes the Agency reign-in the geographical scope of these uses to reach only the Huron Erie Lake Plain ("HELP") Eco-region since the most extensive drainage occurs in this region.

The OEC's understanding of the OEPA's purpose in creating the base aquatic life use is to account for those streams that are incapable of containing a significant aquatic habitat (i.e., where it is infeasible to test for fish and bugs). Based on this sound logic behind the creation of the base use, the OEC suggests the Agency refine the parameters of the drainage use, and all other use designations that do not account for biology, to include only those streams where there is an inability to test for aquatic life. The redefined use designations should include a diminished drainage area size that is less than the current size of 3.1 square miles. (Ohio Environmental Council)

Comment 25: I question the validity of using 6111 ORC for the control of ditch cleaning operations. This section of code refers to the placing or discharging of pollutants into a stream. A ditch cleaning operation is the removal of sediment from the stream that is already there. I know I have heard that ditch cleaning operations stir up the sediment and then gets transported downstream. Large storms do the same thing. Also what if the upland ditch or stream is dry. We would have no sediment transport in that situation.

I want to make it clear that I am for clean water. I have four children and live near Lake Erie which will likely be our best asset for this region in years to come if not already. We need to have reasonable and straight

forward criteria for our ditches and streams with a reasonable response time for permits if needed.

Check dams in streams could assure as little sediment as possible is transported during cleaning operations. Do we need to place one-stage ditches, two-stage ditches or over wide ditches when maintaining ditches. When cleaning a ditch require the removed sediment to be spread and seeded along side of ditch to form a grass buffer strip. Criteria could be set up by drainage area and whether the ditch is dry most of the time or wet because it is near a stream which is wet year round.

Lucas County has recently formed a storm water utility to help meet our EPA requirements. We also plan to do water quality improvements and ditch improvements with this utility. It may be hard to justify the utility in the future if we are not showing any drainage improvements because we are waiting for answers or permits for necessary work. I have recently been asked to attend a public forum on sediment management and solutions for the dredging of Toledo Harbor. My solution will be to keep sediment out of the Harbor by maintaining ditches and removing sediment before it gets there. By promoting sound sediment reduction practices for farming, construction, businesses, and residents we can minimize sediments and pollutants from reaching our streams.

Our area needs to clean ditches since we have fewer than ten miles under ditch maintenance programs. Lucas County is flat topography, the Black Swamp area, and maintaining positive drainage reduces flooding or standing water issues of residents, businesses, and agricultural areas. After we clean ditches in an acceptable manner to limit sediment transport I hope we can limit the sediment and pollutants that enter our streams so we will not have to clean our ditches very often in the future. I am sorry for the long letter but this is an important issue for our region. (Brian Miller, Lucas County)

Comment 26: Scope of the base use and drainage use designations – In the following section we are emphasizing the very large scale of the impacts of these rules, especially for the proposed base use and drainage use.

In OAC 3745-1-07(G)(1), Ohio EPA's proposal applies to smaller streams, less than 3.1 square miles for "upland drainage." While each individual stream might be small, this covers a very large portion of Ohio stream miles. As shown in Table 1 below, the Conservancy estimates there are about 92,573 stream miles in Ohio, and 72,088 (78%) of these are less than 3.1 square miles.¹¹ Ohio EPA (2002)¹² estimated there are 115,000 PWH streams in Ohio, so our estimate is conservative. In any case, the proposed rules' potential extent of impact on streams in Ohio is very extensive, and could establish new use designations, without biological

criteria, on most Ohio stream miles. This stream size distribution applies to all ecoregions in Ohio.

[See comments for tables and graphs.]

For areal extent of these ecoregions, see “Ecoregions in Ohio” in Attachment 3. Ecoregions are from “Ecoregions of Indiana and Ohio,” http://www.epa.gov/wed/pages/ecoregions/ohin_eco.htm

The maps and calculations in Tables 1 and 2 were made using various public data from the Ohio EPA. The Watershed Area maps and calculations were made using a database of all stream watershed sizes derived from a digital elevation model and all the streams are connected and have upstream watershed area classes assigned. The Nature Conservancy clipped the original file so that calculations only included stream miles within Ohio’s borders. The Beneficial Use Designations maps and calculations were taken from a dataset of the streams of Ohio that depicts the stream reaches in more generalized way. The Nature Conservancy then clipped all of the streams by Omernik ecoregion and calculated stream miles individually by Aquatic Life Use by ecoregion. The watershed area calculations are based on data from the database WtrShdAr.gdb. The ALU data comes from this database oepa_dsw_gis_data.gdb.

If the Agency does proceed with a “base aquatic life use designation,” we strongly encourage you to significantly reduce the scope and size of the watersheds subject to the “base aquatic life use designation” rule. All larger streams (our suggestion is larger than the proposed “Primary Headwater habitat” size, i.e., above one square mile in drainage size) should then be assigned what has been the “default” use designation in Ohio, warmwater habitat. The cumulative effect of removing biological criteria would likely result in lower habitat quality, and consequently lower quality in receiving streams ,and mainstems of many Ohio streams and rivers. Based on Ohio EPA data, Figures 1 and 2 below show how lowering stream habitat quality, such as through (but not limited to) ditching and channelization, correlates with the number of sensitive species in a watershed. Lowering the use designation goals of these smaller streams could lead to cumulative and downstream use loss.

Because of the inclusion of an overwhelming percentage of tributaries to Ohio’s rivers and streams that this rule would exempt from biological standards, we feel it is inappropriate to allow most tributaries of Ohio’s rivers and stream to be exempted, or even eligible to be exempt, from biological criteria. This is especially true for streams in higher quality watersheds that include EWH or CWH designations, or Outstanding State Waters or Superior High Quality Waters antidegradation categories.

Ohio EPA's "Headwater Stream Fact Sheet" recognizes downstream impacts

(http://www.epa.state.oh.us/dsw/wqs/headwaters/HWH_economic_jan2003.pdf) and states:

"Many primary headwater streams are being modified (examples include channelization and riparian removal) as part of activities related to agricultural activities (e.g., drainage) and urban/suburban development (e.g., flood control and construction). Such modification is the origin of the habitat degradation, pollutant, nutrient, siltation and sedimentation problems in smaller streams and a leading source of impairment to the water quality of larger streams into which they flow."

(The Nature Conservancy)

Comment 27: 3745-1-07(G) - Drainage use designations - The Agency should not allow conventional ditching, or any stream channelization, where the stream proposed for a drainage use or drainage project is designated as Exceptional Warmwater Habitat, Coldwater Habitat, Class III PHWH, or is in antidegradation categories of Outstanding State Waters or Superior High Quality Waters. The Agency should require proposals that avoid, eliminate or reduce impacts related to drainage projects whenever these streams might be impacted, including in tributaries that might affect these resources. Any drainage practice that is implemented should be protective of stream quality. (The Nature Conservancy)

Comment 28: 3745-1-07(G)(1)(a) Many of these historic modified water bodies have been wetland impacts from the pioneers or producers or have been streams that have been modified to follow property boundaries or increase land available for agricultural purposes. When performing ditch maintenance, better designs must be utilized to provide a benefit for water quality. (Brian Prunty, Stark Soil and Water Conservation District)

Comment 29: 3745-1-07 (G)(1)(a): "Upland drainage: These are water bodies constructed in the upland areas of watersheds to drain the landscape of excess water during wet periods."

ODOT questions this definition and whether an upland drainage should be identified as a water body or as a specific feature at all. If it's not a stream with specific morphological criteria, how can an upland drainage be objectively identified? OEPA should provide instruction on how to delineate these features. If identified, consider naming it a feature instead of a water body. Also, feature should then be defined in Rule 02. (ODOT)

Comment 30: Just over three years ago the Ohio Federation of Soil and Water Conservation Districts and ODNR-DSWC formed the Rural Drainage Advisory Committee to recommend a means to better support construction and maintenance of drainageway systems, and to achieve a high level of

environmental stewardship in drainage programs and projects. This committee reached consensus on a broad set of recommendations in September of 2007 and published the Rural Drainage Systems report in early 2008. One significant recommendation that came forward from this committee was to develop a protocol for environmental review to meet local, practical drainage needs and meet clearly laid out requirements of state and federal water quality related laws. As OEPA was a significant contributor to this committee, ODNR-DSWC is hopeful and confident that the draft Water Quality Standards as proposed by OEPA will meet the goals as set forth by this committee.

The section of the draft rules that impacts drainage or petition ditch type projects is quite similar to three tables that were previously developed by OEPA with input from ODNR-DSWC and the Rural Drainage Advisory Committee. In an effort to determine the impact these rules may have on drainageway improvement projects throughout Ohio, ODNR-DSWC performed a drainage review in five counties to analyze potential impacts. The counties reviewed included: Defiance, Delaware, Madison, Seneca, and Wyandot. A report that summarizes these results and was developed by ODNR-DSWC is attached to this letter. The final recommendations that were developed as a result of these reviews are shown directly below and should be considered as ODNR-DSWC comments to OEPA draft rules for Ohio's Water Quality Standards.

Final Recommendations/Comments for OEPA Draft Rules for Ohio Water Quality Standards

In summary, 60 of 203 projects reviewed or approximately 30% require resource agency consultation or implementation of an alternative design method. In an effort to minimize the combined social, economical and environmental impacts of the draft water quality standards with respect to drainage improvement projects, especially those associated with low gradient, rural and row-crop agricultural situations (e.g. County Petition Ditch and Conservation Works of Improvement projects), ODNR-DSWC recommends the following items be taken into consideration prior to finalizing the proposed rules.

- As part of this review, ODNR-DSWC performed site visits to visually inspect the resource characteristics and erodibility of channels with less than 2000 acres of watershed and gradients in the range of 0.3% to 1.0%. It was observed that channels with smaller watersheds (typically less than 1500 acres) and with grades in the range of 0.3% to 0.6% did not exhibit the resource characteristics or erodibility concerns to warrant additional oversight. To assure adequate protection of stream resources while still providing an efficient review process, ODNR-DSWC recommends changes to the gradient restrictions for channels. As proposed by OEPA, channels with less than 2000 acres of

watershed that have a gradient that exceeds 0.3% require resource agency consultation. For watersheds with less than 2000 acres, ODNR-DSWC recommends the following categories be established.

Resource Agency Consultation Only Required When:

- Watersheds are < 2000 acres & Gradients exceed 0.3%
 - Watersheds are < 1500 acres & Gradients exceed 0.4%
 - Watersheds are < 1000 acres & Gradients exceed 0.6%
- For projects where the biological data is significantly downstream of the project and a tiered aquatic life use designation has been assigned as a result of this data, it is recommended that resource agencies outline what process will be utilized to determine the impact this downstream data will have on developing design specifications.
 - It is recommended that the process by which county drainage programs will be required to consult with resource agencies for outlier projects should be further outlined. Resource agencies will also need to consider staff availability for performing these consultations and assign appropriate resources to assure adequate response times.
 - The process by which county drainage programs are to develop and submit NOIs and SWPPPs should be outlined.

ODNR-DSWC appreciates the efforts and cooperation that Ohio EPA staff has shown in developing these draft rules. By modifying these rules as has been suggested and outlined above, ODNR-DSWC is confident these rules provide a protocol that: 1) allows drainage projects to continue, 2) focuses environmental requirements on projects in larger watersheds, and 3) increases the likelihood of building healthier drainageways in smaller watersheds. (David Hanselmann, ODNR)

Comment 31: 3745-1-07(G)(1)(b)(ii) Have a gradient less than .30%. When asked where this number came from there was no scientific background to explain this figure. Ohio EPA Representative stated they just picked it. This figure was pulled from the air and not from geomorphic theories, Leopold or Rosgen formulas. (Brian Prunty, Stark Soil and Water Conservation District)

Comment 32: 3745-1-07(G)(1)(b)(iii) Drain less than 3.1 square miles. As stated before this is considered headwater streams or primary headwater streams and these ecosystems or water courses are important to preserve due to connections between floodplains, wetlands, seeps and baseflow. Majority of surface water miles are headwater streams and modifying these ecosystems impact larger stream creating a domino effect for water quality. (Brian Prunty, Stark Soil and Water Conservation District)

Comment 33: 3745-1-07(G)(2)(a) Water conveyance: Traditional ditching methods only remove flooding onsite by accelerating how fast water will go down stream. They do not look or study downstream, which are usually more urbanized, to see the affect they are creating. By mandating 2 stage channel designs or other equivalent designs you will solve flooding and water quality issues. Most urban areas are developed on main stem floodplains where it is extremely costly to try to re-establish flood plain when this can be developed in upland drainage courses of the rural areas and be extremely beneficial for both water quantity and quality. (Brian Prunty, Stark Soil and Water Conservation District)

Comment 34: Paragraph (G)(2). The use "water conveyance" seems to describe the same feature commonly referred to by the USACE and the regulated community as a "captured stream". OEPA should take into consideration the existing and commonly used terminology that is available to describe these features. Using existing terms would alleviate confusion that would be incurred by the regulated community. Fact Sheet Attachment 2 states that these features will be subject to an "abbreviated antidegradation review". It is ODOT's concern that without further definition of these features, it is unclear when review within the antidegradation portion of an application to impact such waters would be necessary. Currently these are features that are not determined as such by the jurisdictional determination process conducted by the USACE. Is it OEPA's intention to require an "OEPA waters of the state determination" in addition to the USACE jurisdictional determination? A clear and precise definition and the process for determining what constitutes waters of the state, including these new "drainage uses", should be made part of the new rules and made available for comment. (Timothy M. Hill, ODOT)

Comment 35: Water conveyance drainage size – The Conservancy does not support the unlimited drainage area proposed for the “drainage use” and “water conveyance” under proposed OAC 3745-1-07(G)(2)(b)(ii).

The Agency should establish an upper limit for such streams. In addition to contributing to the cumulative effects noted in Figures 1 and 2 above, this proposed rule would appear to have the potential for loss of use or degradation. This is especially related to use attainment related to biological criteria, in streams that should be large enough and more than capable of supporting, at least, modified warmwater habitat, warmwater habitat and even exceptional warmwater habitat. (The Nature Conservancy)

Comment 36: OAC 3745-1-07(G)(2)(iv) Use designations eligible for the drainage use designation –

Summary comments:

(1) The drainage use appears to be much more appropriate for some parts of the state, but not for others. Instead of allowing this use across the whole state, the Agency should allow it in only limited parts of the state, such as certain ecoregions (e.g., Huron Erie Lake Plain (HELP) (See Aquatic Life Uses, by Ecoregion, in Table 2; See map of Ohio ecoregions in Attachment 3). We request that the rule only apply first to the HELP ecoregion, and, but only where appropriate, to the northern part of the Eastern Corn Belt (ECBP) Ecoregion, specifically Ecoregion 55a (Clayey, High Lime Till Plains).

Some areas in this same ECBP Ecoregion might not be appropriate. For example, in a recent report on the Upper Great Miami River, in the ECBP Ecoregion7, Ohio EPA noted (Figure 49, Page 163) some high IBI scores in headwater streams in ecoregions 55a and 55b. Influences such as groundwater and potentially higher use attainment also should be considered in assigning drainage use and the resultant requirements related to any drainage design.

(2) There should be no downgrading of stream use designations to “base use” or “drainage use” for those that are already designated. We are concerned that „drainage use” could result in a loss of use if drainage “improvements” are performed.

We expect a significant impact related to the proposed drainage use designation. Drainage has an extensive environmental footprint in much of Ohio. Drainage alteration through channelization and ditching has resulted in extensive water quality impacts, among the most widespread in Ohio and the Midwest. Blann and others (2008)⁸ have summarized these direct and indirect impacts, and we encourage the Agency to review this material, linked below. Some key points from this summary:

“Cumulatively, these changes in hydrology, geomorphology, nutrient cycling, and sediment dynamics have had profound implications for aquatic ecosystems and biodiversity.” (pg 2)

“In general, large scale conversion to agriculture accompanied by artificial drainage and channel alteration has increased water and sediment delivery rates and volumes, altering instream habitat through sedimentation, channel entrenchment, reduced water quality, and loss of bank and instream cover.” (pg 34)

“The cumulative effects of changes occurring over the past century has been

- widespread declines in many intolerant species
- dramatic shifts in composition of aquatic communities
- homogenization of aquatic faunal assemblages towards more tolerant, generalist species.” (pg 62)

The drainage use appears to be much more appropriate for some parts of the state, but not for others. Instead of allowing this use across the whole state, the Agency should allow it in only limited parts of the state, such as certain ecoregions (e.g., Huron Erie Lake Plain) where conditions seem most appropriate, and biodiversity is generally lowest.

For example, a limited demonstration area or watershed might be warranted and could address legal and technical issues and monitoring. Establishment of concepts such as the proposed “base aquatic life use” (OAC 3745-1-42 (E)) especially in combination with the drainage use, could lower water quality in many parts of Ohio and lead to a loss of many years of environmental progress. Therefore, we ask that the Agency pay particular attention to issues such as avoiding environmentally negative downstream impacts, especially in high quality watersheds. In contrast, establishment of more environmentally-friendly design goals for drainage projects and primary headwaters protection could help to lessen some of the continuing impacts of agricultural drainage and development.

Our understanding of OAC 3745-1-07(G)(2)(iv) is that only warmwater habitat, modified warmwater habitat, and limited resource water are eligible for the proposed use designation. This would mean that other uses, such as exceptional warmwater habitat and coldwater habitat, are not eligible. Because some higher quality (EWH, CWH) streams have been “historically channelized” but have at least partially recovered and can support diverse aquatic life, we agree these streams should not be eligible for the drainage use designation. We ask that the agency confirm this in your response.

The drainage use appears to be much more appropriate for some parts of the state, but not for others. Instead of allowing this use across the whole state, the Agency should allow it in only limited parts of the state, such as certain ecoregions (e.g., Huron Erie Lake Plain (HELP) (See Aquatic Life Uses, by Ecoregion, in Table 2; See map of Ohio ecoregions in Attachment 3). These areas appear to be naturally limited to lower aquatic life uses like WWH, as shown in Table 2. For example, the HELP Ecoregion has no EWH streams, while the ECBP Ecoregion has 1450 miles of EWH streams.

There should be no downgrading of stream use designations to “base use” or “drainage use” for those that are already designated. The Agency should avoid downgrading use designations; our understanding is the only mechanism available is a formal rulemaking. Any proposal for downgrading should only be accepted if data is collected and confirmed by Ohio EPA.

The Agency’s response should clarify that presently designated streams will maintain their use designations. This is not clear in the proposed rule that streams that are already designated are protected by these use designations and that they will maintain their biologically-based uses.

Our understanding is that there are no numeric criteria assigned to the drainage use designations. However, the Conservancy supports the application of aquatic life and recreation criteria to waters designated drainage use, and therefore the tiered aquatic life uses mentioned above should still apply even when the drainage use designation is assigned.

These gradients seem to be likely to misclassify small and even historically channelized streams in the Eastern Corn Belt Ecoregion, where many streams should be at least capable of attaining at least the Warmwater Habitat use designation. Therefore, we would expect these streams to have protection under the rules that would ensure continuation of their use designations such as WWH or EWH, regardless of a “drainage use” classification.

We urge Ohio EPA to reevaluate the gradients, based on habitat quality, and especially its potential. In Ohio EPA’s QHEI scoring of stream habitat quality⁹, streams with gradients of 30 feet per mile or more score either “high” or “very high.” In this table and habitat scoring, Ohio EPA derived scores using plots of IBI versus stream gradient for each stream size category. Gradients of only 15-20 feet per mile can lead to a QHEI score for this metric of 10 points. With only 60 points needed to establish the potential for WWH designation, gradients at this level constitute a significant part of the habitat quality score. It seems appropriate to not allow damaging drainage practices in these streams, as they could prevent attainment of a use designation such as WWH. (The Nature Conservancy)

Comment 37: OAC 3745-1-07(G)(3) Waivers of restrictions for drainage uses -
The Conservancy does not support waivers for gradient and drainage area restrictions without a more explicit language defining limits on waivers.

We feel under proposed 3745-1-07(G)(1)(b)(iii) that the 0.6 percent gradient for upland drainage is very generous and should be lower. Many watersheds in Ohio have very limited areas with gradients this high. For example, the “Gazetteer of Ohio Streams”¹⁰ shows that in the “drainage country” northern and western portions of Ohio, there are few named streams whose average fall (gradient) exceeds the 0.6 percent (about 32 feet per mile) gradient proposed for “upland drainage.” Much of the Maumee River basin, Huron Erie Lake Plain and parts of the Eastern Corn Belt Ecoregions have gradients less than 0.6 percent (in some watersheds, there are no “Gazetteer of Ohio Streams” streams listed with greater than 0.6% gradient). Waiving this limit seems unnecessary for adequate drainage, and doing so would seem likely to damage stream habitat. These relatively high gradient streams seem among the most likely to recover, at least partially, from impacts of channelization on their own, and allowing conventional drainage “improvements” might result in loss of use under OAC 3745-32-04(K). Also, extending “upland drainage” beyond 3.1 square

miles seems likely to include many streams that could recover or achieve higher use designations.

These gradients seem to be likely to misclassify small and even historically channelized streams in the Eastern Corn Belt Ecoregion, where many streams should be at least capable of attaining at least the Warmwater Habitat use designation. Therefore, we would expect these streams to have protection under the rules that would ensure continuation of their use designations such as WWH or EWH, regardless of a "drainage use" classification. (The Nature Conservancy)

Comment 38: 3745-1-07(G)(3) There will be no chemical, bacteria or biological criteria for drainage use designations. There should be standards for drainage use designations. Ohio EPA requires dry weather screening to occur in the MS4 program to identify illicit discharges or connections which is criteria for drainage systems. Agricultural land use have modified stream channel with no connection to floodplain for water quality affect. They apply manure to fields which usually have subsurface drainage tile and transport contaminated runoff by surface or subsurface increasing bacteria and nutrient loads into their watersheds. By allow traditional ditching methods nutrient assimilation will not occur. (Brian Prunty, Stark Soil and Water Conservation District)

Comment 39: Page 22. (G)(5) Abbreviated antidegradation review. The proposed language states that all waters assigned a drainage use designation and meeting the conditions of division (C) of ORC 6111.12 shall be subject to an abbreviated antidegradation review. This language is in conflict with Am. S.B. 20 passed by the 123rd General Assembly which specifically states:

"A historically channelized watercourse provides technical, social, and economic benefits. Therefore, with regard to a historically channelized watercourse, the director shall not require further antidegradation review ... "

Recommendation: Remove the antidegradation review requirement to be compliant with the language contained in Am. S.B. 20. (Ohio Farm Bureau)

Comment 40: Proposed sections 3745-1-07(G)(5), Drainage Use Designations (page 22) and 3745-1-05 (C)(5) Other Waters (page 20) state the requirement of an abbreviated antidegradation review requirement.

This is in direct conflict with the requirements already established in ORC 6111.01, 6111.12, and 6131.14 by Ohio's 123rd General Assembly passage of S.B. 20. It is clearly stated within these sections when and why an antidegradation review would be required.

S.B. 20 clearly states the following:

To amend sections 6111.01, 6111.12, and 6131.14 of the Revised Code to declare, for purposes of the state antidegradation statute, that a historically channelized watercourse provides technical, social, and economic benefits, to preclude the Director of Environmental Protection from requiring further antidegradation review upon making specified findings, including a finding that work is necessary to restore or maintain such a watercourse, and to require, where appropriate, the Director of Natural Resources and, if applicable, the Director of Transportation and the board of directors of a conservancy district to make recommendations to a county engineer regarding the use of best management practices in the construction of an improvement under the ditch statutes.

ORC 6131 and 6133 requires public hearings be held to receive public testimony relating to the impacts the proposed project my present. In addition, these projects are reviewed by Ohio Department of Natural Resources and or USDA, Natural Resource Conservation staff for compliance with natural resource related items.

The proposed sections 3475-1-07(G)(5), Drainage Use Designations (page 22) and 3745-1-05 (C)(5) Other Waters (page 20) must remain consistent with the language stated in S.B. 20 of the 123rd General Assembly as it pertains to an abbreviated antidegradation review. (Seneca SWCD)

Comment 41: 3745-1-07(H) "Navigation"

It is not clear why the rivers and harbors listed under this rule do not include all rivers and harbors within Ohio that are under the jurisdiction of Section 9 and 10 of the Rivers and Harbors Act of 1899. Each USACE district maintains a list of those waters that are subject to this rule. OEPA is advised to seek these lists and include those waters in this rule to maintain consistency between regulatory programs. (ODOT)

Comment 42: Ohio Adm. Code 3745-1-07(H) Navigation. The Utilities question why Ohio EPA is adding this beneficial use designation. First, the U.S. Army Corp of Engineers and the Coast Guard already have jurisdiction over navigable waters. Second, Ohio EPA has indicated that "[t]here are no chemical, bacteria or biological criteria designed for the navigation use designation." Ohio Adm. Code 3745-1-07(H)(3). Thus, the Utilities do not believe that there is any purpose for this beneficial use designation and it should be removed from the regulations. If there is a legitimate purpose for the designation, Ohio EPA should articulate it to the regulated community. (Ohio Utility Group)

Comment 43: 3745-1-07(H)(3): “(3) There are no chemical, bacteria or biological criteria designed for the navigation use designation. [Comment: The criteria in rule 3745-1-04 of the Administrative code, applicable to all waters, and the criteria associated with any other assigned beneficial use designations apply to these water bodies.]”

EPA Comment – EPA recommends revising the above language to state: “There are no chemical, bacteria or biological criteria in Ohio’s water quality standards to protect this use. However other uses, including aquatic life uses, recreation, and public water supply, are associated with water quality criteria to protect the uses and some or all of these uses and criteria may apply to a given water to which a drainage use applies.” (U.S. EPA, Region 5)

Rule 3745-1-31 Lake Erie standards.

Comment 44: I agree with the Ohio Lake Erie Commission and Ohio Environmental Protection Agency that open-lake disposal of dredge material in Ohio waters of the western Lake Erie basin should be limited, and strongly support the adoption of OAC 3745-1 (C).

Lake Erie is vitally important to my family and to Ohio's environment and economy. It supplies drinking water to 11 million people, 3 million of whom live in Ohio.

Lake Erie also supports the largest sport fishery in the Great Lakes and the one of the largest commercial freshwater fisheries in the world, underpinning a \$1 billion sport fishing industry. The Lake Erie shoreline contributes \$9.45 billion a year in tourism and travel revenue to the Ohio economy. Lake Erie is a critical resource for humans and wildlife and is worth protecting and improving.

Sediment is a major water pollutant and is considered to be one of the top causes of water quality impairment. No other Great Lake states allow open-lake disposal unless it is clean sand (the dredge material in the Toledo Harbor is not sand - it is clay slit).

Therefore, I support a prohibition of open-lake disposal in excess of 50,000 cubic yards by 2011. (E-mails from 265 people)

Comment 45: Introduction

Audubon Ohio is the Ohio program of the National Audubon Society. We deliver Audubon’s programs to our 14,000 members and 18 chapters, and to many constituent groups, in Ohio. We operate from a state office in Columbus; field offices in Cleveland and Mansfield; and the Aullwood Audubon Center and Farm near Dayton. We are also constructing the

Grange Insurance Audubon Center, an 18,000 square foot nature education center that will open in Columbus next year. We have 28 employees in Ohio.

Audubon Ohio has a longstanding interest in protecting and restoring Lake Erie, the Western Lake Erie Basin, and the accompanying shoreline. Audubon Ohio takes the position that it is critical to regulate the water quality of these critical ecosystems that are vital to the birds, wildlife and humans that utilize Lake Erie and the shallow Western Lake Erie Basin.

Lake Erie Standards – OAC 3745-1-31 (C)

Audubon Ohio is submitting comments in strong support of the adoption of Ohio Administrative Code (OAC) 3745-1-31 (C) restricting open lake disposal of dredge materials.

Within the Great Lakes navigation system, the waters of the Toledo Harbor on Lake Erie are shallow and consequently, the most heavily dredged. For nearly 20 years, the United States Army Corp of Engineers (USACE) has placed approximately two-thirds of the sediments dredged annually into the open waters of Lake Erie. The remaining one-third of the sediments, which are defined by the USACE as contaminated (sediments including heavy metals and other point source pollutants), are placed in nearby Confined Disposal Facilities (CDFs) which have been reserved for this purpose.

The least contaminated soils, approximately 600,000 cubic yards annually, are disposed in the open lake three and a half miles northwest of the Toledo Harbor lighthouse. The contaminated sediments are disposed of at the Toledo Harbor Facility 3, Grassy Island (Island 18) and Toledo Harbor Facility 3 Extension).

Over the last 20 years, the OEPA, through its 401 certification process, provided temporary approval of open-lake disposal with the requirement that alternatives be developed due to the environmental impacts. In 1987, the Ohio Environmental Protection Agency (OEPA), with the support of the United States Protection Agency (USEPA), made the determination that open-lake disposal of sediment from the Toledo Harbor was an unacceptable practice.

In 1991, the Buffalo District of the USACE made a federal standard determination that sediments dredged lake-ward from Lake Mile 5 were not contaminated, and therefore, suitable for open water disposal. Within the USACE regulations, the federal standard is the least costly disposal alternative that is structurally sound and satisfies applicable environmental regulations. The OEPA does not concur with the USACE's determination that the sediments dredged lake-ward from Lake Mile 5 are clean and thus,

the USACE's determination is incorrect as open-lake disposal of the sediment would not satisfy applicable environmental regulations.

The USACE has developed a Great Lakes Testing Manual that is intended to determine whether sediment is clean based on the concentration of point source contaminants such as heavy metals. OEPA does not concur as the agency recognizes that sediment itself, and associated phosphate and nitrates, are also contaminants and have major impacts on the Toledo Harbor. The amount of dredged sediment material that is currently open-lake disposed – on the average 600,000 cubic yards annually – results in significant pollutant loading to the Western Lake Erie Basin.

Sediment is a major water pollutant and is considered to be one of the top causes of water quality impairment. Suspended sediment reduces sunlight from penetrating the water column causing reduction in plankton and aquatic plant growth. High concentrations of suspended sediment can abrade, thus damaging fish gills and destroying the protective mucous covering the eyes and scales and increasing the risk of infection and disease. As sediment settles out of the water column, fish eggs, benthic organisms and high quality bottom substrate are covered creating major impacts to the ecosystem. The huge amount of sediment leading also increases the amounts of nutrients and phosphates that are deposited in the Toledo Harbor. As Dr. Jeffrey Reutter, Director of Sea Grant, stated in a letter addressed to the Director of the Ohio Department of Natural Resources (ODNR) dated November 26, 2007 – the most important problem facing the Lake Erie ecosystem at present is Harmful Algae Blooms, a form of blue-green algae that produces the toxin microcystin that can be a significant human health issue. Open-lake disposal of sediments increases loading of nutrients and contaminants that make the Dead Zone and harmful algal blooms worse. In addition, the treatment of drinking water requires that sediment be removed. In recent years, the Toledo Water Treatment Plant has seen an increase in the number of times that the raw Lake Erie water that is drawn in for treatment contains large amounts of very fine particles of sediment. The elimination process of this sediment is costly and increases treatment costs to meet USEPA requirements. No other Great Lake states allow open-lake disposal unless it is clean sand (the dredge material in the Toledo Harbor is not sand – it is clay slit).

The OEPA maintains that the sheer volume of sediments placed into open waters impacts lake ecology by reducing water clarity for an extended time and redistributing pollutants. Former Governor Bob Taft stated in a February 2004 letter to Michigan Governor Jennifer Granholm that placing dredged material in such a shallow part of Lake Erie “where it can spread by wind and current action is counterproductive to our efforts to restore this Great Lake”. In the Lake Erie Protection and Restoration Plan of 2008, Priority Nonpoint Source Pollution, the Ohio Lake Erie Commission states

that critical actions for the years 2009-2011 should be to develop water quality criteria for the western Lake Erie basin that would result in a prohibition of open-lake disposal in excess of 50,000 cubic yards by 2011.

Conclusion

Audubon Ohio agrees with former Governor Taft, the OLEC and OEPA that open-lake disposal of dredge material in Ohio waters of the western Lake Erie basin should be limited, and strongly support the adoption of OAC 3745-1 (C). We look forward to future opportunities to work with the OEPA to promote our shared objective of protecting and restoring water quality and the ecological integrity of the Lake Erie and Western Lake Erie Basin for the benefit of all citizens of Ohio, and the birds and wildlife that reside in and cross our borders. (Vicki Deisner, Audubon Ohio)

Comment 46: I wish to address the proposed changes to the WQS that significantly limit the volumes which can be disposed of by open lake disposal post January 1, 2011.

The Toledo-Lucas County Port Authority has been a leading advocate of sustainability throughout the U.S. and continues to promote that objective in all respects. We are good environment stewards and we are constantly looking for opportunities to enhance the role and to promote the message. We do so, wherever possible, based on the sound application of science.

It is accepted that on an annual basis the Maumee River deposits into the federal waterways of Toledo Harbor an average of 1.3 million cubic yards of sediments. In order to maintain the federal channels to standard that same amount would have to be averaged annually by the Army Corps of Engineers (ACE) in its dredging effort. The Army Corps has not exceeded 800,000 CY of dredging in Toledo Harbor for a decade at least. Currently the ACE's dredging is at a rate below 500,000 CY and most of that is being open lake disposed.

The Maumee River also deposits very substantial volumes onto its riverbeds outside of the federal waterways in areas that require dredging in order to maintain safe navigation between the federal waterways and the locations along the River and in Lake Erie where vessels berth. The volume of private dredging required is not exactly known however it does not exceed the federal waterways dredging needs. None of the private dredgings are open lake disposal.

It is apparent that limiting open lake disposal to a maximum of 50,000 CY will mean the ACE will be forced to change its disposal methods radically. Instead of disposing of up to an annual average of about 500,000 CY open lake it will be reduced tenfold to 50,000 CY. The ACE does not have in existence now or achievable in the short term, sufficient CDF or alternative

upland capacities to otherwise dispose of 450,000 CY or greater. The ACE's in-river dredging is already significantly limited by insufficient disposal capacity in its CDF's.

Annual Dredging of the federal waterways in Toledo's Harbor is absolutely essential to keeping our Harbor open to effectively support Ohio's economic recovery. Without that dredging the closing of the Harbor is inevitable in the short term. We already have a backlog of sediments needing to be dredged exceeding 3 million CY in our federal waterways.

Ohio's ports contribute \$6.5 B to Ohio's economy annually and the great port of Toledo is responsible for much of that. Maritime transportation is the most efficient (cost effective) and environment friendly means of moving raw materials and goods. The Global economy is forcing all people worldwide to further enhance their respective transportation systems, not to make them more expensive, less efficient and less environment friendly.

We urge consideration be given to all of the best interests of our communities and the global environment. It would make no sense to undermine our economy and do net damage to our natural environment as a whole simply to respond to a narrow environmental concern. We appreciate that the time for open lake disposals is disappearing and is already gone in areas where it is not essential. We suggest that consideration be given to phasing out the practice in a manner supported by science and prudent economic planning. This is not a simple matter.

Please consider doing that, including initiating an initial graduated phase-in yet to be determined, possibly starting in 2011. (Warren D. McCrimmon, Toledo-Lucas County Port Authority)

Rule 3745-1-42 Water quality criteria for the base aquatic life use designation.

Comment 47: We are concerned that effluent limits based on the proposed criteria for chloride could prove difficult for the Northeast Ohio Regional Sewer District's (NEORS) three wastewater treatment facilities to meet during the winter months. Since, of the three facilities, Southerly Wastewater Treatment Center (WWTC) would receive the most stringent limits, the potential for violations there was investigated. In an effort to understand what these criteria might mean to Southerly WWTC specifically, chloride and supporting data were collected at strategic locations throughout 2009.

The OEPA-proposed criteria were acquired from the USEPA national criteria: 860 mg/L for the acute criterion and 230 mg/L for the chronic criterion. From these individual criteria, the wasteload allocation (WLA) for Southerly WWTC was calculated.

The WLA would be the calculated permit limit for Southerly WWTC if reasonable potential to exceed it is demonstrated. A comparison with the WLA based on the acute criterion did not show any potential violations at Southerly WWTC in the 2009 data. The greatest concentration of chloride, 583.5 mg/L (collected on January 14, 2009), is just over half of the WLA based on the acute criterion. However, the chronic criterion could pose a considerable problem during the winter months, with 21.8 percent of the 243 rolling thirty-day periods having potential violations. Due to public safety concerns, attempting to regulate the application of roadsalt and other chloride mixture applications during the winter months could present challenges.

The local limit could not be determined at this time, because the domestic background concentrations and the loading flow could not be determined. However, during the review of the data, it was noted that the plant's removal efficiency for chloride was -0.882 percent. The increase of chloride at the effluent might be explained by the use of chemicals during treatment. One in particular stands out: ferric chloride is added to the treatment processes for removal of phosphorus. Nutrient removal is becoming a "hot" topic, with new numerical limits anticipated for the near future. With the expected lowering of the phosphorus limit, the use of the ferric chloride for phosphorus removal could become a potential problem if the proposed chloride criteria are adopted.

Another expected change to limits in the future could result from the addition of sulfate criteria. Many states are working on or have recently adopted sulfate criteria. Chloride and sulfate criteria seem to be favored over a total dissolved solids (TDS) criterion. Since TDS is made up of several different anions and cations, it may not demonstrate actual or reproducible toxicity (Mount et al. 1997, IDNR 2009b, Pennsylvania Department of Environmental Protection 2009, Linton et al. 2008). Mount et al. (1997) was able to determine, from extensive testing, that the toxicity appeared to be dependent on specific ionic composition since some combinations could be antagonistic. As such, there is currently no national criterion for TDS because it is an indirect measure of the presence of a combination of other constituents (Linton et al. 2008).

Iowa Department of Natural Resources (IDNR) started review of the chloride criteria in 2007 and found that additional toxicity data, along with review of new research, was needed for scientifically defensible criteria. The IDNR partnered with the USEPA Office of Research and Development to determine the gaps in data and to help with the update and review process (IDNR 2009). It was determined that additional toxicity testing was needed to verify some toxicity data in the new review and to determine whether chloride toxicity was dependent on any other parameters. Partnering with several other organizations, the USEPA had a battery of toxicological work completed in 2008; this work was for a recalculation of

the chloride criteria along with additional information for future sulfate criteria (Linton et al. 2008).

As stated by Stephan et al. (1985), “When enough data are available to show that acute toxicity to two or more species is similarly related to a water quality characteristic, the relationship should be taken into account... .” As demonstrated by the toxicity testing completed in the chloride criteria update, a total of three, of four, species had shown that hardness affects chloride toxicity; both of the laboratories performing the testing had corresponding results (Linton et al. 2008). The hardness lessened the toxic effect of chloride as it increased. In addition, one species was used to assess whether chloride toxicity could be a function of sulfate levels. The species (*Ceriodaphnia dubia*) showed that sulfate had an inverse effect on chloride toxicity (IDNR 2009b). If at least one more species demonstrates this inverse effect, sulfate should also be taken into account.

The results obtained from additional toxicological information led to the development of the State of Iowa’s chloride criteria to reflect the relationship characteristics of not only hardness, but of sulfate as well. Iowa’s adopted criteria are listed below (Environmental Protection Commission 2009):

Iowa Chloride Acute Criterion: $287.80(\text{Hardness})^{0.205797}(\text{Sulfate})^{-0.07452}$

Iowa Chloride Chronic Criterion: $177.87(\text{Hardness})^{0.205797}(\text{Sulfate})^{-0.07452}$

The current Iowa criteria-based WLA were then compared with data obtained from Southerly WWTC during 2009. The comparison applying Iowa’s acute criterion still demonstrates that Southerly WWTC did not show any potential violations of the WLA calculated from the acute water quality criterion. The new toxicity data obtained during Iowa’s investigation into new criteria, however, included more sensitive invertebrate taxa, lowering the acute criterion from the national criterion. Only two percent of the 46 rolling thirty-day periods were in potential violation for the chronic criterion, for which the calculated WLA was higher than the WLA determined using the OEPA-proposed criterion. When the hardness effect on toxicity is taken into account, the chronic criterion is less stringent.

In conclusion, the proposed State of Ohio criteria are potentially both under- and over-protective of aquatic assemblages (IDNR 2009b). Recent additional toxicological information should also be included in the criteria calculation. The relationship of sulfate should be considered, if additional research suggests that other species also exhibit this effect, in development of Ohio criteria. At the very minimum, water hardness should be accounted for in the new Ohio criteria.

Also, we recommend that the TDS criteria be removed from the Ohio water quality standards. Even though the OEPA is not proposing a change to these criteria, it might be appropriate to add this change during this review since the OEPA will be rescinding the old rule (draft Ohio Administrative Code [OAC] 3745-01-07) and replacing it with a new rule (draft OAC 3745-01-42). (NEORSD)

Response 47: The chloride criteria that were in the draft rules are not being pursued in the proposed rules. Criteria for chloride, along with possible revisions of the existing TDS criterion and possible adoption of criteria for sulfate or other specific ions will be pursued in a future rulemaking. Ohio EPA is aware of the studies and work done in the States of Illinois and Iowa in partnership with US EPA on sulfate and chloride water quality criteria, respectively. In addition, US EPA has commissioned additional toxicity tests, many of which are nearing completion. Ohio EPA believes that it is prudent to await the results of these toxicity tests before adopting new or revised aquatic life criteria for TDS and/or constituent salts.

Comment 48: 3745-1-42 Table 42-1 contains chloride criteria that could result in NPDES permit limits that may prove difficult for the NEORSD's three wastewater treatment facilities to meet during the winter months. It is likely that other wastewater treatment facilities similarly located in the northern portion of the state could face similar difficulties due to road salting during inclement weather. While acute criteria are unlikely to pose a permit excursion concern, based on data collected by NEORSD, it is likely that chronic criteria could pose a considerable problem during the winter months. This issue is further complicated by the fact that wastewater treatment plants do not have control over road salting activities in their areas. We encourage Ohio EPA to continue looking at additional toxicological information to further develop chloride criteria that are appropriate for the state of Ohio. Ohio EPA may also want to consider replacing the total dissolved solids (TDS) criterion with ion specific criteria as the current TDS criterion may not demonstrate actual or reproducible toxicity. (NEORSD)

Comment 49: Table 42-1 Water quality criteria for the protection of aquatic life. Chloride criteria. The Utilities believe that Ohio EPA should revise the proposed criteria for chloride based on results of recently published toxicity studies. A recent publication by Elphick et al. provides relevant new information that, cumulatively, casts doubt on the scientific defensibility of Ohio EPA's proposed criteria. Ohio EPA has taken the proposed chloride criteria in Table 42-1 from U.S. EPA's 1988 chloride criterion document, which the Utilities believe is outdated. To summarize, the Elphick et al. publication demonstrates the following:

- Some toxicity data used by U.S. EPA in the 1988 document should be removed due to non-conformance with the Agency's data acceptability criteria.

- U.S. EPA used an acute-chronic ratio ("ACR") value of 7.59 (based on results for four species) to calculate a chronic criterion (230 mg/L) from the final acute criterion. The Elphick et al. paper provides ACR values for nine species and the geometric mean ACR value (3.50) is considerably lower than EPA's value.
- The chronic criterion value calculated by Elphick et al. (307 mg/l) is more robust than EPA's outdated value, as it encompasses considerably more toxicity data (much of which was conducted by Elphick et al.).
- Elphick et al. clearly demonstrate that chloride toxicity decreases as water hardness increases. Thus, at medium to high hardness values, complying with limitations based on Ohio EPA's criteria of 860 mg/L OMZM and 230 mg/L (Outside Mixing Zone Average ("OMZA")) would be overprotective.

The Utilities are aware that U.S. EPA is in the process of revising its nationally recommended ambient aquatic life criteria for chloride and the revised criteria may be issued in 2011. The Utilities do not know if U.S. EPA will be soliciting comments on the draft revised criteria or will simply be issuing final revised criteria. Either way, the Utilities think that the chloride criteria listed in Table 42-1 are not scientifically defensible and should be removed. The Agency should do one of the following: (1) replace the removed criteria with values reported in Elphick et al. or (2) wait until U.S. EPA finalizes its revised nationally-recommended criteria. If Ohio EPA believes that U.S. EPA's final updated criteria are suitable statewide criteria, these values can be proposed during a subsequent triennial review period.

The Utilities also note that Ohio EPA did not list the proposed aquatic life criteria for chloride on Ohio EPA's criteria website (<http://www.epa.ohio.gov/dswhvqs/criteria.aspx>). We assume that this was an inadvertent omission that will be corrected. (Ohio Utility Group)

Comment 50: TDS and Chlorides regulatory flexibility. Technologies available to remove TDS or Chloride from wastewaters are limited and depend on the matrix of constituents in a particular wastewater. Potentially available treatment technologies are all energy intensive and very expensive. Accordingly, OEPA needs to establish water quality standards for TDS and Chloride utilizing the best scientific information available (see detailed Ohio Utility Group comments). (First Energy Corp.)

Rule 3745-1-43 Water quality criteria for the tiered aquatic life use designations.

Comment 51: Page 18. Table 43-12. Lake habitat criteria. Review of the proposed water quality criteria presented in the table revealed an inconsistency in the lake trophic state used as the endpoint for the proposed lake habitat criteria. According to Wetzel (1983), the proposed chlorophyll a criteria are indicative of freshwater lakes with a mesotrophic - eutrophic trophic state,

the proposed total phosphorus criteria are indicative of lakes with a mesotrophic trophic state and the proposed Secchi disk transparency criteria are indicative of lakes with an eutrophic trophic state. Given the inter-related nature of these criteria, a single common lake trophic state should be used.

Recommendation: Keep lake trophic state endpoint consistent in the proposed lake habitat criteria and reevaluate the total phosphorus criteria using an eutrophic trophic state endpoint. Wetzel (1983) indicates an eutrophic lake total phosphorus concentration should be in the range of 16 - 386 ug/l (average 84.4 ug/l).

Wetzel, R.G. 1983. Limnology. Philadelphia, W.B. Saunders Co., 767 pp. (Ohio Farm Bureau)

Response 51: The nutrient criteria for lakes in the draft rules have been tabled from this rulemaking. Adoption of lake nutrient criteria will proceed in a future rulemaking simultaneously with the nutrient criteria for streams and rivers.

Comment 52: Table 43-12 Lake Habitat Criteria. The Utilities provide the following comments on the nutrient criteria background document, "Technical Support Document: Nutrient Criteria for Inland Lakes in Ohio (March 2010)." In general, it is the Utilities' understanding that Ohio EPA derived numeric nutrient criteria (for either statewide application or ecoregion-specific) based on the following procedure:

- Samples for the analysis of total phosphorus, total nitrogen, and chlorophyll-a were collected at various inland lakes (N=170) during years 1989-2009. Secchi transparency was also recorded.
- At most lakes, samples were collected at a single sample location (two locations were sometimes used at lakes with a high surface area). Samples were typically collected in the lake's center at a depth of 0.5 meters. Median values of nutrient analyses were obtained for each sample event at each lake.
- Seasonally, the samples were biased towards late summer - 74% of all samples collected among all years were collected from July through September. Only 14% of all samples were collected in Spring (April or May).
- No outlier analysis was conducted on sample results. For analyses of phosphorus, TKN, or $\text{NO}_3 + \text{NO}_2$, values reported as "<MDL," these were censored to one-half the MDL. The Agency made no attempt to estimate the many "< MDL" analytical values using probabilistic regression techniques.

- The combined nutrient and secchi transparency (all lakes) data were tested for lake type stratification using a non-parametric analysis of variance (Kruskal-Wallis test; more than two lake groups) or the Mann-Whitney U test (two groups only). The non-parametric tests were used because the base assumptions of using parametric tests (normal distribution, homogeneity of variance, independence of observations) could not be met or were assumed to be not met.
- After lake type and/or ecoregion classifications were completed, the applicable nutrient criteria were calculated by choosing the 25th percentile value per U.S. EPA guidance. The criteria for secchi transparency was calculated as the 75th percentile value.
- The total nitrogen, total phosphorus, and chlorophyll-a criteria apply as median values from May through October at two locations: (1) in the epilimnion (upper layer) of stratified lakes and (2) throughout the entire water column for lakes that are not stratified.
- The base aquatic life criteria for ammonia and pH apply to all lake types at all times.

In addition, no temperature increase is allowed at any time for all lake types. The Utilities provide the following comments on the process used by Ohio EPA to derive nutrient and secchi disk transparency criteria. In general, the Utilities are not opposed to the development and regulatory adoption of nutrient criteria for the purpose of regulating excessive anthropogenic inputs that may, eventually, lead to water quality risks for aquatic life or human health protection. However, the Utilities think that the step-wise development of nutrient criteria must follow sound technically-based concepts and practices. Ohio EPA's proposed nutrient criteria have some procedural weaknesses and these are delineated below:

- Highly variable inter-year sampling effort: Figure 3 of the technical support document indicates the distribution of samples during the period of nutrient data collection (1989 - 2009). A significant reduction in sampling effort occurred during years 1999 to 2007 (9 years, or about % of all years sampled). Statistically, pooling all sample-specific analysis results for all years among all lake types assumes that regional or temporal changes in nutrient concentration (i.e., increasing or decreasing trends with time) did not occur during the 20-year monitoring period. Did Ohio EPA test this assumption? Considering the relative sparseness of nutrient data available for years 1999 to 2007, the Utilities believe that Ohio EPA should, at minimum, test the null hypothesis that nutrient levels during years 1989 to 1998 are not statistically different from levels monitored during years 2008 to 2009. U.S. EPA's nutrient criteria technical guidance manual for lakes and reservoirs, published in 2000 recommends that long-term nutrient

data, where available, should be evaluated for potential temporal trends:

In characterizing reference conditions for nutrient criteria, it is also important to determine if trends exist in the reference site database. For example, since passage of the Clean Water Act and elimination of most discharges to lakes, many lakes have improved markedly. Other lakes, subject to increased nonpoint-source runoff, may have declined in overall quality.²⁶

- Excessive amounts of "< MDL" values censored to % the MDL value: the Utilities believe that Ohio EPA should have conducted a more scientifically defensible analysis of all nutrient values measured at "< MDL." Ohio EPA could have used an analysis that the Agency currently uses when evaluating outfall-specific data for Preliminary Effluent Quality ("PEQ") calculations.²⁷ On page 7 of this guidance document, guidelines for handling "less than" data are indicated:

If the data set contains observations as less than the analytical detection level, those observations are replaced with estimates of the distribution below the detection level before calculating the above statistics and equations. The replacement is performed using the log-normal probability regression method. An alternative method may be applied if it can be demonstrated to provide equal or greater accuracy in regard to the estimation of the mean and standard deviation of a log-normally distributed data set.

Thus, Ohio EPA's procedure for assessing "less than" results for effluent data do not allow a simple "one-half the detection level" substitution method. Moreover, the practice of censoring "less than values" to either zero or one-half the detection limit has often been criticized by statisticians.²⁸ The Utilities believe that Ohio EPA should have conducted a more thorough and statistically defensible evaluation of nutrient sample analyses reported as "< MDL."

U.S. EPA's nutrient guidance manual for lakes and reservoirs discusses the need to statistically estimate values reported as "< MDL." Specifically, the need to estimate "< MDL" values is somewhat contingent upon the relative number of analyses - among all analyses - reported as "< MDL":

Where analytical results are reported as below detection limits and the method of analysis is an EPA-approved or "standard" method, use the reported minimum detection limit to calculate the median value. If the median exceeds these minimum detection values, no further analysis is necessary. If any of the minimum detection limit values exceed the median, statistical methods applicable to censored data should be used.²⁹

(emphasis added).

- What were the analytical methods used to analyze nutrients and chlorophyll a? Did the method detection limits for any of these parameters change during the 20-year monitoring period? What were the quality assurance and quality control measures taken to ensure robust accuracy and precision of reported laboratory values?
- None of the nutrient data were evaluated using outlier analysis. The removal of statistical outliers is allowed when the Agency calculates the PEQ statistic for effluent data. For nutrient data that are extreme concerning the distribution of all data points, an outlier analysis should have been conducted.
- The distributions of chlorophyll a, secchi disk transparency, total phosphorus, and total nitrogen values are positively skewed, having a lognormal distribution (Figures 5-8 of the technical support document). Ohio EPA, however, calculates the lake-specific, year-specific nutrient concentration by calculating the median of all measurements for a given year (all sites combined). A more proper central tendency statistic to calculate is the geometric mean, which is appropriate for data that are positively skewed.³⁰ In some cases, the use of geometric mean instead of median will have little difference. For example, the four data points for chlorophyll a obtained from Acton Lake during 2005 (Appendix A) yield a median value of 63.76 µg/L. The corresponding geometric mean value is 69.19 µg/L. In other cases, the two measures of central tendency can differ markedly. The two data points for chlorophyll a obtained from Aldrich Pond during 1994 yield a median value of 26.69 µg/L and a geometric mean value of 13.47 µg/L. Geometric mean values should be used instead of median values to calculate year-specific nutrient levels at individual lakes.
- Because few of the ambient nutrient data were collected during the month of October (2.1% of total; Figure 4 of technical guidance document), the nutrient criteria for the lake habitat use designation should not apply during this month.
- At several locations in the technical support document, the terms "Kruskal-Wallace Rank sum Test" and "Wilcoxon-Mann-Whitney Ranked Sum Test" are used. These are incorrectly spelled and should be replaced with "Kruskal-Wallis test" and "Wilcoxon-Mann-Whitney rank sum test," respectively. (Ohio Utility Group)

Comment 53: Comments on the *Technical Support Document: Nutrient Criteria for Inland Lakes in Ohio* which supports the new draft criteria in OAC 3745-1-43.

EPA has a few questions and comments on the technical support document for the new draft nutrient criteria for lakes. While Ohio closely followed the outlines of the analysis EPA used to derive the ecoregional nutrient criteria, and the analysis appears scientifically sound, the additional information EPA is requesting below will help ensure we have a thorough understanding of the basis for the lake nutrient criteria.

1. It is not clear how the final lake groupings were derived from the significance tests. For example, chl-a differs significantly across ecoregions in impoundments, and chl-a in ECBP differs from that observed in EOLP in natural lakes (Table 5), but it isn't obvious how these findings are used to define the final groupings (Table 6). More details on this process are needed. Also, a classification and regression tree provides an analysis that is well-suited for defining these types of categories.
2. How representative are the lake data of the overall population of lakes in Ohio? On Page 4, it is stated that 170 lakes were sampled. What proportion of all lakes in Ohio does this number represent? How were the lakes selected?
3. Median values were used to calculate the criteria, but on Page 17, it is states that "criteria apply to arithmetic averages". Does this mean that an arithmetic average from a fixed number of samples from an assessed lake will be compared to the criterion? Given that the distributions of TN, TP, and chl-a are highly skewed, comparison of an arithmetic average to a median will result in many unintended exceedances. More thought is required on how these criteria will be implemented. (U.S. EPA, Region 5)

Response 53: The nutrient criteria for lakes in the draft rules have been tabled from this rulemaking. Adoption of lake nutrient criteria will proceed in a future rulemaking simultaneously with the nutrient criteria for streams and rivers.

End of Comments