Environmental Protection Agency

Division of Surface Water
Response to Comments

Rules: OAC 3745-32-01, -02, -03, -04 (Section 401 Water Quality Certification rules)

Agency Contact for this Package

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Ohio EPA held a public comment period from November 3 through December 8, 2023 regarding 401 Water Quality Certification rules. This document summarizes the comments and questions received during this comment period.

Ohio EPA reviewed and considered all comments received during the public comment period. By law, Ohio EPA has authority to consider specific issues related to protection of the environment and public health.

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

General/Overall Concerns

Comment 1: Many commenters expressed concerns over the speed of the rulemaking and the lack of a workgroup or interagency team to collaboratively develop the stream mitigation tool and subsequent rules. (CEC, EarthBalance, EIP, FLOW, MBI, OCA, OEC, RES, TNC, USEPA, USACE, WLS)

Response 1: Ohio EPA conducted extensive stakeholder outreach which consisted of exploring the use of several stream mitigation methodologies, including discussion with stakeholders on the pros and cons of a Stream Quantification Tool (SQTs). SQTs have been developed and implemented in many states and vary in complexity. The general recommendation was for Ohio to review and consider an abbreviated SQT developed by the US Army Corps of Engineers' Savannah District and currently used in Georgia. The Ohio Stream Assessment Method (OSAM) was adopted from the Georgia SQT with a few modifications. After review and consideration of the comments received during the Interested Party Review, OSAM version 3.0 now largely mirrors that of Georgia except for biology and habitat metrics specific to Ohio as well as a slight deviation on weightings. Ohio EPA is fully committed to further refining the tool and its reference/regional curves; however, due to time constraints, workgroups are not feasible but will be entertained during the tool revisions and next rulemaking.

3745-32-01 Definitions

Comment 2: One commenter stated that the definition of "discharge" cites a portion of the regulation that does not appear to exist. In Section 402 of the Federal Water Pollution Act, there is no paragraph numbered sixteen (16). (ODOT)

Response 2: The definition of discharge cites Section 502 of the Federal Water Pollution Control Act, not Section 402. Please refer to section 16 at the following website location: https://www.epa.gov/cwa-404/clean-water-act-section-502-general-definitions.

Comment 3: One commenter stated the definition of "stream" includes "streams with ephemeral flow." HB 175 (ORC 3745.114(G)(1)) replaced the term "ephemeral stream" with "ephemeral feature," so it may be clearer to address ephemeral features separately, or as a sub-bullet in the definition of stream. ORC 6111.311-316 also uses the terminology "ephemeral feature". They stated that it may be helpful to cite that ephemeral features are waters of the state only when the USACE has the authority to issue a permit under 33 U.S.C. 1344. (ODOT)

Response 3: Ohio EPA has considered this request but will leave the language as proposed. The language added to the statute by HB 175 of "ephemeral features" can be broader than ephemeral streams, such as ditches or other drainage features. The intent of this rulemaking, and the stream mitigation requirements, is to narrow the scope to only features that meet the definition of a stream. A comment is included in OAC 3745-32-04 to reiterate that streams with ephemeral flow are regulated under 6111.311 through 6111.316 and not subject to the stream mitigation requirements in 3745-32-04.

Comment 4: One commenter objected to the inclusion of the 2016 Stream Mitigation Guidelines into the rule as it directly conflicts with the Ohio Stream Assessment Method (OSAM). The recommended that any and all references to the 2016 Guidelines be removed or provide additional time to comment on the 2016 Guidelines. (OCA)

Response 4: The 2016 Stream Guidelines (Guidelines) are referenced in rule specifically for the purposes of required performance standards and monitoring requirements on the stream mitigation to document the mitigation is meeting milestones and overall successful implementation of the project. Stream mitigation debiting and crediting is to be done using the Ohio Stream Assessment Method (OSAM); therefore, there are no conflicts between the Guidelines and OSAM.

Comment 5: Several commenters requested that a mandatory revision interval be written into the rule or somehow allow for further changes to the stream mitigation method to accommodate changing science. (MBI, TNC, USACE, USEPA)

Response 5: According to ORC 106.03 and 119.04, Ohio EPA is required to review effective rules every 5 years, which allows for the consideration of changes in science; however, the agency is committed to reviewing potential revisions to the tool according to the most recent science well before the 5-year deadline of the rule review.

3745-32-02 Applicability

Comment 6: One commenter asked for clarification why "dredged or fill material" was removed from (A) but left in (D)(1) and (D)(2). (ODOT)

Response 6: The exemptions listed in 3745-32-02(D) are specific federal 404 exemptions and are only applicable for discharges of dredged or fill material. These exemptions do not apply to the broader scope of all discharges referenced in (A).

Comment 7: One commenter stated that Army Corps of Engineers should be capitalized throughout. (ODOT)

Response 7: Rule writing mechanics is outlined in the Rule Drafting Manual provided by the Ohio Legislative Service Commission. According to the manual, the names of government agencies, offices, and programs are not capitalized.

Comment 8: One commenter asked if "federal project" refers to Section 408 Civil Works projects or projects with federal funds or both? (ODOT)

Response 8: This language is taken from Section 404(r) of the Federal Water Pollution Control Act (Clean Water Act) and has the same meaning as in that Act. The federal projects must be specifically authorized by Congress. Therefore, if the project is exempt from 404 permitting under that clause, it is also exempt from the 401 water quality certification requirements.

3745-32-04 Mitigation for Impacts to Streams

Comment 9: One commenter objected to the use of the term "jurisdictional" in the rule and instead suggested using ephemeral, intermittent, and perennial as in the Stormwater General Permit. They asked for clarification how the agency will regulate streams that are ephemeral and federally jurisdictional. (MBI)

Response 9: On August 29, 2023, the US Environmental Protection Agency (US EPA) revised the definition of Waters of the United States (WOTUS) to include

relatively permanent waters (RPW), eliminating the flow regime nomenclature. OAC 3745-32-04 refers to stream impacts that are authorized under a Section 401 Water Quality Certification which certifies impacts to WOTUS, or other appropriate authorization issued by the Director.

Requirements pertaining to the regulation of ephemeral features that are also WOTUS in which the US Army Corps of Engineers has authority to issue a permit (33 U.S.C. 1344) are outlined in ORC 6111.31 through 6111.316.

Comment 10: One commenter suggested that a reference to Ohio's Water Quality Standards and antidegradation (Chapter 3745-1 and 3745-1-05 of the OAC) be inserted in 3745-32-04(A). (ODNR)

Response 10: Ohio EPA has considered this comment but will not be adding the references as this time. The Ohio Water Quality Standards (OAC 3745-1) are still applicable for all waters of the state in addition to the specific stream requirements in this chapter.

Comment 11: Several commenters asked for clarification or changes to the term "as protective" in 3745-32-04(B)(5). (Cleveland Metroparks, ODNR, USACE)

Response 11: This language has been changed from "as protective" to "provides an equivalent or greater ecological lift as OSAM."

Comment 12: Several commenters asked for the definition of "long term protection" and stated that requirement could create challenges for some mitigation projects and certain industries. They also asked for clarification on the term "appropriate management measure" in 3745-32-04(B)(6). (Cleveland Metroparks, OCA, ODOT)

Response 12: Long term protection is defined in OAC 3745-1-50 and that rule is specifically referenced in the definition chapter (3745-32-01). Appropriate management measures are normally outlined in the long term protection document, such as an environmental covenant or conservation easement.

Comment 13: Two commenters requested that the term "watershed" be more clearly defined and suggested that the rule include an approved watershed service area map like the Wetland Antidegradation Rule. (ODNR and USACE)

Response 13: Ohio EPA has considered this request but is choosing to not include a watershed or service area map at this time. Due to the changing landscape of service areas for banks and in-lieu fee programs, including a map in rule would reduce the flexibility for mitigation sponsors in the state.

Comment 14: Two commenters requested clarification on the term "stream type" and if banks and in-lieu fee programs will be selling stream credits by stream type such as flow regime or use designation. (ODOT and USACE)

Response 14: In response to this comment the "stream type" language has been removed from OAC 3745-32-04(B)(1)(a) and (b).

Comment 15: One commenter suggested that the mitigation hierarchy be eliminated and the applicant, not Ohio EPA, should be able to select the appropriate mitigation option. (OOGA)

Response 15: Ohio EPA generally requires applicants follow the mitigation hierarchy established in 2008 federal mitigation rule (33 C.F.R. Part 332). Additionally, the director may allow for deviations from the hierarchy under OAC 3745-32-04(B)(2), which requires applicants to provide an analysis of credit availability and associated watershed, costs of the mitigation projects, and comparison of ecological lift provided between all options for Ohio EPA's review and consideration.

Comment 16: Several commenters expressed concern over the proposed temporal loss multiplier and provided several alternatives such as removing it altogether, reducing the multiplier, waiving it for public projects, scaling it based on bank height ratio, or incorporating it into the stream mitigation tool. (OCA, ODNR, ODOT, NEORSD, RES, TNC)

Response 16: In response to this comment, Ohio EPA has reduced the temporal loss multiplier to 1.1 and revised the corresponding language to specify this multiplier only applies to advanced credits purchased through an in-lieu fee program or permittee-responsible mitigation.

Comment 17: One commenter asked for clarification on how the term "concurrently" is defined for temporal loss with permittee responsible mitigation. (OCA)

Response 17: Concurrently means mitigation construction happens at the same time as the impacts to the waters of the state occur, so there is no temporal loss of ecological resource functions.

Comment 18: One commenter asked for clarification regarding "alternative stream mitigation methods." They asked if the intent is to allow methods other than OSAM, or if it is to allow different stream mitigation projects such as AMD remediation, stream daylighting, dam removals, etc.? (ODOT)

Response 18: The alternative stream mitigation methods is intended to satisfy both the use of methods other than OSAM and for different stream mitigation projects. Due to its infancy, the agency recognizes that OSAM may not address all water

quality improvement projects and therefore, provides opportunities for the proposal of novel, science-based mitigation projects.

Comment 19: One commenter asked if "in-kind" means that perennial stream impacts must be mitigated with perennial mitigation and if stream types are factored into the OSAM tool. (ODOT)

Response 19: **"**In-kind" is defined in OAC 3745-32-01 as a water of the state with a similar structural and functional type to the impacted water of the state. OSAM is functional assessment that is designed to ensure that lost functions are replaced by the proposed stream mitigation. This helps to ensure that stream mitigation fulfills the in-kind requirement. Stream types, such as Rosgen stream type and flow regimes, are factored into the OSAM tool.

Comment 20: One commenter requested that stream ecological performance standards be directly incorporated into rule and don't just reference the 2016 stream mitigation guidelines. (OHBA)

Response 20: The Guidelines provide a foundation for applicants and sponsors to reference when developing their mitigation plans. Referencing the Guidelines as opposed to listing performance standards explicitly in rule allow the applicant or sponsor and Ohio EPA to consider performance criteria that is most appropriate for the proposed project, particularly for projects that propose alternative mitigation methods (e.g. dam removals).

Comment 21: Two commenters suggested revising the language in 3745-32-04(B)(8)(a) since it appears to be copied from wetland antidegradation and some of it does not apply to streams, such as soil samples. They also asked for clarification on "appropriate valuation method" and if that was referring to HHEI and QHEI or some other methods. (ODNR and ODOT)

Response 21: In response to this comment, this language has been updated in the rule. Appropriate valuation method depends on the specific parameter being monitored, such as stream habitat, riparian vegetation, stream stability, etc. This could include HHEI and QHEI and other methods outlined in the Guidelines.

Comment 22: Several commenters stated that 10 years of biological monitoring should be required for all mitigation and should only be shortened if all performance standards have been met and at least four bankfull events have occurred post-construction. (MBI, OEC, TNC)

Response 22: Ohio EPA contends that stream mitigation projects without a forested component should have 5 years of monitoring (consistent with wetland mitigation) and if the project is not meeting the performance goals after

those 5 years, the monitoring will be extended. Projects with a forested component will be required to have 10 years of monitoring. Additionally, OAC 3745-32-04 (B)(8)(b) requires that applicants request an extension or propose alternative mitigation measures (e.g. credit purchase) if they do not meet performance standards by the end of their monitoring period.

Comment 23: One commenter asked how the agency will evaluate cumulative upstream impacts on mitigation sites. (MBI)

Response 23: Cumulative impacts upstream of mitigation sites is not something that the agency is required to consider or evaluate. If upstream impacts affect the mitigation's potential to achieve required performance goals, the rules include options to extend the monitoring period or seek alternative mitigation options.

Comment 24: One commenter asked how data collected for mitigation sites will be made available to the public. (MBI)

Response 24: Permittee-responsible mitigation monitoring reports can be accessed by Ohio EPA's eDocument Search (https://epa.ohio.gov/help-center/edocument-search). Monitoring reports for mitigation bank and in-lieu fee sponsors can be accessed through the Regulatory and In-Lieu Fee & Bank Info Tracking System (RIBITS). If documentation is unavailable at either if these locations, these monitoring reports are public documents and can be obtained through a Public Records request for state records and Freedom of Information Act (FOIA) request for federal records.

Comment 25: One commenter requested that the rule explicitly require a professional engineer to design 401 mitigation projects and include a reference to ORC 4733. (NPSE-OH)

Response 25: To the extent that a mitigation project involves the practice of engineering, the permittee would be required to utilize a professional engineer under existing law. However, because not all mitigation projects will necessarily involve engineering, we are choosing to allow requirements under ORC 4733 to drive this requirement when it is applicable.

Comment 26: One commenter pointed out several incorrect intext citations referencing paragraphs that were not in the draft rule. Paragraph (C)(1) should be (B)(1) and paragraph (E) should be (B) (OCA).

Response 26: In response to this comment, the intext citations have been corrected.

Ohio Stream Assessment Method (OSAM): General Comments

Comment 27: Several commenters suggested that the agency consult the "Technical Guide for the Development, Evaluation, and Modification of Stream Assessment Methods for the Corps Regulatory Program" which was developed by the US Army Corps. They stated that deviating from established practices could result in a tool that is missing key elements (e.g., differentiation of stream classes), less effective, or accepted in the scientific and regulated community. (CEC, TNC, USACE, USEPA, WLS)

Response 27: Ohio EPA has reviewed the technical guide provided by several commenters. Ohio EPA is fully committed to further refining the OSAM tool and its reference/regional curves and this guide will be a useful reference during that process.

Comment 28: Several commenters recommended a thorough user manual and scientific support documentation that will inform users how to properly apply the new tool should be provided prior to finalizing the rule. (TNC, USACE, USEPA)

Response 28: In response to this comment, an OSAM user manual and support document has been developed and refined through comments received from our regulatory federal partners. The manual will be available on our website along with the OSAM tool.

Comment 29: Several commenters expressed concern over the lack of rationale or scientific basis for the metrics that were selected and those that were eliminated. They stated references should be cited and justifications should be provided. (CEC, TNC, USACE, USEPA)

Response 29: See response 28. The new OSAM manual includes rationale and scientific bases for selection of the metrics.

Comment 30: Several commenters stated that the OSAM needs proper testing and calibration before it is finalized and adopted in rule. (CEC, RES, USACE)

Response 30: Ohio EPA is fully committed to further refining the OSAM tool and its reference/regional curves, including the gathering of Ohio specific data. However, due to time constraints set forth by House Bill 175, OSAM Version 3.0 will be included in rule.

Comment 31: Several commenters stated that OSAM conflicts with the 2008 Federal Mitigation Rule that requires in-kind mitigation and no-net loss. (CEC, EarthBalance, EIP)

Response 31: In order to address this comment, OSAM version 3.0 has been modified to be a function of stream linear footage instead of area. This change should help ensure that there is no net loss of stream function in compliance with the 2008 Federal Mitigation Rule.

Comment 32: Many commenters stated that the stream mitigation requirements and tools should be agreed upon by Ohio EPA and the Corps to avoid conflicts in mitigation requirements between the federal and state regulatory programs. (CEC, EarthBalance, EIP, TNC, USACE, USEPA, WLS)

Response 32: Ohio EPA agrees that this is important for both the regulatory agencies and the regulated community. In response to this comment, Ohio EPA conducted several meetings with our federal regulatory partners during the months of January and February 2024 to help refine the OSAM tool. Several changes were made to the tool, including changing from area to linear footage and adding a large woody debris metric, to ensure that both federal and state regulatory programs would be aligned on stream mitigation requirements.

Comment 33: Several commenters mentioned the need for proper regionalization and involvement of the developers of the original Stream Quantification Tool (SQT) that OSAM is based upon. (USEPA and USFWS)

Response 33: Ohio EPA did receive thorough comments from Ecosystem, Planning and Restoration (the developers of the original SQT). Several of their comments have been addressed in the revision of OSAM. Ohio EPA is committed to properly regionalizing OSAM in future iterations. Additional analysis and data gathering are necessary to ensure proper regionalization.

Comment 34: Several commenters stated that OSAM should include metrics that capture each level of the stream functions pyramid, including hydrology and physiochemistry that are currently not included in the tool. (Cleveland Metroparks, MBI, USACE)

Response 34: Ohio EPA has considered this request. However, to keep the tool simple, at the request of stakeholders, only minor changes were made to the OSAM tool at this time, and we will be moving forward with OSAM version 3.0. This request will be considered in future OSAM versions that will be refined through a collaborative workgroup.

Comment 35: Many commenters stated that OSAM should be a function of linear feet instead of area. They stated that an area-based method is not common in the mitigation industry because it does not translate well between stream order and watershed location and will favor large stream restoration projects, incentivize over-sized channels, and produce an overall loss of headwater streams. They recommended reviewing USEPA's report on Stream Mitigation

Accounting Metrics. (CEC, EIP, EPR, WLS, RES, TNC, USACE, USEPA, and USFWS)

Response 35: In response to this comment received from many stakeholders, the OSAM version 3.0 has been modified to be a function of stream linear footage instead of area. Ohio EPA is committed to evaluating area as a possible unit of measure within OSAM in future iterations. Additional analysis and data gathering are necessary to ensure that there is no net loss of stream function while using an area-based method.

Comment 36: One commenter stated that OSAM could triple the credit prices for in-lieu fee providers because OSAM only generates 33% of the stream credits when compared to the current ratio-based methods. (TNC)

Response 36: Ohio EPA understands that this change from a ratio-based method to a functional assessment model will require adjustments for everyone. The change to linear footage from area may help to alleviate some of the concerns. Using a functional assessment will ensure that stream functions are not lost during the permitting process. Depending on the streams proposed for impact, many projects may see a reduction in the number of credits required to be purchased which will help to balance the additional credit costs that sponsors may need to charge.

Comment 37: One commenter stated that OSAM should include bonus multipliers that incentivize projects that show watershed-based site selection such as projects that serve to meet a TMDL strategy, Balanced Growth Plan, or are located adjacent to high-quality waters or parks or other conservation lands. (TNC)

Response 37: See response 34.

Comment 38: Several commenters requested the terms and vocabulary in OSAM be clearly defined, such as stream channel area and flow regimes. (TNC, USACE, USEPA)

Response 38: Definitions of commonly used terms are located in the Glossary of Terms within the OSAM user manual.

Comment 39: One commenter suggested the inclusion of a Catchment Assessment Form to assist practitioners with site selection (e.g., selecting sites with the greatest uplift potential given watershed conditions), and to identify stressors found in the watershed that are so severe as to call into question the perpetual success of the mitigation project. They recommended looking at the Wisconsin SQT as an example. (EPR)

Response 39: See response 34.

Comment 40: One commenter stated that it is unclear how the OSAM is calculating credits for preservation. They requested that the ratios for preservation remain the same per Table 11-2 in the current 2016 Guidelines for Stream Mitigation Banking and In-lieu Fee Programs in Ohio, Version 1.1. (ODNR)

Response 40: Preservation is calculated in the tool by selecting "Preservation" from the "Impact or Mitigation Activity" dropdown. Unnecessary fields are automatically blacked out. Once the required fields are filled in, a function foot score and total number of potential stream credits is provided for the stream proposed for preservation. The formulas used for calculation are visible for each field. The preservation calculation in OSAM provides a similar number of potential stream credits as the 2016 Guidelines.

Comment 42: One commenter asked if the tool could be used for impacts exactly as it is for restoration? They stated that the preparer could enter the Existing Condition Assessment for the stream that will be impacted and enter the Proposed Condition Assessment for the stream that will be constructed. Any negative credits would be the amount of mitigation owed by a project. Any positive credits would be considered self-mitigating or be used to reduce overall mitigation debits for the project. This approach would give applicants an incentive to put back better (or at least the same) as what was impacted where possible. (ODOT)

Response 42: Yes, the OSAM tool can be used in the scenario described by the commenter.

Comment 43: One commenter stated that OSAM does not include a debit tool component. Mitigation practitioners experienced in SQT methodologies could provide input on the development and incorporation of a SQT debit tool. (WLS)

Response 43: OSAM contains both a debit and credit tool component. If a project requires both debit and credit calculations, two separate spreadsheets will need to be completed with "Impact Site" (debit) or "Restoration, Enhancement, Preservation, or AMD Remediation" (credit) selected from the "Impact or Mitigation Activity" dropdown. Practitioners, and other stakeholders, will be involved in the future refinement of OSAM through a collaborative workgroup.

Comment 44: One commenter stated that OSAM calculates functional uplift and loss within the same spreadsheet tool. They gave examples of other states that formatted their SQT this way, such as Wyoming, and this caused several problems, so they separated the debits and credits into separate tools or spreadsheets. They stated that this creates several advantages. First, for third party mitigation, the mitigation location is different than the impact location. IRT's have found it's easier to manage third party mitigation

separate from the impact site, especially since mitigation sites are becoming large (many reaches). Second, and related to number one, third party mitigation will have a different permit process and number for the mitigation site and the impact site. They offered the Wisconsin SQT as an example. (EPR)

Response 44: See response 34 and 43.

Comment 45: One commenter stated that Rosgen created a rating metric corresponding to the bank height ratio to classify streams as non-incised, moderately incised, incised, and severely incised, but the ranges in OSAM seem to be taken from the Ohio EPA Rainwater and Land Development manual. They requested the rationale for the divergence of bank height ratio categories from the "A Stream Channel Stability Assessment Methodology" by Rosgen versus what is incorporated in OSAM. (TNC)

Response 45: The categories and values for the bank height ratio in OSAM are based on the reference curves from the Georgia SQT and other SQT's across the country. These do differ slightly from the Rosgen categories and from the Rainwater and Land Development manual. The three categories used in OSAM, and the Georgia SQT, (poor, fair, and good) mirror the not functioning, functioning at risk, and functioning categories typical of most SQTs.

Comment 46: One commenter recommended that all Rosgen stream types be listed in the stream type drop down (e.g., Aa+, Fb, Ba, Eb, Cb, Db, D, etc.) to clearly define the existing and restored/mitigated stream geomorphic condition. They also recommended that an additional stream type of "DB" be added to the stream type list for beaver impounded streams. Beaver analog impoundments (e.g., slow-dewatering instream detention structures that mimic beaver impoundments) can be an approach to mitigating increased stormwater runoff due to current and historic land use changes. (OCA)

Response 46: See response 34. The Rosgen stream type "D" was added to the OSAM dropdown list as it was missing from the original version. The consideration of including other stream types will be discussed during the further refinement of the tool.

Comment 47: One commenter stated that for all impact or mitigation activities, when identifying the Existing Stream Type as "G", which has an Entrenchment Ratio (ER) < 1.4, the Existing Condition Assessment provides an Index Value greater than 0.0 for ERs between 1.20 to 1.39. The Index Value from 1.0 to 1.39 should be 0.0. It appears that the ER Index Value is incorrectly using the ER Index Values from the "A, B and Bc reference curve" in the Hydraulics column under the Reference Curves tab. (OCA)

Response 47: For impact activities, the G type stream entrenchment ratio is scored using the "A, B, and Bc" reference curve. G type streams generally correspond in slope with B type streams and are often considered an evolutionary or early successional type stream that will eventually transition to a more stable type. For mitigation activities, the entrenchment ratio for a stream with an existing stream type of G will be scored with the corresponding reference curve for the proposed stream type, which will most commonly be B, C, or E. The intent is for the tool to score the entrenchment ratio index for the Rosgen stream type that is based on the corresponding slope and valley type. Similarly, impact calculations for F type streams use the "C and E" reference curve and mitigation activities will use the proposed stream type to determine the appropriate reference curve.

Comment 48: Two commenters stated that the autofill functions and layout make required inputs in the tool unclear. A lack of clarity in how to use the tool may lead to user error and an ineffective tool. (RES and USACE)

Response 48: The OSAM spreadsheet contains text hints when users hover over certain cells. The tool also greys out unnecessary fields as certain values are provided. The technical references tab within OSAM should help users as well as the detailed OSAM user manual that is now available. Additional changes to the spreadsheet to reduce user error can be evaluated in subsequent revisions to the tool and rulemakings.

Comment 49: One commenter pointed out that when printing the OSAM spreadsheet, the header and footer names are incorrect. (OCA)

Response 49: In response to this comment, the headers and footers in all tabs of the spreadsheet have been removed.

<u>Ohio Stream Assessment Method (OSAM): Reference Data and Curves</u>

Comment 50: Many commenters stated that using reference data and curves from the Georgia SQT is not appropriate since it does not have the same eco-regions, stream types, climate, land use legacy, and evolutionary history as Ohio. Some suggested that it would be more appropriate to use reference data generated for the Wisconsin SQT or other great lakes states. (CEC, Cleveland Metroparks, EPR, RES, USACE, and USEPA)

Response 50: See response 34.

Comment 51: Several commenters stated that many of the reference curves should be stratified by on a regional basis such as ecoregion, geology, or physiography or stratified by stream type or flow regime. (Cleveland Metroparks, ODOT, RES, USACE, WLS)

Response 51: See responses 1, 30, and 34.

Comment 52: One commenter stated that the breakpoints in the physiochemical reference curves do not follow publications by Ohio DNR in 2016 regarding AMD impacts. They stated that those breakpoints should use ODNR's documentation for the physiochemical metrics. (USACE)

Response 52: See response 34. The physiochemical curves developed for AMD projects reflect Ohio EPA extensive dataset for streams in the WAP and EOLP ecoregions in Ohio. The curves for Iron (Fe) and Dissolved Oxygen (DO) were modified in the final OSAM version 3.0 to better reflect the range of natural conditions that are present in the target area. The use of natural conditions is appropriate for stream health and will incentivize work done in all levels of AMD impact, even impairments identified as mild in the ODNR report reference by the commenter.

Comment 53: One commenter stated that streams with gradients greater than 8% need to have a separate reference curve or merely have an index value of 1.00 for properly designed and constructed rock channels that function as cascades. (OCA)

Response 53: See response 34.

Comment 54: One commenter requested that units be added for the chemical parameters on the x-axis associated with OSAM Reference Tab Graphs. (OCA)

Response 54: Units have been added to the Reference Tab Graphs for the following chemical parameters: Dissolved Oxygen, Specific Conductivity, Aluminum, Iron, and Manganese.

<u>Ohio Stream Assessment Method (OSAM): Hydraulics Metrics</u>

Comment 55: One commenter stated that "hydrology" may be a more appropriate term instead of "hydraulics" since hydrology focuses on the natural system and hydraulics is an engineering term related to water under pressure typically in a pipe. (ODOT)

Response 55: The terms in the OSAM are taken directly from other SQTs across the country and are based on the Stream Functions Pyramid where "Hydraulics" means the transport of water in the channel, on the floodplain, and through sediment. Hydrology is a separate functional category for many SQTs, but that functional category, and associated metrics, is not included in the Georgia SQT and subsequently, the OSAM.

Comment 56: One commenter stated that OSAM user manual shows that Bank Height Ratio (BHR) is measured from pool cross-sections. The BHR, for the purpose of grade control/floodplain connectivity, must be measured in the riffle. They recommended requiring more than one riffle measurement to prevent gamesmanship. BHR is only measured in the pool for bank erosion estimates, e.g., the Bank Erosion Hazard Index. (EPR)

Response 56: Ohio EPA agrees that Bank Height Ratio should be measured in the riffle. The OSAM manual clearly states this requirement.

Ohio Stream Assessment Method (OSAM): Geomorphology Metrics

Comment 57: Several commenters stated that OSAM should include metrics to measure lateral migration/erosion and bedform diversity by including metrics such as the Bank Erosion Index, Large Woody Debris Index, and direct pool depth measurements. They suggested adding lateral migration as an additional function-based parameter with two corresponding metrics: dominant BEHI/NBS and percent streambank erosion. (Cleveland Metroparks, EPR, RES, TNC, USACE, USEPA, and USFWS)

Response 57: In response to this comment, a large woody debris metric has been added to the tool using the existing reference curves from the Georgia SQT. See response 34.

Comment 58: One commenter suggested adding pebble counts as an additional metric to geomorphology. (RES)

Response 58: See response 34.

Comment 59: One commenter stated that Colorado (U.S. Army Corps of Engineers, 2020) and Wyoming SQTs (U.S. Army Corps of Engineers, 2023) combined and re-weighted functional categories to remove dilution of geomorphology. They use the following weighting: Reach-Hydrology & Hydraulics = 30%; Geomorphology = 30%; Physicochemical = 20%; Biology = 20% and perhaps this is a viable option for the OSAM. (EPR)

Response 59: See response 34. In response to the many comments received on the weighting of OSAM parameters during interested party review, and subsequent stakeholder meetings, Ohio EPA has adjusted the final OSAM version 3.0 weighting. The final weighting and rationale are explained in the accompanying OSAM manual. The weighting is as follows:

Hydraulics (40%):

Bank Height Ratio (50% (20% of total))
Entrenchment Ratio (50% (20% of total))

Geomorphology (35%):

Riparian Width (50% (17.5% of total))
Pool Spacing Ratio (16.7% (5.8% of total))
%Riffle (16.7% (5.8% of total))
Large Woody Debris (16.7% (5.8% of total))

Habitat and Biology or Chemistry (25%):

For streams under 1 sq mile drainage area:
Habitat (20% (5% of total))
Biology (80% (20% of total))
For streams over 1 sq mile drainage area:
Habitat (40% (10% of total))
Biology (60% (15% of total))
For AMD treatment (all drainage areas):
Habitat (50% (12.5% of total))
Chemistry (50% (12.5% of total)

Comment 60: Several commenters stated that the riparian vegetation metric does not account for vegetation quality, composition, or cover type. They suggested adding additional metrics such as VIBI-FQ, native vegetation cover, tree canopy, tree maturity, tree density, native shrubs, or herbaceous cover. (Cleveland Metroparks, EPR, RES, WLS)

Response 60: See response 34.

Comment 61: Two commenters stated that the 200 ft buffer width is arbitrary and needs to be linked to stream geomorphic condition, which is the bankfull channel width. One stated that buffer widths should be directly correlated to the bankfull width of the stream since in many cases 200 ft will be too wide for small streams or too small for larger streams. They also stated that the current guidelines only require a 50 ft buffer which would only receive a score of 0.3 in OSAM (OCA and WLS)

Response 61: See response 34.

Comment 62: One commenter asked if there was evidence that pool spacing ratio significantly contributes to a stream's quality. They stated that this metric could falsely create functional lift for overly engineered streams on the mitigation side of the equation. In addition, this metric has not been used in any stream assessment methods in Ohio to date and therefore they questioned its importance. They recommended removing the metric. (ODNR)

Response 62: Pool spacing ratio is one of three measurement metrics (pool spacing ratio, percent riffle, and large woody debris) within the Geomorphology functional category and Bedform Characterization parameter. The overall weight of this one measurement is a small portion of the total OSAM score and is a useful measurement when characterizing the bed form of the stream. Ohio EPA is

committed to gathering Ohio specific data for all these parameters and all metrics will be evaluated during subsequent revisions.

Comment 63: One commenter asked why would pool to pool spacing ratio index be greater than 1 which is inconsistent with SQTs in other states where the maximum is 1. (CEC)

Response 63: The pool spacing ratio index is not greater than 1 for either streams with slope less than 2% or greater than or equal to 2%. Both reference curves have an index value from 0 to 1. The field values for the pool spacing ratio can be greater than 1, and that is consistent with other SQTs.

Comment 64: One commenter stated that pool spacing and percent riffle alone are not sufficient for characterizing bedform diversity. They strongly recommended including the pool depth ratio as well unless it is included in other measurements, such as QHEI and HHEI. (EPR)

Response 64: See response 34.

<u>Ohio Stream Assessment Method (OSAM): QHEI and HHEI</u>

Comment 65: Several commenters stated that the HHEI and/or the QHEI should be removed from the tool entirely or should be moved into the biology functional category. Some suggested replacing the habitat metrics with a large woody debris metric. (NSPE-OH, OCA, TNC, and WLS)

Response 65: In response to this comment, the QHEI and HHEI (habitat metrics) have been moved into the Biology Metric in OSAM version 3.0. Also, a large woody debris metric has been added to the tool using the existing reference curves from the Georgia SQT.

Comment 66: One commenter stated that collection of HHEI and QHEI should be done by a level 3 QDC, qualified under Ohio's credible data rules to ensure high quality data is collected and that both QHEI and HHEI should be collected at all sites <3 sq. mi. unless the stream is ephemeral. (MBI)

Response 66: Ohio EPA has considered this request but has chosen not to make this a requirement at this time. We may consider this in future rulemakings. Given the limited number of certified data collectors in the state, this would create an additional burden and cost to applicants. For all permit and mitigation plan reviews, Ohio EPA staff will review, and field verify all submitted data, as necessary.

Ohio Stream Assessment Method (OSAM): Chemistry Metrics

Comment 67: Several commenters stated that crediting for acid mine drainage (AMD) should not be considered as this requires engineered treatment systems constructed off-line of restored stream channels and requires dosing and ongoing maintenance and repair in perpetuity. They stated that AMD cannot be remediated through stream restoration alone, if at all. (CEC, RES, TNC and WLS)

Response 67: Ohio EPA agrees that AMD remediation projects are a different and unique type of stream mitigation, but there are many examples of successful remediation projects that have achieved significant water quality benefits. Most of these projects do require long-term maintenance and monitoring. If an applicant or sponsor chooses to propose AMD remediation as part of their mitigation plan, they will be required to demonstrate that they are achieving required performance goals through monitoring, which will most likely include chemical parameters. The OSAM is not intended to be used to set those performance goals. It is only to be used as a calculator to determine the number of potential stream credits for the proposed project.

Comment 68: One commenter stated that using physicochemical metrics in-lieu of biological metrics for AMD streams undervalues stream ecological importance and restoration potential as well as not fully reflecting their biological significance or restoration challenges. Biological metrics may require longer recovery time frames, and the substitution of physiochemical metrics could lead to early release of credits. This could lead to a lower perceived value of AMD streams in terms of ecological restoration, potentially deprioritizing necessary remediation efforts. (USACE)

Response 68: See response 34.

Comment 69: One commenter suggested splitting chemistry and biology as separate functional categories each weighted at 15 or 20% of the total score. For Acid Mine Drainage projects, aquatic life is missing but naturally present and by having separate categories the assessment score would reflect that impaired function. (EPR)

Response 69: See response 34.

Comment 70: One commenter stated that the chemistry parameter thresholds are so low or restrictive that it is unlikely that any stream credits can ever be rationally obtained for an AMD Remediation project. They recommended aligning the chemistry values with the NDPES discharge parameters and thresholds so that NPDES discharge thresholds are not improperly increased by the stream rules. (OCA)

Response 71: See response 34 and 52.

Ohio Stream Assessment Method (OSAM): Biology Metrics

Comment 72: One commenter suggested that higher weighting should be given to the biology and physiochemical metrics while other commenters suggested that biology weighting should be reduced or biology should be a bonus credit generator. (Cleveland Metroparks and TNC)

Response 72: See response 34 and 59.

Comment 73: One commenter stated that biologic metric selection based on drainage area may cause scoring inconsistencies. For example, similar streams with drainage areas marginally above or below 1 sq. mi. could have different scores depending on the actual biological assessment used. (USACE)

Response 73: See response 34.

Comment 74: Several commenters expressed concern with allowing a designated aquatic life use to be used in-lieu of biological sampling. Some stated that biological sampling should always be performed. Others suggested that a default score of functioning be applied to impact sites to allow applicants to skip assessment of physicochemical and biology functions, saving time and money while ensuring no net loss of function. (Cleveland Metroparks, EPR and MBI)

Response 74: The option to use a designated aquatic life use in the OSAM was added at the request of stakeholders. This allows applicants and mitigation sponsors the option to avoid the cost and time of collecting biological sampling for streams that are already designated in the Ohio water quality standards. Ohio EPA may consider the use of default functioning scores for some parameters in future iterations of OSAM.

Comment 75: One commenter stated that the proposed limited methods in OSAM should not be used to conduct any type of Use Attainability Analysis (UAA) to either revise an existing designated ALU or assign a new use for an undesignated stream. They stated that the HMFEI/HWMI approach is limited and inadequate for this purpose. (MBI)

Response 75: The OSAM tool and the 401 Water Quality Certification rules (OAC 3745-32-01:03) are inherently narrow in their application. The stream mitigation tool will not be used for anything other than determining stream mitigation debits and credits required for 401 WQCs. A UAA will still be required to make

existing and designated use determinations per the Ohio water quality standards in OAC 3745-1.

Comment 76: One commenter stated that HWMI does not use hester dendy samplers which should be used in drainage areas > 10 sq. miles. They recommended that the hester dendy sampling and ICI be used in streams with drainage areas > 10 sq. miles instead of just using IBI in streams with drainage areas > 20 sq. miles. They also recommended that the entire suite of biological metrics developed by the agency should be incorporated into the tool as reliance on a single organism group creates error in measuring the success of mitigation projects since some organismal groups may respond to differently to environmental stressors. (MBI)

Response 76: See response 34. OSAM, and other functional assessments, are designed to measure a wide array of stream functions, not just biology, to provide a broader picture when making stream mitigation decisions. This helps to ensure no net loss in stream functions. OSAM, like the Georgia SQT, only focuses on one biological group (fish or bugs), based on the drainage area, to keep the tool and methods simplified while still achieving the no net loss goal.

Comment 77: One commenter stated that OSAM automatically chooses if IBI or HWMI are used. They recommended that OSAM be structured so that the user can justify the use of IBI or HWMI (or Number of EPT taxa) outside of the suggested range of watershed size. (TNC)

Response 77: See response 34.

Comment 78: Several commenters stated that HWMI needs a stronger peer review and should not be included in OSAM. They suggested replacing it with Number of EPT taxa or ICI. (TNC, MBI, OCA)

Response 78: See response 34.

Comment 79: One commenter stated that the Headwater Macroinvertebrate Field Evaluation Index (HMFEI) is arbitrary in the required stream assessment length and causes increased sampling area ratio relative to streambed width which increases the chances for misclassification of streams. (OCA)

Response 79: The stream assessment reach length for primary headwater habitat streams is 200 feet for all primary headwater habitat methods, including HMFEI. This is outlined in the Field Methods for Evaluating Primary Headwater Streams in Ohio (Version 4.1). During the creation and calibration of the primary headwater methods, the 200-foot length was determined to be the most

appropriate to capture changing conditions in primary headwater streams as you move up or downstream.

End of Response to Comments

December 7, 2023

Rule Coordinator
Ohio EPA
Division of Surface Water
PO Box 1049
Columbus, Oh 43216
Via email: dsw_rulecomments@epa.ohio.gov

Dear Coordinator:

Subject: DSW Interested Party Review
Section 401 and Wetland Water Quality Standards Rules

Civil & Environmental Consultants, Inc. (CEC) is pleased to provide this response to the November 3, 2023, email public notification of the Interested Party Review – Section 401 Water Quality Certifications and Wetland Water Quality Standards Rule (OAC 3745-1 and -32). House Bill 175 (HB 175) was authorized signed into legislation by Governor DeWine on April 20, 2022. That authorization has directed the Ohio Environmental Protection Agency (Ohio EPA) to adopt stream mitigation standards into rule by July 2024. CEC is providing this letter in response to that request for public comment, specifically the new rules created to comply with House Bill 175 related to stream mitigation.

Background

The Ohio EPA convened a meeting of stakeholders on June 22, 2023, which primarily included a combination of mitigation bank providers, in-lieu fee program managers, and consultants. The Ohio EPA reviewed the current stream mitigation process and methods for crediting and debiting resources within existing mitigation framework in Ohio. At that meeting, the Ohio EPA was considering three alternatives to implementing stream mitigation measures moving forward:

- Expand upon the 2016 Guidelines for Stream Mitigation Banking and In-Lieu Fee Programs
- Adopt a modified version of the Stream Quantification Tool (SQT) framework for Ohio, or;
- Adopt the 2010 Stream Mitigation Rule Proposal (never finalized)

The Ohio EPA stated that their focus of this rule making process at that time was:

- That stakeholders are interested in a functional assessment stream mitigation tool
- That the 2016 guidelines and the proposed 2010 rule are limited in assessment capabilities and, therefore, encourage minimum restoration efforts, and;
- That the SQT is a widely used functional assessment tool.

The Ohio EPA suggested Georgia has been using a modified and reduced version of the SQT that may provide a good template for an updated rule but that developing an SQT may take more than a year to develop.

At the conclusion of the June 22, 2023, meeting, the Ohio EPA proposed that the path forward would include:

1. Making minor changes to current methodology while promulgating guidelines through the rulemaking process to be completed by July 2024.
2. Concurrently, forming a workgroup to update the Stream Mitigation Guidelines (no date defined).
3. At the latest, developing an updated Stream Mitigation Guideline, an "SQT Lite", into Rule by the 5-year rule review benchmark.

At that time, CEC had reached out to the Ohio EPA requesting participation in the SQT development for Ohio and the Revisions of the Stream Mitigation Guidelines. Here is what followed:

1. As of August 21, 2023, the workgroup had not been gathered and CEC was informed that we would be notified if/when that occurs.
2. To the contrary, the Ohio EPA notified the stakeholder group on September 14, 2023 that an area-based functional assessment tool for stream channels (Ohio Stream Assessment Method, OSAM) had been already developed by an individual stakeholder, that it had been submitted for consideration to the Ohio EPA as comment on the 2016 Stream Mitigation Guidance review. The Ohio EPA indicated they were actively considering and evaluating this tool for implementation.
3. On October 13, 2023, the Ohio EPA distributed a version of the OSAM for public stakeholder consideration and comment.

4. On November 3, 2023, the Ohio EPA public notification of the Interested Party Review – Section 401 Water Quality Certifications and Wetland Water Quality Standards Rule (OAC 3745-1 and -32) was released to allow the public to comment on the OSAM.

Concern with Process

Concerns regarding the development and approval process are eminent due to the rapid effort in receiving public comment to adopt the OSAM with a general lack of transparency of the administrative process taken place to date in the public introduction of the Stream Mitigation Rules. Our concerns on policy process include:

1. The Ohio EPA stated their process intended to make minor modifications to the existing process while they convened a workgroup of stakeholders to develop the future assessment tool. That process is not taking place.

   SQT assessments have been developed for states across the country and typically take several years to collect data, perform analyses and develop reference standards to justify crediting. We have concerns that the presentation of this tool with no previous acknowledgement during this process, by a single stakeholder, is biased and not compliant with sound research and scientific backing. Where is the data and reference standards specific to Ohio watersheds? Has it been peer reviewed and published? We suggest that experienced, unbiased third parties take part in the development of an Ohio-specific stream quantification tool.

2. The Ohio EPA has been slow to administer the rule making process and appears to be advancing in a different trajectory than what has been presented to stakeholders earlier last summer. The Ohio EPA clearly defined their three stream mitigation credit alternatives in the rule making process and OSAM was not one of them. The OSAM was not developed by the Ohio EPA, has not been used or vetted by the Ohio EPA, and had not previously been conveyed as an alternative proposed for consideration. The OSAM was not publicly recognized by the Ohio EPA as recently as June 2023 and subsequent public demonstrations of the spreadsheet tool to implement the OSAM required the stakeholder who developed it to educate the Ohio EPA on how to appropriately use it.

3. The proposed workgroup of professionals in the industry and other stakeholders, to develop an SQT of any type in Ohio, has not been formed by the Ohio EPA to date.

4. The OSAM was developed by a single stakeholder and presented as a comment response to the open comments collected regarding the 2016 Stream Mitigation Guidance. SQT assessments have been developed for states across the country and typically take several years to compile and develop, including the development of state-specific reference data. Rushing to adopt the OSAM into OAC seems premature given it was not an alternative outlined as late as June and has not been thoroughly evaluated.

5. Initial roll out of the OSAM tool and the draft Rules on October 16, 2023, allowed stakeholders only several weeks to review content before the public comment period was announced on November 3, 2023. To this point, the urgency conveyed by the Ohio EPA in the 30-day review opportunity is very inadequate given the complexity of the effort requested, their lack of history with the OSAM, and considering that this method was not one of the three alternatives presented at the June 22 meeting.

   It is recommended that the Ohio EPA should consider consulting the *Technical Guide for the Development, Evaluation, and Modification of Stream Assessment Methods for the Corps Regulatory Program,* developed by the US Army Corps of Engineers Engineer Research and Development Center, to assist in developing a list of metrics and parameters germane to evaluating restored stream systems.

6. We are concerned about adopting new and possibly flawed methodology into Rule without proper testing. Furthermore, updating, reworking, and replacing of stream mitigation rules, the 2016 Stream Mitigation Guidance, and the introduction of a stream functional assessment such as SQT will likely be subject to their own individual amendments, scheduling and timing complications. Attempting to address all the identified initiatives in one action may make corrective measures difficult to amend legislatively once approved. We recommend that the Ohio EPA update the stream mitigation rules independently of the adoption of a functional assessment tool.

7. OSAM does not appear to be consistent with nor does it appear to consider the 2008 Mitigation Rule developed by the federal government (USACE and USEPA) for in-kind mitigation and no-net loss (33 CFR Parts 325 and 332, as well as, 40 CFR Part 230). How has the USACE formally responded to OSAM?

   a. It appears the Ohio EPA is moving towards adopting policy that may conflict with the 2008 Mitigation Rule, in-kind mitigation, and Section 404/401 Clean Water Act permitting process. Being there are three different USACE districts in the state of Ohio, efforts should be made by the Ohio EPA to get concurrence from the USACE

of proposed changes to ensure that one stream mitigation product can service both regulatory agencies for Clean Water Act and Ohio EPA Division of Surface Water permits.

a. The ephemeral mitigation options developed from the HB 175 in conjunction with these area-based inconsistencies of OSAM may be establishing two separate versions of stream mitigation in Ohio to address mitigation requirements for two different regulatory agencies (State and Federal). Dual mitigation programs exist in several states right now and are known by mitigation providers, permit applicants, and regulatory agencies to cause delays and extra administrative workload. A dual program will further lengthen regulatory timelines and delay project implementation. We recommend that the Ohio EPA or the Legislature NOT allow a separate or conflicting mitigation program to be implemented.

8. The proposed OSAM is not the Georgia SQT as it was discussed at the June 22 meeting, and it appears to subjectively select metrics without explaining the rationale of what was included or omitted. From a policy standpoint, the scientific rigor and reasoning is not consistent with research or scientific backing. It may be subjectively ignoring other metrics or parameters that should or do have value. The decision on what is important to include was decided by one stakeholder, and by virtue of that process, is a biased product from conception.

9. In June 2023 the Ohio EPA envisioned a 5-year process to develop an SQT for Ohio. We recommend that the original schedule be followed in developing a new functional crediting assessment. The development of the SQT in Ohio should be separate from the rule making process and should be conducted by a group of peers in the industry representing a diverse professional background.

Concern with Technical Merit

We have strong concerns about the technical merit of the current proposed OAC 3745-1 and -32 and the lack of scientific rigor that is being invested into this process.

1. The current ratio-based method is a function of linear feet measurements. The SQT methodologies are in terms of linear feet measurements. Options presented in June 2023 were linear feet methods of functional assessment. The OSAM, which has not been developed with public involvement from inception, is in area units.

a. We question why there is such a strong shift in the approach to units of measurement without public input from your stakeholder group.

b. The change of basic metrics appears to unjustifiably favor a very stormwater-engineering approach to implementing stream mitigation.

2. An area-based method is not common in the mitigation industry elsewhere in the United States because it has been deemed cumbersome and it does not translate well between stream order and watershed location. This is because:

   a. Cursory use of this tool suggests that simple adjustments to a bankfull width can translate to gratuitous increases in credit generation.

   b. Our concerns are that a channel plan-view, area-based method will allow mitigation providers to increase credit generation without ecological, geomorphic, or hydrologic value.

   c. Area-based restoration will incentivize mitigation providers to use stormwater engineering techniques to generate overly-wide, trapezoidal systems resembling stormwater conveyances. Overly wide channels have been shown to have negative influences on sediment transport resulting in sediment deposition and aggradation of the channel. Furthermore, the Functional Pyramid developed by Will Harman suggests that colonization by biota/benthic macroinvertebrates is a function of appropriate bedform diversity.

   d. Large streams channels and impounded water environments provide different habitat, ecological function, and ecosystem services than small streams and their functional equivalency is not analogous.

   e. Area-based calculations will incentivize over-sized channels, mitigation with open water, and mitigating the loss of headwater stream function in lower regions of the watershed on larger river systems.

3. In the context of no-net loss (2008 Mitigation Rule), because a majority of the USACE and Ohio EPA regulatory permits are issued to fill in or remove headwater (first- to third-order stream channels) the proposed approach seems to encourage the relocation of the headwater aquatic resources to areas lower in the watershed and further away from impacts.

4. The use of appropriate reference data for comparison of ecological function is critically important, but not part of the proposed rule. It is the recommended approach to stream and wetland mitigation by the USEPA, as presented in the May 2010 document titled, *"Stream Assessment and Mitigation Protocols: A Review of Commonalities and Differences"*, in

which the USEPA states, "Reference conditions provide the context with which the condition or outcome of any observation or measurement can be compared to other similar observations. Consequently, the proper documentation of reference conditions is vital to any program seeking to assess changes to natural resources over time." They go on to say, "Thus, a multi-faceted evaluation of reference conditions, based on biological, chemical, and physical/geomorphological characteristics measured in similarly situated streams throughout a defined region or watershed, is desired in lieu of relying on any single characteristic of stream ecosystems."

The OSAM is predicated on reference data pulled in from the Georgia SQT which identifies that their method is based on eco-regional and morphological metrics garnered from the Piedmont, Blue Ridge, Ridge and Valley, and Southeastern Plains without proper analysis or justification. Why is the Ohio EPA considering a method that uses data from regions in the mountains and southern coastal United States for application in Ohio?

Physiographic regions consider the geology and climate over time and their influence on the landscape ecology which in Ohio is different from Georgia. More work is needed to develop accurate bankfull discharge regional curves for first- to third-order streams in Ohio across the different physiographic areas. We recommend that any reference curves, regional parameters, woody debris indexes, and trait-based macroinvertebrate curves be based on habitat found in Ohio or the adjacent states with similar physiographic regions based on the Central Lowlands, Appalachian Plateau and Michigan Basin physiographic provinces, as mapped by the USEPA, or similar units.

5. This crediting procedure appears to allow/incentivize stream mitigation by creating open water, such as large pools connected by stream channels, overly wide channels that remain ponded, or even the integration of best management practice (BMP) ponds constructed in-sequence. Mitigating a stream channel with open water habitat was a common occurrence pre-2008 in the development industry and this was redressed by the federal 2008 Mitigation Rule for in-kind mitigation requirements.

   Large open water impoundments, stagnant channel habitat, and BMPs constructed for stormwater, erosion sediment and management, or acid mine drainage management, should not be considered for mitigation of lower order stream channels.

6. Our testing of OSAM indicates that channel size is a function of drainage area input. This does not directly compare impacts and crediting between stream channels across the spectrum of small to large drainage areas.

7. Why would the pool to pool spacing ratio index value be greater than 1.0? This is inconsistent with SQT versions in other states. Typically the maximum value is 1.0.

8. Budgets tied to stream mitigation resulting from recent Clean Water Act and other state surface water permits should be applied to the restoration of habitat, hydrology, and morphology of stream channels and should not be directed towards engineering methods to address water quality resulting from abandoned mine land runoff.

    a. Many stream channels, open waters, and wetlands currently located in the previously minded areas of Ohio are not in their original location.

    b. There is substantial funding in the Infrastructure Investment and Jobs Act to address impairments in abandoned mine land and acid-mine discharge where previous funding was lacking.

    c. Acid mine drainage typically requires engineered treatment systems constructed off-line of restored stream channels that are costly, require ongoing maintenance and management and repair, and these management problems typically exist in perpetuity.

    d. Mitigation of headwater stream channels should be in-kind and consistent with the 2008 Mitigation Rule and should not support systems that require mechanical management in perpetuity.

9. Mitigation alternatives should not promote engineered systems that require facilities management and funding of engineered dosing systems, slag wetlands, and other mechanics in perpetuity.

Summation

All public policy or assessments should be developed transparently, with scientific merit, and not by one individual stakeholder. Sufficient time should be afforded to stakeholders and the public, in regards to reviewing and considering the development of such efforts. The mitigation banking framework and the acid mine drainage impairment program in Ohio should be mutually exclusive. The stream mitigation policy, functional assessments, and crediting measures should all be consistent with the 2008 Mitigation Rule and with regional USACE district concurrence to ensure that the Section 404/401 permitting process and other state permits do not require dual or inconsistent mitigation deliverables. We recommend that the stream mitigation rules, temporary adjustments to current practices, revisions to the 2016 Stream Mitigation Guidance, and the

development of any SQT in Ohio follow separate implementation trajectories to allow for scientific review and engagement through an iterative process with stakeholders on each effort.

If you have any questions or require additional information, Mr. Bradley Petru can be reached at (614) 310-0174 or by e-mail to bpetru@cecinc.com. We greatly appreciate the opportunity to provide this feedback to the Ohio EPA and look forward to helping you develop this program moving forward.

Sincerely,

CIVIL & ENVIRONMENTAL CONSULTANTS, INC.

Bradley J. Petru, MS, PWS, ISA-CA
Senior Project Manager

Raymond A. Ewing, Jr.
Vice President, Ecological Division Lead

Gregory S. Babbit, PWS
Principal

December 8, 2023

Ohio EPA
Division of Surface Water

Dear OEPA Rulemaking Team,

Cleveland Metroparks appreciates the opportunity to comment on proposed changes to the Section 401 Water Quality Certification rules. Our organization is committed to protecting and restoring Ohio's aquatic resources. We offer the following specific comments for your consideration.

3745-32-04

(B)(5) Alternative stream mitigation methods. The director may authorize mitigation for impacts to streams based upon other methodologies if the applicant demonstrates that the methods are as protective as those used in the "Ohio Stream Assessment Method"

Comment: Is "protective" the right term to use? Protection is just one component of mitigation. More than just protective, it should be demonstrated that the methods will result in as much or more ecological benefit/uplift as those described in the "Ohio Stream Assessment Method"

3745-32-04

(6) The applicant shall demonstrate that the compensatory mitigation site will be protected long term and that appropriate management measures are, or will be, in place to restrict harmful activities that may jeopardize the compensatory mitigation.

Comment: How is the agency defining "long term" protection?

Business Impact Analysis:

Page 6 Item 14. Please describe the Agency's plan for implementation of the regulation, including any measures to ensure that the regulation is applied consistently and predictably for the regulated community. The Agency will put the effective date of the adopted rules 10 days out from the date of adoption, which gives the Agency time to update web pages. Additionally, the agency will provide training on the new stream tool and its metrics to standardize data collection and provide predictability.

Comment: Looking forward to the agency trainings on OSAM. If trainings are offered regionally, Cleveland Metroparks would be happy to host at the Watershed Stewardship Center. Please contact Elizabeth Hiser to help reserve space: 440.253.2162.

OSAM Comments:

Cleveland Metroparks appreciates the state's desire to provide a measurable quantitative approach to mitigation based on stream function. Our staff have recently performed summer assessments based on the TN SQT and training given by Stream Mechanics and provide the following input on the proposed OSAM based on that experience.

Generally, we would encourage the state to review the Wisconsin SQT that is currently in draft to see where applicable reference curves and methodology could be applied to OSAM - especially in the Lake Erie watershed.

We believe a higher weight should be provided to the biology and physicochemical tiers of the pyramid. Suggest re-weighting: Reach-hydrology & hydraulics = 30%; Geomorphology = 30%; Physicochemical = 20%; Biology = 20%.

Given the reach specific nature of impacts and restoration it may not be appropriate to use the Aquatic Life Use (ALU) designations to assign function to an impacted reach. It would be more appropriate to perform the same biological assessments at the proposed impact reach as will be required by the restoration/mitigation site. Alternatively, you could assume that the impact site is functioning for biology to ensure no net loss of function.

The SQT methodology relies strongly on bankfull area, width and depth. We would encourage the state to provide appropriate reference curves for each ecoregion and stream type/drainage area (perennial, ephemeral, intermittent) for use with the OSAM tool.

While we appreciate the desire for a rapid and repeatable methodology, we believe that including reach runoff/hydraulics and watershed metrics in the OSAM will be more appropriate for urban watersheds and restoration projects where watershed factors may need to be considered and potentially addressed with stormwater management. This will also help ensure restoration sites chosen are appropriate and that chemical and biological function are achievable.

While QHEI/HHEI do speak to erosion, large woody debris, and pool depth, including an option to use Bank Erosion Hazard Index and Nearbank Stress, Large Woody Debris Index, and direct pool depth measurements can lend to restoration design that speaks to specific issues with geomorphology, lateral migration/erosion and bedform diversity. Another

consideration would be to have users pull that information out of the QHEI/HHEI score into a separate line items in the SQT.

We encourage the state to consider the addition of riparian vegetation metrics like tree canopy, tree maturity, tree density, and native shrubs and herbaceous cover to speak to the quality of riparian buffer to be mitigated.

Respectfully,

Cleveland Metroparks
Division of Natural Resources
jer@clevelandmetroparks.com

DEPARTMENT OF THE ARMY
HUNTINGTON DISTRICT, CORPS OF ENGINEERS
502 EIGHTH STREET
HUNTINGTON, WEST VIRGINIA 25701-2070

REPLY TO ATTENTION OF

December 11, 2023

SUBJECT: USACE Comments – Interested Party Review (IPR), OAC Chapter 3745-32 Rulemaking

Rule Coordinator

Email: dsw_rulecomments@epa.ohio.gov

To whom it may concern:

The U.S. Army Corps of Engineers Buffalo, Huntington, and Pittsburgh Districts (collectively "USACE") are providing comments in response to the Ohio Environmental Protection Agency's ("Ohio EPA") Interested Party Review regarding Section 401 Water Quality Certifications Rules (Ohio Administrative Code Chapter 3745-32). The USACE recognizes that Ohio EPA's process and decision-making in respect to the Ohio Administrative Code Chapter 3745-32 ("OAC Chapter 3745-32") rulemaking effort was born from Ohio House Bill 175 and is ultimately a matter of State Authority. The USACE is providing comments regarding elements where our respective programs intersect.

Overall, the USACE still views the OAC Chapter 3745-32 rulemaking effort as an opportunity for the USACE and the Ohio EPA (as well as the U.S. Environmental Protection Agency) to collaborate in developing or refining compensatory wetland and stream mitigation standards, guidelines, and criteria that would satisfy both the Clean Water Act Sections 401 and 404 programs to ensure predictability and consistency for the public, our compensatory mitigation sponsors, and increase interagency collaboration on compensatory mitigation. Any divergence or bifurcation of state and federal requirements would lead to greater inconsistencies among the two programs. In addition, we fear this would also result in less predictability and efficiencies for our agencies as well as the public and our mutual stakeholders.

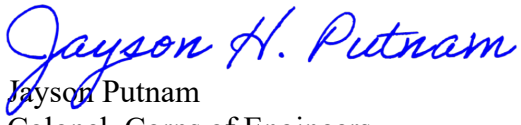
The USACE supports the use of functional and condition assessment tools to inform fair and balanced permit decisions under Section 404 of the Clean Water Act and requires that these tools be transparent, objective, incorporate best-available science, and accurately assess an aquatic resource in order to restore and maintain the chemical, physical, and biological integrity of the Nation's waters. The USACE has adopted models like the Stream Quantification Tool (SQT) in various Districts by collaborative development, rigorous testing, and regionalization.

The USACE supports third-party mitigation and aims to maintain an environment that entices this industry in the State of Ohio. If Ohio EPA adopts the Ohio Stream Assessment Method (OSAM) into State Rules, this may lead to a divergence in state and federal mitigation requirements. This places a/the burden on the regulated public, creates additional complexities for the agencies, and is a disruption to mitigation providers' existing business models. The USACE and Ohio EPA should work through a transparent and collaborative process to develop a defensible tool that is sensitive to

the specific regional variations and pay greater long-term dividends for all. We offer the enclosed comments organized by (1) overall comments across the documents, (2) IPR comments, (3) OSAM narrative comments, and (4) OSAM spreadsheet comments.

In summary, the Clean Water Act Sections 401 and 404 programs are distinctly different, and the districts feel greater consistency and predictability could be achieved for public and our mutual stakeholders in areas where our respective programs share some commonality. There have been some longstanding requirements shared by our programs to benefit the regulated public specifically in the form of synchronized mitigation hierarchy, mitigation requirements (for each stream and wetland type of impacted resource), and processing efficiencies. Any divergence or bifurcation of state and federal requirements we fear would result in less consistency, predictability, or efficiencies for our agencies and our mutual stakeholders. We continue to pledge support for and recommend a small joint team consisting of staff from each of the three Corps districts, the U.S. Environmental Protection Agency, and your agency convene to most efficiently develop a single model which is optimal for the regulated public and within the State of Ohio's rulemaking timeframe.

Sincerely,



Jayson Putnam
Colonel, Corps of Engineers
District Engineer

Comment 1.1: The proposed OSAM documentation does not adequately describe the scientific rationale or provide detailed technical guidance. There is an absence of in-depth scientific rationale or references supporting the metrics or reference curves. Analogously, the efficacy of the methods in Ohio are not described. The empirical basis of methods, validity, and appropriateness are challenging to assess without sufficient technical document. Insufficient documentation may also lead to misapplication of the assessment methods and/or reduce acceptance and buy-in among stakeholders.

Comment 1.2: The development of OSAM does not align with standard methodologies for development of regulatory stream assessment techniques (David et al., 2021). Standard methodologies provide tested frameworks and benchmarks that ensure the reliability and credibility of such tools. Deviating from established practices could result in a tool that is missing key elements (e.g., differentiation of stream classes), less effective, or accepted in the scientific and regulated community.

Comment 1.3: Reference curves do not appear to incorporate any differentiation across regions or stream types. The OSAM should consider whether reference curve data should be regionally stratified relative to geologic regions (e.g., glacial history), physiographic regions, or eco-regions. For example, USGS bankfull regional curves are split into a minimum of two regions (Sherwood and Huitger, 2005). Furthermore, additional description is needed on the process used to develop reference curves and technical appropriateness of the breakpoints. Reference curve data could be conflated across different regions which will decrease accuracy of the reference curves.

Comment 1.4: OSAM data sources are not well-described. Public data sources can provide a wealth of information for environmental assessment and are typically part of standard methodologies. OSAM data sources supporting reference curves are not described, and figures should include data in addition to best fit lines to better characterize uncertainty for users. Ignoring such data can limit the tool's comprehensiveness and its ability to be calibrated or compared to existing benchmarks.
.
Comment 1.5: There is insufficient justification for the adoption of Georgia’s Simplified SQT to Ohio. Since OSAM is based on the Georgia SQT, it inherits its foundational assumptions and potential limitations. Additionally, Georgia and Ohio exhibit significant difference in geologic history, stream types, climate, land use legacy, and evolutionary history, all of which require explanation for the use of the model in Ohio. Some metrics have also been substituted in the adaptation of the models to Ohio (e.g., biological indices), and these modifications to the Georgia SQT should be clearly documented. This could restrict the applicability of OSAM in different environmental contexts or for various stream types.

Comment 1.6: This simplified SQT removes Functional Categories (i.e., Hydrology, Physicochemical) and the majority of Function-Based Parameters without rationale or supporting documentation. SQTs are typically developed based on the entire stream functions pyramid. It is not clear what the effects the simplifications in OSAM will have on overall calculation of stream

function. The removal of categories and parameters without test-cases raises concern about the ability of the SQT to adequately capture stream function for debits and credits. In particular, the fundamental philosophy of the stream functions pyramid hinges on dependency between functions from bottom to top. Therefore, eliminating the hydrologic metrics (i.e., the base of the pyramid) is a critical assumption that must be justified and documented clearly and thoroughly. Simplifications within OSAM are untested for streams in Ohio and it's not clear what limitations or issues will arise.

Comment 1.7: Multiple reference curves for metrics (e.g., HMFEI, HWMI, ALU, Aluminum, Pool Spacing) have breakpoints that are nearly linear. Breakpoints on reference curves that are nearly linear add unnecessary complexity and suggest a level of precision that is not justified. For HMFEI, a straight line through the first and last points only deviates a maximum index score of 0.04 compared to the current reference curve. Similarly, for HWMI, a straight line through the first and last points only deviates a maximum index score of 0.03 compared to the current reference curve. Small changes in slope likely indicate a false level of precision relative to the inherent variability of the input values (e.g., biological indices are likely to vary more than 4% at a single site). Breakpoints in reference curves which lack justification and/or supporting documentation could lead to skepticism about the method's validity and confusion about breakpoint significance. This could create challenges in implementation and acceptance from stakeholders.

Comment 1.8: The documents do not provide clear user instructions and field procedures for the application of the OSAM. User instructions are essential for the consistent and correct application of any assessment tool. Data collection protocols and required analyses should be included in a user guide to appropriately implement stream assessment methodologies and promote consistency and repeatability within the method. Without clear instructions, there could be variability in how different users apply the tool, leading to inconsistent or unreliable results.

Comment 1.9: Use cases are not clearly defined, especially for specific conditions like Acid Mine Drainage. Detailed use cases guide users on how to apply the tool in various scenarios, ensuring its effectiveness and relevance. Without clear use cases, users may struggle to apply the tool appropriately in different environmental contexts. For instance, biological and physiochemical metrics could be incorrectly substituted without clear definitions of what qualifies as an AMD system.

Comment 1.10: The use of stream channel area as the unit of measure is ambiguous as currently defined and can be overly simplistic for diverse stream types. Channel area is not clearly defined as the baseflow channel, ordinary high water, or bankfull. Inconsistent definition could affect the assessment's accuracy, especially in streams with complex or irregular shapes. An inaccurate or oversimplified measure could lead to inappropriate mitigation strategies, may not be appropriate for certain stream types, may not incentivize landscape appropriate restoration, and may incentivize large channels for mitigation, affecting the ecological balance and restoration efforts (Harman et al., 2021).

Comment 1.11: Headwater AMD streams are important to downstream water quality but will have a smaller stream channel area than downstream water bodies. As a result, stream channel area may undervalue the importance of headwater AMD streams for credits and debits. AMD streams can have a strong impact on water quality on downstream water bodies, yet many AMD streams may be in the upstream end of the watershed. As a result, the stream channel area on these streams will likely be small and may undervalue the importance of headwater AMD streams for credits and debits. The undervaluing of headwater AMD streams could result under-crediting restoration/mitigation actions or under-debiting impacts.

Comment 1.12: OSAM's approach to AMD streams, focusing on physiochemical parameters in lieu of biological parameters, can undervalue stream ecological importance and restoration potential. AMD streams, if assessed predominantly on physiochemical aspects, may not fully reflect their biological significance or restoration challenges. Additionally, biological metrics may require longer recovery time frames, and the substitution of physiochemical metrics could lead to early release of credits. This could lead to a lower perceived value of AMD streams in terms of ecological restoration, potentially deprioritizing necessary remediation efforts.

Comment 1.13: Breakpoints specified in the physicochemical reference curves do not seem to follow publications from Ohio DNR in 2016 that documents AMD impacts. Ohio DNR has documentation that includes classifying streams with AMD impacts based on biological and physicochemical metrics (Calhoun and Kinney, 2016). The breakpoints for the physicochemical metrics for AMD streams are not documented. Reference curve breakpoints should utilize the best available information.

Comment 1.14: The OSAM framework needs to be adaptable and responsive to new environmental data and insights. Environmental conditions and scientific understanding are constantly evolving. The current methodology might not account for future changes or new information. Periodic reevaluations of stream assessment methods ensure they adhere to current and sound science. Lack of adaptability could lead to outdated or ineffective assessment practices, affecting long-term environmental outcomes.

Comment 1.15: Based on the information provided, it does not appear that an interagency, multidisciplinary team was formed to develop the OSAM. Interagency, multidisciplinary teams can enhance the technical accuracy and applicability of assessment methods and are recommended when developing stream and wetland assessment methods for Clean Water Act applications. Interagency, multidisciplinary teams are essential to developing, evaluating, and/or modifying existing methods.

Comment 2.1: Define "watershed" more clearly for the purpose of mitigation. In Section B, mitigation is directed to occur in the same watershed as the proposed stream restoration. However, watershed is not defined. Some definition of watershed is required as this may have implications of how far removed the mitigation is from the impacted areas. Additionally, differing watershed characteristics influence the variability of stream functions across

physiographic or ecological regions, and thus influence the expression of indicators or metrics used in stream assessment methods.

Comment 2.2: Define what is meant by “stream type”. A definition of stream type that is appropriate for the intention of mitigation (preserving ecological condition according to stream type) should be directly referenced or developed. Though Rosgen methods are mentioned at the intend typology in the OSAM narrative, it is unclear how these stream types provide guidance to acceptable mitigation site selection. Stream classification and stratification are essential to an effective stream assessment method (David et al. 2021). Rosgen presents a classification system for streams irrespective of their ecotype, and therefore in itself does not provide any guidance on movement towards a “better stream condition” in itself.

Comment 3.1: Biological metric selection based on drainage area may cause scoring inconsistencies and is not documented. The biology metrics (e.g., HMFEI, HWMI, IBI) used in the OSAM are stratified by drainage area (e.g., 1 sq mile, 20 sq miles), which could lead to inconsistencies in scoring. Additionally, documentation of this approach is not provided.
It is not clear whether transitioning between different biological assessments will cause inconsistencies in functional scores. For example, similar streams with drainage areas marginally above or below 1 square mile could have different scores depending on the actual biological assessment used.

Comment 3.2: Cite references and justify assertions with references. In some cases, literature is cited but not supplied as references. In other cases, there are assertions, e.g. “The most common computation of BHR is...”; “These parameters are often impaired by AMD…”; “Reductions in pH can have multiple impacts on stream ecology…” Without citation of these assertions, it is impossible to 1) determine the credibility of these assertions; and 2) easily find the originating literature for description of limitations of such assertions.

Comment 3.3: Define vocabulary more clearly and select parameters that reduce confusion. Many of the parameters used in the tool are not defined in the narrative. This may lead to errors in user input. For example, stream channel area could indicate wetted area or bankfull channel area. Lack of clarity in the parameter definitions may lead to user error and an ineffective tool. promulgate degraded conditions as acceptable, for example, instead of stream channel area, perhaps upstream drainage area.

Comment 4.1: Autofill functions and layout make required inputs unclear. In using the tool, it is unclear what cells are required or optional inputs, as well as which cells are for computational output. Lack of clarity in how to use the tool may lead to user error and an ineffective tool.

Comment 4.2: Lack of demonstrated proof of concept for the index-based methods utilized in the tool. Functional categories have generalized inputs that don’t have demonstrated support of the literature (i.e., lack of citations and rationale) or reference sites/case studies demonstrating effectiveness. For example, riparian vegetation is represented by a buffer width. Given the vagueness in the narrative and the representative parameters, this can be interpreted as an

unpaved area with a single type of vegetative taxa, such as a grass, or it could represent a well-established riparian forest with shrubs and trees, or it could be a senescing riparian forest that would otherwise point to a degrading ecosystem. As the materials are presented for the public notice, there isn't sufficient information to 1) demonstrate the efficacy of the tool in representing mitigation effectiveness; and 2) demonstrate that the tool results are grounded and reasonable according to the variety of possible conditions in OH streams.

References

Calhoun, J., Kinney, C. 2016. Mine Drainage Impact Assessment of Ohio Watersheds. Ohio Department of Natural Resources Division of Mineral Resources Management Abandoned Mine Land Program.

David, G. C., Somerville, D. E., McCarthy, J. M., MacNeil, S. D., Fitzpatrick, F. A., Evans, R., & Wilson, D. B. 2021. Technical guide for the development, evaluation, and modification of stream assessment methods for the Corps Regulatory Program. US Army Corps of Engineers.

Harman, W., Nadeau, T-L., Topping, B., James, A., Kondratieff, M., Boyd, K., Athanasakes, G., Wheaton, J. 2021. Stream Mitigation Accounting Metrics: Exploring the Use of Linear-based, Area-based, and Volume Units of Measure to Calculate Impacts and Offsets to Different Stream Archetypes. EPA 840-R-21-003. U.S. Environmental Protection Agency, Washington, DC.

Sherwood JM, Huitger CA. 2005. Bankfull characteristics of Ohio streams and their relation to peak streamflows. Columbus: US Department of the Interior, US Geological Survey.

U.S. Army Corps of Engineers (USACE). 2011. Assuring quality of planning models. EC-1105-2-412. Washington, DC. U.S. Army Corps of Engineers.

From:	Donald H. Ross
To:	EPA dsw_rulecomments
Subject:	DSW Interested Party Review Section 401 Water Quality Certifications and Wetland Water Quality Standards Rule (OAC 3745-1 and -32)
Date:	Friday, December 8, 2023 9:56:32 AM
Attachments:	image001.jpg image002.png image003.png image004.png image005.png

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To the Rule Development Coordinator:

We operate an investment fund with mitigation banks from coast to coast, including Ohio. By streamlining the development approval process, mitigation banks facilitate the economic progress for which Ohio is renown. We are developing projects to serve Ohio's emerging growth areas and are proud to be contributing to the State's progress.

Brad Petru of Civil & Environmental Consultants, Inc. (CEC) is our consultant for mitigation banking in Ohio. CEC has provided a detailed comment letter on the proposed rule that we fully endorse. Their letter addresses technical and procedural issues that cause us concern.

Our overarching concern, however, is that when state and federal mitigation banking rules diverge, mitigation bank approval becomes more complicated, costly, and much slower. In turn, this creates an imbalance between mitigation credit supply and need, and the resultant insufficient credit supply becomes an impediment to development.

We believe that the proposed Section 401 Water Quality Certifications and Wetland Water Quality Standards Rule (OAC 3745-1 and -32) is NOT consistent with the federal mitigation banking rules. Federal agencies are reluctant to comment publicly about a state rule, but we believe that Ohio adopting a non-conforming state rule will lead to significant delays in federal mitigation bank permitting, perhaps even leading to dual requirements for the same mitigation bank. Florida, for example, has a dual federal and state mitigation banking program, and a recent study showed it takes an average of nearly five years to obtain a federal mitigation bank permit in Florida (*The Time It Takes for Restoration, An Analysis of Mitigation Banking Instrument Timelines*, EPIC + ERBA, 2023). Not surprisingly, Florida is also experiencing mitigation credit shortages.

Heretofore, Ohio EPA and the federal agencies have worked well together. We want that harmony to continue, and we ask you to delay adoption of the proposed rule until a consensus among the State, the federal agencies, and mitigation providers has been achieved.

Respectfully,

Don Ross

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December 5, 2023

Rule Coordinator
Ohio EPA
Division of Surface Water
PO Box 1049
Columbus, Oh 43216
Via email: dsw_rulecomments@epa.ohio.gov

RE: Section 401 Water Quality Certifications and Wetland Water Quality Standards Rule (OAC 3745-1 and -32)

Ecosystem Investment partners (EIP) is pleased to provide a response to November 3, 2023, email public notification of the Interested Party Review – Section 401 Water Quality Certifications and Wetland Water Quality Standards Rule (OAC 3745-1 and -32). Specifically, the stream assessment methodology proposed by the Ohio Environmental Protection Agency (OEPA).

EIP is a private equity firm that specializes in environmental offsets. To date, the majority of our investments have focused on large scale stream and wetland mitigations within the United States. EIP currently owns and operates two stream and wetland mitigation banks in the state of Ohio that were permitted in 2018. EIP has plans to invest more in the state of Ohio, however the current proposal from OEPA casts doubt on our long-term planning and viability. With this in mind, EIP would like to provide the following comments and recommendations:

- It is our understanding that the proposed assessment methodology was created and coordinated with a *very* limited group of stakeholders. Given the potentially broad ecological and economic impacts of the proposal, EIP recommends expanding the group of stakeholders. EIP suggests involving the mitigation industry, professional services that work in this sector, State and federal regulators, private industry as well as non-profits that have experience within mitigation.
- EIP has been involved with many different types of assessment methodologies in at least a dozen states. Developing and implementing these technical processes takes considerable time due to the complexities of matching policy with practice as well as the unique ecosystem being impacted. EIP recommends extending the proposed timelines in order to implement the best tools to mitigate the unavoidable impacts.
- EIP is concerned with using an area-based calculation for stream mitigation offsets. EIP has questions on the ecological integrity of this approach to provide a no net loss to mitigation. EIP proposes to implement an assessment methodology that complies with the intent of the 2008 mitigation rule.
- EIP is concerned that the current proposal, if implemented, would ultimately require the creation of both State and Federal impact credits / permitting protocols. It is our understanding that the current proposed methodology would not be in compliance with the Federal 2008 mitigation rule requiring no net loss. If this is the case, EIP is concerned that the unintended consequence of having two separate permit processes would result in additional financial burdens and delays to all stakeholders.

EIP appreciates the opportunity to provide comments to the proposed Section 401 Water Quality Certifications and Wetland Water Quality Standards Rule. It is our hope that the Rule Coordinator and their team takes into consideration the above listed recommendations and suggestions in an effort to improve the process of permitting unavoidable impacts with a no net loss of resources.

Sincerely,

Troy Anderson, CERP
Director of Operations – Eastern U.S.
troy@ecosystempartners.com

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December 8, 2023

Rule Coordinator, Ohio EPA
Division of Surface Water
Dsw_rulecomments@epa.ohio.gov

Dear Rule Coordinator:

Thank you for the opportunity to provide comments on the Ohio Stream Assessment Method (OSAM) V2.1. It is a considerable undertaking to shift mitigation standards, guidance, guidelines, and assessment methods to a more function-based approach. We recognize that stream mitigation is a focus of the Ohio General Assembly and Substitute House Bill 175 (HB 175) and support the efforts to provide a quantitative and verifiable approach to functional uplift and loss determinations that can provide objective results for monitoring and inform performance standards.

The OSAM is a modification of the Georgia Interim Stream Quantification Tool (GA SQT; Somerville et al. 2021), which itself is based on the Stream Functions Pyramid Framework (Harman et al., 2012) and the North Carolina SQT (Harman and Jones, 2017). In the years since the first SQT was regionalized for mitigation purposes, Ecosystem Planning and Restoration (EPR), Stream Mechanics, and various state and federal agency partners, have applied lessons learned and scientific advancements to improve the Stream Quantification Tool (SQT). Recognizing the Ohio Environmental Protection Agency's July 2024 deadline to “adopt substantive mitigation standards into rule” we offer the following comments based upon our experience regionalizing SQTs.

Scoring

The proposed OSAM has the following weighting of functional categories: Hydraulics = 45%; Geomorphology = 35%; and either Chemistry (AMD sites) or Biology = 20%. The stream functions pyramid (pyramid) organizes stream and riparian functions into five functional categories: Hydrology, Hydraulics, Geomorphology, Physicochemical, and Biology (Harman et al., 2012). The pyramid is a simplification of the complex interdependence of stream functions, focusing on the cause-and-effect relationship of lower-level functions like hydrology, hydraulics, and geomorphology supporting the higher-level physicochemical and biology functions. Given that physicochemical and biology functions are critical to human, as well as, aquatic and riparian animal abundance and diversity, it is important that an assessment of these stream functions be included in a credit/debit determination method. The following recommendations pertain to weighting within the OSAM:

1. Consider re-weighting the functional categories to reflect the importance of physicochemical and biological functions.
    a. Consider splitting chemistry and biology as separate functional categories each weighted at 15 or 20% of the total score. For Acid Mine Drainage projects, aquatic life is missing but naturally present and by having separate categories the assessment score would reflect that impaired function.
    b. The Colorado (U.S. Army Corps of Engineers, 2020) and Wyoming SQTs (U.S. Army Corps of Engineers, 2023) combined and re-weighted functional categories to remove dilution of geomorphology. Reach-Hydrology & Hydraulics = 30%; Geomorphology = 30%; Physicochemical = 20%; Biology = 20%. Perhaps this is a viable option for the OSAM.

2. Allowing the use of Aquatic Life Use (ALU) designations for impact sites may not be applicable depending on proximity and recency of assessment. The scope and scale of ALU designation is broader than reach-specific activities within compensatory mitigation and we encourage the same criteria/assessment be used for impacts and restoration to create parity between debits and credits. Otherwise, this approach could lead to over crediting and under debiting, or a functional loss.
    a. Another option is for a default score of *functioning* be applied to impact sites to allow applicants to skip assessment of physicochemical and biology functions, saving time and money while ensuring no net loss.

We recommend that the OSAM require the use of bankfull regional curve width equation for all projects. However, it is imperative that the regional curve represents the precipitation/runoff relationship of the project. One regional curve cannot be used for the entire state. Bankfull width changes more rapidly within a monitoring period than length. Practitioners commonly design a wider width than the final target and allow the channel to narrow during the monitoring years as vegetation becomes established on the streambanks. For example, they design a Rosgen C and let it evolve into an E.

The use of bankfull width to calculate area creates unintended and harmful incentives. For a given drainage area, a wider channel (more area per length) is not always more desirable. Including width in the credit calculation incentivizes practitioners to create wider, yet potentially lower functioning, projects. Additional pros and cons of using area as a unit of measure are discussed in Harman et al. (2021). We recommend that the IRT review this document while considering how to use area within the OSAM.

It was noted in the OSAM Narrative that one strength of an area-based unit of measure is that it can account for differences in stream size and that the use of area can "scale impacts and compensatory mitigation appropriately based upon the size of the aquatic resource…" As we note above and in Harman et al. (2021) there are numerous issues with this assumption. One way new SQTs work to ensure that out-of-kind mitigation is avoided when dealing with streams of different size is to note the flow type and Strahler Stream Order of the functional-foot score. Flow type is denoted as perennial (P), intermittent (I), or ephemeral (E). For example, it is possible to have identical SQT scores for an E1 (ephemeral, first order) and a P4 (perennial 4th order), but the functions are obviously not the same. Using this qualifier helps the IRTs make sure that restoration work completed on an E1 is not used to compensate for a loss in a P4.

Reference Curves

An important advancement made since the release of the first SQTs has focused on the reference curves used to score metrics. Early SQTs used regression curves that fit the scoring thresholds identified by the technical team yielding curves with variable forms. Based on SQT reviews by the U.S. Army Corps of Engineers Engineering, Research, and Development Center (ERDC), other agencies, universities, and practitioners, the logic was refined to use a series of linear relationships unless there is evidence that the relationship between the measured values and functional capacity are non-linear. This recommendation only affects the Bank Height Ratio reference curve in the OSAM.

Certain reference curves in early SQTs like the Tennessee SQT (TDEC 2018) feature a scoring "cliff," i.e. a steep drop off that results in a significantly increased or decreased score for a small change in the field

measurement. Similar curves are found in the GA SQT and in the OSAM, including the Entrenchment Ratio metric.

We recognize that time is of the essence for the development of the OSAM, so we encourage the IRT to review the reference curves in the recently released Wisconsin BETA SQT (WISQT SC, 2023). The rationale for the reference curve development is provided in their science support document (WISQT SC *In Draft*). Since the OSAM and WISQT are part of the Great Lakes Region, it is likely that many of these curves can be adopted into the OSAM.

Catchment Assessment

We encourage the IRT to examine the utility of including or requiring a watershed assessment in the OSAM to recognize that site selection is as important as the reach scale activities themselves.

Catchment Assessment Form: Like the GA SQT, the OSAM does not include a Catchment Assessment Form to account for stressors found in the watershed but outside of the reach being restored. The Catchment Assessment Form is an important component of the restoration potential process and is useful in identifying stressors or constraints that are outside the control of the practitioner.

We recommend the development and inclusion of a Catchment Assessment Form to assist practitioners with site selection (e.g., selecting sites with the greatest uplift potential given watershed conditions), and to identify stressors found in the watershed that are so severe as to call into question the perpetual success of the mitigation project. As a qualitative, decision support tool, the inclusion of this form would represent a minimal increase in time needed to complete the OSAM.

We recommend reviewing the recently released WISQT BETA version (WISQT SC, 2023) or the Wyoming SQT v2.0 (U.S. Army Corps of Engineers, 2023) for examples of Catchment Assessment Forms and related restoration potential instructions that could be used in Ohio.

Parameter and Metric Consideration

Recognizing that a desire of the Ohio EPA is to have a rapid and scaled-down version of a SQT, we encourage the IRT to examine the utility of including the following parameters and metrics to better assess stream functions affected by reach-scale activities. Note that additional parameters and metrics may be readily adoptable from other SQTs and applicable to Ohio streams but only what we consider key parameters and metrics for assessing reach-scale activities are listed below.

Reach Runoff: Reach runoff is a parameter within the hydrology functional category and is included in most SQT's. For the OSAM, perhaps reach runoff and floodplain connectivity are included in a combined category of hydrology and hydraulics. Reach runoff can be measured using rapid methods for two metrics: land use coefficient and concentrated flow points. Each metric is explained below.

Land use coefficient: The area-weighted land use coefficient metric quantifies the influence of land use on runoff potential within the lateral drainage area. This metric incentivizes the preservation of natural land uses and the conversion of developed or agricultural lands to more natural vegetation such as prairie or forest. The riparian vegetation parameter accounts for land cover change only within the riparian area that is proximal to the channel, while this metric characterizes the hydrologic impact of vegetation clearing or planting along hillslopes and headwaters draining laterally to the project reach.

This metric relies on desktop analysis using GIS or other mapping software and can be completed rapidly. Many existing SQTs include this metric and existing reference curves can be selected or modified by the IRT.

Concentrated Flow Points (CFP): A CFP is an ephemeral, erosional feature, such as a swale, gully, or other constructed channel or drainage feature that alters or concentrates runoff directly into a stream (e.g., ditches or storm drains). Stormwater runoff may contain pollutants from urban land uses such as parking lots, or sediment from eroding soils into receiving stream channels. The CFP metric accounts for the presence of CFPs and incentivizes their removal or treatment through best management practices and stormwater control measures such as a constructed stormwater wetland.

Two metrics are available to account for concentrated flow points. The first is a simple count metric, which requires no regionalization. Users simply count each existing CFP during the reach walk. The concentrated flow point index is more involved and includes quantifying the area of land (acres) draining to a CFP and also detailing the type of CPF (e.g., pipe versus grassed waterway). The CFP count metric is included in most SQTs whereas the CFP index is only in the Wisconsin BETA SQT (WISQT SC 2023).

Floodplain Connectivity: Reconnecting stream channels to their floodplains is perhaps the single most important outcome from stream restoration and we are pleased to see the inclusion of the Bank Height Ratio (BHR) and Entrenchment Ratio metrics. The OSAM user manual shows that BHR is measured from pool cross-sections. The BHR, for the purpose of grade control/floodplain connectivity, must be measured in the riffle. Further, we recommend requiring more than one riffle measurement to prevent gamesmanship. BHR is only measured in the pool for bank erosion estimates, e.g., the Bank Erosion Hazard Index.

Large Woody Debris (LWD): While the QHEI includes LWD as a component of instream cover, we recommend a greater focus on the importance of LWD as a separate parameter in geomorphology. LWD influences reach-scale sediment transport and hydraulic processes by: 1) creating sediment and organic matter storage areas; 2) increasing substrate diversity and habitat for benthic macroinvertebrates and cover for fish; 3) creating depth variability where large pieces span the channel and produce pools; 4) sometimes increasing local bank erosion and increasing sediment supply; and 5) providing boundary roughness and flow resistance.

There are two metrics available to quantify LWD: a rapid piece count where the user counts all of the individual pieces of LWD, and a LWD index that quantifies individual pieces as well as debris dams (the LWD index is included in the GA SQT). LWD dams have greater influence on a stream's geomorphology and are scored higher. Both metrics can be quickly completed by stream professionals, and we generally recommend the LWD index over just a piece count. For the initial version of the OSAM, the reference curve from the WISQT could be used. Additional data collection efforts in the Great Lakes Region for LWD and bedform diversity are underway. These additional data sets will likely revise the WISQT and MN SQT reference curves. We are happy to share the data and new recommendations for reference curves as they evolve.

Lateral Migration: While the QHEI includes bank erosion as a component of metric 4 bank erosion and riparian zone, we recommend a larger focus on the importance of lateral migration as a separate parameter in geomorphology. Sediment is the primary pollutant of America's waterways and reducing excessive sediment inputs is a primary goal of many reach-scale restoration projects.

There are three metrics available to quantify lateral migration: percent streambank erosion, percent streambank armoring, and dominant BEHI/NBS. Dominant BEHI/NBS is the bank erosion hazard index and near bank stress combination that describes most of the eroding banks within the reach. Alternative methods that characterize the magnitude of bank erosion can be used instead of BEHI/NBS method. If included in the OSAM, these metrics typically require no regionalization.

Riparian Vegetation: The OSAM's current riparian vegetation metric, buffer width, is a suitable and rapid method to account for the presence or absence of a vegetated buffer along stream reaches. Although the metric is included for scoring within the QHEI as well, a quality riparian buffer is a critical component of stream health. We encourage the IRT to consider other vegetation metrics that could accompany a buffer measurement to better characterize floodplain vegetation, while still being completed rapidly. Example metrics include:

- Coverage estimates (e.g., tree canopy, shrub, and/or herbaceous)
- Tree maturity (e.g., diameter at breast height or basal area)
- Tree density (e.g., stems per acre)

These metrics can be further stratified by whether the species present are native to Ohio. If included, these metrics require data from forestry or similar datasets in Ohio, from existing reference curves (WI, MI, MN, or others), or developed using the collective expertise of the IRT.

Bedform Diversity: The OSAM includes the bedform diversity parameter with two metrics: pool spacing ratio and percent riffle. Other SQTs that include bedform diversity include a third parameter: pool depth ratio. Pool spacing and percent riffle alone are not sufficient for characterizing bedform diversity. We strongly recommend including the pool depth ratio as well, unless pool depth is included in the HHEI or QHEI (we are not familiar with these assessments). If pool depth is included, and if other in-stream habitat assessments are included, perhaps the bedform diversity parameter could be deleted.

Biology: For biological assessment, we lack the expertise to review the OSAM but hope that it includes all relevant aspects of the "ambient biological monitoring of fish and macroinvertebrate assemblages to assess the quality of streams in Ohio" including macroinvertebrates, fish, and salamanders at appropriate sites. It seems that only macroinvertebrates are assessed at a site with a DA between 1 -10 sq.mi. and only fish are assessed at sites DA > 10 sq.mi. and salamanders are not included.

Debit Determination

The OSAM calculates functional uplift and loss within the same spreadsheet tool. The original version of the WY SQT also included a debit calculator within the SQT spreadsheet. After implementing version 1.0 of the WY SQT they learned that having both methods in the same spreadsheet tool caused problems, so they created a version 2 with separate tools (U.S. Army Corps of Engineers, 2023). The other SQTs (except Georgia) have a debit calculator that uses the same parameters, metrics, and reference curves as the SQT but in a separate spreadsheet tool. This creates several advantages. First, for third party mitigation, the mitigation location is different than the impact location. IRT's have found it's easier to manage third party mitigation separate from the impact site, especially since mitigation sites are becoming large (many reaches). Second, and related to number one, third party mitigation will have a different permit process and number for the mitigation site and the impact site. We recommend that Ohio EPA review the WISQT's debit calculator and corresponding chapter in the user manual to get a better idea of how this approach might benefit the OSAM (WISQT SC, 2023).

Technical References

Rosgen has publications in U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS), National Engineering Handbook, Part 654 that are open source you can provide in addition to the Wildland Hydrology links to purchase materials.[1]

Conclusion

We recognize the thoughtful approach that Ohio has taken in developing the OSAM and applaud the effort to update the state's mitigation standards. We also recognize that time is of the essence for developing this tool. All of the above suggestions and recommendations can be found in the WISQT user manual and science support document (WISQT SC 2023; WISQT SC *In Draft*). This SQT would provide Ohio EPA with a more current and more robust tool than the GA SQT, exemplifying the best available science.

SQTs are iterative tools that benefit from regular review and updating, and as Ohio works to finalize and release the OSAM, we encourage developing a process to ensure that the tool accounts for the full suite of stream functions gained from restoration or lost from permitted impacts.
Thank you again for the opportunity to comment.

Sincerely,

Paxton Ramsdell

Paxton Ramsdell,
SQT Regionalization Manager

William Harman

Will Harman, PG
Principal Geomorphologist

[1] https://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=17833.wba

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FLOW
Friends of the Lower Olentangy Watershed

December 8th, 2023

Joni Lung
Ohio EPA, Division of Surface Water
P.O. Box 1049
Columbus, OH 43216-1019
Joni.Lung@epa.ohio.gov
dsw_rulecomments@epa.ohio.gov

RE: Comment on Stream Mitigation Proposed Change

Dear Ms. Lung:

The Friends of the Lower Olentangy Watershed (FLOW) objects to the lack of detail in the proposed stream mitigation rule.and the fact that it was proposed by a single stakeholder without any public evaluation.

FLOW has not had sufficient time to notify our Science Committee of the changes and get feedback on how the proposed changes will potentially affect the future water quality of the Olentangy Watershed. We hope that you will consider the comments by MBI.

We anticipate submitting more comments during the secondary comment period. Please keep us updated on your schedule.

Sincerely,

Laura Fay

Laura Fay
Chair, Science Committee
Friends of the Lower Olentangy Watershed

Ohio EPA, Division of Surface Water
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December 8, 2023

Re: November 2023 IPR Draft Rules – Section 401 Water Quality Certifications Rules (OAC (Ohio Administrative Code) chapter 3745-32)/Ohio Stream Assessment Method (OSAM)/Headwater Macroinvertebrate Index (HWMI)

To Whom It May Concern:

On behalf of Midwest Biodiversity Institute (MBI) and our staff of experienced aquatic ecologists and researchers, I submit the following comments in response to the Ohio EPA Division of Surface Water's (Agency or Ohio EPA) Interested Party Review (IPR) of the Draft Rules regarding Section 401 Water Quality Certifications Rules (OAC 3745-32). MBI is a not-for-profit organization specializing in applied research with aquatic bioassessments, water quality standards, monitoring and assessment, and state bioassessment program development. MBI has conducted biological assessments of numerous Ohio river and stream sites and reaches under Level 3 Project Study Plans (PSPs) and the Ohio Credible Data Law and Regulations. As such, Ohio EPA can consider this data and the ensuing assessments of that data for revising and verifying existing aquatic life use designations, affecting impaired waters listings, and evaluating mitigation projects.

Our comments focus on the proposed Ohio Stream Assessment Methodology (OSAM), the proposed Headwater Macroinvertebrate Index (HWMI) and the application of related assessments in multiple programs of the Agency. MBI supports the general intent to provide for function and ecological lift in mitigation projects. We also support accurate, defensible, and consistent bioassessment tools, indicators, and indices that are applied to small headwater and other streams. However, we have significant concerns about OSAM and HWMI and the process for adopting these methods, including:

- The sole reliance on ***one*** biological group in mitigation assessments, and the regulatory and management consequences thereof.
- That although presentations by the Agency prior to the Early Stakeholder process indicated **three** options under consideration, we believe the option proposed in the Interested Party Review will result in significant reductions in monitoring quality and drastically limit the number of streams to be monitored.
- There is no assurance from the Agency these approaches (OSAM and HWMI) would not be applied to other programs Ohio EPA is responsible for, such as Aquatic Life Use and Use Attainability Analysis.

MBI also takes issue with the process used by the Agency in the promulgation of these rules. From the ESO Comments provided to us by the Agency, the Division received a recommendation for major changes to the mitigation program and the assessment of Ohio streams from a stakeholder in August 2023. It appears that Ohio EPA accepted that proposal a most verbatim. However, MBI and others who

provided ESO comments were not made aware of this until the draft rules were published in November. This change is fundamental and related to many Ohio EPA decisions on implementing the Clean Water Act in Ohio. Consequently, MBI had requested an extension of the deadline for comments on November 21, to more adequately provide review of this new approach. The extension request was nevertheless denied. While we recognize that Assistant Chief Joby Jackson's response to our request referred to "additional opportunities for public input on the rulemakings as we move forward" and a "comment period and public hearing in addition to the JCARR proceedings," our strong preference was to have more opportunity to evaluate and comment during the August to December period regarding the "SQT lite" approach.

We recognize that Ohio EPA is on a tight timeline because of HB 175 and its requirement that policies be in rules by July 2024. However, this rule package contains significant changes related to stream mitigation, specifically the introduction of a new stream mitigation model, and should not be hastily codified without full stakeholder review. If the time frames required by the code are a concern, we would strongly advise using tools developed in and familiar to Ohio practitioners, and currently in use today. This would provide time for a full comparison of Ohio EPA 2016, SWVM, and the SQT lite methods and ample vetting of OSAM, and *then* (when the full analysis is complete) to consider this drastic change.

Please see our attached general and conceptual comments on the rule package. As always, we appreciate the Agency's consideration of our perspectives and opinions. If you or others in the Agency have questions or would like to discuss these issues further, please do not hesitate to contact me at tdougherty@mwbinst.com.

Sincerely,

Trent A. Dougherty
Executive Director
Midwest Biodiversity Institute
4673 Northwest Pkwy
Hilliard, OH 43026

Attachment

Specific Comments on November 2023 IPR Draft Rules – Section 401 Water Quality Certifications Rules (OAC chapter 3745-32)/ Proposed Ohio Stream Assessment Method and Headwater Macroinvertebrate Index

Midwest Biodiversity Institute
4673 Northwest Parkway
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General and Conceptual Comments
Proposed Ohio Stream Assessment Method and Headwater Macroinvertebrate Index
and related assessment methods

Aquatic Life Use (AQLU) assessment: The proposed limited methods should not be used to conduct an AQLU assessment for any purpose other than within the strict confines of determining mitigation outcomes. We maintain it is not sufficient to do even that, because mitigation goals should be ultimately based on aquatic use attainment and protection. However, the Agency seems to be focused on a limited approach in terms of a macroinvertebrate only HMFEI/HWMI perspective.

Unverified AQLUs: While the Agency leaves the option to follow the current AQLU, we have concerns regarding unverified stream. At least 20% of the AQLUs in the current WQS are unverified and default WWH. Many of these are nested among other verified AQLUs many of which were redesignations to EWH and CWH. Leaving such streams as default WWH will most likely result in erroneous outcomes if the default use is blindly followed for mitigation purposes. The same is true of undesignated streams of which there are likely as many as the number of unverified streams. Based on our experience performing mitigation monitoring for the current banking entities, being constrained by inadequate methodologies, such as HMFEI/HHEI alone, would likely overlook several unverified CWH and even EWH streams.

Use Attainability Analysis: The proposed limited methods should not be used to conduct any type of Use Attainability Analysis (UAA) to either revise an existing designated AQLU or assign a new use for an undesignated stream. The HMFEI/HWMI approach is limited and inadequate for this purpose.

Insufficient review time and opportunity: There simply has not been sufficient time to review the HWMI hence accepting it *carte blanche* is too much to accept at this moment in time. In addition, if this is a new method that the Agency is proposing to adopt then the appropriate methods referenced in the WQS and user manuals should be updated. The Agency has simply not granted sufficient time to review and allow meaningful public input, offer constructive criticisms, and formalize what is effectively a major revision to the biological assessment methodologies. Since August 2023, the review and interaction seem to have been limited to the Agency and the interested stakeholder who proposed the "SQT lite" approach.

Hester Dendy samplers (HDs) in headwaters: The claim about HDs not being used at drainage areas less than 20 sq. mi. is not true. The traditional cutoff was around 10 sq. mi. Based on knowledge and

involvement of former Ohio EPA employees now at MBI, the Agency implemented this in the 1990s to increase sample site coverage in the watersheds and increase the number of small drainage area sites to support the TMDL (Total Maximum Daily Load) approach. Because it included the dual fish/bug assemblage approach and the Agency felt comfortable with the qualitative narratives as a standalone in lieu of the ICI (Index of Catchment Integrity) in such small streams, this approach has become commonplace in Ohio surveys since that point. However, the refusal of the Agency to adopt it then has only led to the mixed approaches we now see as the Agency tries to simplify methodologies to avoid "burdensome" monitoring requirements. We believe the monitoring is a small portion of the cost for projects, and we urge the Agency to provide estimates of this and other relative costs, such as land acquisition, design, construction, and legal costs. We argue that limiting monitoring allows stakeholders not wanting the correct results to avoid them by not monitoring the proper indicators in the first place. Improper implementation of HB 175 through an HWMI approach as proposed could force this change on mitigation providers who more completely and accurately monitor all appropriate indicators.

We are concerned that if this approach is extended to other programs under the Clean Water Act, many EWH, CWH, and WWH streams are going to be under protected. A current example is the unnamed tributary to Coyote Run (Mad River watershed) that MBI analyzed for the Mud Run Conservancy in Clark County. The collection of all appropriate indicators (i.e., fish, macroinvertebrates, QHEI (Qualitative Habitat Evaluation Index), HHEI (Headwater Habitat Evaluation Index)) resulted in a CWH recommendation for this stream. Collection of the more limited data in the current proposal would have been unlikely to identify and recommend this aquatic life use. We are concerned a reduced approach could contradict the federal mandate to preserve existing uses.

Limited opportunity to review SQT lite and OSAM: While the Agency requested comments in June 2023, it appears it only relied on the input of the Stream + Wetland Foundation's (S+W) recommendations of August 4, 2023, proposing the SQT lite and OSAM as the functional assessment tool. We are not aware of additional interaction with other stakeholders until the publication of the November 2023 draft rules. Ohio EPA proceeded and published the draft rules without an indication this was the Agency's work or preference. It does not appear to be based on the Agency's own scrutiny of the SQT lite. We strongly encourage the Agency to develop its own expertise in stream restoration and policies and not rely on another private interest party to this extent.

Even with this limited opportunity for review, we did identify some unintended consequences that have not been fully thought through, we believe, by the Agency. For example:

- We note Josh White's (Land and Water Solutions) ESO comments on SQT lite of January 17, 2023, regarding states such as Pennsylvania's and Tennessee's problems with SQT implementation and the need to modify such an approach. Modifications, as Ohio EPA knows, become very difficult and slow when the rules process is involved.
- Any mitigation bank that would make efforts to do more accurate stream quality determinations would be at a competitive disadvantage – equating to both an economic and ecological loss.
- The possibility that this could force changes to the Ohio Water Quality Standards (WQS) via HB 175 without proper public review and input, leading to inaccurate assessment of headwater streams in Ohio.

Hydrology: The hydrology component was dropped, without explanation, from the Stream Functional Pyramid model of Harmon (2012) in Figure 1 of the proposed Ohio EPA's OSAM document. We are concerned because hydrology is a major limiting factor on stream health in areas with stormwater impacts and artificial drainage. The National Academy of Science in a study of stormwater management

in the United States concluded that altered flow regimes were a major cause of aquatic life impairments (NRC 2009). Ohio EPA's Integrated Report cites "Hydromodification, or flow alteration," as "one the major causes and sources of water quality problems" in Ohio (Ohio EPA 2022; page A-9 and Exhibit 1, "Stream Physical Integrity Processes and Assessment"). Careful selection and assessment of mitigation sites in areas affected by stormwater and artificial drainage /hydrological stressors is very important. Conditions could limit long-term ecological lift, even where habitat quality is sufficient. It is notable that other Clean Water Act programs need to address hydrology. For example, see Ohio EPA's July 2022 Ohio EPA stormwater guidance on ephemeral stream impacts related to stormwater management at https://epa.ohio.gov/static/Portals/35/401/MitOptions-EphemeralStreamImpacts.pdf.

The OSAM cites the document "U.S. Army Corps of Engineers, Savannah District, User Manual & Scientific Support for the Georgia Stream Quantification Tool, Version 2.0 (October 2021) as its main reference. Hydrology is referred to as a "Functional Category" in this USACE document. However, hydrology, although very important to stream quality, is not further discussed in this document. As stated, in the "Ohio Stream Assessment Method Supporting Information, 1 November 2023," hydrology is eliminated from the Stream Functional Pyramid in Figure 1. Our opinion is that where present or future hydrology is not considered, mitigation projects could fail to achieve lift due to the influence of the present or future hydrology. Please explain why the hydrology component was removed, and why it would not be a consideration in stream restorations. Otherwise, we strongly encourage inclusion of hydrology as a component of the functional pyramid and an explanation of how it would be addressed.

Habitat Sampling as Part of OSAM: We suggest that collection of HHEI or QHEI data should be conducted by a Level 3 QDC, qualified under Ohio's Credible Data rules, to ensure high quality data is being collected. Furthermore, we disagree with the bright line cutoffs implied by the document of < 1 sq mi, 1-3 sq mi and > 3-20 sq mi for collection of habitat data. We suggest that at all sites < 3 sq mi, there should be an attempt to collect both types of habitat data (QHEI and HHEI), unless the stream is determined to be ephemeral. Measures of ecological lift will be dependent on the potential for steams to support aquatic life that can vary from multiple classes of Primary Headwater streams to MWH, WWH, CWH and EWH aquatic life uses. The cost differential to collect HHEI and QHEI should be minimal.

Biological Data Collection: We find the guidance for the collection biological data to be under-protective. Based on the collection of QHEI/HHEI data at sites, other than truly ephemeral sites, those where the QHEI indicates MWH or better conditions should have fish data collected. Ohio and other states collect both fish and invertebrate data (multiple organism groups) because they often respond differently to the suites of stressors that might occur in a stream. We did a quick query of the Ohio EPA and MBI data for sites < 20 sq mi where there was both fish and macroinvertebrate data were collected (Figure 1). Although they are clearly correlated and there are many cases where fish and macros will agree on attainment status or narrative categories, there are numerous cases where one group or another would be attaining when the other would be impaired. Numerous studies support this assessment. For example, Johnson et al. (2006) found in a study with multiple organism groups that macroinvertebrates and diatoms responded strongly to land use and nutrient enrichment stressors, while fish and aquatic macrophytes responded more strongly to habitat/hydromorphology gradients. Ohio EPA biologists can cite numerous other scenarios where one group (fish or macros) was more sensitive to a given suite of stressors. The bottom line is that reliance on a single organism group (either one) creates error in measuring the success of mitigation projects as well as other stream assessments.

Length of Ongoing Monitoring at Mitigation Sites: The document indicates that biological monitoring should occur before project construction and for an ongoing period afterwards, but this period is not specified; we suggest a minimum of 10 years to allow full recovery to occur.

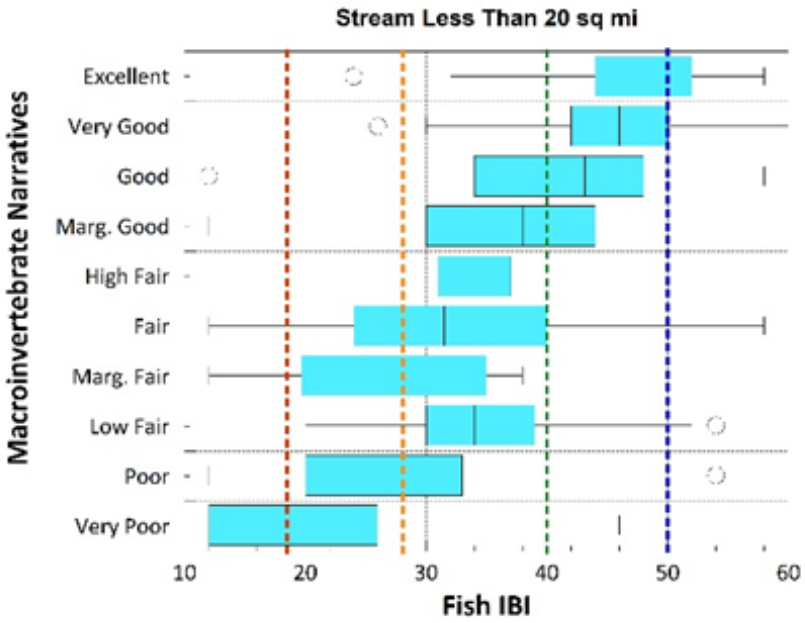

Figure 1. Box and whisker plot of fish IBI scores and narrative macroinvertebrate assessment of Ohio site less than 20 sq mi with data collected at the same river mile. Vertical lines represent general narrative cutoffs for IBI scores.

Cumulative and Upstream Impacts: How will the rules address ensuring that future cumulative impacts do not occur? What type of assurance is there that mitigation sites will not be affected by future cumulative and other upstream impacts in an area? For example, if a development site is "traded" for mitigation sites elsewhere in a developing area, are there assurances that nearby and upstream sites won't be considered and used as development sites in the future, potentially affecting the success of a mitigation? Such future stressors could lead to cumulative impacts from future development and put the stream mitigation at risk of decline.

Data and Availability: What data collected in the development and mitigation of sites will be available to the public to review? What site lists, plans and other documents will be in place for Ohio EPA or outside parties to keep track of development and mitigation sites into the future? We recommend these be available on Ohio EPA's website. We think it is critically important to make any monitoring data readily available to the public, helping make the program more successful. How will the agency track the use and assess the success of mitigation sites? It would be useful to provide concrete examples of precisely how the new approach will differ from the existing mitigation requirements. Such examples should also cover the range of ALUs and drainage areas.

HWMI: As described in an above comment, while the HMWI may be a robust surrogate for Level 3 narrative macroinvertebrate data, the outstanding issue relative to the proposed mitigation methodologies is the reliance on a single organism group to measure ecological lift relative to the Ohio WQS. There will be numerous cases where macroinvertebrates identify ecological lift, but these sites are still precluded from attaining an appropriate aquatic life use because fish are limited by existing or future stressors. The same issue would exist if only fish were used as an indicator (which is the proposed methods identify for streams > 20 sq mi). An analogy would be to only examine demand parameters from point sources where metals were also a potential stressor. The major costs of stream restoration originate from actual construction costs (e.g., often at least several hundred dollars and more per linear

foot), thus it seems unjustified or short-sighted to try to reduce "monitoring" costs where the risk of misidentifying ecological lift or failure to identify key limiting stressors may be significant.

Setting a standard for HMFEI only (<1.0 sq mi), HWMI only (1.0 to <20 sq mi) and fish IBI only (> 20 sq mi) does not guarantee the biological integrity would be achieved or maintained which should the goal for any mitigation site. For example, MBI has sampled in the Interior Plateau ecoregion and found streams under 2.0 sq. mi. that meet WWH standards, and inversely, some streams > 1.0 sq. mi. have PHWH characteristics. These arbitrary drainage areas can result in misclassification of streams.

For small PHWH streams there is no mention in OSAM for salamander surveys. For these small streams salamanders are the main vertebrate predator. If streams being mitigated have salamanders, what measures will be in place to protect habitat loss for these species?

Methods for evaluating PHWH vs WWH streams and the evaluation of each may include HHEI, QHEI, salamander, HMFEI, Qualitative Narratives, ICI evaluation, and IBI. These methods have all been developed and should be used to ensure maintaining the biological integrity in a standard approach.

Development of a new index, HWMI, is an interesting addition to the Ohio methods. However, a much stronger peer review of HWMI should be conducted. The extremely short time offered for review (30 days) is inadequate and would be rejected in other circumstances. Some of the metrics seem a bit arbitrary. Again, using all methods available instead of just HMFEI, HWMI and IBI does not seem to guarantee biological integrity.

Drainage Use proposal: Please see MBI's report entitled "Assessment of the Biological Assemblage Condition of Small Headwater Streams in Ohio" MBI/2011-6-6 located at: https://midwestbiodiversityinst.org/publications/reports/assessment-of-the-biological-assemblage-condition-of-small-headwater-streams-in-ohio This included a statewide tally of EWH, CWH, WWH streams by drainage area on a statewide basis and provides some context to our concerns that the macroinvertebrate only approach may not identify streams with high potential and in particular the CWH use in small head water streams. This analysis was done in response to the proposed Ohio EPA Drainage Use, which would have affected streams up to 10 sq. mi. It effectively proposed to eliminate the biocriteria from streams <3 sq. mi. It was dropped as a concept by Ohio EPA, although this report is now 10+ years old, the conclusions remain.

Determination of ephemeral stream status: We recognize the Agency is proposing to add the word "jurisdictional," apparently recognizing HB 175 obligations. However, we believe this definition will be very difficult, if not impossible, to apply consistently. Ephemeral or episodic flow is very much an arbitrary construct, and therefore we encourage the use of biologically based methods that Ohio EPA has used in the past, particularly on headwater streams. We note that these definitions of permanent, intermittent, and ephemeral streams were in the 2018 general stormwater permit, before HB 175.

Federal protocol for jurisdictional: Because the federal definition and protocol for assessment of an ephemeral stream has not been established, how will Ohio oversee streams that are still classified as ephemeral and jurisdictional by the US Army Corp of Engineers until the time they are classified as not jurisdictional?

References

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Northeast Ohio
Regional Sewer District

December 7, 2023

Submitted via email to dsw_rulecomments@epa.ohio.gov

RE: Interested Party Review – Section 401 Water Quality Certification Rules (OAC 3745-32)

To Whom It May Concern:

The Northeast Ohio Regional Sewer District (NEORSD) appreciates the opportunity to participate in Ohio Environmental Protection Agency's (EPA) interested party review for the proposed changes to Section 401 Water Quality Certification Rules in Ohio Administrative Code (OAC) 3745-32. NEORSD is a ratepayer-funded political subdivision of the State of Ohio that is responsible for wastewater treatment facilities, regional stormwater management, and interceptor sewers across Cleveland and 62 suburban communities. Our mission is to provide progressive regional management of sewage and stormwater that protects the environment and serves our community. NEORSD is committed to improving water quality and the environment in Northeast Ohio and supports regulations that protect our valuable water resources within the state. NEORSD's Regional Stormwater Management Program has identified at least $1.3B in needed investments, of which $112M has already been spent, to address flooding, streambank erosion and water quality issues throughout its service area.

NEORSD generally supports the draft rules, which establish stream mitigation requirements, including a new crediting and debiting model, and performance standards for impacts to perennial and intermittent streams covered under a Section 401 water quality certification. NEORSD supports efforts by Ohio EPA to establish an assessment tool that will consistently evaluate stream losses and gains related to projects and mitigation sites. Knowing what to expect is a crucial component when planning and designing stream projects. However, there is one component of the draft rules that causes concern, and therefore NEORSD offers the following comments for Ohio EPA's consideration.

The proposed draft rule 3745-32-04 establishes compensatory mitigation requirements for streams that are similar to those established for wetlands under OAC 3745-1-54. However, Section (B)(4) also requires additional mitigation requirements through the use of a "temporal loss multiplier" in certain situations. Specifically, Section (B)(4) states: "*A temporal loss multiplier of 1.5 will apply for credits purchased through an in-lieu fee program or when permittee responsible mitigation will not occur concurrently with the approved impacts.*" While NEORSD recognizes the importance of prompt mitigation to limit any temporary loss of streams, mitigation bank credits are rarely available, especially in urbanized areas in the USACE Buffalo District. Unfortunately, the lack of available mitigation bank credits is not within the control of permit applicants. In these situations, permittees are forced to choose an in-lieu fee program (ILF) or permittee-responsible compensatory mitigation (PRM). Further, it can be challenging to perform PRM before or

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concurrently with the approved impacts, particularly for projects located in urban areas which lack sufficient room to perform the mitigation onsite and additional site(s) would need to be secured.

Therefore, NEORSD requests that Ohio EPA add language allowing this requirement to be waived for public projects whose purpose provides a water quality or environmental benefit to the watershed. This will allow public sector permittees implementing environmentally beneficial projects the flexibility to use their limited public funding in ways that best support the environmental restoration of the region. Providing the ability to waive the temporal loss multiplier to public entities does not relieve the permittee from the base required compensatory mitigation but will allow public entities - like NEORSD - to continue allocating ratepayer funding to regional stormwater management projects throughout Northeast Ohio.

We appreciate your consideration of these comments and welcome the opportunity to discuss them further. If you have any questions or concerns, please contact me at (216) 881-6600 or dreyfuss-wellsk@neorsd.org or our Legislative Affairs Manager, Danielle Giannantonio at (216) 409-9715 or giannantoniod@neorsd.org

Kind Regards,

Kyle Dreyfuss-Wells
Chief Executive Officer

NSPE-OH OHIO SOCIETY OF PROFESSIONAL ENGINEERS

December 1, 2023

Rules Coordinator
Ohio EPA, Division of Surface Water
P.O. Box 1049
Columbus, OH 43216-1049

Re: NSPE-Ohio's Interested Party Comments – Section 401 Water Quality Certifications Rules (OAC chapter 3745-32)

To Whom It May Concern,

The Ohio Society of Professional Engineers (NSPE-Ohio) appreciates the opportunity to provide Interested Party Review comments on the Ohio EPA's draft rule language for Ohio Administrative Code (OAC) Chapter 3745-32 concerning Section 401 Water Quality Certification (WQC).

NSPE-Ohio is the single, most powerful voice representing Ohio's professional engineers. On behalf of our leaders' professional opinions – which reflect engineering principles, a working knowledge of Ohio's engineering laws and rules, and a desire to protect and improve our state – we would like to provide recommendations for additional changes to improve the Ohio EPA's draft rules. We offer two suggestions in response to the proposed rules under OAC 3745-32:

1. NSPE-Ohio recommends that the Ohio EPA explicitly state that a professional engineer be in responsible charge of 401WQC projects by including a direct reference to Chapter 4733 of the Revised Code.

The regulatory intent of the Ohio EPA's proposed rules for OAC 3745-32 and the intent of the 401 WQC program is to ensure that water quality is protected and that the state's water quality standards are maintained. To ensure that these standards are met, NSPE-Ohio recommends that the Ohio EPA add language stating:

> *"In accordance with Chapter 4733. of the Revised Code, a professional engineer must be in responsible charge of all 401 certification designs projects."*

Stream restoration and/or mitigation design projects are dominantly engineering based and require, but are not limited to, the disciplines of hydrologic, hydraulic, sediment transport and geotechnical engineering to assess and restore the physical condition of streams. With Chapter 4733. of the Revised Code in effect, NSPE-Ohio believes that inserting our suggested language will ensure that professional engineers – who are required to be in responsible charge of these projects – are properly identified.

NSPE-Ohio recommends that this language be added to proposed rule **3745-32-03**, but we would be happy to work with the Ohio EPA on alternative placements if necessary.

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2. NSPE-Ohio recommends the removal of the two rapid habitat stream assessment methodologies from the new stream mitigation model, the Ohio Stream Assessment Method (OSAM): the Qualitative Habitat Evaluation Index (QHEI) and the Headwater Evaluation Index (HHEI).

While NSPE-Ohio acknowledges that the QHEI and HHEI are existing assessment tools and are not directly mentioned in the Ohio EPA's proposed rule language. However, we find it necessary to raise our concerns with these two assessment tools as they were specifically referenced during the development in the newly created OSAM model that was incorporated into this rulemaking process and frequently cited by name throughout the proposed rule language.

The main issue NSPE-Ohio has with the QHEI and HHEI methodologies is the large emphasis placed on qualitative, subjective criteria/performance standards. **NSPE-Ohio recommends that the Ohio EPA use more quantitative, objective assessment methods that are supported by peer-reviewed research.** The current standards in place, which will be continued in the OSAM tool, require a professional engineer in responsible charge of a design project in a position to oversee a project that may not be using prudent engineering design procedures. For example, in the case of 401 WQC projects, a project could potentially be approved based on the criteria outlined in the QHEI and HHEI methodologies simply because of the subjective criteria needed to satisfy the guidelines. A professional engineer using qualitive and objective measures, however, could deny that same project because of it interferes with their use of proper engineering judgement. NSPE-Ohio also notes that if an alternative, qualitative assessment tool was used to approve 401 WQC projects, then it should simultaneously be capable of determining the physical condition of streams (i.e., are streams in a naturally stable or unstable condition).

On behalf of NSPE-Ohio members, we thank you again for the opportunity to provide comments on these crucial rules, and we would like to reiterate that our recommendations are made with the full support of the NSPE-Ohio Board of Directors. We appreciate the diligence and hard work of the Ohio EPA in the development of these rule packages and the OSAM tool. We are happy to further discuss our concerns should you have any questions throughout this process at our office at (614) 223-1144 or by email at ospe@ohioengineer.com.

Sincerely,

Dennis Irwin, PhD, PE, FNSPE
President

Travis L. Rhoades, PE
Vice President, Legislative & Government Affairs

December 8, 2023

VIA EMAIL ONLY TO dsw_rulecomments@epa.ohio.gov

Rule Coordinator
Ohio EPA, Division of Surface Water
P.O. Box 1049
Columbus, Ohio 43216-1019

Re: The Ohio Coal Association Comments concerning the Section 401 Water Quality Certifications and Wetland Water Quality Standards Rules (OAC 3745-1 and -32)

Dear Rule Coordinator:

The Ohio Coal Association (OCA) appreciates the opportunity to submit this letter in response to the request for comments concerning the Interested Party Review of the Section 401 Water Quality Certifications and Wetland Water Quality Standards Rules (OAC 3745-1 and -32). Our hope is that these comments will provide you with some relative feedback to the potential issues as you develop draft rule revisions.

The Ohio Coal Association is a trade organization that adheres to the best interests of the coal mining companies who operate in the State of Ohio. Our coal companies all utilize various Ohio EPA Rules, where applicable, to obtain permission for fills and activities that impact aquatic life, habitat, and waters of the State. It is through the years of application of these rules and working with Ohio EPA personnel, both directly or through our respective coal operators and their consultants, that we are submitting these concerns. In efforts to create a focused value we have provided you with a straightforward reaction to areas in need of improvement with this program and draft rules, moving forward. It is with this persevering experience that we share our perspective and honest recommendations.

Again, thank you for the opportunity and your sincere consideration of OCA's comments and specific factual information. Feel free to contact me with any questions you may have.

Sincerely,

Paul Leist
OCA Environmental Committee Chair

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Ohio Coal Association (OCA) Interested Party Review (IPR) Comments – Section 401 Water Quality Certifications (WQC) and Wetland Water Quality Standard Rules (OAC 3745-1 and -32)

The OCA is supportive of the OEPA's move towards evaluating stream *functions & services* by assessing and comparing the existing and restored stream geomorphic conditions, and using stream *area* rather than stream linear feet to properly scale stream impacts within watersheds. These two significant stream assessment improvements are incorporated within the *Ohio Stream Assessment Method* (OSAM), Version 2.1, and help align OEPA stream impact and restoration/mitigation assessments more with the 2008 Federal Compensatory Mitigation Rule. That is, stream assessments are based upon the stream geomorphic (physical) condition and the associated biological & chemical processes (functions), and that stream biota are directly dependent upon both the stream geomorphic condition and the associated biological & chemical processes. This substantiates that the OEPA's "biology only" stream assessment approach is incomplete, misleading, produces improper outcomes, and does not meet the objective of the Clean Water Act (CWA), which is to *restore* and maintain the chemical, physical, and biological integrity of the Nation's waters.

Although OCA supports this move towards a functions & services approach, the OCA has questions, concerns and recommendations regarding these IPR draft stream and wetland rules, rule references and OSAM Version 2.1. These are provided below.

Draft Stream Rule (3745-32) Comments

1. Proposed draft rule O.A.C. 3745-32-01 in paragraph (AA)(2)(e) references the "Guidelines for Stream Mitigation Banking and In-lieu Fee Programs in Ohio," version 1.1 (March 2016). Referred to as the *2016 Guidelines*.
    a. These 2016 Guidelines were developed by the Ohio IRT "behind closed doors" without any input from stakeholders. The agency should grant more than the minimum period of time for comments on this 43-page manual, including the ambiguous, subjective performance standards contained in Section 8 therein.
    b. The 2016 Guidelines' arbitrary set of stream impact and mitigation guidelines and criteria directly conflicts with the Ohio Stream Assessment Method (OSAM), Version 2.1. The OSAM Version 2.1 identifies the hydraulic, geomorphic and biologic functional measurement methods within the Existing and Proposed Condition Assessments to holistically determine ecological success for stream restoration/mitigation. Now the OEPA seems to be proposing a second ecological success standard or set of criteria by also referring to the "2016 Guidelines" that were developed in the behind closed doors.
    c. As just one example of the risk of abuse of discretion that will follow from the wholesale incorporation of the performance standards in the 2016 Guidelines, Section 8 states: "Full performance goals for streams will be based on measures of, chemical, physical, and/or biological integrity. This discrete insertion of "and/or" permits agency staff to ignore the physical and focus entirely on the biological and will only lead to more confusion and misunderstanding for stakeholders and create endless opportunities for the OEPA to manipulate stream impact and restoration/mitigation criteria.
    d. OCA also strongly objects to the 2016 Guidelines Section 8 in advancing the QHEI score as the mitigation standard for stream habitat restoration.
    e. The OCA strongly recommends that the OEPA delete any and all references to the 2016 Guidelines or grant more time for comments.

2. Apparent errors in proposed draft rule O.A.C. 3745-32-04 impede complete and meaningful comments and deprive commenters due process.
    a. O.A.C. 3745-32-04 in paragraph (B)(2) refers to "paragraph (C)(1) of this rule" three times, but there is no paragraph (C) or (C)(1) in proposed draft rule O.A.C. 3745-32-04.
    b. O.A.C. 3745-32-04(B)(8)(b)(iii) in the draft rule refers to "paragraph (E) of this rule", but again, there is no paragraph (E) in proposed draft rule O.A.C. 3745-32-04. Further, this reference implies that there is a paragraph (D) in this rule, but a paragraph (D) does not exist.
    c. The OCA reserves its right for further comment on these incomplete Interested Party Review (IPR) draft proposed rules and will provide further rule comments and other associated comments once this rule is corrected and properly written, and the OCA is provided sufficient time to review and provide additional written comments to the OEPA (i.e., 3 weeks minimum).

3. **Temporal loss**. Draft proposed rule O.A.C. 3745-32-04(B)(4) discusses that compensatory mitigation debit and credit amounts shall be calculated using OSAM. It then states that a temporal loss multiplier of 1.5 (a 50% increase) will apply for credits purchased through an in-lieu fee program (ILFP) or when permittee responsible mitigation (PRM) will not occur concurrently with the approved impacts.
    a. A flat 50% temporal losses multiplier for ILFP and PRM is outrageous and this enormous amount of temporal loss cost was never discussed in any of the Early Stakeholder Outreach (ESO) discussions.
    b. Regarding PRM temporal loss, how is concurrently defined? It appears that mitigation must occur at the same time as the stream impact, which is non-sensical especially when PRM typically impacts a stream and then restores/mitigates it at the same location.
    c. As problematic as the formerly proposed SWVM compensatory mitigation approach was, the temporal loss rate multiplier was 3% per year in comparison to a flat 50% increase in mitigation requirements.
    d. OCA provided ESO comments dated 1/18/2023 in Item 15 within our "Section 401 WQC Rule Recommendations (pgs. 11 & 12) that specifically addressed temporal loss using a functional assessment approach, which directly aligns with the debit and credit functional assessment approach used in OSAM Version 2.1 and could easily be incorporated into OSAM.
    e. The OCA recommended a functional temporal loss approach that has a declining temporal loss rate as existing stream functions decline. The direct surrogate measure for stream function decline is already contained in OSAM Version 2.1 in the bank height ratio (BHR) measurement. That is, as a stream becomes more vertically contained and disconnected from its floodplain (i.e., due to stream channel incision) stream functions proportionally decline.
        i. Thus, an existing stream impact that is geomorphically stable or has a BHR = 1.0, then the temporal loss rate would be at a maximum per year.
        ii. As the BHR increases up to a BHR = 2.0, the temporal loss rate per year declines as stream function declines, and when the BHR > 2.0 stream functions become negative and the temporal loss rate per year is 0.0 (none).
        iii. In other words, how can a stream that is causing stream degradation downstream and upstream (i.e., has a BHR >2.0 or negative functioning) be assessed a temporal loss rate when the existing stream functions are the cause of stream degradation.
    f. OCA's proposed temporal loss rate per year ratios for varying degrees of BHR ratio are as follows:
        iv. BHR = 1.0 to 1.05 --- 100% functioning, then temporal loss rate per year = 1.00%;
        v. BHR = 1.06 to 1.30 --- 85% functioning, then temporal loss rate per year = 0.85%;
        vi. BHR = 1.31 to 1.50 --- 60% functioning, then temporal loss rate per year = 0.60%;
        vii. BHR = 1.51 to 2.00 --- 33% functioning, then temporal loss rate per year = 0.30%;
        viii. BHR > 2.00 --- 0% or negative functioning, then temporal loss rate per year = 0.0% (none).

g. These base temporal loss rates can be proportionally increased. For example, if a geomorphically stable stream was to have a 3% per year temporal loss rate of 3% (3 x 1%), then the subsequent temporal loss rates would also be scaled or multiplied by 3 (e.g., 3 x 0.85% = 2.55%; 3 x 0.60% = 1.80%; 3 x 0.30% = 0.90%, and 3 x 0.0% = 0.0%).
h. The OCA is strongly opposed to an arbitrary flat temporal loss of 50% for ILFP and PRM. This directly opposes the whole OSAM Version 2.1 functional stream assessment approach and is outrageously expensive, punitive and non-sensical.
i. OCA recommends that the OEPA use a temporal loss rate that is associated with stream functions as OCA has presented above and in its ESO comments submitted to the OEPA 1/18/2023.

4. **Long-term protection**. Draft proposed rule O.A.C. 3745-32-04(B)(6) discusses that the compensatory mitigation site will be protected long term and that appropriate management measures are, or will be, in place to restrict harmful activities that may jeopardize the compensatory mitigation.
    a. This draft long term protection rule language at first glance seems reasonable, but there is no explanation or example of what is an appropriate management measure.
    b. OCA provided ESO comments about long-term protection discussing that rural private landowners that we work with have purchased property, in most all cases, to make a living off the land and that any legal restrictions (e.g., environmental covenant, conservation easement) that limit their usage of their land is an unacceptable option for them. However, frequently, rural landowners accept fencing of streams and associated buffers, because fencing is often perceived as a benefit and landowners typically want to manage their land in a responsible manner. Additionally, landowners have not impacted fenced off streams and buffers as the buffer vegetation matures, because they view the matured vegetation as a benefit. Also, in most cases, the restored/mitigated streams and buffers are associated with quite small intermittent streams (e.g., 2 ft to 4 ft wide) due to most mining activities occur higher on the hillsides and not in valleys.
    c. OCA requests that OEPA specifically endorse this type of long-term protection in Item b. above as an appropriate management measure by including this as a potential long-term protection example in this specific stream rule.
    d. In addition to the long-term protection approach discussed in Item b. above, landowners, businesses, industries and governments cannot impact streams without first obtaining a 404 and 401 WQC, thus, restored/mitigated streams are still protected by stream regulations after buffer maturity is reached.
    e. A significant concern regarding this long-term protection rule is that the OEPA includes a reference to the *U.S. Army Corps of Engineers Mitigation Guidelines Checklist for the State of Ohio (2004) or* "Corps Checklist" abbreviated. Within this Corps Checklist in Section VI(B) entitled "Legal Protection" it requires providing evidence of long-term legal protection instruments, such as, conservation easement, fee simple donation, management contract with federal, state, or local conservation organization. This Corps requirement seems to conflict with the long-term protection language in draft proposed rule 3745-32-04(B)(6). The Corps list of long-term protection requirements do not include the example scenario that OCA provided in Item b. above.
    f. This "Corps Checklist" is identified on the OEPA website associated with this complete rule package under Permittee Responsible Mitigation (PRM) section, but this "Corps Checklist" is not referenced in the rules (i.e., 3745-32-01 (AA)). OCA requests that the OEPA explain how website references that are not in the proposed rules are used as a rule.
    g. The OCA recommends that the OEPA remove/delete the *U.S. Army Corps of Engineers Mitigation Guidelines Checklist for the State of Ohio (2004)* ("Corps Checklist") as a reference document. T**he OEPA website reference to the "Corps Checklist" prevents the OCA from the opportunity to meaningfully comment and be heard before a rule becomes law. In fact, it is not in the rules or law.**

5. **Performance Standards**. Draft proposed rule O.A.C. 3745-32-04(B)(7) states that the Director will require the permittee to achieve performance standards to demonstrate *ecological success* of the mitigation project in accordance with the "Guidelines for Stream Mitigation Banking and In-Lieu Fee Programs in Ohio…." This is understood to be the same reference in Item 1 above and is referred to as the "2016 Guidelines," which were developed by the Ohio IRT.
    a. This provision undercuts the advancements OCA appreciates in OSAM Version 2.1. As commented on at the outset, OSAM identifies the hydraulic, geomorphic and biologic functional measurement methods within the Existing and Proposed Condition Assessments to holistically determine ecological success for stream restoration/mitigation.
    b. The subjective and ambiguous performance standards in Section 8 of the 2016 Guidelines developed in the "backroom behind closed doors" permit agency staff to ignore the "physical" and focus entirely on the "biological." The standards also support using a QHEI score as the mitigation standard for stream habitat restoration. (See OCA's objections to QHEI, *infra*.)

Draft Wetland Rule (3745-1) Comments

1. Draft proposed O.A.C. 3745-1-54(E)(5) states: "For wetlands created by previous coal mining activities that are impacted as part of a remining coal operation, as defined in rule 1513:13-2-02 (PPPPP) of the Administrative Code, or part of an "Abandoned Mine Land Reclamation" project, as defined in division (C)(1) of section 1513.37 of the Revised Code, and were not used as previous mitigation, the minimum compensatory mitigation ratio is 1:1 for all wetland categories and types."
    a. Is this new paragraph referring to non-isolated wetlands at remining sites? OCA presumes so since the 401 process does not apply to isolated wetlands per R.C. 6111.021 but please clarify.
    b. The new paragraph references 1513:13-2-02, which does not exist. OCA presumes the intended O.A.C. rule reference is 1501:13-1-02.

Ohio Stream Assessment Method (OSAM), Version 2.1, Comments

1. When printing OSAM spreadsheets, the "printed" header and footer names are incorrect and these need to be revised.

2. For all Impact or Mitigation Activities, when identifying the Existing Stream Type as "G", which has an Entrenchment Ratio (ER) < 1.4, the Existing Condition Assessment provides an Index Value greater than 0.0 for ERs between 1.20 to 1.39. The Index Value from 1.0 to 1.39 should be 0.0. It appears that the ER Index Value is incorrectly using the ER Index Values from the "A, B and Bc reference curve" in the Hydraulics column under the Reference Curves tab.

3. It is recommended that all Rosgen stream types be listed in this "drop down" (e.g., Aa+, Fb, Ba, Eb, Cb, Db, D, etc.) to more clearly define the existing and restored/mitigated stream geomorphic condition.

4. **Beaver Impounded/Analog Streams**. It is recommended that an additional stream type be added to the Rosgen stream type list which is D_B. D_B refers to beaver impounded streams, which are critical for the mitigation of increased peak flows due to current and historic land use changes (i.e., storage loss is the #1 degradation of stream physical condition). Thus, beaver analog impoundments (e.g., slow-dewatering in-stream detention structures that mimic beaver impoundments) are a primary approach to mitigating increased stormwater runoff due to current and historic land use changes. This approach is more likely to be used in rural portions of Ohio.

5. **Cascades**. In Montgomery & Buffington's report "*Channel Classification*" (1993), they identify that streams with gradients greater than 8% function as *cascades* as opposed to step-pools. Cascades are continuous rock channels without pools due to the steep nature of the stream (e.g., a typical trapezoidal rock channel with an appropriate W/D ratio). Rosgen refers to these as Aa+ stream type, but less clearly defines them as having a step-step-step formation. Additionally, the construction of step-pool structures above 8% are precarious to construct and they are highly prone to failure, which is also documented in the Georgia SQT Lite manual (p. 10 & 11). Additionally, this high instability potential has been demonstrated in Ohio not to function as good habitat and has resulted in minimal to no biological recovery. Also, the GA SQT Lite does not count small, temporary pools within cascades (p. 11). Thus, streams with gradients greater than 8% need to have a separate reference curve or merely have an Index Value defined as 1.00 for a properly designed and constructed rock channels, that is, cascades.

6. **Riparian Widths.** Under the Existing and Proposed Condition Assessments, the left and right riparian widths extend up to 200 feet on each side of a stream for "all stream types". The 200-foot width is arbitrary and needs to be linked to the stream geomorphic condition, which is the bankfull channel width (W_{BKF}). Thus, the buffer width needs to be of an appropriate ratio of the bankfull width and within the floodprone area (e.g., 10 x W_{BKF} for low gradient streams, 5 x W_{BKF} for moderate gradient streams and 3 x W_{BKF} for a high gradient stream). In many cases the arbitrary 200-foot width will be too wide for small streams and too small for larger streams. In small streams, the 200-foot width could easily be within the watershed of another stream. Further, buffers required beyond the floodprone area can be considered an illegal taking of land, because many landowners prefer grasslands as opposed to trees, which is common in rural Ohio.
    a. It is recommended that the OEPA correlate the right and left buffer widths to the bankfull width of the stream (W_{BKF}).
    b. It is strongly recommended that the right and left buffer widths be limited to a width that is absolutely necessary and not create an arbitrary taking of land.
    c. It is recommended that the OEPA create a mitigation incentive to expand the right and left buffer widths beyond the width that is absolutely necessary (e.g., increase a right and/or left buffer Index Value by a percentage or provide a similar increase at an appropriate location in OSAM).

7. **Headwater Habitat Evaluation Index (HHEI) Scores**. The HHEI assessment procedures are described in the OEPA's "*Field Methods for Evaluating Primary Headwater (PHW) Streams in Ohio 2020*", Version 4.1 and is referred to as the PHW Manual.
    a. OSAM uses HHEI scores to obtain Habitat Parameter Index Values for the Geomorphology Functional Category under Existing and Proposed Condition Assessments when streams drainage areas are less than 1.0 square mile.
    b. The "*OEPA Primary Headwater Habitat Initiative Data Compendium*" published September 2002 (referred to as the "2002 Compendium") contains the research and purpose for the HHEI.
    c. The 2002 Compendium on p. 10 indicates that potentially 87% of Ohio's stream length is associated with headwater streams (i.e., less than 1.0 square mile drainage area).
    d. The 2002 Compendium determined that three physical habitat measures (1) bankfull width, (2) maximum depth of pools, and (3) substrate & percent could be used to statistically separate Class III streams from Class II and Class I streams.
    e. These three stream classes are categorical (i.e., the HHEI assessment only determines a stream Class – nothing else).

f. The HHEI database contains only geomorphically stable streams, and thus, cannot be used to assess geomorphically unstable streams. The 214 streams in the database did not collect bank height ratio (BHR) for any stream, and the original author of this study said that the streams in the database should be considered geomorphically stable as opposes to unstable.
g. The HHEI stream assessment procedure has no *link* to the hydrologic (rainfall-runoff) or geomorphic condition of the stream, that is, physical integrity of the stream. For example, you cannot tell when using the HHEI whether the natural stream has a BHR equal to 1.0 or 2.6 (i.e., whether the stream is connected to its floodplain or severely incised).
h. When the HHEI is improperly used to assess geomorphically unstable streams, the HHEI scores will arbitrarily increase, and thus, increases the potential for an ephemeral (Class I) stream to appear as an intermittent (Class II) stream and an intermittent (Class II) stream to appear as a perennial (Class III) stream.
i. HHEI scores only 'point' to a stream category or stream Class, and have no independent meaning. That is, an HHEI score of 27 cannot be said to be a better stream than an HHEI score of 17 (i.e., an HHEI score of 17 or 27 only identifies a Class I or ephemeral stream – nothing else).
j. The OEPA improperly uses HHEI existing and restored/mitigated stream scores to create the 'appearance' of an existing vs restored/mitigated stream comparison. This comparison is beyond the purpose and design of the HHEI, and thus, it is a *false* or *fictious* comparison.
k. The HHEI has no research to demonstrate that the HHEI can be utilized to assess a restored/mitigated stream to determine a Stream Class. There is no basis for this type of usage.
l. An example presented previously to the OEPA shows that a severely incised stream that has eroded 8-ft deep with a drainage area of 0.6 square miles receives an HHEI score of 96+/- and a restored stream that is about 1-ft deep and connected to its floodplain receives and HHEI score of 59+/-. That is, the severely incised stream 'appears' to be a pristine stream and the restoration/mitigation work would receive debits rather than credits when compared to the existing stream HHEI score. This is an example of the absurd outcomes that the HHEI will produce if used in OSAM as presented.
m. The HHEI uses an arbitrary 200-ft stream assessment length, which is not scalable to stream size/drainage area. The HHEI assessment length needs to be scalable (e.g., 20 x W_{BKF}). In other words, streams with a smaller drainage are more likely to included degraded stream conditions than a properly scaled assessment length, and thus, making the stream Class go up (e.g., Class I appear as a Class II stream).
n. The HHEI approach is based upon the River Continuum Concept (RCC) and the HHEI score is strongly biased towards single-thread streams. That is, the HHEI will score braided streams, wetland streams and beaver impounded streams extremely low as if they have little to no value, which could not be further from the truth. In fact, these types of streams are the most needed types to offset lost watershed storage and decrease peak flows.
o. The OCA strongly recommends that the OEPA delete the HHEI score from the OSAM Existing and Proposed Condition Assessments, because the HHEI scores that are used for the stream Habitat evaluation are arbitrary, misleading, and imposes that restored/mitigated streams must include characteristics from degraded streams, which is absurd.
p. The OCA recommends that the OEPA replace the HHEI scores for the Habitat Parameter with a Large Woody Debris (LWD) assessment as utilized in the Georgia SQT Lite approach; however, the LWD assessment should be representative of Ohio conditions.

8. **Headwater Macroinvertebrate Field Evaluation Index (HMFEI) scores**. The HMFEI biological assessment approach is contained within the PHW Manual and is used as a biological supplement to the HHEI.
    a. The OSAM Existing and Proposed Condition Assessments for the Biology Functional Category uses the HMFEI assessment method score to obtain an Index Value. However, the HMFEI approach is arbitrary in its methodology and should not be utilized to assess macroinvertebrates using its current methodology.
    b. The HMFEI uses an arbitrary 200 ft stream assessment length for its streambed biologic assessment. This arbitrary length is not scaled to stream size/drainage area (e.g., 20 x W_{BKF}).
    c. As stream drainage area increases, so does the streambed width. Using the USGS Ohio Regional Curve as a basis for streambed width, the HMFEI assessment macro sampling area near a drainage are of 1.0 square mile as compared to 0.1 square mile is nearly 3 times the streambed area (refer to Table 1 below). This arbitrary increase in streambed macro sampling area makes it significantly more likely that more macroinvertebrates will be found as streambed width increases, which will increase the likelihood that an ephemeral stream appears as an intermittent stream and an intermittent stream appears as a perennial stream.
    d. The streambed sampling area along any reach of headwater stream (DA < 1.0 square mile) should be the same (e.g., 200 square feet) for a consistent macroinvertebrate field evaluation.
    e. The OCA strongly recommends that the OEPA remove the HMFEI method from the Biology Functional Category until such time that the OEPA corrects the streambed sampling area to be the same regardless of drainage area and is recalibrated.

TABLE 1

Headwater Stream Drainage Area (square miles)	HMFEI Assessment Length (feet)	Typical Streambed Width (feet)	Typical Streambed Area to be sample for Aquatic Insects (square feet)	Increased sampling area ratio relative to 0.10 acre DA streambed width
0.10	200	6	1200	1.0
0.50	200	12	2400	2.0
0.90	200	16	3200	2.7

9. **Qualitative Habitat Evaluation Index (QHEI) scores**. The QHEI biological habitat assessment methodology in the QHEI Manual (2006) and 2016 Guidelines is used for streams with drainage areas greater than 1.0 square mile and are based on statistical data, which means valid or normal stream conditions exist outside the statistical range (e.g., braided streams, wetland streams, beaver impounded streams) are arbitrarily considered unacceptable.
    a. The QHEI biological habitat assessment tool requires numerous subjective visually-based assessments of stream features. These stream features are individually rated and then summed to obtain a total QHEI score. However, these subjective visually-based assessments provide no context or *link* to the stream geomorphic condition. That is, it is impossible to determine whether a stream has a bank height ratio is 1.2 or 2.6 when using the QHEI.
    b. Existing or degraded QHEI scores are frequently greater than restored/mitigated streams QHEI scores, which implies that restored/mitigated streams are in a worse condition than a degraded stream. This then implies that stream restoration/mitigation designs include characteristics from degraded streams or pay for debits, which are both non-sensical.

c. The engineer designs streams utilizing objective prudent engineering approaches and sound equations along with reference reach characteristics. In no case would an engineer design a stream utilizing characteristics from a degraded stream in the restored/mitigated stream design. Further, it is impossible for engineers to design for subjective visually-based stream features that may take decades to develop.

d. The QHEI is biased towards single-thread streams and high stream powers, which directly precludes the construction of braided, wetland or beaver impound (analog) streams. The QHEI target stream condition is one that appears like a trout stream (i.e., slightly steep, fast-moving water with large substrate).

e. Dan Mecklenburg at the ODNR in 2010 graphed 10,269 QHEI stream scores versus the stream's unit stream power (refer to Figure 1 below). This graph demonstrates the QHEI is *biased* towards higher stream powers once a QHEI score of about 40 is obtained, which has a median stream power of about 50 lb_f/s-ft (1 lb_f/s-ft = 14.59 W/m^2). Brookes (1983, 1987a, 1987b) noted that streams with unit stream powers processing less than 25 W/m^2 typically aggraded and streams with unit stream powers greater than 35 W/m^2 tended to erode (incise). Thus, the QHEI scoring system desires higher stream powers that are prone to erosion and biased against lower gradient stream systems, such as, braided streams, wetland streams and beaver impounded/analog streams.

f. The OCA strongly recommends that the OEPA delete the QHEI score from the OSAM Existing and Proposed Condition Assessments, because the QHEI scores used for the stream Habitat evaluation are arbitrary, misleading, and imposes that restored/mitigated streams must include characteristics from degraded streams, which is absurd.

g. The OCA recommends that the OEPA replace the QHEI scores for the Habitat Parameter with a Large Woody Debris (LWD) assessment as utilized in the Georgia SQT Lite approach; however, the LWD assessment should be representative of Ohio conditions.

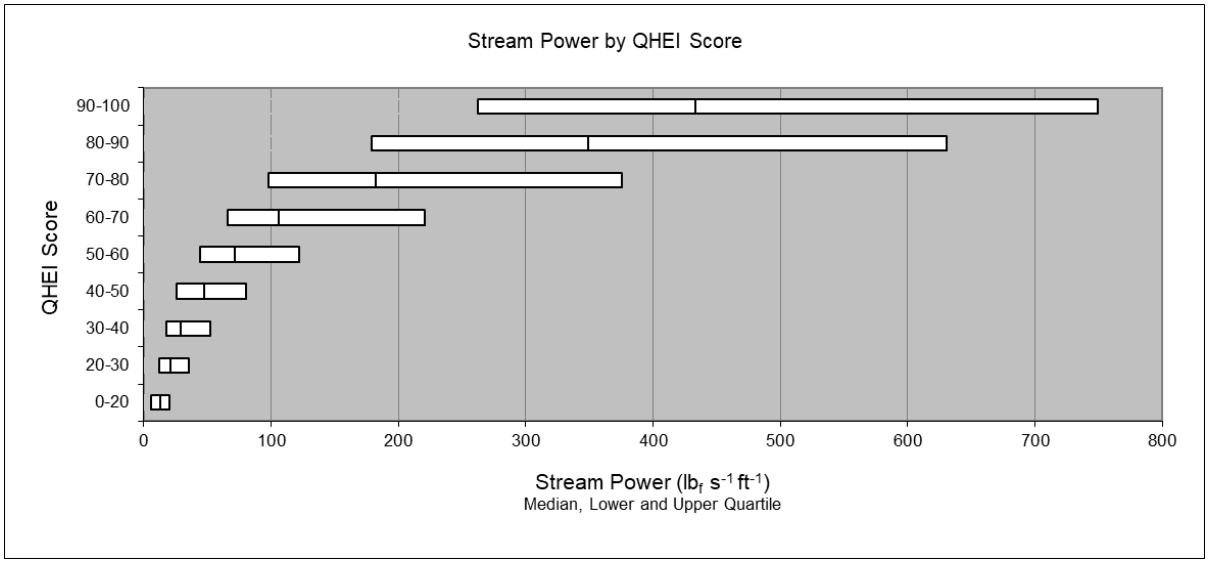

Figure 1 – Graph of OEPA QHEI Scores vs. Unit Stream Power (lb_f/s·ft). This graph demonstrates that QHEI scores increase with unit stream power, which suggests a pre-determined habitat bias toward steeper gradient streams with larger substate, and also suggests increased stream instability as unit stream powers increase. This graph was produced by D. Mecklenburg, ODNR, in 2010, which evaluated 10,269 QHEI stream assessment scores that were completed from the period 1978 to 2007.

10. **Large Woody Debris (LWD)**. The Georgia SQT Lite Geomorphology Functional Category assesses stream bed form by using Pool-Pool Spacing Ratio, % Riffle, and Large Woody Debris (LWD). The OEPA has deleted the LWD bed form assessment and replaced it with either the QHEI or HHEI depending on drainage area (i.e., DA greater than or less than 1.0 square mile) in the Existing and Proposed Condition Assessments.
    a. Given neither the HHEI nor the QHEI has the ability to determine the degree of instability of a stream channel, along with other negative aspects as discussed in Items 7 and 9 above, there is no rational reason for the OEPA to replace the LWD assessment with either the HHEI or QHEI. Further, the HHEI and QHEI are biased toward higher stream powers, and higher stream powers tend to 'blow out' or expel LWD from streams, which is opposite of what is desired, that is, more LWD.
    b. LWD is a strong stream geomorphic driver, creates greater habitat and food supply diversity for macros and fish as well as avian and terrestrial wildlife, and directly supports the restoration/mitigation of lost historic aquatic resources as recommended by the 2008 Federal Compensatory Mitigation Rule, such as, braided streams, wetland streams and beaver impounded/analog stream reaches; thus, LWD is a more appropriate and has an objective assessment methodology.
    c. The OCA strongly recommends that the OEPA remove the biased, irrational and arbitrary HHEI and QHEI stream assessments, as discussed in Items 7 and 9 above, from the Existing and Proposed Condition Assessments and replace it with a LWD assessment method, which is objective, functional and aligns with the Georgia SQT Lite approach, which OCA was supportive of during ESO.

11. **Headwater Macroinvertebrate Index (HWMI)**. The OEPA includes a newly published document in the OSAM Version 2.1 Technical References tab entitled "*Headwater Macroinvertebrate Index (HWMI)*" and no other reference detail. However, the OEPA stream and wetland rule website under Headwater Macroinvertebrate Index includes a link to the DSW Technical Bulletin website. The Technical Bulletin website includes a manual entitled "OEPA *Headwater Summary Macroinvertebrate Index Based on Presence/Absence Data*", November 2023. That is, this document is so new that the OEPA only has a summary document to describe this new stream macroinvertebrate assessment tool, and an HMWI detail report has not yet been published for this new assessment methodology.
    a. OCA has spoken with several practicing biologists and none of them have ever heard of the HWMI methodology nor seen any documentation on this methodology let alone used it to compare with current procedures.
    b. **The HWMI assessment methodology is so new that the OEPA does not have a proper manual/report describing its development and it has not been evaluated by practicing biologist is preventing OCA the opportunity to meaningfully comment and be heard before a rule becomes law. That is, this incomplete reference is thwarting OCA and everyone that is commenting on this rule from understanding this new assessment methodology so that thoughtful and well-informed comments can be made. This appears to conflict with the spirit of R.C. 119.03 and 121.72, if not outright violate them.**
    c. Given that this HWMI methodology is so new and untested by stakeholders, the OCA recommends that the HWMI be removed from the OSAM Version 2.1 as a reference document and removed from the OSAM, Version 2.1, Biology measurement method for the Existing and Proposed Condition Assessments for streams with drainage areas greater than 1.0 square mile and replace it with the current methodology or the Invertebrate Community Index (ICI).

12. **Acid Mine Drainage (AMD) Remediation**. In the recent past, an OCA member had reached out to the OEPA and the District Office to support this OCA member with an AMD remediation project to remine (mine-out) a small 12-acre 100+ year old deep mine to perpetually eliminate an AMD source discharging water with a pH of 2.6. However, the OEPA District Office was not supportive of this massive environmental win-win AMD remediation project and failed to provide any stream mitigation credit incentives for the resultant downstream chemical water quality improvements. Thus, this remining project had to be avoided and the 2.6 pH deep mine discharge continues to flow downstream and likely will for centuries to come. This experience has been one of the most perplexing responses from a government agency that OCA has ever encountered. Thus, it is encouraging that the OEPA has included an AMD remediation method that will potentially provide stream credits for chemical stream water quality improvements. However, the chemistry criteria for the various chemical parameters contained in OSAM, Version 2.1, spreadsheet appear suspect, such that, the chemistry parameter thresholds are so low or restrictive that it is unlikely that any stream credits can ever be rationally obtained for an AMD Remediation project, which effectively leads to the same scenario discussed above (i.e., project avoidance). Hopefully these thresholds are revised as discussed below to provide some base level of encouragement to remine and remediate AMD.
    a. Each of the chemistry parameters need to include the units (e.g., mg/l, ug/l) on the x-axis in the associated OSAM Reference Tab graphs.
    b. **pH**. The permissible NPDES threshold range for pH is 6.5 to 9.0. This allowable threshold range should receive an Index Value of 1.00. Currently, 1.00 Index Value threshold pH range is from about 7.8 to 8.3. Based on experience in previously mined areas, virtually no streams have pH values in this range and this range will not be achieved by an AMD remediation project; thus, it will score towards an Index Value nearer 0.0 (e.g., 0.08 to 0.3), which is a discouragement for such a remediation project.
    c. **Iron**. The permissible NPDES average monthly threshold for Iron is 3.0 mg/l or 3000 ug/l. Currently, an Iron concentration above 1800 ug/l receives an Index Value of 0.0. An Index Value of 1.00 is not received until the Iron concentration is about 120 ug/l, which will virtually never be achieved by an AMD remediation project. The Index Value of 1.00 needs to exist for an Iron range from 0 to 3000 ug/l to be rational, reasonable and encouraging to take on such a project type.
    d. **Manganese**. The permissible NPDES average monthly threshold for Manganese (Mn) is 2.0 mg/l or 2000 ug/l. Currently, an Mn concentration above 600 ug/l receives an Index Value of 0.0. An Index Value of 1.00 is not received until the Mn concentration is about 60 ug/l, which will virtually never be achieved by an AMD remediation project. The Index Value of 1.00 needs to exist for a Mn range from 0 to 2000 ug/l to be rational, reasonable and encouraging to take on such a project type.
    e. **Specific Conductivity (S.C.)**. The OEPA NPDES program moved from assessing for Specific Conductivity (S.C.) to Total Dissolved Solids (TDS) back in 2020 for coal related programs. Thus, if TDS is determined to have a reasonable potential, then the permissible NPDES TDS threshold is 1500 mg/l. If S.C. data is collected in lieu of TDS, then the S.C. data is converted to TDS by the ratio of 15/24ths. This makes the NDPES S.C. threshold equal to 2400 Umho/Cm. Currently, an S.C. concentration above 1800 Umho/Cm receives and Index Value of 0.0 and an Index Value of 1.00 is not received until S.C. is at or below 500 Umho/Cm, which will virtually never be achieved in an AMD remediation project. The Index Value of 1.00 needs to exist for an S.C. range from 0 to 2400 Umho/Cm to be rational, reasonable and encouraging to take on such a project type.
    f. **Aluminum**. There are no NPDES discharge limit for Aluminum (Al); thus, by including Al as a project threshold the OEPA is appears to be expanding its NPDES regulatory authority through stream mitigation rules, which is not appropriate. The Al threshold for an AMD remediation project needs to be removed from the AMD remediation list of chemistry parameters.
    g. **Dissolved Oxygen (D.O.)**. The D.O. values from about 6 to 11 mg/l receive an Index Value equal to 1.00. This D.O. range seems somewhat reasonable for remining, but may be more difficult to obtain in lower gradient stream situations.

h. It is recommended that the pH, Iron and Mn chemistry parameters be weighted heavier than other parameters, because these three chemistry values tend to be the drivers for an AMD remediation project. For example, pH could be weighted 4, Iron could be weighted 3, and Mn could be weighted 2; thus, the current list of 6 chemistry parameter scores summed would be divided by 12 (9 + 3), for example, rather than 6. Six (6) is associated with a simple summation of chemistry parameter Index Values and dividing the summed Index Values by 6 chemistry parameters.
i. OCA strongly recommends that the OEPA re-evaluate these AMD Remediation Index Values to align with the NDPES discharge thresholds and use appropriate chemistry parameters so that NPDES discharge thresholds are not improperly increased by the proposed stream rules.
j. Again, the OEPA needs to recognize that the AMD Remediation approach has to be reasonable to encourage remining for AMD Remediation projects; otherwise, these higher risk projects will not be undertaken if no benefits are provided. And remining is the only way to perpetually eliminate AMD sources.

Draft Stream Rule References Comments

1. The OCA recommends the inclusion of the Montgomery and Buffington report on "Channel Classification" as an OSAM Version 2.1 reference document, because it specifically addresses that cascades are a steep gradient stream type and is more clearly defined than a somewhat similar Rosgen stream type referred as Aa+. The specific cite is as follows: David Montgomery and John Buffington, "Channel Classification, Prediction of Channel Response, and Assessment of Channel Condition", Report TFW-SI-110-93-002, Washington State, June 24, 1993.
2. Based on discussion that OCA provided in the OSAM Version 2.1 section above in Items 7 & 8 regarding the HHEI and HMFEI, the OCA strongly recommends that the OEPA remove the OSAM reference to the OEPA's "*Field Methods for Evaluating Primary Headwater Streams in Ohio 2020*", version 4.1, 130 pp.
3. Based on discussion that OCA provided in the OSAM Version 2.1 section above in Item 9 regarding the QHEI, the OCA strongly recommends that the OEPA remove the OSAM reference to the OEPA documents entitled "*The Qualitative Habitat Evaluation Index (QHEI): Rationale, Methods and Application*, Rankin, E.T., 1989, and "*Methods for Assessing Habitat in Flowing Waters: Using the Qualitative Habitat Evaluation Index (QHEI)*", 2006.
4. Based on discussion that OCA provided in the OSAM Version 2.1 section above in Item 11 regarding the HWMI, the OCA strongly recommends that the OEPA remove the OSAM reference to the OEPA *Headwater Macroinvertebrate Index* or alternatively described as the "OEPA Headwater Summary Macroinvertebrate Index Based on Presence/Absence Data," November 2023.

Common Sense Initiative (CSI) Comments

1. The IPR proposed O.A.C. 3745-32 stream rules include references to documents and procedures that have never been through the rule-making process. Many of these documents have serious problems that the OEPA has not addressed even after the OCA has publicly commented on one specific flawed document, the PHW Manual, at least 10 times over the past 6 +/- years. All of the past comments are hereby incorporated here by reference in Items a. through i. below and OCA looks forward to OEPA's response to each and every one of them. To date, the OEPA has yet to make any of the necessary corrections to its PHW Manual. The OEPA's intended incorporation of this PHW Manual in a rule will lead to needless increased costs for landowners, business and industry that have not been properly assessed in this rulemaking as required by CSI.
    a. 10/4/2017 – OCA ESO Water Quality Certified Professional (WQCP) comments;
    b. 5/11/2018 – OCA ESO Wave2 Credible Data comments;
    c. 2/25/2019 – OCA IPR Water Quality Certified Professional (WQCP) comments;
    d. 6/10/2020 – OCA comments for the draft General Permit for Impacts to Ephemeral Streams and Isolated Wetlands;
    e. 10/07/2020 – OCA & BN (2 sets) Wave2 Proposed Rule Making Credible Data (OAC 3745-4) comments;
    f. 11/29/2021 HB175 Senate Testimony;
    g. 1/6/2023 – OCA IPR Water Quality Standards (WQS) Definitions and Methods (OAC 3745-1) comments;
    h. 1/18/2023 – OCA ESO for Section 401 Water Quality Certification Rules (OAC 374-32) and Wetland Water Quality Standard Rules (OAC 3745-1-50, -51, -52, -54);
    i. 1/31/2023 – OCA comments for OEPA's Water Quality Standards (WQS) Triennial Review.
2. CSI also obviously presumes common sense will prevail. The errors proposed O.A.C. 3745-32-04 where non-existent subsections are referenced make it impossible for the OCA to provide meaningful comment on the proposed rule. This poor-quality rule development leads to confusion about the rules that provides the OEPA the opportunity to mislead and manipulate stream impact and restoration/mitigation outcomes, which can only mean needless additional costs for landowners, business and industry. Proposed rules need to promote transparency, specificity and predictability, which significant portions of this rule do not provide.
3. One item in these proposed rules that work towards promoting transparency, specificity and predictability is the *Ohio Stream Assessment Methodology* (OSAM) spreadsheet, Version 2.1. Although there are several poorly developed OEPA stream habitat and biological assessment contained in the OSAM spreadsheet that need to be removed from OSAM and the proposed stream rules, the OSAM spreadsheet is a significant improvement that is proposed in the new stream rules. The OSAM spreadsheet overall approach aligns with the 2008 Federal Compensatory Aquatic Resource Mitigation rules that require stream impacts and restoration/mitigation to assess stream impacts (debits) and stream restoration/mitigation (credits) based on assessing stream functions and services, which requires the physical condition of the stream to be properly evaluated. The OSAM spreadsheet includes stream physical condition assessments for the first time, which allows for stream functions and services to be properly and predictably evaluated. Although the OSAM spreadsheet is a positive move towards transparency, specificity and predictability, many portions of the proposed stream rules are poorly developed, incomplete or reference documents that have never faced stakeholder review and comment, all at odds to what the CSI process envisions.

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OCA appreciates this opportunity to comment and looks forward to additional time being granted by OEPA to continue a productive dialog before final rules are filed.

Ohio Department of Natural Resources Comments on Ohio's Section 401 Water Quality Certification Rules and Wetland Water Quality Standards Rules

ODNR appreciates the efforts Ohio EPA has shown in soliciting public comment throughout the process and Ohio EPA's commitment to considering valuable input from stakeholders to help ensure a well-vetted final product for Ohio that will be acceptable to the majority.

Below are our comments:

Section 401 Water Quality Certification Draft Rules, 3745-32-04 Mitigation for impacts to streams

1. Under Section(A), we recommend inserting a reference to Ohio's Water Quality Standards and antidegradation (Chapter 3745-1 and 3745-1-05 of the OAC).

2. B (4) "Compensatory mitigation debit and credit amounts shall be calculated using the "Ohio Stream Assessment Method". A temporal loss multiplier of 1.5 will apply for credits purchased through an in-lieu fee program or when permittee responsible mitigation will not occur concurrently with the approved impacts."

   We believe the mitigation hierarchy described in the 2008 Federal Mitigation Rule and under B (1) of this rule already accounts for the concept of temporal loss by requiring a preference to mitigation provided by a bank over in-lieu fee and permitee responsible mitigation respectively. We don't feel the State should dictate this preference further by penalizing permittees if mitigation provided by a bank is not available within the watershed. We would suggest omitting the second sentence above.

   This could significantly increase the cost of mitigation for a permitee simply because bank credits were not available within the impacted watershed. Potential effects of this could be an impact to economic development in Ohio and in ODNR's case, the irresponsible expenditure of taxpayers' dollars. We recommend removing the temporal loss multiplier, however, if necessary, we believe 1.5 is too high, and if necessary, perhaps 0.5 is more appropriate.

   There is no temporal loss when preservation is the mitigation type, or other project types such as dam removals, would the temporal loss factor be omitted when preservation is the mitigation type, or the project type has no temporal loss?

3. B (5) "Alternative stream mitigation methods. The director may authorize mitigation for impacts to streams based upon other methodologies if the applicant demonstrates that the methods are as protective as those used in the "Ohio Stream Assessment Method"".

   Some clarification would be appreciated on what some alternative stream mitigation methods could be. It is unclear if the intent is alternative mitigation assessment methods other than OSAM, or alternative mitigation types such as stream recaptures, AMD remediation projects, stormwater BMP's, stream daylighting, dam removals, etc.

ODNR is in support of the allowance for alternative mitigation project types such as dam removals, stream recaptures, stream daylighting, AMD remediation projects, etc. with adequate crediting to allow for successful completion.

Clarification would be appreciated describing what "as protective" means. We are unclear if the intentional meaning is providing similar aquatic resource benefits as traditional mitigation types, or perhaps something else.

4. B (8) (a) "The ecological monitoring may include, but is not limited to collection of data on hydrologic characteristics, vegetation communities and soils at the compensatory mitigation site and conducting an assessment of the compensatory mitigation using an appropriate valuation method."

   We believe the language used in this section was copied/pasted from the wetland Antideg and should be revised for appropriate stream data collection methods, which would not include soil samples and potentially vegetation community data collection.

   We are unclear on what the reference to "appropriate valuation method" is referring to. Is it referring to methods like QHEI, HHEI, etc.? Please clarify and provide links to existing methods if that is the intention.

5. Wetland Antideg includes a listing of the approved service areas and a map as an appendix – we believe it would be beneficial to add that.

6. Different mitigation types are not discussed in the stream rule language – could this be added similar to the way it is included in the wetland Antideg?

Wetland Water Quality Standards Draft Rules, 3745-1-54 Wetland Antideg

1. We understand OEPA was investigating an alternate assessment method, has this method been vetted enough to be acceptable to the Director of the OEPA and could it be listed under 2 a (ii)?

Ohio Stream Assessment Method

1. Functional Category – Geomorphology; Bed Form Characterization: Pool Spacing Ratio. Is there evidence that this metric significantly contributes to a stream's quality/function? It can be argued that this metric could weigh heavily on falsely creating functional lift for overly engineered streams on the mitigation side of the equation. In addition, this metric has not been used in any stream assessment methods in Ohio to date and therefore we question it's importance. Additionally, the QHEI form, which is taken into consideration in the same section, has a metric that scores the stream's stability, and therefore this parameter is already being taken into consideration. In an effort to keep the tool as concise as possible, and cut down on assessment efforts and costs, we recommend removing this metric.

2. It's unclear how the OSAM is calculating credits for preservation. We request the ratios for preservation remain the same per Table 11-2 in the current Guidelines for Stream Mitigation Banking and In-lieu Fee Programs in Ohio, Version 1.1 (March 2016). The preservation of streams and stream corridors is important to the mission of our Department as a whole and to the individual missions of many of our Divisions. Allowing preservation of aquatic resources to be a viable component of mitigation plans helps ODNR further our Departmental goals for water quality, resource and habitat protection, biological diversity, etc. and helps ensure Ohio's best aquatic resources are being protected appropriately.

Thank you for the opportunity to provide these comments.

Mike Pettegrew
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OHIO DEPARTMENT OF TRANSPORTATION
Mike DeWine, *Governor*
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December 8, 2023

Rules Coordinator
Ohio Environmental Protection Agency
Division of Surface Water: Permit Processing Unit
P.O. Box 1049 Columbus, OH
43216-1049

RE: Draft Rules for Section 401 Water Quality Certifications Rules (OAC 3745-32) and Wetland Water Quality Standards Rules (OAC chapter 3745-1)

Dear Ohio EPA Rules Coordinator:

The Ohio Department of Transportation (ODOT) appreciates the opportunity to submit comments on the proposed draft rules associated with Ohio Administrative Code (OAC) 3745-32 and OAC 3745-1. Our comments are provided herein.

General Comment

- ODOT reviews proposed rules through the lens of completing thousands of projects across the entire state every year; thus, the effect of small changes across that large of a program can result in significant time and expenses if not carefully considered. We recognize that stream mitigation rules are needed for many reasons and support the development and implementation of these rules that Ohio EPA has assumed. We request that Ohio EPA also consider how the proposed rules impact a program as large as ODOT's, per our comments below, that serves the citizens of Ohio every day.

OAC Chapter 3745-32-01

- (D) The definition of "discharge" cites a portion of the regulation that does not appear to exist. In Section 402 of the Federal Water Pollution Act, there is no paragraph numbered sixteen (16). Please clarify.

- (S): The definition of "stream" includes "streams with ephemeral flow". HB 175 (p.2) amendment to OAC 3745.114(G)(1) replaces the term "ephemeral stream" with "ephemeral feature". It may be clearer to address ephemeral features separately, or as a sub-bullet. ORC Section.311-316 also uses the terminology "ephemeral feature". It may also be helpful to cite that ephemeral features are waters of the state only when they the USACE has the authority to issue a permit under 33 U.S.C. 1344.

OAC Chapter 3745-32-02

- Please clarify why "dredged or fill material" was removed from (A) but left in (D)(1) and (D)(2).

- A (1-3): Army Corps of Engineers should be capitalized.

- (D)(1): Does "federal project" refer to Section 408 Civil Works projects or projects with federal funds or both?

OAC Chapter 3745-32-03

- No comments.

OAC Chapter 3745-32-04

- (B)(1): Clarify "credits for the appropriate stream type" in (B)(1)(a and b). Do, or will, stream banks and ILF only be able to sell certain stream credit "types" broken out by flow regime or use designation?

- (B)(3): Per the "In-Kind" definition added in 3745-32-01 "*a water of the state with a similar structural and functional type to the impacted water of the state*." Does this definition mean, for example, perennial impacts must be mitigated for with perennial mitigation? Since the OSAM establishes debits and credits, will stream type need to be factored into those values?

- (B)(4): Penalizing applicants with a higher mitigation ratio for ILF due to temporal loss when bank credits are unavailable doesn't seem appropriate, may impose undue financial hardship on applicants, and may encourage some applicants to pursue permittee-responsible mitigation. From 2020-2022, ODOT spent 6.36 million on stream mitigation. If all projects were ILF purchases and an additional 1.5 multiplier was applied to mitigation owed, ODOT would spend an additional 3.2 million. While ODOT does not support the additional 1.5 multiplier requirements, at a minimum the language

should be revised to state "A temporal loss multiplier of 1.5 will apply for credits purchased through an in-lieu fee program that has not implemented a mitigation project that will provide the necessary credits."

- (B)(6): While this is a reasonable requirement, it could create challenges for some mitigation projects, such as dam removal, where applying a long-term protection instrument of the mitigation area may not be possible. Please consider exceptions for mitigation projects that would offer significant benefits to a stream or watershed but without a requirement of long-term protection of the restored area.

- (B)(8)(a): Consider removing "soils" as an example. It is an unlikely monitoring requirement for stream mitigation.

OAC Chapter 3745-1-50

- No comment.

OAC Chapter 3745-1-51

- No comment.

OAC Chapter 3745-1-52

- No comment.

OAC Chapter 3745-1-54

- It appears that the formula works best if restoration is 1:1 and that increasing restoration would increase the overall amount of mitigation needed. Is this the intent of the rule, or should additional restoration reduce the amount of preservation and/or enhancement?

Ohio Stream Assessment Method v 2.1

- IBI Biological reference curves should be added to account for the various ecoregion differences in Ohio. There should not be one IBI reference curve, but rather several curves based on drainage area (field 14 B) and Ecoregion (Field 11 B) inputs in the spreadsheet and as outlined in Table 7-1 (A) in OAC 3745-1-07. This approach would better calibrate the OSAM to Ohio.

- Could the tool be used for impacts exactly as it is currently used for restoration? The preparer could enter the Existing Condition Assessment for the stream that will be impacted and enter the Proposed Condition Assessment for the stream that will be constructed, as a result of stream impacts. Any negative credits would be the amount of mitigation owed by a project. Any positive credits would be considered self-mitigating or be used to reduce overall mitigation debits for the project. This approach would give applicants an incentive to put back better (or at least the same) as what was impacted where possible.

- OSAM spreadsheet: under Calculated Stream Parameters suggest spelling out Wbkf and Dmax. Even though the acronyms are defined in the narrative document, providing the complete names in the spreadsheet would be user-friendly.

- OSAM spreadsheet: under Function Based Parameters Summary, Existing Condition Assessment and Proposed Condition Assessment, "Hydrology" may be a more appropriate term instead of "Hydraulics" since hydrology focuses on the natural system and hydraulics is an engineering term related to water under pressure typically in a pipe.

Please consider our comments above and how the proposed rules will impact ODOT's statewide program. We appreciate Ohio EPA engaging ODOT on the development of the proposed stream rules and look forward to working with your office on rule package implementation. Please contact Matt Perlik, Assistant Environmental Administrator, at 614-466-1937 with any questions or concerns.

Respectfully,

Matthew K. Perlik

for

Timothy M. Hill
Administrator
Office of Environmental Services

December 8, 2023

Rule Coordinator
Ohio EPA, Division of Surface Water
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RE: Interested Party Comment on Stream Mitigation Draft Rules
Section 401 Water Quality Certifications Rules (OAC chapter 3745-32)

Dear Ohio EPA,

Thank you for considering our comments. We understand that the agency is facing a rulemaking deadline imposed by HB 175. However, we urge you to adopt your existing stream assessment and mitigation methodologies and guidance into rule rather than attempt to create a new and relatively unexamined and untested system prior to the statutory deadline.

As currently written, this rule package represents a dramatic and troubling transformation of Ohio's approach to stream mitigation. The draft rule introduces a new stream mitigation model – the Ohio Stream Assessment Method (OSAM) – that lacks testing, development, collaborative examination, and a track-record of implementation. In addition, OSAM was developed not by the agency, but by a single, private party without much input from other regulatory agencies or stakeholders. OSAM should be held to much closer scrutiny – by the agency and mitigation stakeholders – *before* Ohio EPA seriously considers adopting it as a replacement for the agency's longstanding, Ohio-specific methodology and guidance.

The rule adoption requirement of HB 175 does not call for Ohio EPA to jettison the scientific methodologies it has used for decades. The draft rule, however, does not appear to even adopt these agency tools by reference. Under HB 175, failure to adopt these tools in rule could end the agency's ability to use them. We urge Ohio EPA to stand by its decades of work by fully adopting its existing stream assessment tools in this rulemaking. Ohio EPA developed these methods and the agency and Ohio practitioners have successfully used them for decades. Not adopting these tools in rule now would represent a deeply troubling departure from tried-and-true agency methodology and practice.

The agency should use this opportunity to fully adopt in rule its existing, robust scientific stream assessment tools, such as QHEI, HHEI, VIBI, AmphIBI, ICI, and IBI. Doing so would likely result in better mitigation outcomes. And putting existing agency science and methodology into rule could better position the agency to meet the HB 175 timeframe. At the very least, it would preserve Ohio's operative stream mitigation standards and allow the agency and public to more fully examine changes as dramatic and untested as the OSAM proposal.

In addition, we believe that at least ten years of monitoring should be required for stream mitigation projects. Shorter monitoring timeframes may fail to produce reliable and accurate data to determine whether stream function and quality has been adequately achieved. Five-year monitoring periods could therefore lead to stream restoration failures that nonetheless receive credit.

The OEC respectfully requests that Ohio EPA set aside OSAM at this time and instead fully adopt its existing stream assessment and mitigation methodologies – including IBI, ICI, VIBI, AmphIBI, QHEI, and HHEI – in this rulemaking.

Sincerely,

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December 8, 2023

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RE: Comments on Ohio Environmental Protection Agency Section 401 Draft Rules Ohio Administrative Code 3745-1-50 to 3745-1-52, 3745-1-54, and 3745-32-01 to 3745-32-04

Dear Joni:

The Ohio Home Builders Association (OHBA) appreciates the opportunity to submit comments to Ohio Environmental Protection Agency's (EPA) as a part of the Agency's rulemaking associated with Substitute House Bill 175, including Section 401 Water Quality Certification Rules (Ohio Administrative Code (OAC) 3745-32) and Wetland Water Quality Standards (OAC 3745-1). House Bill 175 included a requirement that any substantive standards, guidelines, guidance, criteria, scientific methods, processes, or other procedures used by the Director in a uniform manner, including guidelines utilized by the Ohio Interagency Review Team (IRT), when reviewing stream and wetland mitigation proposals must be adopted via rulemaking. OHBA would like to submit the following highlighted comments for the rule package **Section 401 Water Quality Certifications (OAC 3745-32) and Wetland Water Quality Standards (OAC 3745-1)**. Please feel free to contact me with any questions.

3745-1-54 Wetland Antidegradation

(E)(1): Multiple times in the past several years, applicants proposing to purchase credits from within the service area of a mitigation bank, but not within the same 8-digit HUC watershed, were instead directed to purchase in-lieu fee advance credits from the same watershed as their development site. At the time, the Agency justified this action because the bank credits in question were generated by preservation or enhancement activities. The Agency's decision-making process did not align with the hierarchy presented in the draft rule and its prior iterations which did not consider mitigation credit activity type. OHBA requests that Ohio EPA incorporate additional text into this section of the draft rule to provide a framework that more thoroughly clarifies the mitigation hierarchy decision-making process employed by Ohio EPA when reviewing an applicant's mitigation plan. This framework should integrate concepts associated with proximity of the mitigation site to the impact site, their significance within the watershed, and an evaluation of the mitigation bank sponsor or in-lieu fee program (i.e., whether it is successfully meeting no net loss. Recommended text is provided below:

Recommended Text: Ohio EPA will follow the mitigation hierarchy established within OAC 3745-1-54(E)(1) when determining the acceptability of a mitigation plan. When multiple mitigation options are available in a service area, Ohio EPA will assess the likelihood for ecological success and sustainability, the location of the compensation site relative to the impact site and their significance within the service area, potential for temporal loss, fulfillment of no net loss of acreage or functions, and the costs of the compensatory mitigation project.

3745-32-04 Mitigation for Impacts to Streams

(B)(7). Despite the strict schedule required by HB 175, adopting the 2016 stream guidelines directly by reference in the draft rule (with language thus included verbatim from the guidelines) fails to address numerous programmatic issues associated with several of the guideline's recommended ecological performance standards. OHBA requests that Ohio EPA incorporate the text of individual ecological performance standards directly into the rule instead of referencing the guidelines, as this will provide greater clarity and consistency for sponsors. Copied below are the text of performance standards that have been accepted on several recently approved projects.

- **PHYSICAL MEASUREMENTS:** The restored streams channels (i.e., Mitigation Type 1, Activity Levels 1, 3, and Stream Creation) will meet physical criteria based upon the final stream design. Physical parameters will be established as design goals for each channel and will include: riffle bankfull width, riffle bankfull depth, pool bankfull width, pool bankfull depth, riffle cross sectional area, pool cross sectional area, bank:height ratio, sinuosity, radius of curvature, and bankfull slope. Documentation of attainment of these criteria will be completed during the site's post-construction topographic survey and subsequent monitoring.

- **CHANNEL STABILITY (BEHI):** The restored stream channels will be stable. They should not exhibit excessive bank erosion, headcutting, aggradation, entrenchment, or degradation. To document compliance with this goal, the restored stream channels (i.e., Mitigation Type 1, Activity Levels 1, 2, 3, and Stream Creation) will be evaluated utilizing the BEHI assessment tool. Restored channels will achieve a BEHI score less than 25.

- **HABITAT (HHEI or QHEI)**: The restored stream channels (i.e., Mitigation Type 1, Activity Levels 1, 3, and Stream Creation) will achieve a habitat assessment score of _____ or an increase of 10 points from baseline, whichever is higher.

- **MACROINVERTEBRATES (HMFEI):** For streams with active channel restoration (i.e., Mitigation Type 1, Activity Levels 1, 2, and 3), post-restoration stream class, based upon macroinvertebrate sampling, will equal baseline (pre-construction) stream class.

- **NATIVE SPECIES**: Riparian areas receiving mitigation credit will have a minimum 80% relative cover of native plant species by the end of the monitoring period and less than 5% relative cover of non-Typha invasive plant species listed in Table 9.1 of this document by the end of the monitoring period. Additionally, due to the difficulty of distinguishing the

three species of cattails (Typha latifolia, Typha angustifolia, Typha x glauca), as well as the likelihood that at least one of these will be present in many riparian areas in Ohio, the total relative cover of invasive species listed in Table 9.1, including Typha spp., will be less than 10%.

- **FORESTED HABITAT**: For stream mitigation reaches where earthwork was conducted resulting in a lack of a closed canopy of trees following construction, the goals will be:
    - A minimum of 400 native, live and healthy (disease and pest free) woody plants per acre (of which at least 200 are tree species) evenly distributed throughout the site will be present at the end of the monitoring period.
    - 200 native trees per acre shall attain a height of 2.0 meters by the end of the monitoring period.

General Comment

Given the current housing crisis facing Ohio currently, land development regulations play a crucial part in helping to mitigate this shortage. The ability to develop lots for homes to be built in a predictable, reasonable manner will only help to alleviate the obvious problem Ohio faces: the lack of the necessary supply of lots and housing.

Thank you for allowing us this opportunity to comment. OHBA continues to coordinate with other industry groups, as well as mitigation bank sponsors to produce meaningful feedback, and looks forward to continuing to work on these rules in establishing this program. We would be happy to meet with you and the DSW management team to discuss further.

Sincerely,

Vincent J. Squillace, CAE
Executive Vice President

December 8, 2023

VIA E-MAIL (dsw_rulecomments@epa.ohio.gov)

Amanda Payton, Rule Coordinator
Ohio EPA, Division of Surface Water
P.O. Box 1049
Columbus, OH 43216-1049

Re: Comments of the Ohio Oil and Gas Association on Ohio EPA Draft Rule Packages: (1) Section 401 Water Quality Certification Rules (OAC 3745-32), and (2) Wetland Water Quality Standards Rules (OAC 3745-1)

Dear Ms. Payton:

In November 2023, the Ohio Environmental Protection Agency (Ohio EPA) Division of Surface Water issued two related Draft rule packages for interested party review: (1) *Section 401 Water Quality Certification Rules (OAC Chapter 3745-32)*, including amendments to three existing rules (OAC 3745-32-01, -02, and -03) and one new rule (OAC 3745-32-04); and (2) *Wetland Water Quality Standards Rules (OAC Chapter 3745-1)*, including amendments to four existing rules (OAC 3745-1-50, -51, -52, and -54) (collectively, the "Draft Rules"). The Ohio Oil & Gas Association ("Association" or "OOGA") is pleased to provide the following comments on the Draft Rules.

The Association is one of the largest and most active state-based oil and natural gas associations in the United States and has been the representative of Ohio's oil and gas producing industry since 1947. OOGA's members are involved in all aspects of the exploration, development, production and marketing of crude oil and natural gas resources in Ohio. The Association's members often rely on OOGA as their primary source of information on industry trends, activities, tax changes, legislation and regulatory issues. OOGA frequently participates in federal and state regulatory actions affecting the oil and gas industry.

Oil and gas exploration, production, and transportation projects involve significant planning to coordinate the construction, equipment and services needed to complete each project. These projects, from time to time, require OOGA members to obtain a Clean Water Act (CWA) Section 404 federal permit to authorize impacts to streams and wetlands, which triggers the requirement to obtain a CWA Section 401 Water Quality Certification from Ohio EPA (e.g., a project that needs to cross a jurisdictional stream). The CWA 401 WQC/404 permit contain mitigation requirements to compensate for the stream/wetland impacts associated with a particular project. Currently, Ohio EPA utilizes criteria from various guidance documents for determining the appropriate stream and

wetland mitigation performance standards and monitoring requirements in its Section 401 WQC decisions.

Ohio House Bill 175 (effective July 21, 2022) requires any wetland, stream, or lake mitigation standards, guidance, guidelines, and criteria used in the Section 401 water quality certification process to be in rule after July 21, 2024. The Draft Rules codify the guidance relied upon by Ohio EPA for the issuance of Section 401 WQCs, in accordance with HB 175. The Draft Rules also incorporate into rule: (i) a new stream mitigation model, the Ohio Stream Assessment Method (OSAM), which is a functional assessment tool for calculating mitigation debits and credits based on an Ohio-specific variation of the Stream Quantification Tool; and (ii) a new guidance document and new preservation and enhancement formulas for wetland mitigation.

The Association supports Ohio EPA's incorporation into rule the guidance documents used in the Agency's 401 WQC decisions. The Association, as a general matter, also supports Ohio EPA's use of (and incorporation into rule) mitigation criteria that are objective, quantifiable, and repeatable, and that provide for increased flexibility in the performance criteria for mitigation projects. In this regard, the Association appreciates Ohio EPA's consideration of new guidance under the Draft Rules, including the development of the OSAM and the new preservation and enhancement formulas for wetland mitigation. The Association urges Ohio EPA to continue working diligently on the development of OSAM (and other mitigation tools) for timely incorporation in the final rule to satisfy its obligation under HB 175, and to not simply codify current guidance and delay the development and incorporation of OSAM (and other tools) for the next 5-year rule review.

Finally, the Association suggests that draft rule OAC 3745-32-04 be revised by eliminating the hierarchy of preferred mitigation options. The rules should allow for and facilitate the applicant's – not Ohio EPA's – selection of one or a combination of mitigation options.

The Association appreciates the opportunity to comment on the Draft Rules. We look forward to continuing to work with Ohio EPA in this rulemaking effort to establish reasonable and technically supportable stream and wetland mitigation requirements.

Sincerely,

Rob Brundrett
President
Ohio Oil and Gas Association

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December 8, 2023

Anna Kamnyev
Ohio EPA Division of Surface Water
50 W. Town Street, Suite 700
Columbus, OH 43215

RE: Comments on the proposed amendments to OAC Chapter 3745-1 and Chapter 3745-32 and proposed new rule Chapter 3745-32-04

Ms. Kamnyev:

Resource Environmental Solutions LLC (RES) is submitting our comments regarding Ohio Administrative Code (OAC) Chapter 3745-1 and Chapter 3745-32 and the new draft rule (Chapter 3745-32-04) proposed to comply with House Bill 175. As an ecological restoration practitioner with more than a decade of experience nationwide, we are thankful for the opportunity to provide input on the proposed amendments and new rule.

We appreciate that the Stream and Wetland Foundation initiated the discussion around applying a tool in Ohio based on the Stream Quantification Tool (SQT) Light methodology, which we support. The proposed Ohio Stream Assessment Method (OSAM) tool is a good start, but no tool will be perfect from the beginning, and developing a new tool for Ohio will undoubtedly entail an iterative and adaptive process. Understanding this, we feel there are several aspects of the tool that could be improved immediately. We have described these proposed improvements in our comments below and have developed an updated version of the tool that includes our proposed revisions. As we have seen in other states, we expect the tool to improve over time as ecological restoration practitioners and Ohio EPA work collaboratively to update and refine the tool.

RES has been applying the SQT Light tool to restoration projects in Georgia and Tennessee for many years and have maintained a lead role on a workgroup with agencies in these states to adaptively modify and improve the tool over time (the tool is currently on its 12th version in Georgia). **While we have summarized our comments below in this letter for quick reference, we would like to request a one-on-one meeting with Ohio EPA to walk through our comments and some revisions we have directly made to the tool itself that we believe will significantly improve its functionality in Ohio. Our SQT subject matter expert, Matt Hughes, who has more than a decade of experience developing stream assessment methodologies based on SQT Light in collaboration with multiple state agencies, can be present to relay his extensive experience with the tool and our suggestions for adapting it effectively for implementation in Ohio. We are optimistic that our insights based on this experience and in-house expertise will help Ohio EPA save time and resources in developing the best tool possible.**

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Comment 1: Regulatory Process and Stakeholder Input

Ohio EPA should update the rules independently of the stream assessment tool to avoid multiple rule amendments and the scheduling and timing complications and constraints that may result from synchronizing tool updates with rule amendments through the legislative process. Ohio EPA should update the 2016 Stream Mitigation Guidelines concurrently but independently and allow multiple opportunities for stakeholder input to develop and improve the OSAM tool over the next five years.

While we appreciate that Ohio EPA offered multiple stakeholder meetings and opportunities for comment through the early stakeholder process and understand that Ohio EPA is under a tight timeline to incorporate the new rules into the final regulations, we feel that stakeholders have not been provided sufficient time to review the tool. We ask that as the rules are finalized, the OSAM tool be allowed to remain in draft form for a period of at least one year, while allowing for stakeholder collaboration through a work group with regularly scheduled meetings. Following the (minimum) one-year period, OEPA could reevaluate the tool, assess its effectiveness and make any appropriate modifications or revisions.

Comment 2: Units of Measurement (Area vs. Linear)

Mitigation should not be based on square footage and should instead be based on linear footage. While we understand the rationale for increasing the area of habitat and representing impacts by stream size, the OSAM tool currently does not have enough checks and balances to hold mitigation providers accountable to prioritize ecological uplift. Instead, the current parameters present an unintended incentive to design channels to be overly wide to increase square footage and maximize credit generation.

Properly sized channels help ensure a continuously stable, self-sustainable stream. By increasing the width of a channel to gain more square footage, a stream may hold-up for a few years, and may potentially get through the initial monitoring period, but eventually the system will likely fail, leaving the long-term land steward with a problem they are often not equipped, or funded, to fix.

A U.S. Environmental Protection Agency study entitled *"Stream Mitigation Accounting Metrics: Exploring The Use Of Linear-Based, Area-Based, and Volume Units of Measure To Calculate Impacts And Offsets To Different Stream Archetypes (EPA 840-R-21-003)"* highlighted the following shortcomings in using area-based UoM:

- The use of channel and valley area as a standard unit of measure (UoM) are difficult to consistently measure and may result in unintended mitigation outcomes.
- A channel area UoM may account for channel size, but several issues were raised with the ease and repeatability of measurement; for instance, channel area may vary depending on stage/discharge and as it evolves.

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- Channel area UoMs may also vary depending on what width is measured. For example, top of bank or bankfull width may naturally vary over time, and channel bottom width may vary depending on which features are included and how "bottom" is defined.
- Channel area as a UoM may incentivize the design and construction of overly large channels with low velocities that create higher cross-sectional areas and limited ecological uplift.

To evaluate credibility in assessing different UoMs, the study investigated whether the use of a given UoM is scientifically supported for calculating impacts (debits) and compensation (credits) to achieve compensatory mitigation program goals. The study concluded that length-based units, when coupled with a channel and floodplain assessment approach, ranked high for single-thread archetypes, and emerged as a UoM with the most strengths and fewest weaknesses under the assumptions included with the scenarios.

The study concluded that strengths and weaknesses of a UoM relate to the stream assessment method used. The stream assessment approach taken, including how function or condition are assessed affects the scientific credibility of a selected UoM, as the UoM is generally applied as a multiplier. Therefore, it is extremely important that the appropriate UoM be selected. **Our experience and research point to length-based (linear feet) and not area-based (square feet) as the most scientifically supported and credible UoM.**

Comment 3: Reference Curve Data

RES would like more clarification on where the reference ranges come from for buffer widths, pool spacing, and percent riffle. As it appears now, there seems to be a lack of scientific rigor used to create and modify the tool from previous versions used in other states. Additional information on how reference curve data was obtained and is related to Ohio would be appreciated. If more research or input is needed on reference curve data, RES is happy to lend our support.

Comment 4: Removing the AMD Parameter

The OSAM tool includes a separate parameter for restoration projects including design elements that address acid mine drainage, and affords separate biological criteria based on this parameter alone. The inclusion of an Acid Mine Drainage (AMD) parameter is not appropriate in the context of a stream assessment tool for stream mitigation. A significant amount of funding is available through the recent infrastructure bill to address AMD impairments in a variety of ways outside of the mitigation banking framework.

The OSAM tool is a stream assessment tool and not a water quality assessment tool. AMD cannot be remediated through stream restoration alone, if at all. AMD treatments are completed close to the source adjacent to hillslopes/floodplain through limestone dosing, treatment wetlands, ponds, or an engineered treatment facility. This is typically a long-term and expensive process, requiring

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perpetual active maintenance, often through engineered solutions that are not nature-based. This is counter to the 2008 Final Rule goal of self-sustainability (33 CFR 332.7(a)(5)(b)).

A Sponsor could be proactive through the monitoring period and cease AMD treatment after closing the bank and exhausting its credit supply. This would allow AMD to flow back through the stream system and undo the ecological uplift that resulted from earlier restoration activities and previous active management of the bank. As a result, we feel that the OSAM should focus only on traditional stream restoration for use in mitigation.

Comment 5: Addressing Temporal Loss to Maintain Consistency with State and Federal Regulations

Within the Impact Calculation section of the OSAM, a temporal loss multiplier should be added for the use of In-Lieu Fee and PRM credits, to comply with Section (B)(4) of the draft Ohio Administrative Code Section 3745-32-04.

> *"Compensatory mitigation debit and credit amounts shall be calculated using the "Ohio Stream Assessment Method". A temporal loss multiplier of 1.5 will apply for credits purchased through an in-lieu fee program or when permittee responsible mitigation will not occur concurrently with the approved impacts."*

We would like to discuss our ideas for incorporating a temporal loss modifier into the tool in person and would like to request a one-on-one meeting to walk through our updated version of the OSAM tool together.

Comment 6: Additional Parameters

While RES appreciates the simplicity of the OSAM, currently there does not appear to be enough data going into the OSAM to determine proper baseline and proposed conditions. For example, enhancement work would only minimally modify the current parameters and the work performed would not be accurately represented and calculated. Additionally, the few parameters currently included do not provide checks and balances to ensure the stream design will produce the most stable systems. RES suggests the following parameters/data collection be added to the OSAM to ensure that the level of effort for work being performed is being taken into account and that restoration stream design is done in a way to support a healthy, self-sustaining stream.

- Add number of large woody debris (LWD)
    - Not only does LWD help increase habitat diversity, act as an obstacle to flowing water and sediment trap in flood events, but it is also an effective method of improving a stream system while performing enhancement work.
    - This is a simple piece of data to collect and gives a quick snapshot into a different component of the health of a stream system.
    - The Tennessee SQT uses the "# Pieces" of LWD as a parameter in which the Index Value is linked to the stream Eco Region. RES suggests adding "# Pieces" into the

OSAM but does not think the "Large Woody Debris Index" from the TN SQT is necessary.

- Riparian Vegetation
  - RES believes there should be some incentive for encouraging the transformation of impacted buffers into protected, native vegetation buffer areas. In addition to the Buffer parameters currently incorporated into the OSAM tool, the addition of a "Native Vegetation Cover" similar to the TN SQT, but simplified, would be a good addition to this tool. Adding a Native Vegetation parameter will help encourage removal of invasive species.
- Add pebble count data
  - The TN SQT has a "Proposed Bed Material" drop down in the Site Information section. This is linked to "Size Class Pebble Count Analyzer (p-value)" under Geomorphology. Adding a pebble count parameter would be beneficial as it will more closely evaluate the current and proposed substrate data and encourage proper design to ensure sediment is being transported as it should.
  - The QHEI and HHEI rewards boulder-sized material in the scoring, which is not always appropriate depending on the type of channel being designed. The addition of a Pebble Count parameter could help balance scores from the QHEI and HHEI and could be as simple as linking pebble count data to the proposed stream type (e.g. C4, A3, etc.). Scores would be based on whether or not the pebble data matches.
  - It might also be beneficial to link bed material size to slope. Gravel and cobble are ideal in most systems, but, for example, a steeper step-pool system would need slightly larger material to prevent it from washing away.
- Bankfull width and depth reference data should be linked to the Eco-Regions, and not be the same throughout the entire state. It would be helpful if the regression equation used is cited within the document.

Comment 7: Updates and Revisions to Improve the OSAM Tool

RES suggests specific edits to the OSAM tool as outlined in the table below.

Cell Number	Suggested Edit	Explanation
B23	Change Conditional Formatting to "black out" this cell when B8 is not "Impact".	Increased user-friendliness.
E16	Add ROUND function to formula to 2 units.	Helps maintain a consistent number of debits needed which will allow for cleaner bank ledgers.

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Cell Number	Suggested Edit	Explanation
J23	Add ROUND function to formula to 2 units. Change visibility of decimal point to 2 units.	Helps maintain a consistent number of credits calculated which will allow for cleaner bank ledgers.
J40 / J56	Change formula to modify "Overall" index score if Biology is "" for Ephemeral or Intermittent streams.	Ephemeral and intermittent streams which cannot have benthic organisms collected on them due to lack of flow should not be penalized by having a 0 averaged into the Overall index score formula.
E47 / E63	Add Conditional Format to "black out" this cell if B20 = Ephemeral.	Increased user-friendliness.
D14:E15	Add rows to add a drop down for "Mitigation Credit Source" and a Debit multiplier if the source is ILF or PRM.	See explanation in Comment 5.
A17:B18	Remove cells for square ft calculation.	See explanation in Comment 1.
G16:J18	Remove cells for square ft calculation.	See explanation in Comment 1.
J19:J23	Modify formulas to not use square ft in calculation.	See explanation in Comment 1.

Comment 8: Additional Suggested Edits

RES would like clarification on specific items within the OSAM tool as outlined in the table below.

Cell Number/ Location	Additional Clarification Needed
E13	Please clarify what needs to be entered for "Area of Impact (sq ft)". How is this different than the "Existing Stream Area" (cell E12)? This modification may not be necessary as RES does not believe area should be a component of Impacts if it is not part of the mitigation, and therefore E12 and E13 should be removed.
Ref Curves	The Reference Curve data for Entrenchment Ratio does not match up with the formulas for Entrenchment Ratio on the "OSAM Draft" tab. The "Reference_Curves" tab shows data for stream types: A, B, Bc and E, F. However, in the formulas on the "OSAM Draft" tab, data for A, B, and Bc stream types are also used for G and Gc. Similarly, data for C and E stream types are also used for F, but this is not referenced on the "Reference_Curves" tab. There is also no reference data linked in the "OSAM Draft" tab formulas for Da stream types. This should be updated.

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Cell Number/ Location	Additional Clarification Needed
Ref Curves	Reference Curve data for "Pool Spacing" is based on stream slopes above and below 2%. However, generally streams above 3% and below 1% don't want to naturally form riffle-pool sequences. RES would like more information on where Pool Spacing reference curve data came from to ensure the proper slope percents are being used.

Thank you for considering our comments through the rulemaking process. Once Ohio EPA has received our comments, I will reach out to inquire about scheduling a one-on-one meeting (in person if possible) to discuss our comments and proposed changes to the OSAM Tool.

Katie Wolff
Regulatory Director

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December 8, 2023

Anna Kamnyev, 401/Wetlands Manager
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Subject: Comments on Proposed Mitigation for Impacts to Streams Rule (OAC 3745-32-04)

Dear Ms. Kamnyev,

Thank you for the opportunity to review and comment on the proposed new rule "Mitigation for Impacts to Streams" (3745-32-04) and its associated Ohio Stream Assessment Method (OSAM). The Nature Conservancy (TNC) appreciates your efforts to gather stakeholder input and we are hopeful that a collaborative approach to developing stream mitigation rules and crediting tool will result in an approach that works for the entire mitigation community and for the protection of our stream resources. TNC regrets that Ohio EPA conducted very little stakeholder engagement with the mitigation community during the development of the proposed assessment methodology.

TNC would like to first point out that Ohio has been using the ratio-based debit and credit calculations detailed in the "Guidelines for Stream Mitigation Banking and In-Lieu Fee Programs in Ohio" and it seems to provide a viable and adequate way to determine credits and debits. The methodology is also easily understood by all, making the permitting process less onerous for those with compensatory mitigation obligations, and it is immediately operational. Because HB175 created a very tight deadline from which the Ohio Environmental Protection Agency (Ohio EPA) must work, we suggest that a solution might be to initially utilize the ratio method, which would allow time for the Ohio EPA to develop the rigorous methodology and background data that is necessary to effectively develop a comprehensive function-based mitigation tool. This would also allow for more comprehensive stakeholder involvement in the process.

Ultimately, TNC is in favor of utilizing a function-based approach to evaluate mitigation debits and credits; however, TNC does have substantial concerns with OSAM in its current form. The goal of developing an assessment methodology should be to establish a scientifically defensible approach for the calculation of debits and credits and to focus stream mitigation on results that are ecologically beneficial, predictable, and can be measured easily and accurately in the field. TNC does not think that the OSAM in its current form achieves these goals and therefore would not be an improvement over the current methodology. A bulleted list is provided in the attachment with specific comments regarding the OSAM tool.

The Ohio EPA has had a major influence on the rest of the country with its robust scientific approach to stream assessment tools, such as QHEI, HHEI, VIBI, AmphIBI, ICI, and IBI. These tools have evolved to the point where no one questions the viability of the results. Results are not questioned because the

significant amount of biological, physical, and chemical data that have been collected and analyzed over the last decades clearly demonstrate that the factors that are being assessed correlate strongly with the ecological conditions of streams. Their use has resulted in reliable water quality standards that protect streams and rivers at the appropriate levels based on their assigned designated uses. An equally reliable tool that can measure baseline conditions and ecological lift from compensatory mitigation actions should be the targeted outcome of these current efforts. TNC believes the best way to achieve this is to rigorously incorporate this robust scientific legacy by quantifiably measuring the attributes most important in shaping the ecological conditions of Ohio's streams and rivers.

Again, thank you for the opportunity to provide comments. We look forward to working with the Ohio EPA to develop a mutually satisfactory model that provides a practicable, predictable, and scientifically based approach to evaluating stream impacts and compensatory mitigation projects in Ohio.

Best,

Bill Stanley
Ohio State Director
The Nature Conservancy

Enclosures

Attachment A: TNC Comments – Mitigation for Impacts to Streams Rule

TNC offers the following comments on the proposed Mitigation for Impacts to Streams Rule (OAC 3845-32-04):

1. Temporal loss multiplier (3845-32-04)(B)(4) - While TNC recognizes that temporal loss, as it is described in the 2008 Mitigation Rule, may cause some short-term ecological impact on the State's aquatic resources, a multiplier of 1.5 is extreme. If the permitting agencies are strictly applying the mitigation hierarchy, then the only reason ILF credits would be purchased is if there are no mitigation bank credits available in the service area. This unavailability is not the fault of the permittee, nor do they have control over it, so forcing them to purchase 1.5 times the required amount seems unfair and excessive. Other stakeholders have claimed that including a multiplier would allow more mitigation banks to be located in Ohio, but again the strict adherence to the mitigation hierarchy is more of a driver of this. Additionally, it doesn't seem that permittees should be forced to shoulder this burden when being forced to purchase ILF credits. Because of this, a temporal loss multiplier should only be used when a permittee is seeking to purchase credits outside of the mitigation hierarchy (as described in (3845-32-04)(B)(2). If the Ohio EPA determines that a temporal loss multiplier is necessary, TNC recommends using a less extreme multiplier such as 1.2.

2. Ecological monitoring period (3845-32-04)(B)(8)(b) - TNC does not condone the use of a 5-year maintenance and monitoring period, and urges the use of a 10-year period which has already been in practice in Ohio. A 5-year period simply does not provide enough time for mitigation sites to achieve measurable success and the sustainable equilibrium that is necessary for site closure. Regarding (3845-32-04)(B)(8)(b)(i), the Ohio EPA should never allow for a 5-year monitoring period to be shortened. Stream systems are too dynamic for success to be proven in such a brief period. The "Guidelines for Stream Mitigation Banking and In-Lieu Fee Programs in Ohio" require at least four documented bankfull events post-construction before all credits are released.

   TNC recommends that 10 years of ecological monitoring should be required for all mitigation providers, and this period should only be shortened if all performance standards have been met and at least four bankfull events have occurred following construction.

Ohio Stream Assessment Method:

TNC offers the following comments on the proposed Ohio Stream Assessment Method (OSAM) v. 2.1 spreadsheet and supplemental document:

A. Regulatory Process, Pace and Ethics

TNC recognizes the extremely tight timeline that HB175 created for finalizing the required stream rulemaking; however, developing an appropriate stream assessment tool takes significant time and robust collaboration. The work being undertaken is extremely important and cannot be rushed. The US Army Corps of Engineers Engineer Research and Development Center developed best practices that could be adopted in the Technical Guide for the Development, Evaluation, and Modification of Stream Assessment Methods for the Corps Regulatory Program.

As part of this process, Ohio EPA requested comments in June 2023. Stream + Wetland Foundation (S+W) submitted an August 4, 2023 letter, in which they proposed OSAM as a functional assessment tool. Without soliciting additional input from other stakeholders or convening a working group as earlier suggested, Ohio EPA selected the S+W approach and moved forward with finalizing the draft rules using this tool. We suspect that a large part of this choice was influenced by the tight timeline and the easy opportunity to quickly use OSAM as a "ready-made" tool.

Based on the additional interactions with the Ohio EPA regarding OSAM, it is apparent that S+W continues to be the technical lead in the tool's development. This reliance on a single, private party raises concerns regarding undue influence and raises questions about the agency's ability to fully understand the inner workings of the tool or the many ways it could exert influence on mitigation. The tight deadline has seemed to force the Ohio EPA into accepting a quick solution and sidestepping important process and collaboration efforts.

TNC recommends that the Ohio EPA take over the technical development of OSAM, and establish a true working group of mitigation stakeholders in order to garner collaborative and transparent technical expertise.

Regardless of the decision-making around the use and form of OSAM, TNC strongly suggests that a revision interval should be included in the rule. A revision interval, such as every 3 or 5 years, would allow for OSAM to be revised to include:

- **Updated data collection for Ohio's streams such as regional curves being developed for Ohio.**
- **Continued input from experts such as (but not exclusively): geomorphologists, fisheries ecologists, malacologists, macroinvertebrate biologists, botanists, engineers, wetland ecologists, soil scientists, geologists, social scientists, economists etc.**

- **Ohio EPA to pivot from unforeseen detrimental impacts to aquatic resources that have occurred because of the initial adopted OSAM.**
- **Adjustments to OSAM because of watershed and stream flow changes as a result of climate change or drastic land alteration.**

B. Area-Based Units of Measurement

The OSAM supporting documentation explains that the tool uses stream channel area as its unit of measure and claims that the use of area provides benefits over the use of linear feet. This is a very significant change compared to most functional assessments, most notably Georgia's SQT Lite which OSAM is modeled after, and TNC believes this approach requires rigorous analysis to determine its impacts on Ohio's aquatic resources.

On the surface, the use of area may have merit, but in the OSAM Supporting Information document, only anecdotal rationale is provided, which was directly copied from S+W's August 4, 2023 letter. No evidence is provided that these claims are true, or that the linear feet approach is not working. TNC is not aware of a comprehensive assessment that has been performed to determine this. Since most SQT tools across the nation use the linear feet approach, it would seem there would be ample opportunity for research.

The 2021 USEPA report Stream Mitigation Accounting Metrics: Exploring the Use of Linear-Based, Area-Based, and Volume Units of Measure to Calculate Impacts and Offsets to Different Stream Archetypes provides an in-depth assessment of the various "Units of Measure" (UoM) and suggests that there are 3 questions to explore:

- Is the use of a given UoM scientifically supported for calculating impacts (debits) and compensation (credits) to achieve compensatory mitigation program goals? – Credibility
- Does the given UoM reasonably apply to different stream archetypes and landscapes nationwide? – Applicability
- Does the given UoM apply equally to the impact (debit) and compensation (credit) sides of a debit/credit ledger? – Parity

From the OSAM supporting documentation, the credibility, applicability, or parity regarding the switch to an area-based unit of measure are not explored or explained.

In addition to the lack of supporting evidence for a switch to an area-based approach, TNC also has strong concerns that there could be very significant unintended consequences that should also be researched. The Ohio EPA recognizes the power of this tool to promote certain restoration approaches, as they have stated that the reason for shifting to area-based crediting is to incentivize mitigation on larger streams. TNC cautions that this focus would work against the goal of headwaters protection under the watershed approach described in the 2008 Final Mitigation Rule (33 CFR Parts 325 and 332). Additionally, the area-based approach would allow

simple adjustments to the bankfull width to provide significant gains in credit generation. This will very likely create a perverse incentive that awards more credits for stream restoration design approaches that favor large single-thread, over-widened channels, regardless of the ecological appropriateness.

Additionally, from a restoration standpoint, the credit focus on square-foot area and bankfull width creates a severe credit penalty for restoration approaches that narrow the bankfull width; however, there are valid design reasons for this to happen that commonly occur. It would also seemingly disincentivize dam/culvert removals. TNC believes that design decisions should be made based on sound science and not the maximization of credits. Because OSAM strongly penalizes the narrowing of bankfull width, mitigation providers may be forced to make decisions that go against the ecological benefit of the stream.

TNC recommends that OSAM be changed to a linear foot crediting system.

C. Credit Generation and Influence on Pricing

TNC has analyzed projected OSAM credit costs with our full-cost accounting spreadsheets and tested these scenarios against actual projects and theoretical projects. Through our analysis, OSAM consistently generates only 33% of the stream credits that the current ratio-based crediting methodology generates. This indicates that OSAM in its current form would triple credit prices. This represents a significant increase in credit pricing that would seemingly require explanation and justification from the Ohio EPA.

TNC recommends that Ohio EPA perform a comprehensive credit generation comparison between the current ratio-based credit methodology and OSAM.

D. Lack of Flexibility Negatively Impacting Site Selection and Restoration Design

The current iteration of the OSAM tool greatly limits the ability to address geomorphic impairments to the stream channels. Similar to the sentiment of "*first, do no harm*" in the Hippocratic Oath that physicians abide by, recovering stream channels should be evaluated based on impairments and then the appropriate treatment should be administered. The stage of stream channel evolution needs to be considered along with evaluating the impairments that occurred as a result of cumulative impacts from historical and current land uses. Different restoration applications are needed to address stream degradation concerns. Restoration can encompass a variety of types, including but not limited to:

- Addressing conflicts with infrastructure as related to improperly sized culverts that should be replaced or dams that are hazardous and no longer functioning for their intended purpose.
- Allowing beaver to create natural wetland and stream complexes.
- Breaching berms adjacent to streams for floodplain access.

- Creating high-flow channels in floodplains to naturally alleviate flooding pressure.
- Developing anastomosing, multi-threaded channels where appropriate on the landscape.
- Increasing instream habitat complexity and reduce legacy effects of forest stand dynamics in the contribution of large wood habitat in streams.
- Allowing other stream channel types that would be appropriate as both low gradient, high gradient, alluvial, and bedrock streams occur in Ohio.

In addition, a nationwide effort is currently gaining momentum to create a realm of acceptable outcomes of restoration techniques to allow to decrease the rigidity of projects that are occurring. This is evident from the 2023 National Stream Restoration Conference workshop proceedings *Expanding monitoring and performance to dynamic stream systems* beginning on page 120 of the white paper.

TNC recommends that OSAM metrics, performance standards, and the determination of appropriate outcomes should be based on the type of restoration work that has occurred. OSAM should be modified to include stream channel evolution and allow for a range of appropriate techniques.

E. Influence on Site Selection

It does not seem that the watershed-based approach, as defined by the 2008 Mitigation Rule, is part of OSAM. There is scant evidence that the project search image dictated by OSAM has a watershed-based focus. This is a significant departure from previous guidance and in stark contrast to the guidance TNC received when developing our Instrument.

TNC recommends that OSAM include bonus multipliers that incentivize projects that show watershed-based site selection such as projects that serve to meet a TMDL strategy, or Balanced Growth Plan, are located adjacent to high-quality waters or parks or other conservation lands.

F. Create a Working Agreement for Co-Regulating with Federal Agencies

The regulation of aquatic resources in the state of Ohio seems to be in incredible flux, because of HB 175 and the U.S. Supreme Court "Sackett v. USEPA" decision. Permittees and mitigation providers are relying on the regulators to create a steady, predictable process for navigating through these chaotic times. The seemingly independent development of OSAM without much input from the other regulatory agencies or stakeholders is troublesome. The possibility of having two different mitigation pathways for permittees and mitigation providers would be very disruptive.

TNC recommends Ohio EPA work with other IRT agencies to find collaborative solutions to HB175 and Sackett.

G. Mitigation Providers and Permittees Independently Developing Assumptions Around Uplift

There are a lot of assumptions that must be made in order to predict how many OSAM credits might be generated from a mitigation project. If mitigation providers make the wrong assumptions and are too optimistic, they can create challenges not only for their ability to fund the necessary mitigation work, but they could jeopardize the entire mitigation community through ruined reputations and failed mitigation projects. Because of the 5 or 10-year monitoring and credit release timeframe, the magnitude of any miscalculation may take a long time to reveal itself, causing an exponential growth of liability and failure to meet the overall goals of the Clean Water Act. Since OSAM is new and untested, this is a real risk, especially since there will be a huge disparity in the level of understanding from regulators, permittees, consulting firms, and mitigation providers.

TNC recommends that the Ohio EPA or IRT develop the underlying data and background information regarding OSAM, including the credit predictions and cost implications, so that there is an even playing field for all stakeholders. Also, stakeholders should be involved in training and discussions regarding the use and development of OSAM, and in the development of a basic set of assumptions to be used when ecological lift is being predicted. Regulators should also provide a very high standard of oversight regarding ILF credit pricing, and mitigation bank and permittee-responsible credit projections.

H. Acid Mine Drainage Parameter

The OSAM tool includes a separate parameter for restoration projects including design elements that address acid mine drainage, and affords separate biological criteria based on this parameter alone. The inclusion of an Acid Mine Drainage (AMD) parameter is not appropriate in the context of a stream assessment tool for stream mitigation. The OSAM tool is a stream assessment tool and not a water quality assessment tool. Because AMD treatments are largely completed through relatively temporary approaches, most would run counter to the 2008 Mitigation Rule. There may be some limited opportunities to include AMD remediation in the mitigation context, on a case-by-case basis, but that doesn't warrant its incorporation into OSAM.

TNC recommends that AMD be removed from OSAM.

If AMD is kept in the final version of OSAM, TNC recommends that the parameters and multipliers be further investigated. Because all of the Water Chemistry parameters are afforded only 20% of the overall credit score, an AMD stream restoration that fails to remediate the water chemistry could still receive a significant amount of mitigation credits through OSAM. Additionally, specific conductivity and turbidity can fluctuate with rain events and can be problematic to measure consistently.

I. Scientific Rigor and Knowledge Gaps

OSAM proposes the utilization of three general metrics of hydraulics, geomorphology, and biology and is based on a modified version of Will Harman's Stream Functions Pyramid. OSAM, in its current form, however, does not adequately explain the decision-making that went into choosing which metrics to include in OSAM, or how they relate to appropriate credit generation and no net loss. The OSAM guidance document states that, "this tool will be able to directly measure functional lift that results from a mitigation project."; however, there is no evidence provided that the tool adequately measures functional lift. It is important to scientifically show that OSAM will result in specific goals of attainment and no net loss.

The proposed tool presents significant deviations from the Georgia SQT Light tool from which it was modeled. It appears S+W selected certain parameters and deleted others without providing much justification or scientific rationale for these changes. It is unclear whether data local to Ohio were or will be incorporated into the tool, which was originally developed using regional curves from Georgia. As an example, the data presented for reference curve information in this modified SQT does not document sources or methodologies.

TNC recommends that robust studies are performed by Ohio EPA, and rationale developed to determine and justify which metrics, reference curves, and multipliers are utilized in OSAM. TNC provides further recommendations below.

1. **Hydraulics**

Chanel incision or stability can be measured through bank height ratio and the connection to the floodplain. Bank height ratio (BHR) is the vertical distance between the toe of the slope to the top of bank elevation. Rosgen created a rating metric corresponding to bank height ratio to classify stream channels as non-incised with a BHR range of 1.0 to 1.05, moderately incised with a BHR range of 1.06 to 1.3, incised with a BHR range of 1.3 to 1.5, and severely incised with a BHR > 1.5. Bank height ratios or channel incision will range from a value of < 1.2 for a non-incised channel, ≥ 1.5. The ranges in OSAM seem to have been taken from the **Ohio EPA Rainwater and Land Development Manual.**

TNC requests the rationale for the divergence of categories from the A Stream Channel Stability Assessment Methodology by Rosgen versus what is incorporated in OSAM

Hydrology is an important component of stream evaluation and assessment and is only nominally included in OSAM. In the Site Information section, there is the option under Flow Regime to select ephemeral, intermittent, or perennial. In performing sample tests of the spreadsheet, however, TNC could not determine how the selection of the flow regime influences OSAM calculations, reference curves, or

ultimately credit generation. We point this out in case the absence of influence is an error.

Stream flow conditions will vary based on seasonality, precipitation, and elevation of the water table. Methodology such as the USEPA Regional Streamflow Duration Assessment Methods (SDAMs) coupled with the USACE Antecedent Precipitation Tool (APT) need to be incorporated for consistency.

TNC recommends that there is guidance provided on how OSAM users should document stream flow regimes to create consistency and predictability.

2. **Geomorphology**

Fluvial geomorphology – the study of interactions between stream channels, water, sediment transport processes, and landforms – is extremely important in determining functional loss for the impacts to stream systems as well as the restoration of streams. OSAM incorporates minimal metrics that encompass fluvial geomorphological processes. The included metrics are floodplain connectivity measured by bank height ratio and entrenchment ratio, riparian vegetation measured by buffer width, bed form characterization measured by percent riffle and pool spacing ratio, and habitat measured by Qualitative Habitat Index (QHEI) and the Primary Headwater Habitat Evaluation Index (HHEI).

TNC recommends incorporating additional fluvial geomorphic metrics such as Large Woody Debris, width-to-depth ratio, channel pattern, sediment transport, sediment carrying capacity, channel sinuosity, meander pattern, meander migration, range of meander wavelengths and radius curvatures, further development of regional curves, instream habitat complexity, channel evolution, etc. into OSAM.

3. **Riparian Vegetation**

There is exhaustive research provided in "A Function-Based Framework" by Will Harman of Stream Mechanics that explains the importance of riparian buffers to stream systems. The publication notes that the land alongside streams strongly influences, and is influenced by, the streams and their associated processes; furthermore, the vegetation within the riparian buffer plays a critical role in supporting channel stability, and physicochemical and biological processes.

TNC has strong concerns with OSAM's minimal consideration of riparian buffers. The only criterion utilized is the width of the buffer, treating the buffer in any condition, whether forested or dominated by invasive shrubs, as the same. This means that a mature riparian forest has no more value under OSAM than an invasive-dominated field. Most SQT methodologies include measures of buffer width, tree density, tree

size, and invasive cover because the science indicates that it is not only the presence of buffer but also its ecological quality that determines its value to the stream system.

By only measuring the width of riparian buffers, OSAM will not discourage mitigation practitioners from the unnecessary removal of mature forest. It also does not provide a credit incentive for high-quality riparian buffer restoration, effectively eliminating Mitigation Types 3 and 4 as described in the Guidelines for Stream Mitigation in Ohio version 1.1.

TNC recommends that OSAM include VIBI-FQ as an additional riparian buffer metric. As mentioned previously, Ohio has developed a robust legacy of assessment tools, among which is the Vegetation Index of Biotic Integrity (VIBI). The VIBI uses attributes of vegetation communities that vary most predictably with human disturbance levels and which correspond with levels of ecological condition. The VIBI-FQ, which only uses some of the VIBI metrics, is a great assessment tool for non-wetland habitats. Both the VIBI and VIBI-FQ methods are widely used throughout Ohio as quantifiable performance standards for mitigation projects, and should be continued to be used in OSAM.

4. Habitat

The Ohio EPA did not incorporate a Large Woody Debris (LWD) metric in OSAM even though it is included in the Georgia SQT Lite tool and many of the other SQT tools around the country (e.g. Tennessee Stream Quantification Tool [TDEC, 2017], North Carolina Stream Quantification Tool [Harman et al., 2017], and Wyoming Stream Quantification Tool [USACE, 2017]). LWD is a valuable metric for measuring stream habitat and nutrient cycling, and the assessment, in addition to providing valuable information about the health of the stream, is relatively easy to perform.

TNC recommends that LWD, as utilized in the Georgia SQT Lite tool, be incorporated into OSAM.

While the Qualitative Habitat Evaluation Index (QHEI) is a welcome addition to OSAM, as it provides a robust, Ohio-based assessment tool that can inform mitigation design and success, the incorporation of the Headwater Habitat Evaluation Index (HHEI) is problematic. HHEI does have a focus of measuring headwater streams in Ohio; however, the HHEI manual explicitly states that it was not designed for evaluating stream restoration projects. Its use in OSAM is highly problematic, as it provides very little credible opportunity for increasing HHEI scores through restoration and goes against the intention of the assessment tool.

TNC recommends that HHEI be modified in order to make it more appropriate for evaluating stream restoration projects by adding parameters that can effectively evaluate functional lift.

OSAM automatically chooses if the QHEI or HHEI are measured, based solely on the watershed size. Both the QHEI and HHEI manuals provide information on situations where their use may extend beyond the strict application of watershed size. OSAM doesn't consider this and the inflexibility is problematic.

TNC recommends that OSAM is structured so that the user can justify the use of QHEI or HHEI outside of the suggested range of watershed size.

Note also that QHEI and HHEI are not analogous for habitat parameters. These metrics were originally developed as a surrogate for macroinvertebrate and fish sampling to determine if a system may support specific communities.

TNC recommends that the QHEI and HHEI be nested under the biology metrics.

5. Biology

1) **Headwater Macroinvertebrate Index (HWMI):** OSAM utilizes a seemingly new index to evaluate macroinvertebrates called the Headwater Macroinvertebrate Index (HWMI). It is not clear why this index is being incorporated into the assessment tool, since there are other assessments that already exist. The November 2023 Ohio EPA publication "Headwater Summary Macroinvertebrate Index Based on Presence/Absence Data", concludes that HWMI is similar to EPT or sensitive taxa richness, and does not replace a formal narrative assessment. While the publication points to some rationale for this assessment tool, it also is full of complex formulas and difficult to grasp functions.

   TNC recommends that #EPT taxa be used instead the HWMI. The #EPT taxa has a legacy of use in Ohio and is much more transparent and less time-consuming to calculate.

2) **Choice of Parameter:** OSAM automatically chooses if the Index of Biological Integrity (IBI) or HWMI are used, based solely on the watershed size. The inflexibility of choosing which metric will be used based on watershed size ignores situations where their use may extend beyond the strict application of watershed size, which is problematic.

   TNC recommends that OSAM is structured so that the user can justify the use of IBI or #EPT taxa outside of the suggested range of watershed size.

3) **Fish and Macroinvertebrate Response to Restoration**: Biological response to restoration projects is difficult to quantify and predict because it is not well

understood. OSAM assumes that macroinvertebrates will respond positively over time to a stream restoration project, but solid, quantifiable, scientific evidence of this is lacking. The quality of the water flowing through a site is a major driver of the ability of sensitive species to survive, so even the most well-designed Ohio restoration projects may not have the ability to increase biological levels beyond the baseline. Because it is very difficult to predict biological lift and 20% of the Proposed Condition Score comes from this parameter, there is a lot of liability and risk inherent in predicting the amount of credit generation, which in turn drives up costs, uncertainty, and liability.

TNC recommends that at a minimum, the proportion of credit generation coming from biology be reduced. Preferably, TNC would recommend that biological lift be treated as a bonus credit generator. Additionally, there should be an exploration of other measurements that may also represent biological lift, such as QHEI.

REGION 5
CHICAGO, IL 60604

December 8, 2023

Ohio Environmental Protection Agency
ATTN: Joni Lung
50 W. Town Street, Suite 700
Columbus, Ohio 43215
Submitted via email to at dsw_rulecomments@epa.ohio.gov

Re: Interested Party Review for Changes to Section 401 Water Quality Certification Rules and Wetland Water Quality Standards Rules

Dear Ms. Lung,

The U.S. Environmental Protection Agency has reviewed the "Interested Party Review for Changes to the Section 401 Water Quality Certification Rules and Wetland Water Quality Standards Rules" (draft rules) proposed by Ohio Environmental Protection Agency (Ohio EPA) and public noticed on November 3, 2023. Ohio EPA initiated changes to state Clean Water Act Section (CWA) 401 Water Quality Certification Rules and Wetland Water Quality Standards Rules to satisfy the five-year review rule required under state law for 7 existing rules under Ohio Administrative Code (OAC) (i.e., OAC Chapter 3745-32-01, -02, and –03, OAC Chapter 3745-1-50, -51, -52, -54) and to satisfy House Bill 175 (HB 175) for one new rule (i.e., OAC Chapter 3745-32-04).

The EPA and the U.S. Army Corps of Engineers (Corps) both have responsibilities in the review and evaluation of projects under Clean Water Act Section 404.[1] These responsibilities include the review of discharges to aquatic resources to ensure the impacts are avoided and minimized to the maximum extent practicable and there is adequate compensation for unavoidable losses. The EPA is an active member of the Huntington, Buffalo, and Pittsburgh District Corps Compensatory Mitigation Interagency Review Team (IRT) and reviews and comments on both compensatory mitigation projects in the state of Ohio as well as the regulatory guidance

[1] https://www.epa.gov/sites/default/files/2015-03/documents/404_reg_authority_fact_sheet.pdf

documents used to inform aquatic resource losses and compensatory mitigation decisions to offset those losses. Ohio EPA is also a member of the IRT given the state's role in CWA 401 water quality certification. Other IRT members include Ohio Department of Natural Resources, U.S. Fish and Wildlife Service, Ohio Department of Transportation, and the U.S. Department of Agriculture Natural Resource Conservation Service. Currently, the "2016 Guidelines for Stream Mitigation Banking and In-Lieu Fee Programs in Ohio Version 1.1"[2] inform mitigation project evaluations by the IRT and guide regulatory decisions on stream permitting and mitigation in Ohio. To meet the requirements of HB 175, the draft rules under OAC Chapter 3745-32-04 establish stream mitigation requirements, including a new crediting and debiting model, the Ohio Stream Assessment Method (OSAM), and performance standards for impacts to perennial and intermittent streams covered under a Section 401 water quality certification.

We offer the following comments on OAC 3745-32-04 based on our review of the proposed draft rules and OSAM. While EPA supports Ohio EPA's development of stream mitigation guidance in response to HB 175 and consideration of a stream assessment methodology which incorporates a function-based approach, we have significant concerns with OSAM and incorporation of the tool into rule as proposed.

OSAM is a modified version of the Georgia Interim Stream Quantification Tool[3] (SQT) which is based on the Stream Functions Pyramid Framework[4] and the North Carolina SQT[5]. The EPA facilitated the development of SQTs in Michigan, Minnesota and Wisconsin for use by the Michigan Department of Environment, Great Lakes and the Energy (Michigan) and St. Paul District Corps (Minnesota and Wisconsin). Those tools were developed with extensive input from federal, state, and local agencies, in addition to stakeholders, and completed a rigorous regionalization process whereby regionally specific data or data from existing SQTs were calibrated to selected parameters and metrics to reflect the range of stream conditions where the tool was applied. OSAM was not developed collaboratively with the IRT and all relevant stakeholders in Ohio. We recognize Ohio EPA's tight timeframe to finalize the draft rule by July 2024, but encourage Ohio EPA to prioritize collaboration with the IRT in trying to address the collective concerns of the IRT prior to the deadline.

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[2] Ohio IRT. "Guidelines for Stream Mitigation Banking and In-Lieu Fee Programs in Ohio Version 1.1" March 2016. https://www.lrh.usace.army.mil/Portals/38/docs/regulatory/Guidelines%20for%20Stream%20Mitigation%20Banking%20and%20In-Lieu%20Fee%20Programs%20in%20Oh.pdf

[3] Somerville, D.E., A.F. White, J.A. Hammonds. 2021. User Manual & Scientific Support for the Georgia Interim Stream Quantification Tool. Savannah, GA: U.S. Army Engineer Corps of Engineers, Savannah District.

[4] Harman W, Starr R, Carter M, Tweedy K, Clemmons M, Suggs K, and Miller C. 2012. A function-based framework for stream assessment and restoration projects. EPA 843-K12-006. Washington (DC): US Environmental Protection Agency, Office of Wetlands, Oceans and Watersheds. https://www.epa.gov/sites/production/files/2015-08/documents/a_function_based_framework_for_stream_assessment_3.pdf

[5] Harman WA and Jones CJ. 2017. North Carolina stream quantification tool: spreadsheet user manual, NC SQT v3.0. Raleigh (NC): Environmental Defense Fund. https://www.edf.org/sites/default/files/Quantification-Tool-User-Manual.pdf

Secondly, OSAM is not accompanied by appropriate supporting documentation or scientific rationale. The SQTs in EPA Region 5 include user manuals, scientific support documents, watershed assessments, field forms, and field assessment method manuals to ensure proper use of the tool, the rationale for the chosen parameters and metrics, the science behind reference curves, and detailed directions on collecting and documenting the data for use in the tools, all of which is supported by extensive references to published literature. The "Ohio Stream Assessment Method Supporting Information," accompanying the OSAM rule does not provide the supporting documentation demonstrating the tool adequately quantifies the functional value of Ohio streams. Without appropriate supporting documentation demonstrating transparent, objective approaches and scientific rationale supporting technical feasibility and defensibility, OSAM is difficult to defend for use in federal regulatory decisions. We recommend Ohio EPA evaluate the other SQTs in the Region to examine how they may be able to inform OSAM moving forward. The EPA would be happy to support Ohio EPA in such an effort.

Further, OSAM is not consistent with basic principles for stream assessment method and metric development as outlined in the Corps Engineer Research and Development Center "Technical Guide for the Development, Evaluation, and Modification of Stream Assessment Methods for the Corps Regulatory Program"[6]. The Corps, in coordination with the EPA, and U.S. Geological Survey developed this comprehensive guidance to promote transparency, technical defensibility, and consistent application of stream assessments in regulatory programs. We recommend Ohio EPA use the guide to objectively evaluate and modify the OSAM.

Lastly, in our experience with developing SQTs in the Region, we have found these tools require frequent reviews and updates to adapt to evolving science, new data, and flaws undetected during initial development. Direct incorporation of the OSAM into rule makes such maintenance and updating more cumbersome and could delay Ohio's ability to make changes to the OSAM necessary for the tool to perform the functions required to implement the Clean Water Act. We recommend Ohio EPA take this into consideration before finalizing the rule.

In conclusion, EPA does not support the adoption of OSAM to determine stream impacts or compensatory mitigation under CWA Section 404 as currently proposed. That said, we are committed to working with the Ohio EPA, the Corps, and the rest of the IRT to develop a stream assessment method for Ohio that incorporates a function-based approach developed and supported by all the Agencies.

The draft rule revisions also include amendments to existing rules under OAC 3745-1-54; specifically, a new mitigation ratio for coal mining and abandoned mine projects whereby Ohio EPA would mitigate wetlands impacted by remining activities at a ratio of 1:1, without consideration of wetland quality. In some instances, previously mined areas may have had significant time to naturalize and provide important ecological functions to the watershed. As such, it would be prudent to evaluate wetlands impacted by coal mining consistent with

[6] https://hdl.handle.net/11681/42182

existing standards to ensure the replacement of lost functions and maintain the intent of wetland mitigation. We recommend Ohio EPA take this into consideration before finalizing the rule.

The EPA appreciates the opportunity to comment on the proposed draft rules. We support a stream assessment method that incorporates a function-based approach developed jointly by the Agencies utilizing transparent and objective approaches supported by sound science. The EPA will continue to work collaboratively with Ohio EPA and the Corps to address identified concerns with OSAM with the eventual goal of developing a unified federal and state supported function-based stream assessment tool. Until then, EPA supports the use of the 2016 stream mitigation guidance to inform federal permitting and mitigation for streams in Ohio. We look forward to engaging with you and the IRT in the interim on our concerns. If you have any questions regarding these comments, please contact Kathryn Quesnell at Quesnell.Kathryn@epa.gov or 312-353-3202.

Sincerely,

12/7/2023

X David Pfeifer

David Pfeifer
Manager, Watersheds and Wetlands Branch
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Scott Hans, Regulatory Chief, Corps Buffalo District, Scott.A.Hans@usace.army.mil
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WATER & LAND SOLUTIONS
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December 8, 2023

Ohio EPA, Division of Surface Water
Attn: Ms. Joni Lung, 401 WCQ and Isolated Wetland Permitting Section Manager
P.O. Box 1049
Columbus, Ohio 43216-1049

Submitted via email to dsw_rulecomments@epa.ohio.gov

Re: Interested Party Review - Section 401 Water Quality Certification Draft Rules (OAC 3745-32)

Dear Ms. Lung,

Water & Land Solutions (WLS) appreciates for the opportunity to provide comments during the Interested Party Review phase of the rulemaking process for the Section 401 Water Quality Certification rules (OAC 3745-31-01 through 3745-01-04) currently under consideration for the State of Ohio. WLS is a full-scale ecological restoration and mitigation provider operating in Ohio and across the Eastern United States. Our in-house team is composed of engineers, geomorphologists, hydrologists, restoration ecologists, and biologists who are passionate about delivering ecologically sound, scientifically supported mitigation solutions. Combined, WLS professionals have conducted baseline assessments, performed hydraulic and hydrologic modeling, prepared design plans, performed construction oversight, and conducted monitoring activities on over 1,000 miles of stream channels and adjacent buffers. Our team is trained in and has vast experience using the *Guidelines for Stream Mitigation Bank and In-Lieu Fee Programs in Ohio* (Ohio IRT, March 2016), a variety of ratio-based methods in other states, as well as functional assessment tools (including SWVM, SQT, SQT-lite).

We understand that there have been recent significant changes to laws governing Ohio's streams at both the Federal and State level and appreciate that Ohio EPA staff is quickly and efficiently responding to those changes, including directives set forth in House Bill 175. With the risk to ephemeral streams resulting from House Bill 175 and the Sackett v. EPA, it is vital that Ohio put *rigorously tested and scientifically sound rules* into the OAC. We have carefully evaluated the new rule *3745-32-04 Mitigation for Impacts to Streams* and offer the following comments which have been organized by general topic.

Rulemaking Process

WLS appreciates the opportunity for participation in Ohio EPA's Early Stakeholder Outreach process where general comments on the anticipated rule change were sought. We understand that the rulemaking process evolves as new information becomes available. However, the speed at which the current new rule was developed is cause for concern. During the "HB 175 Stream Rules Update Meeting" facilitated by Ohio EPA on June 22, 2023, Ohio EPA stated that their intention was to make adjustments to the *Guidelines for Stream Mitigation Bank and In-Lieu Fee Programs*

in Ohio and solicited comments on the guidelines at that time. Updating the guidelines was presented as a "bridge" until a functional assessment tool could be developed and tested for future implementation. Within the comments, Ohio EPA received a functional assessment tool developed by one mitigation practitioner, the Ohio Stream Assessment Method (OSAM). Stakeholders were notified September 14, 2023, that Ohio EPA had received a tool and was being reviewed by OEPA and USACE and was considering its adoption. We understand that the tool was evaluated by Ohio EPA with minor updates incorporated from the original version and relatively minor modifications were made subsequent to the original version. **A GOOD PRODUCT TAKES TIME!** Taking time to do the OSAM right now will save significant time in the long run for agencies, mitigation providers, and permittees. Taking the time to properly vet a functional tool now will also minimize the need for issuing and coordinating future modified OSAM versions and modifications to credit ledgers. The OSAM assessment tool is taken from the Georgia SQT which is a lite version of a traditional SQT. The draft OSAM is even lighter than the Georgia version. In the June 2023 meeting, it was stated that a SQT similar to Georgia would take a year and a half to develop. Without developing a functional assessment tool with technical rigor, OSAM will not achieve the goal of assessing and reflecting the functional value of a stream resource. One question comes to mind: Are we trying to do a rigorous functional assessment or just trying meet the bare minimum assignment? OEPA website states: *The OEPA is a state agency whose goal is to protect the environment and public health by ensuring compliance with environmental laws.*

It is not feasible to develop a meaningful functional assessment tool – particularly in Ohio where such a tool did not exist prior – in such a short timeframe. The selected functional assessment tool will influence the design of restoration projects, and it is important for a final functional assessment tool to undergo rigorous technical development, review, and evaluation prior to adoption. Ohio has an active stream mitigation community with technical expertise that is willing to participate in a development process to create a high-quality functional assessment tool. A workgroup approach would also help avoid the appearance that a single mitigation practitioner acted as a technical lead on the OSAM tool with undue influence who has no prior SQT training or development experience. The Ohio EPA should adhere to the nine phases to develop, test, and implement a functional tool as outlined in the *Technical Guide for the Development, Evaluation, and Modification of Stream Assessment Methods for the Corps Regulatory Program* (USACE ERDC, 2021). Creating a functional assessment tool with the input of a multidisciplinary project team, as recommended by the USACE Technical Guide, will also help ensure the tool will be adopted by the US Army Corps of Engineers for evaluating Section 404 permits and compensatory mitigation. A tool that is applied by both USACE and Ohio EPA will help create an efficient regulatory program for project proponents as well as mitigation practitioners.

OSAM

Although WLS was involved in the Early Stakeholder Outreach process, the OSAM was not provided to WLS until October 13, 2023. It is not feasible for any practitioner or agency to fully evaluate a functional assessment tool in such a short timeframe. The OSAM parameters, regional curves, and formulas must be rigorously evaluated, regionalized, and field tested by Ohio EPA staff and professional practitioners prior to implementation in order to fully understand the on-the-ground implications of applying any functional assessment tool. OSAM would greatly benefit from a ***crawl, walk, run approach.*** WLS professionals have reached a consensus on several parameters and technical aspects of the OSAM that require revision prior to putting the tool into effect:

Area Factor

The OSAM credits are generated based on area of impacts (for debits) and existing and proposed stream area (for credits). While width and length are factored in several other OSAM parameters (existing stream length, proposed stream length, entrenchment ratio, HHEI), a multiplier is applied based on area. This results in stream area being very heavily weighted in credit calculations.

According to USEPA's Stream Mitigation Accounting Metrics: Exploring the Use of Linear-Based, Area-Based, and Volume Units of Measure to Calculate Impacts and Offsets to Different Stream Archetypes (Harman et al., 2021, EPA 840-R-21-003, USEPA), **channel area "*does not support in-kind mitigation*" and "*may not be repeatable or straightforward to measure*".** Channel area **may *"change spatially and over time"*.** In addition, per EPA 840-R-21-003, **channel area *"might incentivize or prevent restoration design inappropriate for the landscape"*** and include **incentivizing *"the design and construction of overly large channels with low velocities that create higher cross-sectional areas and limited ecological uplift."***

An Ohio functional tool must remove the area incentive and use channel length. According to the above referenced EPA 840-R-21-003 "the use of channel length when coupled with channel and floodplain assessment approach ranked high for the single-thread channel archetypes…", is "repeatable and straightforward to measure in single-thread channels" and "generally, incentivizes landscape appropriate restoration and debit and credit determination that supports ecological benefits..".

The area parameter provides a distinct incentive to restore large streams, which does not align with the watershed approach which emphasizes "the importance of landscape position and resource type of compensatory mitigation projects for the sustainability of aquatic resource functions within the watershed. Such an approach considers how the types and locations of compensatory mitigation projects will provide the desired aquatic resource functions, and will continue to function over time in a changing landscape" (33 CFR 332.3(c)(2)(i)). Mitigating headwater streams results in cumulative benefits to physical habitat, water chemistry, and biological communities within receiving downstream waterways through a reduction in sedimentation and velocity and increases in nutrient processing.

Further, the goal of compensatory mitigation is to replace lost aquatic resource functions. It is WLS's understanding that the majority of stream impacts in Ohio have historically been to streams with smaller drainage areas, which ideally would be mitigated for in-kind, not via mitigation in larger drainage area streams. It is understood that impacts do occur to larger streams as well; however, it would not be appropriate for a crediting methodology to incentivize large-stream restoration.

Per Rosgen, as the width to depth ratio value increases (i.e., the channel becomes wider and shallower), these conditions result in increased sediment deposition and eventually leading to accelerated bank erosion. Likewise, waterways that have been channelized and dredged for agricultural purposes are often overly widened, incised, and/or entrenched. In such instances, it would be appropriate to design a narrower stream channel, which would be disincentivized in proposed OSAM. Per EPA 840-R-21-003, "effective restoration may include reducing a stream's cross-sectional area (converting a high width/depth ratio stream to a low width/depth ratio stream) thereby reducing the channel width and overall channel area." Implementing this type of restoration would result in lower crediting by the proposed OSAM.

Not only is the area calculation not supported by the USEPA's 2021 paper but the area calculation will affect the biological communities throughout the watersheds. Vannote et al. (The River Continuum Concept, 1980) states there are functional relationships of biological communities along a river corridor based on stream size and structure. The paper also states "*many head water streams are influenced strongly by the riparian vegetation which reduces autotrophic production by shading and contributes to large amounts of allochthonous detritus. As stream size increases, the reduced importance of terrestrial organic matter input coincides with enhanced significance of autochthonous primary production and organic transport from upstream".* This emphasizes that headwaters are extremely important for downstream communities. Vannote et al. continues with stating biological communities are essentially dependent upon their upstream biological groups (e.g. shredders, collectors, scrapers (grazers), and predators; respectively from upstream to downstream). By incentivizing restoration of "wetted area", potential watershed benefits and improvements to riverine and stream functions as a result could be further lost, as restoration work shifts away from headwater systems. Applying OSAM as it currently is proposed, with the goal of restoring lotic resources and functions, may result in creation and restoration of increasingly more traditional lentic environments. This may result in impaired conditions for downstream biological communities and their habitats, including stream fishes, benthic macroinvertebrate communities, and, depending on location, freshwater mussels which are all imperiled statewide.

If restoration focuses on larger systems, then already degraded upstream communities will have fewer opportunities for restoration. Given that headwater restoration can improve and have lasting downstream positive affects (i.e., less sediment, more detritus, low temperatures, improved water quality, etc.). Restoring larger systems is a loss for watershed or water quality improvements. To state the obvious, restoring larger downstream reaches doesn't allow for upstream affects.

If the area calculation is kept in OSAM, then providers will be incentivized to only do larger projects which will not protect those headwater biological communities. There are more headwater streams in the State of Ohio than there are larger streams. Ohio EPA's 2009 report stated that **~80% of Ohio streams have <1 square mile drainage area**. Increasingly, more smaller headwater streams are impacted than larger order streams. One could state that there are more geomorphological and biological functions occurring in a 1,000' long x 10' wide (10,000 sf) project than a 100' long x 100' wide (10,000 sf) project even though they have the same surface area (i.e., more riparian buffers protected, more habitat potential, greater opportunity for water quality improvement, etc.).

A provider may state construction costs are higher to restore the larger streams as one justification to include an area factor. Yes, it may (marginally) if the larger streams are disconnected from their original floodplain and the contractor has to excavate a new lower floodplain. Construction costs could be up to 20% more depending how much excavation is involved. ***However***, the area calculations in OSAM allows and incentivizes larger streams to receive over 10x the credits a smaller headwater project would produce (all parameters were the same for the existing and proposed condition scores). This is another reason to remove area and an OSAM workgroup could identify appropriate methods for crediting in larger systems.

Including an area factor also allows for large amounts to credits to be generated and less stream feet to be restored (i.e., less habitat restored). In other words, one short (length) large-sized stream project may generate a large quantity of credits in a watershed. This large supply of

credits from one project could disincentivize other providers from implementing additional projects. In short, fewer, smaller projects on large systems could meet the entire credit need for a watershed, while most of the impacts are to headwaters streams. This could result in functional loss within a watershed and conflicts with “no net loss” (as stated in the “Common Sense Initiative” associated with the proposed rules) or “in-kind” mitigation.

Hydraulics Measurement Methods

Width is considered in both of the hydraulic parameters, and as stated above is heavily weighted in the OSAM parameters and scoring.

Geomorphology Measure Methods

The riparian vegetation buffer widths do not take into account existing or restored vegetation quality, composition, or cover type. Current guidelines only require 50’ riparian buffers which only receives a 0.3 in OSAM. WVSWVM also requires 50’ riparian buffers and has an extra buffer tool. Request to change the scoring in OSAM to provide higher uplift potential.

OSAM also limits working in forested areas. Many forested areas have incised streams that will never regain access to their original floodplain. The incision also causes excess bank erosion and in turn causes trees to fall into the system. It is more ecologically sound to raise the streambed back to the original floodplain and restore natural stream-floodplain connectivity. If restoration is not performed in those forested areas, then erosion will continue to input excess sediment into the system. *Sediment is the largest contributor to impacting streams in the United States* and is an action item of many watershed plans.

The percent riffle should have a regional and stream type scoring component. The ranges for percent riffle do not appear to be scientifically supported and should be ecoregional and stream type specific.

Although the Headwater Habitat Evaluation Index (HHEI) can be a useful tool for stream assessment, it is not appropriate for inclusion in this version of the OSAM. The HHEI score is based on three factors: substrate, maximum pool depth, and bankfull width. The maximum pool depth is based on water level on the date of field data collection which is intended to be collected during a base flow event. Base flow events are becoming more unreliable due to changing weather patterns; and maximum depth of pool at one point in time is not an indicator of stream health. Bankfull width is not a reliable indicator of stream condition. It is feasible for a rip-rap lined overly wide, overly artificial channel to achieve a maximum score with these criteria. As stated above, many degraded streams are overly wide and incised down to bedrock (resulting in a higher score but not great habitat) and in order to restore to a natural state would be narrowed (resulting in a lower score). And as previously noted, width is considered in other parameters in the OSAM.

Biology Measurement Methods

Biologic scores should be weighted for specific ecoregions. Streams and biological communities (BC) are different throughout Ohio. Streams and BCs in NW Ohio are different than the streams in SE Ohio. However, OSAM has one curve (per drainage area) and not ecoregion specific.

The use of the Ohio EPAs multiple indices of biological integrity (HMFEI, HWMI, and ICI) are excellent tools for evaluating baseline conditions and developing benthic macroinvertebrate communities over time and across varying spatial scales. Restoration of stream habitat within

known freshwater mussel streams could also be quantified and incentivized with the benthic macroinvertebrate focused indices.

Acid-Mine Drainage

The proposed OSAM is a stream assessment method not a water quality assessment tool.

It is not appropriate for a state-wide mitigation tool to include an acid mine drainage component. Acid mine drainage (AMD) cannot be remediated through stream restoration alone, if at all. AMD is typically treated through close to the source with limestone dossing, treatment wetlands, ponds, or an engineered treatment facility, not through stream restoration activities. Treatment is typically a lengthy process and can be reactivated in the future after credits are fully released. The inclusion of the AMD component appears to be included to satisfy the coal industry but is not ecologically sound and does not benefit the majority of Ohio's constituents or its natural resources. A coal company representative was part of the group that proposed the OSAM.

Regional Curves

The regional curves in OSAM do not take into account the ecoregions of Ohio and do not consider stream type. There is a lack of transparency regarding the origin of the regional curves. In addition, the technical review / vetting process of the regional curves is vital to the functionality of an assessment tool and need to be scientifically supported. A transparent, workgroup process would help ensure a rigorous development process supported by current research which have not been disclosed for the OSAM. The range for several of the regional curves do not appear to be scientifically supported.

Credit Type

It is unclear if or when OSAM would be adopted by the USACE. A new OSAM tool should be developed as part of a multidisciplinary workgroup, with the involvement of USACE. These coordinated efforts would help ensure an efficient regulatory program with certainty for both impactors and mitigation providers. If the Ohio EPA rules result in the application of two different assessment tools and two credit types (state and federal) or a dual ledger system, the increased complexity would have negative impacts on both impactors and the mitigation market generally in Ohio. In the absence of coordinated development with USACE, uncertainty could impact the approval of new mitigation projects in Ohio and possibly encourage mitigation providers to focus on other states, resulting in a lack of mitigation options and an increase in temporal loss between impacts and mitigation.

Debit Tool

Permittees are always looking for ways to reduce their costs for mitigation. The current proposed OSAM does not include a debit tool component. Mitigation practitioners experienced in SQT methodologies could provide input on the development and incorporation of a SQT debit tool. A culvert replacement impact is different than impact form a coal surface mine. Typically, a debit tool has tiers that represent the severity of the impact which takes into account the percent of functional loss due to the impact.

In conclusion, WLS appreciates the opportunity to review and provide comment on the draft OSAM tool. While we appreciate Ohio EPA's goal to utilize a functional assessment, we strongly encourage a functional assessment tool be developed via a workgroup approach and with technical rigor. We propose Ohio EPA to postpone putting OSAM or any stream functional assessment into effect in July 2024 until such time that the tool can be technically vetted by the agency, stakeholders, and

experts. At a minimum, the area-based calculation must be removed to avoid incentivizing practitioners to work primarily in large drainage-area streams and design overly wide channels to obtain a large increase in credits, to the detriment of Ohio's streams and water quality. Additionally, it is critical that the parameters/measurement methods and their ranges, and the regional curves be rigorously tested and supported by the current technical literature. WLS would enthusiastically participate in a working group to test or further develop OSAM, or a similar functional assessment tool, to be put into rule at a later date.

At this time and to satisfy the House Bill 175 directive, WLS strongly encourages the Ohio EPA to amend the *Guidelines for Stream Mitigation Bank and In-Lieu Fee Programs in Ohio* as a bridge, allowing for time to develop a reliable, scientifically sound functional assessment tool.

Again, we appreciate the attention that the Ohio EPA has given to this topic. Thank you for considering our comments.

Best Regards,

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December 7, 2023

Rule Coordinator
Ohio EPA
Division of Surface Water
P.O. Box 1049
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Re: Interested Party Review – Section 401 Water Quality Certifications and Wetland Water Quality Standards Rules (OAC 3745-1 and -32)

To Whom It May Concern:

Please accept the following U.S. Fish and Wildlife Service comments on Ohio Environmental Protection Agency's (OEPA) subject draft rules. Specifically, we are providing comments on the Ohio Stream Assessment Method (OSAM) referenced in Mitigation for Impacts to Streams, OAC 3745-32-04. The OSAM is derived from the Stream Quantification Tool (SQT), which was developed using concepts from "A Function-Based Framework for Stream Assessment & Restoration Projects" (Harman et al. 2012). The SQT is a robust tool that can adequately measure the change in stream function at both impact and restoration sites. The SQT has been regionalized for use in many states, including North Carolina, South Carolina, Tennessee, Minnesota, and Michigan. We support use of a regionalized SQT for calculating debits for stream impacts and credits for stream compensatory mitigation in Ohio. However, there are several issues that we believe are important for OEPA to address to ensure successful regionalization of the SQT for Ohio.

Our understanding is that each of the states that currently use regionalized SQTs consulted with the developer of the SQT when modifying it for use in their state. Regionalization includes developing state-specific metrics and regional scoring curves for each metric. Ohio did not consult with the developer of the SQT when creating the OSAM. We recommend that Ohio consider conducting such a consultation to ensure that the metrics, regional curves, and other components of the OSAM are appropriate for measuring stream debits and credits in Ohio.

In addition to the need to coordinate with the developer of the SQT, we believe that one significant potential flaw of the OSAM is that it omits any meaningful measure of lateral stream stability. Although bank erosion is included as a metric in the Qualitative Habitat Evaluation Index (QHEI), it accounts for only three points in the 100-point index. Lateral stability is a critical component of stream quality and should be a separate function-based parameter in the OSAM. Two lateral stability metrics are commonly included in regional SQTs. The first is a combination of the Bank Erosion Hazard Index (BEHI) and near-bank stress (NBS) (Rosgen 2001). The BEHI includes measures of streambank height, depth and density of roots, vegetation cover, and bank angle to calculate an erosion risk rating from very low to extreme. The NBS assesses hydraulic forces acting on the stream bank. The combination of the two is an overall assessment of the risk of bank erosion

at discrete locations in the stream. The second metric to measure lateral stability is percent streambank erosion, which is a quantitative measure of the percent of actively eroding banks in the assessed stream reach. In order to incorporate lateral bank stability into the OSAM, we recommend adding lateral migration as an additional function-based parameter with two corresponding metrics, (1) dominant BEHI/NBS and (2) percent streambank erosion.

Another critical weakness of the OSAM is the use of area as the primary unit of measure to calculate credits and debits. The use of area is problematic for two reasons. First, determining stream area is highly dependent on identification of the bankfull floodplain to determine bankfull channel width. Identification of the bankfull floodplain can vary widely among even experienced field observers (Roper et al. 2008). Errors in determining bankfull width of the stream, when multiplied by stream length, can result in substantial differences in the overall calculated area of stream channel, upon which debits and credits are determined. Applicants, therefore, will have a significant interest in underestimating width of the bankfull channel of impacted streams (debits) and overestimating the width of the bankfull channel of mitigation streams (credits).

Second, because even small increases in stream width can significantly increase the overall all area of the stream channel, using area as the unit of measurement will incentivize restoration of overly wide channels that are inappropriate for the intended stream type (Harmon et al. 2021). Actively narrowing a channel can be a critical part of stream restoration. For example, effective restoration may include converting a high width/depth ratio stream to a low width/depth ratio stream, thereby reducing the channel width and overall channel area. These actions commonly improve functions like floodplain connectivity and thermal regulation (reducing solar inputs and improving summer return flows from the saturated floodplain) (Harman et al. 2021). Therefore, reducing channel area can be a positive change, but not generate appropriate credit due to the loss of overall area.

We believe that channel length, a commonly used measure to quantify streams, and one that is consistently measured among trained observers (Roper et al. 2008), should be used as the unit of measure in the mitigation debits and credits to help minimize the potential influence of inconsistent calculation of bankfull width and eliminate the incentive to restore streams with inappropriately wide channels.

In summary, we support the use of the SQT for calculating stream mitigation credits and debits and recommend that Ohio consult the developer of the SQT to ensure proper regionalization for Ohio. We recommend including lateral stream bank migration as a function-based parameter in the OSAM and recommend that linear footage be used as the primary unit of measure when calculating debits and credits. Incorporating these recommendations into the final OSAM will help ensure that it effectively calculates mitigation requirements in Ohio. Thank you for the opportunity to provide comments on Ohio's water quality standards. If you have questions, or if we may be of further assistance in this matter, please contact Jeromy Applegate at extension 121 in this office.

Sincerely,

Scott Hicks
Acting Field Supervisor

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