



Attn: Mark Johnson and Erin Sherer
Division of Surface Water
Ohio Environmental Protection Agency
P.O. Box 1049
Columbus, Ohio 43216
epa.dswcomments@epa.ohio.gov

May 7, 2024

Public Comment RE: Proposed update to Appendix 9-3 and the 208 Plan Prescriptions for Water Quality Protection within the Big Darby Creek Watershed

Dear Chief Johnson and Assistant Chief Sherer:

These comments are in response to Ohio EPA's announcement regarding the State Water Quality Management Plan (208 Plan) 2024 Certification Update for the Big Darby Creek watershed (<https://epa.ohio.gov/divisions-and-offices/surface-water/announcements>). We thank the Agency for the proposal to extend Appendix 9-3 prescriptions of the 208 Plan to include the entire Big Darby Creek Watershed, including portions of Champaign, Logan, Madison, Pickaway and Union Counties. This has been needed for many years.

We support the extension of strong 208 plan prescriptions to the entire watershed. However, and very importantly, we are concerned that Appendix 9-3 as proposed falls short of ensuring adequate protection and maintenance of the Big Darby watershed's high biodiversity scores,

water quality, rare species, and nationally significant ecology. Because this 208 will be followed by zoning, WPCLF funding, the addition of extensive treatment and collection systems, the addition of impervious surface and associated stresses, we see this 208 plan proposal as one of the last chances to establish adequate biodiversity protection before impacts grow and long-term decline of the mussel community is irreversible.

We believe that fundamental additions must be made to the proposed 208 Plan Update for the Big Darby watershed in order to protect and improve the watershed's exceptional bioindex scores and to protect rare, sensitive, and threatened and endangered species. These improvements to the proposed 208 Plan Update include:

- A requirement that each county in the watershed pause and complete comprehensive stormwater planning prior to the extension of sewer and water service to new areas of the watershed, as was done in Franklin County. The planning should include relevant stakeholders, including governmental jurisdictions, local agencies involved with utilities and oversight of new development, agricultural and environmental representatives, local developers, state agencies, scientific experts, and any other interested parties or citizens to ensure that planning represents the will of local communities. The ultimate goal of planning should be to ensure that thresholds for biodiversity protection are not exceeded.
- Inclusion of a robust analysis tool/framework such as an Integrated Prioritization System (IPS) to establish the "development carrying capacity" or "maximum development threshold," with a margin of safety, for the watershed. The 208 plan must provide guardrails for development in a way that is scientifically supported and effective at protecting the Darby watershed's outstanding biodiversity.
- Regular tracking and review to determine the level of participation and success of the prescriptions.

Big and Little Darby Creeks are Ohio's most biodiverse streams, but development in the watershed is a major threat to stream quality. Even with planning, this is a "grand experiment," and we know of no example of a case where a high quality stream has survived the level of development that would be allowed by existing protections such as the Big Darby stormwater permit. As new development comes to the watershed, this situation must be approached with great caution and thorough, adequate planning.

Biodiversity in this watershed's streams is at risk. Fifty-eight percent of Big Darby Creek's mussel species are now listed by the State of Ohio or federal government as threatened or endangered species. Eight of these species are federally listed and are in danger of extirpation from the watershed, including some that would, if lost, be extirpated from the state of Ohio. Unfortunately, most of the listed species, and all of the federally listed species, are in decline within the watershed. The mussel community of Big and Little Darby Creeks needs protection and restoration. We ask that you ensure an effective 208 plan, ensuring the perpetuation of this biodiversity, and protect the hundreds of millions of dollars of investment in this watershed that Ohio has made to date.

The observed trend in the Little Miami River watershed mussel community should urge great caution for the Big Darby Creek watershed. Hoggarth (2020):

“warned that if water quality and habitat quality were allowed to suffer further degradation, and restoration actions were not taken to improve water quality and habitat, the mussel fauna would suffer as well. The first reexamination of the mussel fauna of the river confirmed these earlier warnings.”

Because of the need to preserve, and improve, the Big Darby Creek watershed’s outstanding diversity for future generations, we strongly encourage that Ohio EPA include additional protections and require planning to create a strong, scientifically defensible 208 plan and implement the following changes to its proposed update and expansion of Appendix 9-3.

We know that Governor DeWine and Ohio EPA are aware of the need to save this best example of the state’s natural heritage. Please accept these comments and we would be more than willing to discuss them and participate in further meetings to improve the 208 plan and help ensure success.

Sincerely,

John Tetzloff
Darby Creek Association

Nathan Johnson
Ohio Environmental Council

Will Harlan
Center for Biological Diversity

Tom Butch
Ohio Scenic Rivers Association

Gail Hesse
National Wildlife Federation

Cathy Cowan Becker
Save Ohio Parks

Kim Landsbergen
Carbon Ecology Consulting LLC

Amy Holtshouse
The Nature Conservancy

Ericka Copeland
Sierra Club, Ohio Chapter

David Moryc
American Rivers

Specific comments

While we certainly appreciate and support the Ohio EPA proposing to extend provisions in Appendix 9-3 to the entire Big Darby watershed, we have an overarching concern that the agency is skipping a critical step in assuring protection of Darby's outstanding biodiversity. In Franklin County, where Appendix 9-3 was first developed, the agency's approach was to require that all jurisdictions complete comprehensive stormwater management planning prior to the extension of sewer and water for new development. By this simple act the agency set in motion a local planning process that resulted in a Plan (the Big Darby Accord) that achieved several key advances over the provisions of Appendix 9-3 alone.

- Using modeling, the jurisdictions set a cap on total development designed to limit pollution from non-point source stormwater runoff to levels protective of Darby's most sensitive species.
- Set a target for setting aside a total amount of natural open space that would offset impacts of development, and provided mechanisms to fund acquisition of that open space.
- Created a land use map that identified where development would occur and how it would be served by sewer and water.
- Created a process to monitor in-stream impacts of new development and adjust the plan based on those results (Adaptive Management).
- Created an Accord that was signed by each jurisdiction pledging to follow the plan.

Given the obvious success of this step in Franklin County, we strongly urge the agency to require local planning in the other counties in the watershed. Such a step would balance the responsibility of the state to protect this unique natural resource with local jurisdictions' desire for local control over both protections and future development within the watershed. The planning should include relevant stakeholders, including governmental jurisdictions, local agencies involved with utilities and oversight of new development, agricultural and environmental representatives, local developers, state agencies, scientific experts, and any other interested parties or citizens to ensure that planning represents the will of local communities.

It has been stated by some in the agency that this planning step cannot be required in the rest of the watershed because the jurisdictions are not asking for it. It has been suggested that Columbus or other jurisdictions asked the agency for this process in Franklin County, and that was why it was required. The implication of this reasoning is that the agency can only require planning if everyone is already at the table. The problem with this line of reasoning is that it does not accurately reflect the series of events that led to the agency's decision to require planning in Franklin County.

First, in the period in question (2001 and 2002), Columbus, the dominant jurisdiction in Franklin County and the Designated Management Authority for the area, opposed multi-jurisdictional planning. In fact, it was because of this opposition that the citizen group People for Economic and Environmental Responsibility (PEER) collected around 20,000 signatures to require a referendum that, if passed, would have forced the city to complete multi-jurisdictional planning prior to extending sewer and water into the watershed. Rather than face the referendum, the city did agree—reluctantly—to planning, and agreed to institute a moratorium on sewer extensions into the watershed until that planning had occurred. But they hardly favored planning at that point. At the same time other jurisdictions were actively looking for alternative

ways to enable their own new development in the watershed. For example, Prairie Township hired a consultant to study a plan to set up a separate sewer district, and at least one developer (Sugar Farms) proposed using land application sewage treatment to serve their project in the watershed. It was simply not that case that the jurisdictions were clamoring for comprehensive planning at that time. Rather, they were competing over development in a chaotic attempt to either expand or as a matter of self-preservation, depending on the jurisdiction. In the middle of this turmoil, OEPA decided to place a moratorium on all jurisdictions until comprehensive stormwater planning could occur (as outlined in the Central Scioto Plan Update of 2002).

Second, at the time the agency required planning in Franklin County, all parties, including the agency, had no roadmap about how to proceed. This is not true today. Now that the Franklin County portion of the watershed has undergone comprehensive stormwater planning and successfully implemented the plan for 18 years, the agency has a clear model and precedent how to proceed. It seems to us that the step of requiring planning is not an overreach by the agency, but simply following precedent for a clearly successful approach. It should be noted that in Franklin County the agency did not micromanage the planning process, it simply required that it happen. The same approach could be taken elsewhere in the watershed.

We have heard from multiple jurisdictions in the watershed that they favor protecting Darby and aren't opposed to some level of planning. We believe that the political climate is at least as conducive to requiring a comprehensive planning approach as that present in Franklin County in 2002.

In the comments that follow we will identify a number of challenges with just relying on the Darby stormwater permit or the provisions of Appendix 9-3 to achieve lasting protection of Darby's sensitive aquatic fauna. The solution to all of these challenges, we believe, is for all concerned parties to undertake careful, scientifically-based planning prior to new development, and prior to the state issuing loans for sewage or water plant expansions.

“Introduction and Summary of Special Prescriptions for the Big Darby Watershed”

“Background”

Page 2

“In 2014, Ohio EPA conducted a biological and water quality survey in the Big Darby Creek watershed. Results indicate substantial recovery from impairments documented in the previous 2001 survey due, in part, to the special protections established in 2006.”

While improvements in Darby's fish and macroinvertebrate communities were noted in the agency's 2014 surveys, there is no direct evidence that these improvements were the result of the implementation of the special stormwater permit. In fact, we believe there is no concrete evidence whether the stormwater permit is, or more important will be, an adequate tool to protect Darby biodiversity.

For one thing, very little new development happened in the watershed between 2001 and 2014 outside of West Jefferson and western Franklin County. Therefore it is impossible that the stormwater permit was responsible for improvements seen in other areas of the watershed. Much more likely is that the observed improvements were the result of other factors.. First of all,

the agency did a lot of work cleaning up wastewater discharges throughout the watershed, and specifically in areas where streams were not attaining their use designation. It seems likely that this was a major factor in the improvements seen in fish and macroinvertebrates. In addition, several stream restorations were undertaken in the Hellbranch Run watershed, leading to small improvements in water quality in some sections of that subwatershed. Another likely contributor to improvements is that in the past 50 years thousands of acres of legally protected conservation land and parkland (including Battelle Darby Creek and Prairie Oaks Metro Parks), mostly riparian, have been added in the watershed, and the effects of those protections have been reaching fruition as those lands recover and become more mature. Finally, agriculture has been adopting many conservation tillage practices across the watershed, and in fact conservation tillage is now the standard approach. We suggest that agricultural nonpoint practices have improved stream quality significantly, as Ohio EPA has noted in other publications.

Most telling, many of the bioindex improvements seen in 2014 were recorded far away (10-20 miles and more) and upstream of sites where the Big Darby stormwater permit requirements were applied. In short, we feel this implies bioindex improvements that were due predominantly to other reasons besides the stormwater permit. We think the stormwater permit has been applied in a relatively limited area during the period, and therefore we think it is an open question how effective the permit is or will be in improving water quality, especially if we begin to see large increases in impervious surface due to new development. This is a question that needs much more study in coming years, and we encourage the agency to use an “adaptive management” approach. In other words, the impacts of the stormwater permit and other protections should be carefully documented and adjustments should be made if the goal of stream protection is not being achieved.

Criterion 0: - Review of Central Sewer Line Projects

We respectfully request that Ohio EPA eliminate the Criterion 0 “Alternative option” because it will likely seriously undermine the Criterion 0 “Preferred option.” Ohio EPA should stand behind the Preferred option by requiring that it be followed prior to issuing permits for central sewer projects. Eliminating the “Alternative option” would require local jurisdictions to implement local control measures prior to the agency issuing central sewer permits.

If the “Alternative option” is retained, it could allow central sewer to be provided to the entire Big Darby watershed without the presence of any of the local governmental riparian and conservation planning and zoning (or similar local measures) preferred by the agency. In fact, because the Alternative option would likely be the path of least resistance to extensive development in the watershed, Ohio EPA should expect that this alternative exception will “swallow the rule” of the Preferred option. With the “Alternative option” available in Appendix 9-3, the agency will likely find itself approving central sewer line projects that effectively “lock in” development before any local conservation planning is conducted or any Appendix 9-3 local conservation measures are put into place. For the foregoing reasons, we ask that you please strike the “Alternative option” in Criterion 0 in its entirety.

Furthermore, we ask that all local governments designate Tier 1 through 3 conservation areas comparable to what was done in Franklin County. Our understanding is that this is addressed through Criterion 3 - Preservation of Conservation Areas, 3a Primary Conservation Areas and 3b Secondary Conservation Areas. We believe this is essential for assuring that local government (and any other applicants’ related permits, such as for stormwater) are participating.

If a permit cannot conflict with an approved 208 plan, the applicable Appendix 9-3 requirements would need to be incorporated in the design/permit application before the permit could be issued, but we see no way an individual, especially private, applicant could establish needed measures such as jurisdiction-wide conservation and planning or development thresholds such as informed by an IPS. We could foresee a situation where the accumulation of applicants could completely or largely develop a subwatershed or area with no other measures in place than the stormwater permit. Because almost no conservation land is being acquired in the Big Darby Accord area now, this is what is happening in the Accord area – the stormwater permit constitutes the conservation measure being applied.

We also are concerned about permits that have been granted by Ohio EPA but the project has not been started (e.g., Plain City wastewater treatment plant expansion). The other administrative situation we are concerned about is where design or construction loans have been applied for (See Ohio EPA's Program Management Plans) or there is some other step short of a PTI that would allow avoidance of meeting Appendix 9-3. There should be no "grandfathering" so that applications avoid Appendix 9-3.

The Criterion 0 "Alternative option" will effectively allow local jurisdictions to "opt out" of both comprehensive conservation planning and the provision of implementing institutional mechanisms, such as conservation zoning. If a local government can effectively opt out of Appendix 9-3, allowing an applicant to decide if they are providing protections seems problematic and unworkable. For example, there would not be local conservation areas, and we suspect that the applicant would default to just implementing the Big Darby watershed stormwater permit and the bare minimum conservation areas enumerated in Appendix 9-3.

We also must emphasize that very little conservation land acquisition has occurred in the past decade. Most of the 14,000 acres of Big Darby watershed conservation land acquired by various entities occurred 10-50 years ago. In effect there now is relatively little significant new conservation land acquisition by local governments, park districts or nongovernmental organizations happening in the watershed. This is one reason that the Big Darby Creek watershed stormwater permit is so important and encroachments or other reductions in protection under this permit should not be allowed.

"as protective as"

Our concern is that "as-protective-as" would be difficult to measure and compare to in order to determine satisfaction of Appendix 9-3. For example, we do not accept that a claim of pollutant reduction through stormwater management would be as protective as preservation of high quality (WWH or EWH) riparian habitat. We are concerned that "as-protective-as" would be inadequate and inconsistent.

"Alternative option - See criteria 5b, 6a and 6b regarding options in the absence of acceptable locally implemented regulations ... An individual NPDES permit for discharge from construction activities may be necessary to implement this option."

We are concerned that this "may" wording makes an individual permit optional. Otherwise, individual permits encourage local government and other permit applicants to ensure that Appendix 9-3 implementation is in place.

We are concerned that this criterion might be met if a local government only implements adoption of the Big Darby watershed stormwater permit in its local ordinances. We maintain this is only administrative and does not add protection for stream quality; the state's stormwater permit would be in effect regardless of local administrative action. Along with trends such as the

lack of significant additional conservation land, this is why an adequate stormwater permit, which we addressed in our January 30, 2023, comments to Ohio EPA, is so important and needs to be revisited regarding effective protection improvements.

Criterion 1: - Adoption of Institutional Mechanisms

- We strongly support the “conservation area” provision and maintain that it must be ensured to be in place when Criterion 0 is addressed, such as when Ohio EPA determines that a local jurisdiction has fully adopted Appendix 9-3.
- We do not support this 208 plan if it does not require local jurisdictions to conduct comprehensive land use planning and implement the specified institutional mechanisms prior to the extension of central sewer service.
- We recommend county-wide or regional land use planning, with the ultimate goal being regional cooperation between all areas of the watershed).
- If needed, we suggest financial assistance in the form of planning grants from the State of Ohio.

“1a A political jurisdiction shall adopt at least one of the following institutional mechanisms to implement stream setback requirements and conservation area preservation requirements within the Big Darby Creek watershed”

We strongly support this “conservation area” provision and maintain that it must be ensured to be in place when Criterion 0 is addressed, such as when Ohio EPA determines that a local jurisdiction has fully adopted Appendix 9-3. Otherwise, we are concerned that areas of higher value and potential conservation land, or that protect those areas (“buffers”) will be minimized if not missed altogether. And if there were no conservation areas, we are concerned that an amount of development would occur that would exceed impact thresholds. This is a prescription beyond the stormwater permit. We ask that a process comparable to what was done for the Big Darby Accord (bigdarbyaccord.org, Big Darby Accord Watershed Master Plan, 3.0 Land Use Plan) in reviewing and mapping these areas be required as evidence that this criterion is met. The conservation areas should be mapped.

Provision 1a seems to be at odds with other statements in the updated 9-3 text that allude to the possibility that development could proceed without local institutional controls. We recommend that local institutional controls be required before development tied to centralized sewer service is allowed. If local institutional controls are optional, it seems likely that development will become concentrated in areas without these controls as these areas will offer the quickest path to approval. This situation seems at odds with the goal of encouraging local control of development.

If the agency decides to allow development to go forward in areas without local institutional controls, we recommend that a moratorium be instituted in targeted jurisdictions so that those communities have time to consider how to establish local controls and garner the resources to do so. For smaller jurisdictions, it may take considerable time and effort to institute controls,

and it may involve a lengthy process of education, seeking and obtaining citizen support, and finding funding to complete the process.

“1b All political jurisdictions in the Big Darby Creek (text *should include “watershed”*) are strongly encouraged to have, to update and to use comprehensive land use planning ...

As we have mentioned, the organizations on these comments strongly urge the agency to require jurisdictions to complete comprehensive land use planning prior to the extension of central sewer service. We do not support the language “strongly encourage.” Currently, Criterion 1b is merely optional, and states only that local jurisdictions “are strongly encouraged to have” comprehensive land use planning. This means that Ohio EPA will likely be approving permits without this prescription in place. Ohio EPA should change the words “strongly encouraged to...” to “must have, update and use comprehensive land use planning...”

“1c Institutional controls for riparian corridor protection should include a purpose statement with the following three elements”

We do not believe that the goals recommended in this section are inclusive enough to preserve Darby’s inherent quality. In addition to maintaining high levels of biological richness, the agency should add maintaining such indicators as having the highest biocriteria scores in the state, and maintaining healthy populations of all state and federally listed species. Merely meeting “attainment” of Clean Water Act designated uses would allow a significant decline in bioindex scoring, in particular in the mainstems of Big and Little Darby Creeks. Without the maintenance of Darby’s historically high scores and rare species, the Big Darby Creek watershed would decline. The rare species, such as mussels, are a major part of the basic character of Big and Little Darby Creeks. To lose these rare species would mean that the 208 plan and related efforts have not been successful.

Criterion 2: - Local Stream Setbacks and Associated Development Restrictions

- We oppose this change to “jurisdictional ephemeral,” as it will lead to a significant reduction in riparian setbacks and conservation land.

“2a Applicable Streams - The local zoning regulation should, at a minimum, apply to the waters described here. Streams requiring protection under this section are perennial, jurisdictional ephemeral, or intermittent streams with a defined bed, bank, or channel.”

Ohio EPA should remove its proposed insertion of the word “jurisdictional” from this provision. Inserting this provision will weaken the protection offered by current Appendix 9-3. Ephemeral streams and features are direct conduits for stormwater into high quality streams. Nothing in HB 175 or elsewhere prevents the agency from maintaining the Appendix 9-3 riparian setbacks for all ephemeral streams, whether they are jurisdictional or not, e.g., one acre woodlots are not “jurisdictional,” but they are within the ambit of Appendix 9-3’s protections. Please delete the update’s insertion of the word “jurisdictional” from this provision.

2b Size of the Setback Distance

See our comments below on “Attachment B – Stream Restoration Option under Darby SW Permit.”

2d Conditional Uses

For streambank stabilization or erosion control, can riprap be prohibited (except for where it is absolutely necessary, such as existing road protection)? We have seen riprap used along streambanks for no apparent reason. The riprap would not appear to meet “substantially use natural materials and native plant species where practical and available.”

We appreciate that this section uses the term "native plant species." However, other parts of this document use the term "natural vegetation." That does not appear to be defined and it does not have a scientific meaning. We suggest changing all uses of the phrase “natural vegetation” to “native plant species.” Alien, invasive plant species might be “natural vegetation.” The prescription should encourage removal of invasive species. Such invasive species are rampant in the Big Darby watershed.

2e Prohibited Uses (within the stream setback distance)

Stormwater units such as retention or detention ponds in the riparian setback should be prohibited. Are they?

4 ... “control noxious weeds (as defined by ODNR, DNAP)”

This appears to be out of date and should refer to invasive species. For example, the Ohio Department of Agriculture maintains a list of invasive plant species that are prohibited from sale in Ohio. These, and other plants that are known to be invasive (such as defined by the Ohio Invasive Plants Council) but are not yet listed by ODA, also are appropriate for removal. See: <https://agri.ohio.gov/divisions/plant-health/invasive-pests/invasive-and-noxious-plants/invasive-plants>. This would be a much more appropriate reference than a “noxious weeds” list.

Criterion 3 - Preservation of Conservation Areas

- The 208 plan should require adequate buffers on all wetlands.

“Primary conservation areas are defined as areas that must be conserved.”

This section is greatly needed. We strongly support its inclusion and especially implementation by local governments.

However, we must emphasize that the acquisition for conservation of these areas has slowed greatly. Conservation organizations are challenged to outcompete developers and solar facilities for land. For example, relatively little conservation land acquisition has been accomplished in the Big Darby Accord area in Franklin County over the past decade. This is why the effectiveness of the Big Darby watershed stormwater permit is so important. The stormwater permit needs to be evaluated to determine if its implementation can be the sole mechanism for preserving stream integrity, i.e., high biodiversity and rare species. At this time, significant acreage (hundreds to thousands of acres) for land conservation is not being accomplished.

3a Primary Conservation Areas (wetlands)

Our experience in reviewing development projects in Franklin County has convinced us that there is a gap in 9-3 protections in that wetland buffers aren't specified. As a result, we are

seeing degradation of wetlands that are “conserved” as part of development projects. Some wetlands have no buffers to speak of, and the wetland is surrounded by things like lawns, parking lots and stormwater units up to the wetland delineation line. They are not functional for wildlife. They are too narrow for wetland animal and vegetation survival, and we are concerned that they are not providing adequate hydrology for the wetland to survive. For these reasons, we recommend that this he 208 plan update should require adequate buffers on all wetlands.

“Primary conservation areas are defined as areas that must be conserved. Secondary conservation areas are defined as those areas that should be conserved to the extent feasible.”

Criterion 3a

Primary Conservation Areas - The following elements should be considered as primary conservation areas and must be preserved:

...

4. Populations of endangered or threatened species as defined by either the state or federal government;”

The Big Darby watershed has recorded eight mussel species that are federally endangered or threatened. Conserving habitat for these species is not as simple as preserving habitat for terrestrial or avian species, because they live in a flowing environment that is impacted by upstream land use or discharges. We recommend that the question of how to protect the habitat of endangered mussels be reviewed and more specific steps or protections be included in this section of the 208. One possibility is to require a review of each site to understand, from a technical standpoint, how stormwater flow could disrupt habitat in the immediate vicinity of the development and downstream. For example, stormwater drains should not discharge directly into prime mussel habitat as this is likely to cause substrate instability and destruction of habitat. In addition to mussel species, the following are species that are present in the watershed and often are not recognized. They are clearly subject to development impacts. We ask that these be specifically addressed in all 208 plan actions.

Bats:

The riparian areas along Big and Little Darby Creeks are clearly potential habitat for the Indiana and long-eared bats, as was documented in the petition filed for ONRW in 2023. Both species have been documented along the Big Darby Creek. The riparian area specified in the Big Darby Creek watershed stormwater permit might not be adequate to support these species of bats, especially where the stream is near the edge of the meander belt, and the riparian distance would only be 100 feet.

Prairie plants:

There are state-listed rare prairie plants in the Big Darby Creek watershed, and especially in the Darby Plains (<https://ohioplants.org/darby-plains-prairie-plants/>). The Darby Plains were described by Ohio EPA (2004, page A.24) These have been documented by ODNR, in scientific journals and related publications. These areas need to be protected and expanded to ensure perpetuation of these species and Darby Plains prairie community. A list of Darby Plains prairie plants, including state-listed species, is at <https://ohioplants.org/darby-plains-prairie-plants/>.

3c Conservation Requirements for Infiltration

“Conservation areas shall be managed such that this recharge rate is maintained or improved.”

We are concerned that this encourages the use of public conservation areas for stormwater management, including that from private development. We do not support the use of public conservation land for stormwater management. The 208 plan should prohibit stormwater management on public "conservation areas," including parkland, nature preserves, or conservation land owned by the State of Ohio.

3d Permitted Uses –

“The local zoning regulation should, at a minimum, specify the following permitted uses within the conservation areas of new development ...”

This does not list invasive species management. Throughout the 208 plan, it should allow for management, especially removal, of alien and invasive species in all cases.

3g Ownership

1. Homeowners’ associations/condominium associations;

HOAs should be the last option. We are concerned that HOAs will not have the resources to manage and protect the conservation areas. In general, HOAs are now discouraged in the Darby Accord area of the watershed (Franklin County) because of challenges with controlling invasive species and other issues.

Criterion 4: – Comprehensive Stormwater Management

“Local jurisdictions are encouraged to adopt institutional mechanisms that require sustainable development and smart growth planning to achieve both high quality developments and strong protection of the Darby watershed.”

As with other sections in this 208 plan, this prescription appears to be voluntary, so we are concerned that it is less likely to be implemented. We recommend that it be required for local jurisdictions to adopt institutional mechanisms if they are going to allow new development tied to centralized sewer. Such a step would reduce impacts, especially when the Big Darby watershed stormwater permit allows development at a high level, perhaps approaching 50% impervious surface or more. Requiring “sustainable development” and “smart growth management” are undefined terms and unless they are shown to significantly exceed the stormwater permit requirements, do not appear to add anything to the 208 plan. These terms need to be defined so that they add to conservation and environmental performance and outcomes.

Criterion 5 - Options for “as protective as” Local Regulations and Individual Projects

In Franklin County, the “as protective as” option has become mostly obsolete because local jurisdictions agreed on a master plan that required adherence to regulations. As mentioned

before, we strongly recommend that the agency require comprehensive planning and local institutional controls. As such, our recommendation is to eliminate Criterion 5 altogether. However, if Criterion 5 is included, we offer the following comments.

5a ... “before submitting the request to the Director, the local jurisdiction must provide public notification and public involvement in developing the proposal.”

Because allowing one jurisdiction to substitute for any criteria in effect affects all other jurisdictions, we recommend that Ohio EPA also public notice these proposals and include them on the DSW “Announcements” page.

“The mechanism to pursue this option is to apply for an individual NPDES stormwater construction permit. The applicant must submit an Environmental Site Management Plan (ESMP) as part of the Stormwater Pollution Prevention Plan.”

As we state for Criterion 6, we strongly support a requirement for an ESMP and an individual permit.

In addition, Criterion 5a “Alternative Local Regulations” should include language specifying the 3 to 1 default “as protective as” ratio specified in Criterion 5b.

“5b Alternative Performance Criteria for Individual Projects”... “the default benchmark for “as protective as” is a 3 to 1 ratio of land conserved as stream setbacks or conservation areas for each linear foot or acre of land removed from the stream setback or conservation areas conservation, respectively. This mitigation must occur within the Big Darby Creek watershed.”

We are concerned that mitigation projects will use WWH or MWH sites for those where the impact is on EWH streams. Therefore, we recommend that mitigation be limited to the same reach of stream. In addition, we recommend that the “as protective as” option be rejected if it would result in encroachment on high quality habitat for federally endangered species (for example, in the upper half of Little Darby Creek).

In the case of wetland mitigation, the mitigation needs to be for like-quality wetlands if a Category 3 wetland is impacted. EWH stream riparian areas should be replaced with only EWH riparian area. We oppose this 208 plan’s broad allowance, assuming it allows this credit for mitigation on any stream, as it is not proven that this is adequate mitigation, and this option will encourage encroachment on EWH riparian setback areas. This is comparable to mitigating Category 3 wetlands with Category 1 or 2 wetlands, something we understand that the State of Ohio does not allow. While we understand Ohio EPA is allowing riparian area mitigation, we believe that all EWH riparian setback areas be fully preserved, and ask that encroachment be further discouraged.

An additional concern is that encroachment of the riparian setback could, depending on site specifics, permanently eliminate stormwater and floodwater treatment areas from the watershed. Hydrologic stress has been identified as a critical factor in the degradation of many mussel streams, including both Big and Little Darby creeks. Instream stress from floods causes substrate instability, it entrenches streams, it removes smaller gage substrate particles (sand and pea gravel) essential to mussel habitat. and it disrupts aquatic food chains. In some areas of the watershed increases in hydrologic stress has virtually eliminated mussel habitat. Causes of hydrologic stress are numerous, but one of the biggest is filling floodplain or cutting

floodplain off from the creeks. In recent years the “as protective as” has been used to reduce floodplain storage in some new developments. This loss of storage cannot be mitigated, short of highly expensive restoration projects. Therefore we caution against allowing any encroachment of stream floodplains by new development, no matter how many acres are set aside somewhere else.

We are also concerned that such encroachment damages Scenic River aesthetic qualities. We are concerned that the State and National Scenic River quality would be degraded unless the 208 plan adequately protects the setbacks from the creeks. The minimum 100 foot setback is not wide enough where the creek approaches or reaches the outer edge of the meander belt. It is less than the 120 foot setback from top of bank that has been previously required as the ODNR Scenic River standard. Development near the creeks damages the scenic river quality and the enjoyment of creek visitors. Encroachment on the riparian area is becoming more common and degrades that area as a scenic river, potential park or recreation corridor. There is no other stream of this scenic river quality in the Scioto River basin in central Ohio. Please ensure the scenic river quality is not lost due to encroachment of development or stormwater units into the creeks’ riparian corridors. Please do not allow encroachment on the scenic river corridor; please encourage wider corridors.

“5b ... The benchmark for achieving the “as protective as” status for individual projects is demanding because of the unique resource and the uncertainty about how the system will respond.”

We believe it will be very difficult for projects to truly demonstrate that they are “as protective as.” For example, we find it unlikely there are substitutes for floodplain and other riparian area. It seems very unlikely that any engineered “enhancement” can achieve more than the natural environment. Therefore, we ask that Ohio EPA develop clear guidance and require that any alternatives be mitigated at high ratios, i.e., no less than 4 or 5 to 1. And as we state regarding 6a, WWH and MWH stream riparian mitigations are not valid substitutes for EWH impacts. In the case of riparian encroachment, the standard that this “mitigation must occur within the Big Darby Creek watershed” is not acceptable. It needs to be “apples for apples,” or “EWH for EWH.”

In addition, Criterion 5b “Alternative Performance Criteria for Individual Projects” should specify that the default benchmark for “as protective as” at a 3 to 1 ratio of land conserved is a hard floor.

Lastly, Ohio EPA should specify that all 5a Alternative Local Regulations and 5b Individual Projects must comply with Criterion 2e Prohibited Uses. This will still provide local communities and individual projects with flexibility while also ensuring the fulfillment of basic minimum standards for riparian setbacks.

Criterion 6 - Options for Projects when Local Regulations are Absent

As covered in previous comments above, we strongly recommend that Criterion 6 be eliminated. However, if it is included, we offer the following comments.

“6a All Permits Must be Approved Before Commencing Construction - All necessary permits must be approved before commencing earth disturbing activity.”

We strongly support Criterion 6a.

“6b Environmental Site Management Plan (ESMP) The Stormwater Pollution Prevention Plan (SWP3) required under the construction stormwater general permit shall be expanded to be an ESMP. ... This plan should include all the requirements from the stormwater permit plus the ESMP must provide information that explains and demonstrates how the project will comply with criteria 2a through 2h and 3a through 3k in the absence of locally enacted regulations.”

First, we strongly support a requirement for an ESMP and an individual permit. These individual permits should be public noticed by Ohio EPA in addition to the local mechanism. The ESMP might provide some incentive for local governments to adopt the institutional mechanisms.

On the other hand, as stated elsewhere in our comments, we find it hard to determine how a project would comply with Criteria 2 and 3 when what is complete and effective is not clearly defined. Neither is consistency assured. In the case of riparian encroachment, the standard that this “mitigation must occur within the Big Darby Creek watershed” is not acceptable. Getting credit for mitigation on an MWH stream when the impact is on an EWH stream is not “as protective as.” This section should first discourage any riparian encroachment, and second, it should require that EWH impacts only be mitigated on EWH streams. WWH and MWH stream riparian mitigations are not valid substitutes for EWH impacts.

Criterion 7 - Recommended Naturalizing Riparian Areas and Improved Conservation Practices for Agricultural and Undeveloped Lands

Promoting wider riparian areas - We appreciate the emphasis on the need to improve agricultural practices, especially riparian quality. We suggest that these programs emphasize creating the widest, highest quality riparian areas possible. As you know, riparian habitat quality, such as native vegetation with mature trees, is correlated with bioindices and fish index scores. How can Ohio EPA encourage programs like the Farm Bill and H2Ohio to focus on agricultural riparian area quality improvement in this watershed?

Levee removal - Also, the Big and Little Darby Creeks are lined with many miles of levees that are confining the creeks, contributing to channel scouring and other issues such as eroding streambanks. We strongly encourage funding of removal of levees as a way to reduce channel scouring and bank erosion and encourage the creeks' access to their floodplains. Programs such as H2Ohio should focus on acquiring new conservation land where levees are part of the riparian area problems, including the removal of these levees.

Riparian vegetation composition -

“Big and Little Darby creeks and their larger tributaries, expansion and retention of natural (wooded and prairie) riparian vegetation is needed.”

Riparian vegetation, even in prairie areas, is more likely to be woody plants, i.e., trees and shrubs, than "prairie vegetation." According to Robert Gordon's 1966 maps, Native Vegetation of Ohio, the areas near streams, Big and Little Darby Creeks in particular, tended to be Mixed Oak Forest or Oak-Sugar Maple Forest. It was not mapped by Gordon as prairie. Floodplains are typically too wet to maintain prairies, and the trees provide needed shade and leaf input, among other things, for streams. Please strike “and prairie”

“A naturally vegetated setback system”

As we mention elsewhere, this might benefit from being rewritten as “setbacks comprised of native vegetation.” Many people fail to recognize that other vegetation (e.g. nonnative grasses) in riparian areas does not provide the same benefits to the stream as native vegetation (especially the native trees).

In general, we see few if any Big Darby watershed-specific agricultural programs. We are assuming that the standard Farm Bill programs are receiving the most attention. We would like to see a much greater focus and funding on agricultural programs that improve riparian quality, remove levees, and reduce sediments and nutrients. If programs like Nonpoint Source Implementation Strategies (NPS-IS) are going to show benefits, they will need far greater attention and funding in this watershed. We encourage emphasizing this in 208 plan conversations with the watershed’s county governments.

Criterion 8 - Installing Clay Check Dams along Sewer Trenches

We have no comment.

Additional detailed comments

The following detailed comments address the general need for further analysis and likely further protections to protect the very sensitive and complex aquatic ecosystem of the Big Darby Creek watershed. In general, we recommend that further analysis occur under the guidance of both OEPA and ODNR, in partnership with other experts, and that resulting findings and protections be included in one or more 208 updates covering the entire Big Darby watershed.

208 planning needs to ensure protection of outstanding biological resources

Big and Little Darby Creeks are outstanding at a state and national level, but are at risk of losing rare, sensitive, and state and federally listed species, especially mussels. 58% of Big Darby Creek's mussel species are listed by the State of Ohio or federal government as threatened or endangered species. Eight of these species are federally listed and are in danger of extirpation from the watershed, including some that would be, if lost, extirpated from the state of Ohio. The mussel community of Big and Little Darby Creeks needs restoration, not just protection.

We recognize that fish scores have improved since the 1970s (Figures 1 and 2), but note the relative quality of fish scores in the Big Darby watershed have consistently been notably higher than those in other Ohio and Scioto River basin streams, and fish scores have improved, at least in large rivers (MBI 2017), across Ohio. The Big Darby Creek watershed's high scores also are outstanding compared to those from other Ohio watersheds (see Figure 3). The Big Darby watershed's scores are beyond exceptional and should be permanently protected at that level or improved. Based on Ohio EPA data analyzed and provided by the Midwest Biodiversity Institute, 146 of the 592 (24.7%) of the highest fish scores (IBI scores of 56-60) recorded between 1972 and 2022 in Ohio were recorded in the Big Darby Creek watershed. Figure 3 below provides a comparison of the top IBI scores in Ohio. The Big and Little Darby Creek mainstems constitute 8 of the top 11 surveys when ranked by highest mean CIBI (Continuous Index of Biotic Integrity). CIBI (using continuous scoring) improves separation among the highest quality sites compared to the "traditional" IBI with its 5-3-1 scoring methodology. At 555 square miles, the Big Darby Creek watershed constitutes just 1.2% of the State of Ohio's 44,825 square miles.

The table below (Big Darby Creek watershed listed mussels) provides the 25 listed mussel species recorded in the Big Darby Creek watershed below. Notable Big Darby Creek mussel species such as northern riffleshell and clubshell have been under stress in recent decades to the point they were augmented in Big Darby Creek by ODNR and others in 2008-2015. Therefore, great caution is warranted to maintain listed mussel species. They are far more sensitive to degradation and have lower sensitivity thresholds than fish species (see Figure 5). Figures 6 and 7 show the decline of the Big Darby Creek mussel community due to existing stresses.

Protecting water quality and nationally significant biodiversity while a watershed undergoes substantial urbanization would be a “grand experiment.” Other examples of relatively high levels of development and doing this successfully without loss of biodiversity are not known.

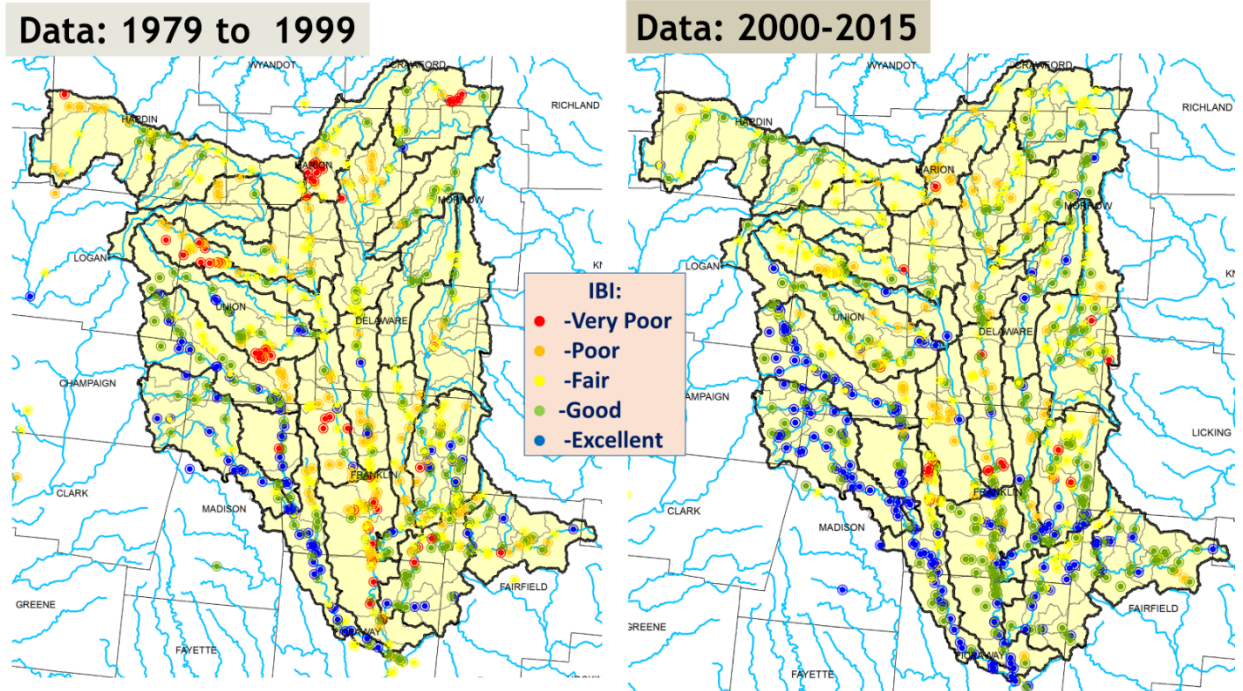


Figure 1 Rankin 2020 Fish trends in the upper Scioto River basin 1979-2015

Fish Trends at Paired Sites

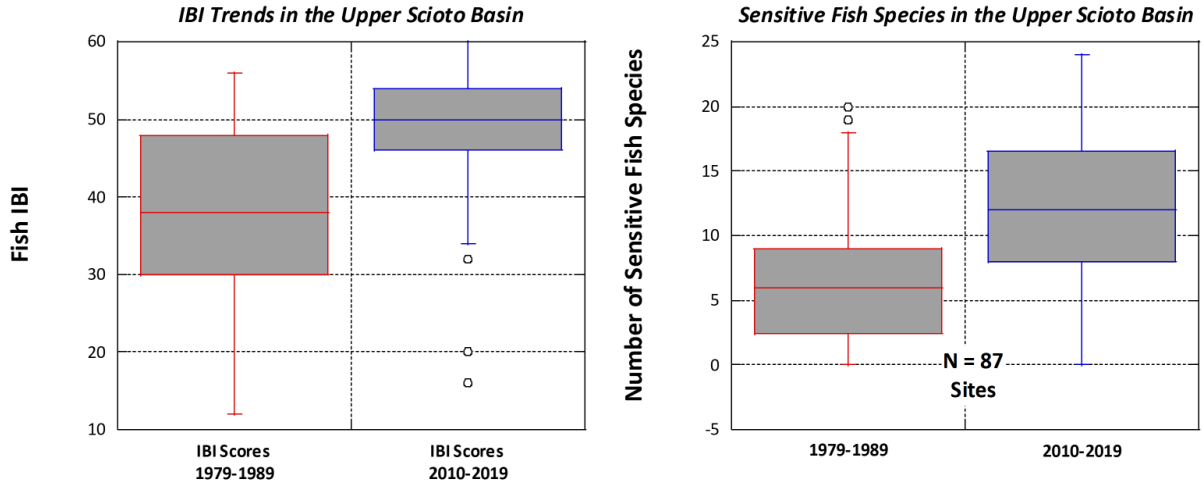


Figure 2 Rankin 2020 Fish trends at paired sites in the upper Scioto River basin 1979-2019

Basin Code	Stream Code	River	Mean Drainage Area (sq mi)	Sample Year	No. Sites	Mean IBI	Max. IBI	IBI Scores > 56	Percent of IBI Scores ≥ 56	IBI Scores = 60	Percent of IBI Scores = 60	Mean CIBI	Max. CIBI
02	200	Big Darby Creek	321.5	2014	34	54.9	60	16	47.1	1	2.9	92.5	101.2
02	210	Little Darby Creek	125.6	2014	11	56.5	60	9	81.8	4	36.4	90.6	100.6
14	200	Stillwater River	629.1	2010	12	53	58	6	50.0	0	0.0	87.2	99.7
02	600	Salt Creek	236.1	2005	20	53.3	56	6	30.0	0	0.0	86.7	95.2
14	200	Stillwater River	334.4	2013	34	53.1	60	16	47.1	1	2.9	86.4	100.5
02	200	Big Darby Creek	334.3	1992	39	52.5	60	15	38.5	2	5.1	85.4	100.8
14	001	Great Miami River	1008.4	2009	35	53.7	58	14	40.0	0	0.0	85.4	95.6
14	500	Twin Creek	167.2	2005	28	53.6	58	12	42.9	0	0.0	83.4	92.4
02	210	Little Darby Creek	125.1	2001	10	53.6	58	5	50.0	0	0.0	83.1	89.8
02	200	Big Darby Creek	219.7	1993	24	51.1	56	4	16.7	0	0.0	82.8	90.7
14	001	Great Miami River	773.5	1994	52	51.3	60	23	44.2	2	3.9	82.6	95.4
02	210	Little Darby Creek	124.1	1992	16	51.6	60	5	31.3	1	6.3	80.8	101.5
02	200	Big Darby Creek	284.8	2001	44	49.8	58	6	13.6	0	0.0	80.7	97.8
02	001	Scioto River	2272.1	1999	11	48.4	54	0	0.0	0	0.0	80.4	92.8
10	200	Ohio Brush Creek	240.3	2007	23	52	60	7	30.4	2	8.7	80.4	92.1
02	600	Salt Creek	243.7	1992	19	50.1	56	2	10.5	0	0.0	80.1	86.2
14	400	Fourmile Creek	109.1	2005	13	49.5	56	2	15.4	0	0.0	80.1	91.4
14	500	Twin Creek	179.3	1995	39	51.8	58	10	25.6	0	0.0	80.1	93.2
14	200	Stillwater River	350.1	1999	37	50.2	60	13	35.1	5	13.5	79.9	95.9
10	200	Ohio Brush Creek	254.6	1987	13	49.7	58	1	7.7	0	0.0	79.7	89
11	001	Little Miami River	254.0	2011	34	50.5	58	6	17.7	0	0.0	79.5	90.5
14	001	Great Miami River	475.8	2008	21	49.9	58	7	33.3	0	0.0	79.5	93.1
02	200	Big Darby Creek	322.3	1979	11	49.1	56	2	18.2	0	0.0	78.1	97.1

Figure 3 Key IBI and CIBI (Continuous IBI) statistics for streams by year for the top 24 results in the Ohio fish database, ranked by highest mean CIBI. Scores highlighted in

blue reflect the highest values for each statistic. Sample year is the year in which an intensive survey was conducted. Streams limited to those > 100 sq mi drainage size. (Rankin 2020)

We are very concerned that the Big Darby mussel community might follow the direction of the Little Miami River watershed. As recently as the 1990s the Little Miami supported a rich mussel fauna. In subsequent years, the watershed has seen intense development in some areas. After concluding a disappointing mussel survey in 2020, Hoggarth stated:

“these findings could indicate that the river conditions are slowly becoming uninhabitable to all mussel species.”

Hoggarth attributes the declines to urbanization. The Darby system has demonstrated mussel declines that appear very similar to the early mussel declines seen in the Little Miami system, and it seems reasonable to fear that it could continue to follow the same path as that unfortunate stream if the agency does not intervene.

The DCA/OEC/CBD comments of January 30, 2023, “Draft General Permit - OHC000006. Draft general permit for stormwater, Big Darby Creek Watershed Appendix A,”

<https://epa.ohio.gov/divisions-and-offices/surface-water/permitting/storm-water-discharges-from-small-and-large-construction-activities--general-permit> describe concerns about the adequacy of the Big Darby stormwater permit. There has been little additional and new conservation land acquisition in the Big Darby Creek watershed. Therefore, the Ohio EPA stormwater permit constitutes the bulk of land protection and stream protection. The permit represents most of the protection efforts directly (associated with a proposed development) or indirectly (not associated) taking place related to development and impervious surface. Because of the rising costs of land due to extensive development in central Ohio and approved solar facility construction (e.g., about 10,000 acres in Madison County), we do not predict a large amount of new conservation land acquisition. Much of the conservation land that is acquired is in the floodplain and meander belt and therefore is (mostly) protected from development anyway.

A 208 plan that is inadequate would encourage development and impervious surfaces at significant and highly concerning levels. Impervious surface is an overarching measure that is linked with impacts stresses such as stream hydrology and flow regimes, temperature, road salt and other pollutants.

We continue to maintain that while Appendix I of the general stormwater permit addresses protections specific to the Big Darby Creek watershed, it has not been demonstrated that these measures are adequately protective of maintaining high fish IBI scores, or ensure long-term protection of rare and sensitive or declining fish, or of mussels, including state and federally listed species. We remain very concerned that

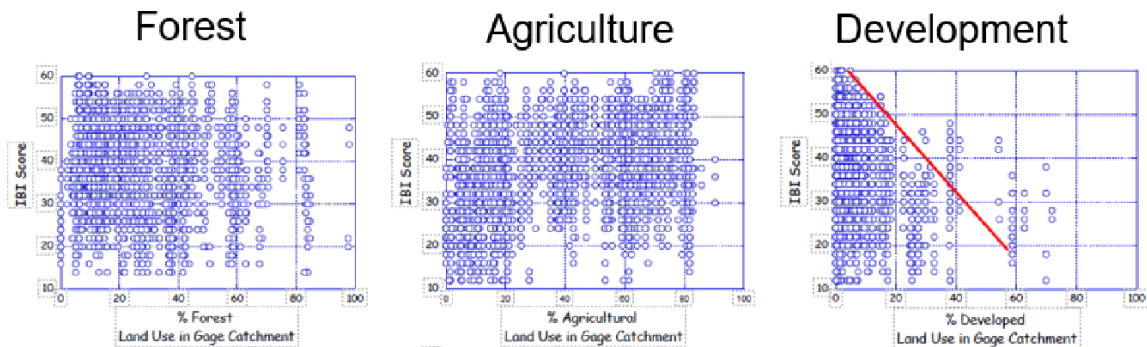
the permit has not been proven to be adequate to protect the species that make Big and Little Darby Creeks Outstanding State Waters and deserving of Outstanding National Resource Waters status. We remain especially concerned that impervious surface amounts will overwhelm any protection measures. We remain concerned that groundwater recharge amounts allow for very high levels of impervious surfaces and that each development adds to stresses and negative outcomes. See our comments below regarding Table A-1 and Table A-2 (Appendix A) regarding Annual Average Expected Total Groundwater Recharge.

We emphasize the Big Darby stormwater permit because, in effect, it has become the main means of stream quality protection that is being implemented. Other actions, such as conservation land acquisition, have significantly declined in the past decade.

The effectiveness of the 208 plan and stormwater permit must be based on environmental results, *i.e.*, perpetuation of high IBI scores and species that establish the Big and Little Darby Creeks as outstanding. This must be clearly demonstrated and not assumed through engineering. Ohio EPA and related data should be used to establish what level of development, impervious surface and stormwater that these species can tolerate, thrive and perpetuate themselves. Such an analysis has not been conducted, but needs to be, and before any significant new development is planned, approved or constructed and this 208 plan is put in place.

We maintain that each further development parcel and its stormwater adds to stresses to the creeks and degradation. The high scores that are found in Ohio EPA surveys are not evidence of adequacy of the stormwater permit, as they are largely likely due to other factors and do not specifically analyze the stormwater permit's adequacy or determine a stormwater area's biological results in streams. Other programs, such as agricultural best management practices, land conservation and stream restorations, have taken place at the same time and since 2001. These might be responsible for some ecological lift. In contrast, and very significantly, mussel populations and species have declined despite riparian buffers which far exceed those in the stormwater permit. Mussels have declined significantly in the Hellbranch Run watershed, where historically the OSU Museum records at least 15 species, but few species are now found. Therefore, while buffers are essential to achieve things like better QHEI scores and riparian habitat conditions they are not an assurance of protection, and this is certainly the case for mussels. Other factors, such as the amount of impervious surface, might be better predictors of mussel and other rare and sensitive species survival. State and local permit programs and conservation planning must continue to review further progress in improved technical evaluation and protections, including demonstration of such evidence of adequacy of the stormwater permit's environmental outcomes. We cannot wait until monitoring results clearly demonstrate degradation in the creeks, especially further reductions in rare mussel populations. (See Figure 4 showing the rapid decline of fish IBI scores after limited development.) Stormwater impacts are very difficult and very expensive to reverse, and stream quality needs to improve to support rare and

sensitive species at risk and that have declined. The approach must be precautionary with a significant margin of safety since impact reversal is unlikely.



Additional points: Urban impact is cumulative/additive (not mitigated or “cancelled out” by natural area); decline is very likely after a few percent “development”; above graphs do not specifically measure sensitive or “high quality” fish species (such as using a CIBI score).

Plots of IBI vs forested land covers (left), agricultural land covers (middle) and developed land covers (right). Land cover represents percent in upstream catchments at gage locations; biological data represents any data on the same river within 10 miles of the gage. Line on developed land plot approximates a threshold line drawn by eye. Source: The Development of a Framework for Managing Flows under the Great Lakes Compact: Issues, Concepts, and Tool Development, MBI 2009 Technical Report MBI/2009-1

Figure 4 (above) Comparison of three land use covers in Ohio, using Ohio EPA stream fish data. Note the failure of the data points to show attainment of EWH (50 and above) at higher levels of development in a subwatershed, i.e., in the upper middle and right of the “Development” graph. Note that agricultural watersheds continue to have high scores even at high percentages of agricultural development. Source: The Development of a Framework for Managing Flows under the Great Lakes Compact: Issues, Concepts, and Tool Development Chris O. Yoder, Research Director Midwest Biodiversity Institute, Edward T. Rankin, Senior Research Associate Ohio University Voinovich School for Leadership & Public Affairs. A Combined Report to: Ohio Environmental Council and The Nature Conservancy.

Allowing significant development must be approached with great caution and in accordance with the precautionary principle. It must be scientifically supported, including with a significant margin of safety. Stresses should not be analyzed separately. A 208 plan must recognize other stresses that are manifesting themselves at the same time, such as agriculture, lack of connectivity due to the dam at Darby Dan Farm at Big Darby Creek downstream of US 40, wastewater discharges, road salt, previous development, levees, and others. These other stresses put an extra burden that the 208 plan must take into account when estimating the capacity of the watershed’s streams to avoid species losses. For example, road salt is the parameter associated with urbanization that has been increasing for at least 40 years, in spite of stormwater management. Road salt levels are reaching toxic or “red flag” levels of concern in Ohio (Miltner 2021), especially in urban areas. See related material from Doug Kane of Heidelberg

University and Bill Hintz (e.g., Hintz et al 2022) of the University of Toledo for more on road salt concentrations in developed versus rural areas.

In order to preserve the species richness and integrity of Big and Little Darby Creeks and tributaries, the 208 plan must establish a threshold for biological impacts that protects rare and sensitive species and ensures high biological scores are perpetuated. The 208 plan must determine the capacity of the watershed's stream to absorb urban development stresses without loss of species or any significant reduction in their distribution. The plan also should support improvement in many areas, especially tributaries. Data-based (including aquatic biology) impact modeling should be conducted to determine the amount of development that could occur without substantially harming the watershed's aquatic biodiversity values. We recommend a robust analysis tool such as an Integrated Prioritization System (IPS) to establish the "development carrying capacity" or "maximum development threshold" for the watershed, and review and rank susceptibility and threats. Although a Big Darby IPS would have to focus more on susceptibility for biological richness, diversity, and species survival and distributions, in northeast Illinois,

"The Northeastern Illinois Integrated Prioritization System (IPS) provides a framework within which high resolution monitoring data and assessment results are organized, analyzed, and merged to better support Clean Water Act (CWA) management programs in meeting their goals and objectives and guiding a wide array of water quality related decision-making."

<https://midwestbiodiversityinst.org/publications/reports/integrated-prioritization-system-aps-for-northeastern-illinois>

The following is excerpted from the DCA/OEC/CBD January 17, 2024, "Comments on the Ohio EPA Water Pollution Control Loan Fund Draft Program Year 2024 Program Management Plan (PMP) Project Priority and Intended Projects List for PY 2024 12/13/2023 Madison County, Plain City and Logan County projects."

"Before any wastewater infrastructure is funded, a framework must be established and deployed that integrates a wide range of information about the biology, habitat, water quality, land use, and both point and nonpoint pollution sources that affect a watershed's streams and rivers and the protection of biological integrity and rare and sensitive species. Analysis of this information can be used to develop a framework that predicts what effect stressors such as flow, habitat, chemical pollutants, or land use changes will have on biological integrity and rare and sensitive species. The framework should address the threat and susceptibility of high quality resources to future development and assess the restorability of impairments that already exist at a relevant scale, i.e., the site, reach, and HUC12 watershed scales. An example framework is available for Northeastern Illinois and can be found at <https://drscw.org/activities/stressors-analysis/>. The Metropolitan Sewer District of Greater Cincinnati sponsored a similar framework for Southwest

Ohio (<https://msdgc.org/programs/water-quality-monitoring-program/>). Once an Integrated Prioritization System (IPS) is developed, it can be used to analyze both river or stream reaches that are not meeting standards and higher quality streams that are susceptible to or threatened by increased stressors. It can help local jurisdictions prioritize opportunities for restoration and protection across central Ohio including the Upper Scioto River and adjoining basins.”

Big Darby Creek watershed listed mussels – 25 species

Big Darby Creek watershed listed mussels – 25 species		
Mussel species names subject to revision		
Common Name	Scientific Name	Status
Black sandshell	<i>Ligumia recta</i>	OSC
Clubshell	<i>Pleurobema clava</i>	OE,FE
Creek heelsplitter	<i>Lasmigona compressa</i>	OSC
Deertoe	<i>Truncilla truncata</i>	OSC
Elephant ear	<i>Elliptio crassidens</i>	OE
Elktoe	<i>Alasmidonta marginata</i>	OSC
Fawnsfoot	<i>Truncilla donaciformis</i>	OSC
Kidneyshell	<i>Ptychobranhus fasciolaris</i>	OSC
Longsolid	<i>Fusconaia subrotunda</i>	OE, FT
Northern riffleshell	<i>Epioblasma rangiana</i>	OE, FE
Ohio pigtoe	<i>Pleurobema cordatum</i>	OE
Pondhorn	<i>Unio merus tetralasmus</i>	OT
Purple wartyback	<i>Cyclonaias tuberculata</i>	OSC
Rabbitsfoot	<i>Theliderma cylindrica</i>	OE, FT
Rainbow	<i>Cambarunio iris</i>	OSC
Rayed bean	<i>Paetulunio fabalis</i>	OE, FE
Round hickorynut	<i>Obovaria subrotunda</i>	OT, FT
Round pigtoe	<i>Pleurobema sintoxia</i>	OSC
Salamander mussel	<i>Simpsonaias ambigua</i>	OT, FE*
Sharp-ridged pocketbook	<i>Lampsilis ovata</i>	OE
Slippershell mussel	<i>Alasmidonta viridis</i>	OT
Snuffbox	<i>Epioblasma triquetra</i>	OE, FE
Threehorn wartyback	<i>Obliquaria reflexa</i>	OSC
Washboard	<i>Megalonaias nervosa</i>	OE
Wavy-rayed lampmussel	<i>Lampsilis fasciola</i>	OSC

* Salamander mussel *Simpsonaias ambigua* Formerly OSC - ODNR changed this species to OT July 2022. Proposed as a federal endangered species, FE, by US FWS on August 22, 2023.

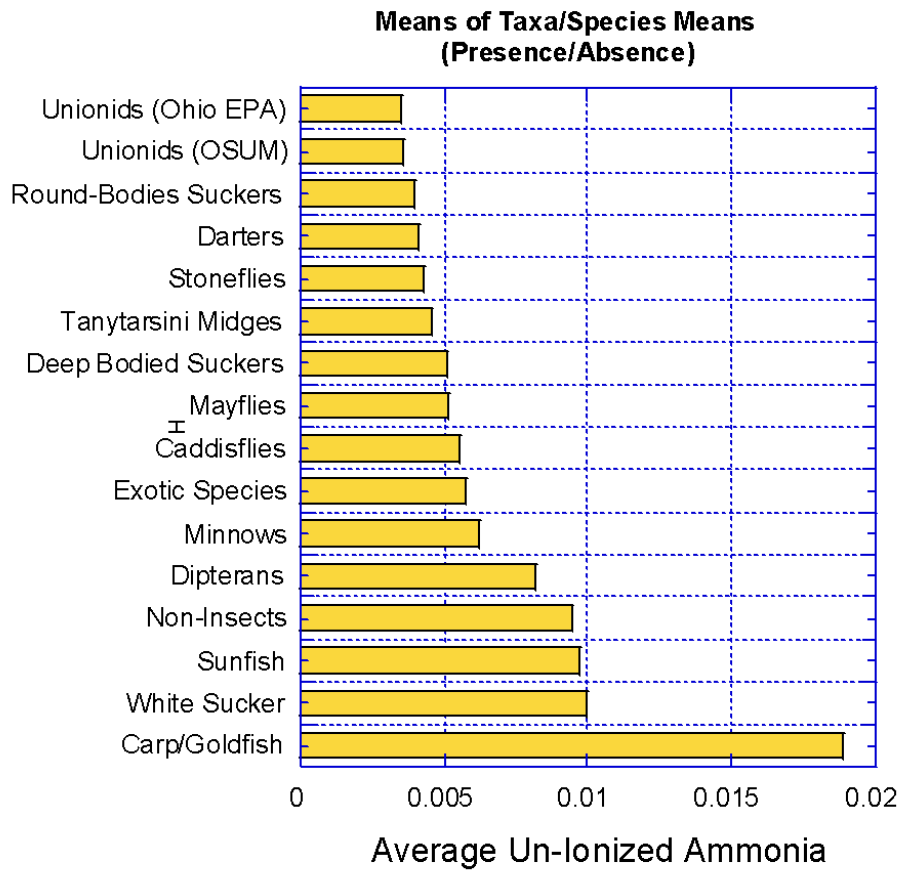


Figure 5 Rankin: Sensitivity of taxa groups to un-ionized ammonia using Ohio EPA and Ohio State University Museum mussel data

Big Darby Creek Mussel Survey Data Watters and EnviroScience 1986 -2015

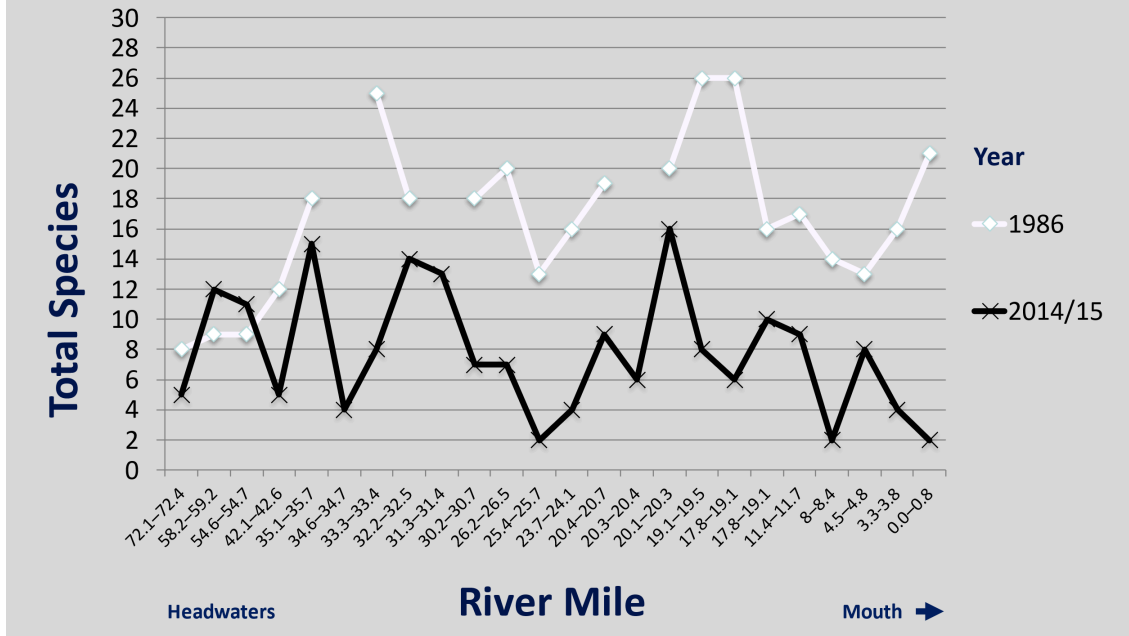


Figure 6 Mussel species richness from upper Big Darby Creek to mouth, comparing Watters (1986) to EnviroScience (2015)

Shannon Wiener mussel diversity comparison

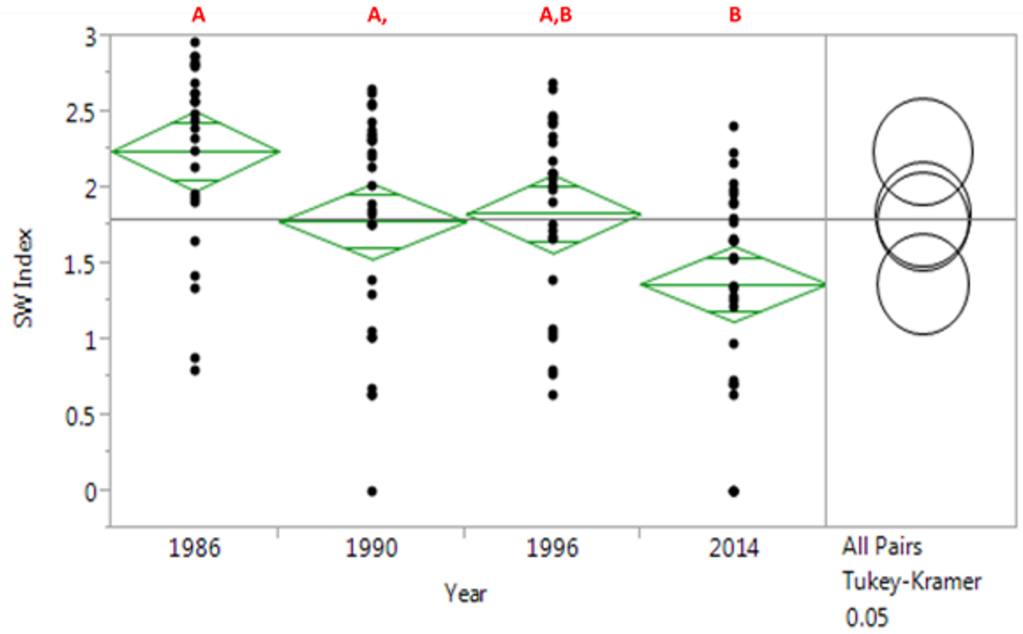


Figure 7 Average Shannon Wiener diversity in the Big Darby Creek from Watters/EnviroScience 1986-2015, $F: 7.76, p < 0.0001$. Means are shown in green with 95% confidence intervals. A post-hoc Tukey Kramer test shows statistically unique values, and means that are statistically different are labeled with different red letters (Data sources: Watters 1986 1990, 1996; EnviroScience 2015).



Figure 8. Over 800 northern riffleshell (*Epioblasma rangiana*) individuals were collected by Dr. David Stansbery of the Ohio State University Museum on August 25, 1962 from Big Darby Creek upstream of Scioto-Darby Road, Pickaway County.

Some mussel species that are now rare in Big Darby Creek were once relatively abundant. Figure 8 shows the abundance of the federally endangered northern riffleshell at River Mile 19 in Pickaway County as of 1962. Big Darby Creek is the last known stream in Ohio to record this species, which was once far more widespread in central Ohio. Figure 9 shows the distribution of the northern riffleshell in Franklin County as recorded by E. Price (1940). This species is now only found in Big Darby Creek.

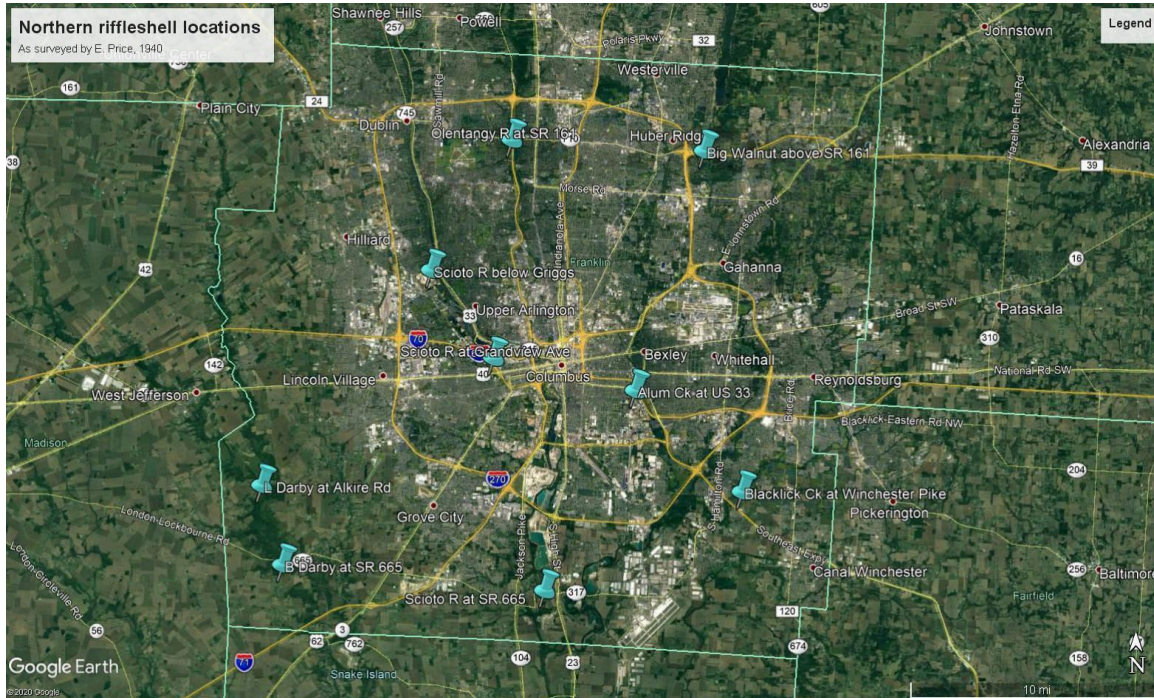


Figure 9. Locations (blue pins) of northern riffleshell recorded in Franklin County by E. Price (1940) showing occurrences in streams such as the Big Darby Creek, the Scioto River and Big Walnut Creek.

It is clear the positive status or trends in fish populations are not seen for the Big Darby's mussel community. Mussels appear to have a significantly lower threshold for negative effects, leading to decline, than fish do. Unless this declining trend stops or reverses itself the Big Darby Creek watershed will lose a key component that it has been well known for. Protective measures, including this 208 plan, need to ensure this lower threshold is not exceeded; water quality standards for mussels at point sources are not enough. All sources including stormwater and agriculture, must be comprehensively evaluated to alleviate stresses on mussels. Mussels are a key indicator of the health of Big and Little Darby Creeks. "Response indicators are generally composite measures of the cumulative effects of stress and exposure and include the more direct measures of community and population response. ... Other response indicators could include target assemblages (rare, threatened, endangered, special status, and declining species)" (Ohio EPA 2024; pg G-3). We consider the Big Darby listed mussel species along with listed and sensitive fish species to be appropriate species as indicators.

The Ohio EPA and State of Ohio will lack an adequate evidentiary foundation to determine impacts to water quality and aquatic wildlife species if robust aquatic biology-based impact modeling is not conducted. Also, it is important to be cautious from the beginning, as we do not have evidence of success in a similar situation, and certainly not with mussels. Therefore, a 208 plan should not be implemented

until there is evidence of adequacy and scientifically supported demonstration of a threshold for impacts on biodiversity, including for rare species.

Recognizing the above and summarizing, a 208 plan should be conditioned on the establishment of a data-based development threshold which is adequately shown to:

- o Avoid loss of rare and sensitive species. It appears we might already have lost some native populations in Big Darby Creek (Scioto madtom for example). Fifty-eight% of the watershed's mussel species are listed at the state or federal levels. (See table above "Big Darby Creek watershed listed mussels.") Eight species are listed at the federal level and are or could be at risk of loss from the watershed.
- o Protect the watershed's fish diversity and avoid lowering biological scores. The Big Darby watershed's scores are beyond exceptional and should be permanently protected at that level or improved. Big Darby Creek leads all Ohio streams in high fish diversity scores. Based on Ohio EPA data, 146 of the 592 (24.7%) of the highest fish scores (IBI scores of 56-60) recorded between 1972 and 2022 in Ohio were recorded in the Big Darby Creek watershed. At 555 square miles, the Big Darby Creek watershed constitutes just 1.2% of the State of Ohio's 44,825 square miles.
- o Maintain Outstanding State Waters status and allow for the future categorization as Outstanding National Resource Waters.
- o Maintain Exceptional Warmwater Habitat for all of Big and Little Darby Creeks, Hellbranch Run, and for appropriate tributaries.
- o Maintain Coldwater Habitat for all appropriate sections of Big Darby Creek and tributaries.
- o Protect the watershed's eight federally listed mussel species and all Ohio listed species.
- o Protect the watershed's important bat species through adequate riparian land conservation (especially Indiana bat (*Myotis sodalis*) (Kniowski 2011) and Northern long-eared bat (*Myotis septentrionalis*), species dependent on high quality and adequately wide stream setbacks.
- o Maintain National and State Scenic River status, including adequately wide riparian corridors (beyond the stormwater permit requirements) and their scenic aesthetics.
- o Protect the hundreds of millions of dollars of conservation investment in this watershed that Ohio has made to date.

For more on the biodiversity value of the Big and Little Darby Creeks, see the Outstanding National Resource Waters (ONRW) petition and appendices submitted November 17, 2023, by the nine conservation organizations (Ohio Environmental Council, Darby Creek Association, Center for Biological Diversity, six others) requesting the categorization of Big and Little Darby Creeks as Outstanding National Resource Waters (ONRW). <https://epa.ohio.gov/divisions-and-offices/surface-water/regulations/early-stakeholder> "Big and Little Darby Creeks - Antidegradation rule (OAC 3745-1-05)" ONRW is the appropriate antidegradation category for these streams given their national ecological and recreational significance.

For more on the need for an adequate 208 plan covering all counties of the watershed, see the DCA/OEC/CBD “Comments on the Ohio EPA Water Pollution Control Loan Fund Draft Program Year 2024 Program Management Plan (PMP) Project Priority and Intended Projects List for PY 2024 12/13/2023 Madison County, Plain City and Logan County projects.”

Attachment B – Stream Restoration Option under Darby SW Permit Part 1 Stream Assessment

“In the event the assessment of the stream meets all the criteria listed below, restoration (provided 401/404 permits are authorized) as depicted in Part 2 of this attachment, may be a means of reducing the setback distance required by Criteria 2.b.1.i.”

This option, which encourages reduction of the stream setback, should be eliminated. First, there is not a need to provide a developer with an incentive. These stream restoration projects are generally paid for by the public such as through the Clean Ohio Fund. This is what we are seeing in Franklin County; the main project funding is from the public. This is being used as a way to place impervious surfaces closer to streams, and without evidence to the contrary, has not been shown to be beneficial.

References

- EnviroScience. 2015. Final Report: Freshwater Mussel Surveys on the Big Darby System in Logan, Union, Champaign, Madison, Franklin and Pickaway Counties to Monitor 40 Sites Previously Surveyed by Watters (1998). September 2014 and May 2015. ES project #5904. Prepared for Ohio Department of Natural Resources, Division of Wildlife, Fish Management and Research Program. 90 pp.
- William D. Hintz, Shelley E. Arnott, Celia C. Symons and Gesa A. Weyhenmeyer. 2022. Current water quality guidelines across North America and Europe do not protect lakes from salinization. PNAS 119(9) <https://doi.org/10.1073/pnas.2115033119>
- Hoggarth, M.A. 2020. Report on a second reexamination of the mussels of the Little Miami River system. Final Report (to ODNR, Scenic Rivers Program). 87 pp.
- Kniowski, A.B. 2011. Summer Ecology of the Indiana bat (*Myotis sodalis*) in an Agricultural Landscape. Master of Science, Ohio State University, Environment and Natural Resources, http://etd.ohiolink.edu/view.cgi?acc_num=osu1299554522
- MBI. 2017. A Retrospective on the Clean Water Act in Ohio: Is Today As Good As It Gets? <https://midwestbiodiversityinst.org/publications/articles/a-retrospective-on-the-clean-water-act-in-ohio-is-today-as-good-as-it-gets> (Accessed 4/27/3024)
- Miltner, R. 2021. Assessing the Impacts of Chloride and Sulfate Ions on Macroinvertebrate Communities in Ohio Streams. Water 2021, 13(13), 1815; <https://doi.org/10.3390/w13131815>
- Ohio EPA. 2004. Biological and Water Quality Study of Big Darby Creek and Selected Tributaries, 2001/2002, Logan, Champaign, Union, Madison, Franklin and Pickaway Counties, Ohio. June 2004. Ohio EPA Technical Report EAS/2004-6-3. https://dam.assets.ohio.gov/image/upload/epa.ohio.gov/Portals/35/documents/BigDarbyTSD2004_A.pdf
- Ohio EPA. 2024. Ohio 2024 Integrated Water Quality Monitoring and Assessment Report. Division of Surface Water, Modeling, Assessment, and TMDL Section. 403 pp. <https://epa.ohio.gov/divisions-and-offices/surface-water/reports-data/ohio-integrated-water-quality-monitoring-and-assessment-report>
- Price, A.E. 1940. A check list of the Unionidae of the streams of Franklin County, Ohio. M.S. Thesis, Ohio State Univ., Columbus. https://etd.ohiolink.edu/!etd.send_file?accession=osu1211909232&disposition=inline
- Rankin, E. 2022. Evidence Towards an Outstanding National Resource Water Anti-degradation Tier for Big and Little Darby Creeks in Ohio: Avoiding Ecological Mediocrity in Ohio's Best Streams and Rivers. Midwest Biodiversity Institute, Hilliard, Ohio. 8 pp.
- Watters, G.T. 1986. The Distribution and Relative Abundance of the Unionid Mollusks of the Big Darby Creek System in Ohio. Museum of Zoology, The Ohio State University. Prepared for the Ohio Chapter of the Nature Conservancy, Columbus, Ohio. 158 pp.

Watters, G.T. 1990. 1990 Survey of the Unionids of the Big Darby Creek System. The Museum of Zoology, The Ohio State University. Final Report of The Nature Conservancy, Ohio Chapter. 36 pp. and appendices.

Watters, G.T. 1996. Freshwater Mussel Survey of Big Darby Creek. Prepared for The Ohio Chapter of The Nature Conservancy.