

Appendix B: Responses to Public Comments

The draft Big Darby Creek Watershed TMDL was made available for public comment from May 16 through August 15, 2005. This appendix contains the many comments received and the responses to those comments. The comments and responses are organized by topic, as follows:

- B.1 Riparian Buffers (including setbacks, channels, and hydrology)
- B.2 Storm Water
- B.3 Recharge
- B.4 Use Designations/WQS
- B.5 208 Plan
- B.6 Authority
- B.7 Impervious Surfaces
- B.8 Nationwide Permits
- B.9 Home Sewage Treatment Systems (HSTS (bacteria))
- B.10 Agricultural Influences
- B.11 Development
- B.12 Area of Applicability
- B.13 Flexibility
- B.14 Miscellaneous
- B.15 Biological Assessment
- B.16 Sufficiency of Sampling

Comments were received from 19 parties, as listed below. In this appendix, abbreviations are used to associate each comment with its source.

Commenter	Abbreviation
1000 Friends of Central Ohio	1000F
Battelle	Batt
Bob Cornett	BC
Building Industry Association of Central Ohio	BIA
City of Columbus	COLS
David Greene	DG
Darby Creek Association	DCA
Darby Watershed Joint Board	DWJB
Darby Watershed Joint Board – Planning Group	DWJB-PG
Diane Bradford	DB
Gregory Deckler	GD
Honda of America Manufacturing, Inc.	Honda
Lenny Losh	LL
Linda and Dale Rapp	LDR
Ohio Environmental Council	OEC
Ohio Farm Bureau Federation	OFB
Robert H. Green	RHG
The Nature Conservancy	TNC
U.S. Fish and Wildlife Service	FWS

B.1 Riparian Buffers (including setbacks, channels, and hydrology)

1000F

Specifically, we strongly support strategies to protect the stream channel from eroding by ensuring advanced, appropriate storm water management and sufficient protected land along stream banks.

Response: The comment is noted.

1000F

Specifically, we strongly support strategies to significantly reduce sediment from entering the stream by measures such as reducing streambank erosion and improving and enforcing controls on construction sites;

Response: The comment is noted.

BIA

Changes in hydrology have been identified as an issue of concern in the watershed, therefore storm water designs will have to assure that no adverse impacts will occur due to residential development. For instance, the existing runoff rate at the undeveloped Burr Oak site during a 1-year storm event is calculated to be 24.67 cfs; whereas, the post-development runoff rate is expected less than 7.00 cfs, an almost 75% reduction. The duration of runoff during a 1-year or smaller event on the undeveloped, agricultural property is 15.7 hours. The Burr Oak storm water system has been designed to increase the duration of runoff to well over 30 hours. This demonstrates that while development may cause a slight increase in runoff volume, appropriate storm water management can actually create a more natural (pre-agricultural) hydrograph through appropriate retention volumes and release rates. This long retention time may also allow for infiltration if appropriate soils are present, especially in larger storm events where a larger area is inundated.

Response: The comment is noted. One of the intents of The Big Darby Creek Watershed NPDES Permit for Storm Water Related to Construction Activity is to protect the hydrology as the watershed develops. Appropriate storm water management is critical to achieve this intent.

BIA

With respect to riparian buffers, we would strongly urge the agency to avoid establishing blanket prohibitions against any impact to riparian zones. The BIA recognizes the importance of maintaining functioning, vegetated riparian corridors along streams in the Darby Creek watershed. But in some instances it may be impracticable to avoid all impacts to riparian corridors. For example, road crossings and/or utility crossings may be necessary. These may in turn allow the design of a development to maximize other water quality protections. It may be possible to design a development and maintain a larger wooded riparian zone while impacting a small portion of an agricultural riparian zone for a road crossing. Similarly, minor impacts in one area may allow for a better, more environmentally sensitive development design overall. Establishing blanket prohibitions may force future development plans to ignore other opportunities which

would provide greater benefits to the Darby Creek watershed. Moreover, in some instances, it may be necessary to construct a stream crossing in order to even access a parcel of property.

As previously noted, we believe that a flexible, pragmatic approach is necessary to allow property owners and developers to consider a range of alternatives to meet well-defined objectives. There should not be a “one size fits all” approach which could preclude the implementation of alternative and perhaps more effective and environmentally sound approaches.

Response: The Ohio EPA considered these points when developing the Big Darby Creek Watershed NPDES Permit for Storm Water Related to Construction Activity. The BIA will have an opportunity to comment on the specifics of this permit when it is released for public input.

DG

Stream restoration should be part of storm water controls, widening, bank protection and tree planting similar to Grants Run project FCSWCD using qualified restoration experts such as Steve Phillips of Oxbow River and Stream Restoration.

Response: The comment is noted. Ohio EPA typically does not get involved in the selection of contractors for restoration projects.

DCA

DCA was confused by the TMDL’s incomplete analysis and recommendations for riparian corridors. Rather than discuss and evaluate the myriad beneficial functions of the corridor and flood plain, the EPA chose to focus on a strictly geomorphological evaluation. As a result, the report limits its recommendations for this, the most critical aspect of protecting a stream, to a beltwidth formula. Beltwidth setbacks are designed to assure that a stream has enough physical space and active flood plain to achieve a dynamic equilibrium that protects a stream’s habitat integrity. Unfortunately, beltwidths do not fully address other aspects of flood plain function, most critically hydrological functions having to do with infiltration of surface water and maintenance of baseflow.

DCA is going to defer to the Nature Conservancy and ODNR Scenic Rivers staff for an extensive listing of the justifications for protecting the entire existing flood plain. (We are attaching a copy of Mr. Bob Gable’s comments to the Darby Accord consultants for your consideration, as it speaks directly to the corridor issue. Mr. Gable is of course ODNR’s Scenic River Project Manager, and has extensive experience in the Darby effort.) We are entirely in agreement with comments you will be receiving from Anthony Sasson, with TNC, and urge you to rewrite this section of the TMDL. We also urge you to consult with the ODNR people with direct oversight of the Darby watershed, namely Scenic River staff.

We urge the agency to recommend a corridor formula similar to the EAG/ESDA proposal. This formula was the consensus choice of all participating stakeholders in Franklin county, including all jurisdictions, the Building Industry Association, ODNR, OEPA, Franklin Soil and Water, Metro Parks, and environmental groups. Finally, we note that the setback would be mandatory only in cases in which new development is

proposed. It would be merely a recommendation for existing land uses, such as existing residential properties and farms.

In addition to adopting ESDA language to define the setback, we strongly urge the EPA to include a list similar to the EAG recommendations that would define allowed and prohibited activities in corridor setbacks for new development. In the current draft, it is unclear what, if anything, is an undesirable activity in the setback. At present there is a proposal for an asphalt plant and gravel mine in the Big Darby flood plain and beltwidth in Pickaway County, and we cannot find anything in the TMDL or promised additions to area 208 plans that would preclude such activities. We urge the agency to specify that filling, dredging, industry, impervious surface, mining, and other inappropriate alterations of the flood plain be prohibited in situations where EPA permits are needed.

Finally, we would add that while the beltwidth formula provided by ODNR and OSU researchers is an interesting area of investigation, it is dangerously speculative to conclude that prescribing a beltwidth which is only generally associated with EWH streams will provide adequate protection in the case of an extremely high quality stream such as Darby. We reiterate that EWH water quality measures do not take into account the requirements of a high quality mussel fauna, and we are quite certain that the folks working on beltwidth formulas have not correlated their recommendations with mussel health at this time. Complete protection of the flood plain is urged.

Response: The purpose of the setback recommendations in the TMDL report are to protect for a stable channel and to help control and reduce sediment loads to and in the streams. The setback recommendations are not riparian corridor protections nor were they intended to be. They are intended to establish a minimum protection area which would allow the river to flood and maintain its dynamic channel equilibrium to address a source of sediment load (bank erosion) and to increase the ability of the system to handle sediment loads (the flood prone protection areas). These protection areas are recommended for all land uses.

The Ohio EPA agrees that the corridor formula developed with a consensus of the ESDA EAG increases the protections for the Darby system by providing and protecting the full flood plain and the beneficial functions this can provide. The corridor formula developed by the EAG will be included in the Big Darby Creek TMDL with the exception that the beltwidth formula used in the Draft TMDL will replace the beltwidth formula used within the EAG corridor formula except in Franklin County where there already exists an overlay protection area. The reason for the change in beltwidth formula is the TMDL beltwidth formula was developed with data more specific to the Darby system than the earlier one used by the EAG. The updated corridor formula will be included in the Big Darby Creek Watershed NPDES Permit for Storm Water Related to Construction Activity, and as such will be mandatory for new development. It will be guidance only for all other land uses. In addition, appropriate uses within the flood plain/ riparian protection corridor will be more clearly defined within the final TMDL report.

DWJB

3.1 Active floodplain terminology won't make sense to people especially in areas when there is no floodplain defined by FEMA. Seems to be more of an in-stream water level.

Response: Active floodplain is generally a much smaller, more frequently flooded area than the 100-year flood plain delineated by FEMA. However, regardless of whether FEMA has delineated the 100-year floodplain for a water course or not, it still floods. If FEMA has determined there is actually no flood plain for an area, and if this was based solely on technical considerations, then the active floodplain should reflect a similar finding as it is based on available elevation data.

LL

The use of active floodplain ignores better data for use in riparian data. USDA soils data and FEMA 100 year defined flood plain negates the need for a new definition that is never clarified in the discussion of floodplain dimensions. The riparian area is ill-defined at best. Reference to an adequate floodplain (3-9) and using bankfull width as part of an active floodplain is a good example of the validity of the data being used.

Response: The active floodplain formula used in the TMDL report to establish recommended setback widths defines an area that is, or should be, frequently flooded. The purpose of this particular setback width is to establish and protect the 'streamway' – the corridor the stream naturally undulates in over time. Protecting this particular area will reduce a source of sediment by reducing bank erosion and it will also increase the capacity of the stream to assimilate sediment by providing areas to deposit it outside of the main channel. The FEMA 100-year floodplain is intended for a different purpose – that of defining an area of catastrophic flooding so that human life and economic interests are protected. Thus, the two definitions are needed to protect for different concerns.

The USDA soils data may be able to be used to define this actively flooded area, and this idea was considered originally. However, ODNR and OEPA specialists felt that it might be too ~~course~~ coarse and not provide an adequate level of resolution. It has been our intention to compare the two methods (the active floodplain formula used in the draft TMDL and the USDA soils data) to see how they compare. This work will be included in the final TMDL report if resources are available within the project time frame.

LL

5-18 The Report's emphasis on geomorphological targeting appears to be directed toward two-stage channel proposals. With no research available, it is believed to be premature to be promoting this activity at this time.

Response: The geomorphological targeting is not directed to two-stage channel proposals.

TNC

Riparian corridor protection - The draft TMDL partially addresses the Environmentally Sensitive Development Area (ESDA) in Franklin County, but does not include significant ecological factors, such as adequate riparian corridor protection. The riparian buffer requirements proposed for the ESDA EAG 2004 report should be included. Without these safeguards (and many others), it is unlikely that streams will be protected, or their delivery of pollutants will be reduced. The riparian corridor needs to satisfy multiple

functions. While native vegetation along streambanks is one factor, the corridor also must filter pollutants and provide part of the groundwater recharge and help to maintain streamflow. The TMDL should clarify how these functions are to be adequately achieved by the riparian corridor to protect rare species and protect and improve diversity. An excellent reference regarding the adequacy of stream buffers is:

Wenger, S. 1999. A Review of the Scientific Literature in Riparian Buffer Width, Extent and Vegetation. Institute of Ecology, University of Georgia, Athens. 59 pp.

Response: The buffer formula proposed by the ESDA EAG will be included in the final TMDL.

TNC

100-year floodplain protection – In order to protect stream integrity, the full 100-year floodplain should be protected from development. The meander belt width is inadequate, and its emphasis might actually encourage floodplain fill and therefore stream degradation. While it is desirable that Ohio EPA uses a stream meander belt formula to encourage at least partial protection of riparian corridors, this is based on engineering calculations and not ecological functions, and ignores key functions of the rest of the floodplain that help protect stream quality. Ohio EPA's failure to recommend protection of the full floodplain goes against the recommendation of the ESDA EAG, which states (from Executive Summary, Page 5):

Riparian Corridor Width

The group recommends that the buffer width be the width of the 100-year regulatory floodplain as defined by FEMA Flood Insurance Rate Maps (FIRMS) or the Hellbranch Overlay formula, whichever is largest, with a minimum of 200 feet (assumed 100 feet per side).

(Please note that The Nature Conservancy strongly encourages that belt width formula currently used by the ODNR be applied. For the text of ODNR's Rainwater and Land Development manual, see [ftp://ftp.dnr.state.oh.us/Soil_&_Water_Conservation/rainwater/.](ftp://ftp.dnr.state.oh.us/Soil_&_Water_Conservation/rainwater/))

It appears that Ohio EPA is not recommending prohibiting floodplain fill. Such fill activity degrades stream functions, such as the ability to form high quality habitat, maximize pollutant filtering and sequestration, and recharge groundwater. Such floodplain fill and development will lead to flooding of additional areas not currently flooded. The TMDL should more strongly discourage floodplain development and fill.

Some of the functions that would be improved by protection of at least the 100-year floodplain, thereby making protection of Big Darby's sensitive species more likely, include¹:

¹ References: <http://www.freshwaters.org/flow/>; "Reducing Storm water and Flooding: The Ten Principles of Effective Storm water Management" from Chester County Water Resources Authority.

- Protecting the highest groundwater recharge areas, especially in the Big Darby watershed, and these areas are often in the floodplain outside of the calculated belt width
- Providing contiguous open space with optimally located stream protection features such as water storage and wildlife habitat, which is often outside of the calculated belt width
- Driving lateral movement of river channel, forming new habitats (new and secondary channels, oxbows)
- Lowering flood levels and slowing flood flows in areas where flood flows expand across the stream valley
- Protecting floodplains from fill and construction are strongly encouraged to preserve the maximum flood carrying capacity of the natural floodplains; and therefore avoiding increasing peak flow rates or flood levels
- Undisturbed floodplains reduce the intensity of downstream flows, and thus the potential for streambank erosion, supporting channel stability protection
- Depositing nutrients and other pollutants on the floodplain
- Maintaining diversity in floodplain forest types through prolonged inundation (i.e., different plant species have different tolerances)
- Controlling distribution and abundance of plants on floodplain
- Providing new feeding opportunities for fish, waterfowl
- Disbursing seeds and fruits of riparian plants
- Providing plant seedlings with prolonged access to soil moisture

Ohio EPA also should recognize the floodplain's importance and legal restrictions of floodplain regulation emphasized by the ODNR's Division of Water in ODNR's August 8, 2005, comments to Kevin Wheeler of the City of Columbus regarding the Big Darby Accord. Please note their emphasis that "the 100-year floodplain is considered a highly sensitive environmental resource protection area that should be protected from future encroachments." (emphasis added)

In Section 5.3 Endangered Species, Ohio EPA recognizes the need to protect the floodplain: "An intact flood plain allows for storage of excess water, and reduced flow velocities, minimizing damage to endangered species habitat." Because endangered species have been or are found in much of the watershed, floodplain protection should include the entire 100-year floodplain.

Finally, using only the meander belt width as a "protective" distance will likely lead to minimum protection, with little assurance of a margin of safety. Development encroaching on the floodplain would be the most likely to deliver the highest rate of pollutants, since groundwater recharge and distances for pollutant filtering and infiltration would be minimized. It is not known that the meander belt width is protective of streams' ecological integrity. Therefore, the Agency should expand this recommendation to protection of the full 100-year floodplain.

Response: The final TMDL recommends no development within the full 100-year floodplain zone.

TNC

Section 5.1.4 Managing Drainage Needs, Channel Erosion and Flood Reduction Work – More environmentally friendly options for drainage systems need to be fully explored and applied in the Big Darby watershed. As described in the above comment, such a progress measurement system could be applied to not only pollutant reductions and riparian corridor quality, but also to hydrologic alteration and tributary quality. The Nature Conservancy fully supports review of options concerning the modification of streams for agricultural drainage and flood control. While such options, which attempt to reduce hydrologic and pollutant impacts, are being demonstrated in other parts of Ohio and throughout the Midwest, no alternative channel maintenance projects are in place in the Big Darby watershed, to our knowledge. We welcome a fresh approach that can help regain higher quality fish and other wildlife habitat, and improve pollutant control. We encourage that the State of Ohio and drainage officials to consider a new approach based on need and environmental quality decisions.

Response: The comment is noted.

TNC

Flow based allocation for Hellbranch Run - Page 4-71 - We strongly support Ohio EPA's effort to ensure adequate stream baseflow. Since the greatest, most imminent development is possible in this watershed, it is appropriate to set goals for this area first. Table 4.4.1.4 recommends a Recharge Allocation for Hellbranch Run of 17.78 (cm/yr). The estimate must show it will be adequate to protect aquatic life and improve stream quality. Our understanding is that this estimate was based on stream flow from the early 1990s. However, stream flow from that period was altered and might not have been adequate, given the decline in fish species in Hellbranch Run in recent decades.

Besides making this recommendation for Hellbranch Run, we request that Ohio EPA review ODNR recharge estimates for the entire ESDA and other developing areas of the Big Darby watershed, and determine recharge goals in these areas.

Because other groundwater recharge reduction stresses occur throughout the watershed, and the TMDL recognizes the great importance of groundwater to the watershed's streams' quality, further review and recommendations on groundwater recharge protection for the watershed is warranted.

We request that Ohio EPA consider the following:

1. Address the need to encourage and establish more natural, protective hydrologic regimes in other parts of the Big Darby Creek watershed, both from pending development and current hydrologic alteration of other types.
2. Review the recharge rates with parties such as ODNR's Division of Water. What is the natural recharge rate that could be expected, and what is needed to ensure stream integrity?
3. Determine the recharge necessary to protect and improve stream biology and protect sensitive species that could inhabit Hellbranch Run, especially given the nonattainment status of Hellbranch Run and other streams. We suggest

comparing flow regimes to Little Darby Creek, Bokes Creek, and Mill Creek, for example.

4. Determine how much recharge a wider riparian buffer and full 100-year floodplain protection would provide.
5. Investigate setting a goal based on the frequency of low flow.
6. Calculate an increase in low flows due to development.
7. Set a frequency-based low flow goal.
8. Compare these to the Big Darby gage record.

We encourage Ohio EPA to determine the range of natural variability in low flows likely for Hellbranch Run (as well as other key segments). We recommend the Agency set instream flow (hydrologic regime) requirements for these streams and then work backwards to recharge rates and other measures (such as permits for storm water management) that achieves these standards.

Also, the Conservancy requests that Ohio EPA review and consider other hydrologic regime conditions or parameters, including seasonality, frequency, duration, magnitude, and rate of change.² The hydrologic regime is the pattern of variation in the amount and movement of water in the system over time. These regimes include surface-groundwater exchange/recharge, local surface runoff, peak flow integrity, low flow integrity, overbank flooding integrity, mean magnitude and degree of inter-annual and seasonal variation, frequency of particular flow magnitudes, duration, and or other aspects of hydrograph shape.

The TMDL should ensure that flooding does not increase as a result of development. The TMDL should ensure that the duration and frequency of the high flows do not increase beyond natural conditions. We recommend the Agency conduct modeling to provide an expected range, frequency and duration of these high flows and compare this to Hellbranch Run records. This may allow storm water/development activities to be planned in a rigorous way.

One of the problems in the watershed is channel instability, likely caused by the scouring of channels by storm water runoff and exacerbated by channelization, levees and floodplain fill. Storm water management in this TMDL should assure channel stability.

Please consider the above in your establishment of geomorphological targets as stated in Section 5.2.2 Construction Activity.

Response: Protection of groundwater recharge has been incorporated in the draft Big Darby Creek Watershed NPDES Permit for Storm Water Related to Construction Activity through the use of a recharge credit system and stream setback requirements; this permit is applicable to the entire Big Darby Creek watershed. The recharge rates in the TMDL and in the Permit are comparable to historical and current findings of the ODNR groundwater and soil scientists.

² A discussion of streamflow-based stream ecosystem management targets is found in Richter, B. D., J. V. Baumgartner, R. Wigington, D. P. Braun. 1997. How much water does a river need? *Freshwater Biology* 37:231-249. <http://www.freshwaters.org/pub/pdf/howmuchh2o.pdf>

Hydrologic TMDL numbers are available to be included for other sub-watersheds within the Big Darby. The final TMDL includes these recommendations.

The other requests for further flow analysis have been noted and will be considered if resources become available for future modeling work in the Darby watershed.

TNC

Riparian corridor status and species richness – While we appreciate the effort to map the status of the riparian corridor in the Big Darby Creek watershed, the Ohio EPA and TMDL need to more extensively analyze the relationship between riparian corridor conditions and stream health on a watershed basis, especially the existence of high species diversity and richness and rare and declining species. While the TMDL provides maps of an inventory of riparian corridor, the document does not sufficiently address the adequacy of the existing width quality. The Nature Conservancy’s analysis of the watershed’s riparian quality suggests that there is a positive correlation between riparian quality and species richness, especially for rare and declining species and mussels. These species are most likely to be found where the riparian corridor is of native vegetation and of greatest width. We would appreciate the opportunity to present our analysis and discuss this relationship further.

Response: Ohio EPA is interested in such a meeting.

OEC

Specific allocation reductions for phosphorus are note worthy. While progress can be made to reduce loads from failing septic systems and point sources historically nonpoint reductions are much more challenging. Traditional voluntary efforts are a component of an overall strategy but should be connected to emerging technologies that show the importance of maintaining the assimilative capacity of headwater streams. For example natural stream channel restoration techniques reconnect the stream with the associated floodplain and when coupled with native and other plantings significantly improve and restore vital stream function. In addition some measure of restoration is afforded to streams by developing two stage channel portions of a stream that historically have been disturbed (the subject of much current research by OSU scientists and others). The two-stage channel reconnects some flood plain back to the stream but not the extent that a natural re-design would.

Clearly the maintained and ditched headwaters stream is the least likely stream channel type to assimilate nutrients and provide other important natural function including stream bank water storage, sediment reduction, and habitat growth. Petition ditches are a regressive water policy and a throw back to an era when stream chemistry and biology were sacrificed for drainage. Drainage can be incorporated into a scientifically sound philosophy of natural channel design where maintenance issues are moot since the channel can be re-developed to contain much larger events and afford the necessary drainage that is artificially obtained through ditching.

Response: In those stream systems where the riparian corridor has been compromised or the local land use is encroaching on the stream, total phosphorus

reductions will need to be accomplished through the establishment of Best Management Practices (BMPs) on the landscape. Ohio EPA agrees that the ability of a stream modified as described above to process nutrients will have been greatly compromised. Reduction of upland phosphorus loadings then becomes the only option to achieve TMDL targets, due to the loss of assimilative capacity in these streams. It will be very important to limit the phosphorus export attributable to agricultural inputs from of these damaged stream systems.

LDR

In many cases it appears that in order to implement your recommendations, farmers would need to take currently productive farmland out of production. If they are not eligible for CREP, what types of financial incentives are there for complying with your recommendations? Most farmers are not wealthy; they need to make a return on their land. How can you expect them to take land out of productive use and get nothing in return? Large corporations can recoup costs of implementing your recommendations by raising prices on their goods. Farmers do not have that luxury. They must continue to pay taxes, mortgages, and insurance on the land although it is providing no return. The farmer has to be made whole. And the answer is not selling PDR's or conservation easements. Farmers are not interested in selling development rights or easements. They want to keep the land they currently have.

The setback widths recommended in the report are enormous. In some cases they would take an entire farms. Once again, there needs to be compensation if you are asking farmers to take productive land out of service.

Response: Setback widths established in the TMDL are protective of long term movement of the stream. Activities within the setback are recommended to be those activities that are compatible with frequent (annual or bi-annual) flooding. To the extent agricultural practices will not be harmed by flooding, agriculture is an acceptable activity. Those practices designed to move agricultural activity closer to the stream channel should be discouraged. Levees and other structures designed to deflect flood water on to down stream land owners are not acceptable unless easements are obtained from downstream land owners for the land that will be flooded by levee installation. Those levees that exist now should over time be abandoned. As stated before, the setbacks demark an area to provide long term protection to the stream and to land owners. Where activities within the setback that are not compatible with flooding are occurring, a gradual retreat out of the setback zone would be considered successful implementation of the recommendation.

Agricultural incentive programs do exist to compensate some land owners for the restoration of crop land to an activity more compatible with the stream corridor.

COLS

Ohio EPA Should Not Adopt A TMDL that Conflicts with the ESDA EAG Recommendations.

Ohio EPA's recommended floodplain widths are significantly different than those recommended by the ESDA EAG and may not be more protective. The ESDA EAG

was comprised of all the political jurisdictions in the ESDA area, development interests, environmental interests and OEPA. These individuals worked extremely hard to reach consensus on riparian corridor recommendations that:

- Include perennial, intermittent and ephemeral streams;
- Require a minimum 200 foot buffer on any of the above three stream types;
- Include the entire FEMA regulatory floodplain, if the calculated floodplain is smaller; and
- Use a philosophy of increasing width with increasing drainage area.

While Ohio EPA's proposed approach uses the last bullet from above, it uses a formula, which greatly expands the width of the buffer. If the efforts of the ESDA are going to be so blithely set aside, the OEPA will, in the long term, be unable to find willing partners to undertake such efforts. There is no perfect science on this topic. Community acceptance, as developed through the open, vigorous discourse in the EAG, is critical to the success of these efforts. The participants in the ESDA EAG should not have their hard work unilaterally undermined by Ohio EPA.

Moreover, Ohio EPA's direction does not include any of the other considerations the ESDA EAG found appropriate and therefore, may, when taken in total, offer less protection. Whether more or less protection is obtained will require a detailed GIS evaluation. However even without this evaluation, Ohio EPA's method does not offer any sort of protection to the headwater systems within the Darby. By Ohio EPA's own internal policies, headwater protection is supposed to be a priority, yet this TMDL offers no such protection.

Response: The setback recommendations in the draft TMDL were not limited to development issues such as the ESDA-EAG recommendations were. Instead, these setback recommendations were focused on establishing activities that can co-exist with frequent flooding and reducing activities that alter the floodplain of the system such as levees. This was a different focus than the ESDA-EAG, and needed to be based solely on current technology as there was not the additional support of a Big Darby watershed-wide representative body with which more consensus based recommendations could be reached. It was not the intent, nor would it be the result, that the TMDL would supersede the ESDA-EAG recommendations within Franklin County for the stream setbacks. The final TMDL endorses the ESDA-EAG setback recommendations for new development. In addition, the setback formula used in the TMDL is based on the same methodology as the one used by the EAG. However, additional data specific to central Ohio was available to use in developing the formula for the TMDL that was not available at the time the EAG was developing their recommendations. Further, the TMDL formula is based on a philosophy of increasing width with increasing drainage area as well as increasing width with increasing ecological sensitivity – something the EAG did not include in their considerations.

FWS

We encourage the establishment of forested buffers along the Darby Creeks and their tributaries as suggested in the TMDL document. These buffers would be beneficial to Federally-listed endangered mussels.

Response: Forested buffers serve many functions in the aquatic ecosystem. The importance to endangered species is noted.

COLS

Section 3.3.1, second paragraph, top of Page 3-13, last sentence. OEPA indicates that the Curve Number method of estimating precipitation "... predicts any 'quick response' flow including .. drainage from tiles." This statement that Curve Number includes impacts of tiles is factually in error. The only time a Curve Number includes the impacts of tiles is when the Hydrologic Soil Group is revised to account for tiles. In this case, less runoff is calculated due to the presence of tiles, as reflected in a change in hydrologic soil group from a less permeable (more runoff) soil to a more permeable (less runoff) soil. This only occurs in a limited number of situations.

Response: The NRCS (formerly SCS) developed the Curve Number Method. The NRCS National Engineering Handbook, Hydraulics and Hydrology, Part 630, Chapter 10, page 8 states the following:

"In flood hydrology baseflow is generally dealt with separately, and all other types are combined into *direct runoff*, which consists of channel runoff, surface runoff, and subsurface flow in unknown proportions. The curve number method estimates this combined direct runoff."

The statement in the TMDL the commenter refers to is not in error.

DCA

The report, and the recommendations it contains, advance the goal of Darby protection in several key ways. For the first time we have an attempt to use scientific analysis to determine protections needed. As a result, we now have much detailed information about how various land uses, including agriculture, are impacting the Darby streams. In addition, for the first time we have the EPA looking at treating storm water runoff from new development as a controllable source of pollution. And finally, for the first time the EPA is looking at the need to positively influence hydrology and increase infiltration to maintain baseflow. DCA encourages the EPA to calculate infiltration TMDLs for all developing areas of the watershed, although this may be an evolving area of evaluation.

Response: The comment is noted. Hydrologic targets will be incorporated for all developing areas of the watershed in the final report.

B.2 Storm Water

1000F

Specifically, we strongly support strategies to protect the stream channel from eroding by ensuring advanced, appropriate storm water management and sufficient protected land along stream banks

Response: The comment is noted.

1000F

Specifically, we strongly support strategies to significantly strengthen storm water and sewage permit regulations by ensuring adequate treatment of chemicals, bacteria and solids from permitted discharges, home sewage treatment and disposal systems, and livestock so that water quality is improved

Response: The comment is noted.

BIA

We would like to point out that residential development that incorporates effective storm water controls significantly reduces discharges of TSS when compared to ongoing agricultural uses. For example, recent studies performed in connection with the design of storm water control for the future Burr Oak residential development (located at the west side of Galloway Road between Hall Road and the Village of Galloway) illustrated the expected positive impact and aggressive storm water control techniques indicates that development of this site will both significantly reduce pollutant loads to the Darby Creek and more effectively manage peak flows when compared to agricultural use.

As we understand it, the percent reductions in sediment load and phosphorous called for in the TMDL report depend upon watershed. Target values have been set for several water quality parameters throughout the watershed.

	TP (mg/L) (total phosphorous)		TSS (mg/L) (total phosphorous)	
	WWH	EWB	WWH	EWB
Headwaters (<20 mi ²)	0.07	0.05	10	10
Wadeable (<200 mi ²)	0.11	0.08	31	26
Small Rivers (<1000 mi ²)	0.16	0.17	44	41

One parameter that must be looked at is the storm water effluent values which should fall below the target values for the designated receiving stream. At Burr Oak, the receiving waters are Hellbranch Run around RM 7.4 which places it within the WWH area of Hellbranch. It is a wadeable stream so the limits for TP are 0.11 mg/L and the limits for TSS are 31 mg/L. The storm water system has been designed to discharge storm water flows with an effluent on the order of 0.08 mg/L of TP and approximately 17 mg/L of TSS. Both of these are well below the target levels.

Response: The expected effluent quality of the Burr Oak storm water is encouraging. Ohio EPA appreciates and supports such innovative storm water design.

BIA

We understand that the agency is considering the development of a general construction storm water permit applicable only in the Darby Creek watershed. Echoing our prior comments, we urge the agency to incorporate sufficient flexibility in that permit to allow for cost effective, yet environmentally sound storm water controls. Moreover, we would request the opportunity to have our members work with the agency in the

development of the general construction storm water permit to allow the agency to take advantage of the regulated community's experience in the implementation of the applicable best management practices in the field.

Response: The comment is noted.

BC

Designate additional Phase II communities within the Darby Creek watershed as soon as possible.

The TMDL mentions that the Ohio EPA expects to exercise its authority to designate additional Phase II communities within the Big Darby Creek Watershed. Given the benefits in public education and outreach, plus the additional Best Management Practices required in construction storm water controls and post-construction storm water management, I strongly encourage this be done as soon as possible.

Response: Ohio EPA will evaluate designating additional storm water Phase II communities in calendar year 2006.

DG

Stream restoration should be part of storm water controls, widening, bank protection and tree planting similar to Grants Run project FCSWCD using qualified restoration experts such as Steve Phillips of Oxbow River and Stream Restoration.

Response: Ohio EPA typically does not get involved in the selection of a specific contractor in restoration projects.

DG

LID Low Impact Development can do more than constructed storm water systems (consultation with other cities). Reduce impervious surfaces and create a storm water utility for entire watershed.

Response: The comment is noted and will be considered in the development of the General Permit for Storm Water Associated with Construction Activity for the Big Darby Creek Watershed.

LL

Reference to storm permitting program (5-6) implies that this will include routine ditch maintenance such as county maintained agricultural ditches. Suggest clarifying as I believe these ditches are not subject to this program.

Response: Ohio EPA included this to state our intent of ensuring that dredging spoil from non-regulated channel maintenance activity would not erode back into the stream. Because the authority for Ohio EPA to require a permit depends on all the specific facts of a situation, the reference in the TMDL to the special permit was removed. However, the potential water quality impacts caused by poorly constructed or maintained agricultural drainage projects remains. This is of particular importance in the Big Darby Creek watershed, where the potential impacts could result in the extirpation of sensitive, threatened, and/or endangered species. Failure to adequately control and minimize the

impacts of agricultural drainage practices on downstream water resources such that federally listed threatened and endangered species are placed in jeopardy is not an acceptable outcome. It is in the best interests of both the State of Ohio and Ohio's agricultural industry to develop a workable solution that protects the downstream resource.

Ohio EPA has three options for approaching this situation: 1) educational outreach and cooperative problem solving, 2) aggressive enforcement of existing regulatory authorities to the full extent that Sections 401, 402 and 404 of the Clean Water Act and Section 6111.04 of the Ohio Revised Code allow, and 3), seeking increased regulation. The Agency will pursue outreach and problem solving by participating on the *Rural Drainage Advisory Committee* convened by Ohio DNR Division of Soil and Water Conservation. In this forum, Ohio EPA will be able to work with county engineers, environmental groups, academia, and federal, state, and local soil and water conservationists to attempt to address our ongoing concern. The committee is charged with looking at the current laws and regulations related to ditch construction and maintenance and looking for practical solutions that effectively address drainage needs and protection of water quality. Ohio EPA hopes that this will be an effective approach. If a successful outcome is not realized within a reasonable timeframe, then Ohio EPA has the recourse of pursuing more permitting authority under existing or new Federal and State law.

TNC

Section 5.2.2 Construction Activity - and temperature - Storm water management typically increases water temperatures, which is detrimental to aquatic life. This problem needs to be addressed in the draft TMDL. The "new characteristics of these permits" (general permits for storm water) discussed in this section need to address temperatures, and ensure that storm water temperatures are not damaging.

Because of the existence of many pollutants of unknown individual effects, storm water discharge water quality requirements must be based not only on individual parameter goals, but also on cumulative and synergistic effects.

Response: The Agency agrees that the management of summer stream temperatures in segments of Big Darby Creek and its tributaries will become increasingly important as the watershed is developed. Thermal inputs from effluents, storm water and solar radiation must be considered. While no significant changes were made in the TMDL report to address temperature specifically, many of the outputs related to riparian set backs, flood plain protections and ground water recharge will have a positive effect. The Agency will seek methods to properly manage summer temperature levels in Coldwater and Exceptional Habitat areas through NPDES permits and other mechanisms. This comment will be considered in the designation of additional areas under Phase II storm water activities, scheduled for 2006.

TNC

Section 5.2.5 Municipal Point Sources – NPDES Phase II and permit limits - This section states "Ohio EPA will evaluate designating additional communities as being required to obtain coverage under the Phase II permit." Because of their locations,

some communities presently not subject to Phase II present considerable storm water threats to stream quality. Additional jurisdictions should be added to the NPDES Phase II program, including Plain City and West Jefferson. It is clear that Plain City, directly on Big Darby Creek, is affecting stream quality in Big Darby Creek, and if the Village expands, will likely affect Sugar Run. West Jefferson includes a significant portion of the lower Little Darby Creek in its Facility Planning Area. If inadequate storm water management continues, it will only make improvement of the stream in these areas more difficult.

We strongly support the review of discharge limits for point sources throughout the watershed, and encourage establishment of permit limits protective of mussel and other species richness.

Response: The TMDL includes an evaluation of point sources throughout the watershed. Most of the point sources will be receiving new limits for the control of Total Phosphorus, unless current permit limits are determined to be adequate to protect water quality. An evaluation of additional storm water Phase II communities will happen in 2006.

TNC

Flat Branch impairment and storm water management - Page 2-15 - Flat Branch is designated as Modified Warmwater Habitat (MWH), and "is not impaired." This stream is one of the lowest quality in the watershed, and the "not impaired" designation is very misleading. Flat Branch clearly contributes significant pollutants to the Big Darby Creek and pollutant loads are far above ecological goals (e.g., see Table 4.1.1.1). This stream, and sub-watershed, needs considerable improvement and a higher goal, clearly because it is not only damaged, but is affecting Big Darby also. Agricultural runoff and sediment delivery to the stream is readily observable in this watershed, and it already has land use development at approximately 10%, clearly demonstrating a need for adequately protective storm water management. Ohio EPA should require enhanced storm water management in this area. Comparable nonpoint source pollution and habitat problems exist in a number of other watersheds and need to be addressed in detail for environmental protection progress to be achieved.

Response: The comment is noted.

B.3 Recharge

1000F

Specifically, we strongly support strategies to prevent flooding as well as drying up of streams by managing runoff, infiltration of storm water into the ground and its release into the streams, and overall protection of groundwater recharge areas;

Response: This comment will be considered in the development of the General Permit for Storm Water Associated with Construction Activity for the Big Darby Creek Watershed.

OEC

One of the important findings in the Technical Support Document for the Darby watershed is the interconnection of surface and groundwater in the Darby system. The occurrence referenced in the report of several areas of coldwater habitat and the groundwater/surface water interaction is obviously a key to understanding the development of Darby's species richness. Forested corridors and high quality habitat alone likely would not have produced this vast ecosystem diversity, therefore the importance of developing scientific understanding of the hydrologic regime at work is significant especially understanding minimum base flow needs to support the Darby's biology. A hydrologic allotment for all sub-watersheds, not just the Hellbranch, is encouraged and in our view a necessary component of the report.

Response: A hydrologic allotment similar to the one included for the Hellbranch in the draft report will be included for the other sub-watersheds in the final report.

COLS

Flow TMDL for the Hellbranch

As discussed in the City's letter, Ohio EPA lacks the legal authority to impose a flow TMDL. In addition, the flow TMDL is not supported by the documents.

Response: In PUD No. 1 of Jefferson County v. Washington Department of Ecology, 511 U.S. 700 (1994), the United States Supreme Court held that a state was allowed under the Clean Water Act to impose a flow restriction in a 401 certification. The Court reasoned that the Act required maintenance of designated uses of waters and that flow restrictions could be an element of maintaining and protecting those designated uses. Ohio Law also requires that water quality standards, including designated uses, be maintained and protected, and that the standards be implemented in permits. Where permitted activities could result in an increase or decrease in flow that affects water quality and maintenance of designated uses, Ohio EPA may impose restrictions that attempt to diminish or eliminate the adverse changes in flow.

COLS

OEPA's initial Technical Support Document indicated that the Upper Big Darby Creek and the upper half of the Little Darby Creek "... benefits from the positive effects of ground water inflow..." The TSD document further indicates "Every effort should be taken to protect the integrity of the ground water resource." This conclusion is reiterated in the TMDL report in Sections 2.2 and 2.4. However in Section 2.5.1 of the TMDL report regarding the Hellbranch subwatershed there is only an indication of a possible ground water impact, as evidenced by the phrase ... "perhaps ground water augmentation given the biological performance..." Yet the only subwatershed that has flow limitations and recharge requirements is the Hellbranch. Simply because a watershed is experiencing development pressure is not sufficient reason to require flow restrictions. In addition to exceeding its legal authority, OEPA does not show sufficient evidence to warrant hydrologic restrictions for the following reasons:

- a. The analysis is based on a stream gauge that has only been in existence since 1992. By OEPA's own admission any numeric targets for flow quantity and hydrology should be based on "... conditions that existed prior to the significant

alteration in the stream flow regime.” The operational period for the Hellbranch gauge does not extend to before any hydrologic modifications have been made in the watershed. While significant development may not have begun until the early 1990’s, other significant hydrologic alterations occurred prior to that time including the installation of field tiles and the creation of Hamilton Ditch and Clover Groff Ditch in their current configurations, which certainly did alter the flow regime and may have artificially increased base flow in the existing hydrograph.

b. OEPA’s report also indicates that targets should be based on a “... stable hydrologic and stream flow regime.” Even if the Hellbranch watershed is in a “stable” hydrologic regime, it is not reasonable to expect that a 13 year record would adequately reflect the true long term behavior of that stream. This is further evidenced by the short term duration of OEPA’s analysis and the gauge behavior during that term. OEPA has based the conclusions on a three year record where runoff is reported to increase by 13% and recharge decrease by 3%. During this same three year period the average stream flow at the Hellbranch gauge varied from a 30.5 c.f.s. to 44 c.f.s. (2000 – 31.7 c.f.s., 2001 – 40.9 c.f.s., 2002 – 30.5 c.f.s., 2003 – 44 c.f.s.) with both positive and negative changes year to year. When the range in flows varies by these amounts it is not reasonable to detect the relatively small changes predicted by OEPA, nor is it reasonable to attribute those changes to a single source.

c.. The conclusions drawn from the modeling appear to have been made without regard for the reasonableness of the results. In Section 4.4, OEPA indicates that a 3% reduction in groundwater recharge and a 13% increase in runoff occurred. Based on TMDL report sections outlining the modeling methodology, it can only be assumed that the recharge reduction was evidenced by a corresponding reduction in base flow, while the runoff increase was evidenced by a corresponding increase in storm flows at the gauge. It is unreasonable to expect that any hydrologic model is accurate to within even 10%, much less able to accurately predict results in the 3% range, especially when considering the complex interaction between surface water and ground water. Second, ground water impacts occur very slowly, especially in a low infiltration hydrologic regime such as the Hellbranch. Expecting to verify any significant impact on a ground water resource in only three years is unrealistic and calls into question the accuracy of the conclusions. Moreover, calibrated hydrologic modeling completed for the Hellbranch Forum showed only a 20% increase in peak flow with an increase in development (as measured by a change in impervious area) of over three times. Also, the same modeling indicated a roughly 10% increase in peak flow with over two times more development. While the increase in impervious areas were not provided in the TMDL report, based on the modeling completed for the Hellbranch Forum, it is unreasonable to expect a 13% increase in runoff, from land use changes occurring between 2000 and 2003. Based on the Hellbranch Forum modeling this would require a change in development (as measured by impervious area) of slightly more than twice existing conditions.

d. The above discussion mentioned the complex interaction between ground and surface water. This paragraph expands on that relationship. One **cannot**

casually infer that a single factor has the predominant influence over these complex interactions, especially considering that annual stream flow, both storm runoff and base flow proportions are impacted by many factors including:

- Variation in annual evapotranspiration;
- Lag in groundwater contribution to the stream due to subsurface flow rates;
- Differences in agricultural cover (cropping patterns, no till);
- Amount of runoff during the winter/spring (warmer winter – more infiltration);
- Rainfall intensity – year with less intense storms will have less runoff;
- Amount of impervious surfaces and degree of connectedness;
- Time between storms – drier antecedent conditions result in less runoff; and
- Total rainfall in a given year

Each of these varies on a year to year basis. It is not valid to attribute changes in stream flow to a single variable when the others are also varying, especially over a short period of record (2000 – 2003 in the analysis that demonstrated a 3% reduction in base flow and 13% increase in storm flow).

e. The predominant soil associations in the Hellbranch are the Kokomo-Crosby-Miamian and the Crosby-Celina. Both are classified as “very poorly drained.” As Section A1.1 of the TMDL report indicates “Associations that are poorly drained have lower infiltration rates, greater runoff or ponding, and typically less water available to recharge groundwater resources.” Since the soils in the Hellbranch are considered “very poorly drained” it can only be assumed that their infiltration capacity is even lower. It is not appropriate to require recharge where there is a little chance of actually being able to influence the recharge characteristics.

Finally, the value of recharge required by OEPA’s TMDL is not reasonable when compared to the probable available recharge capacity of the Hellbranch Watershed. Based on NRCS data contained within a Center for Watershed Protection Paper entitled “Why Stormwater Matters,” the estimated recharge values for the soils present in the Hellbranch is between 3 and 6 inches per year. Hydrologic Soil Group D soils exhibit about 3 inches per year recharge, while Hydrologic Soil Group C soils exhibit about 6- inches per year recharge capacity. Based on the soils present in the watershed, and hydrologic soil groups identified by NRCS and published in the Franklin County Soil Survey, the maximum amount of recharge that can reasonably be expected is less than five inches per year. OEPA’s TMDL requires a recharge of seven inches per year. It should be noted that the five inches per year estimate does not include the impacts of field tiles. Because field tiles capture infiltrating surface water, they will reduce the amount of recharge possible, meaning that the actual existing recharge capacity is significantly smaller than five inches per year.

Response: The concern of the commenter appears to be based on a misinterpretation of the 2000 and 2003 land use comparison analysis. The hydrologic model was calibrated to the full flow record at the Hellbranch gage using matching time period daily weather data. The comparison of land use was based on the same 10+ year weather data using the 2000 land use data and again with the 2003 land use data changing no

other parameters except those associated with land use. The purpose of the analysis was to show only the relative effect of land use changes on the hydrologic regime. As land use developed, there was a loss of baseflow and a gain of runoff; a result supported by many other studies in other urban settings.

The distribution of the hydrologic soil groups for the Hellbranch sub-watershed is as follows:

Soil Group	% of Total	Estimated Recharge (in/yr) [^]	Estimated Recharge in the Hellbranch (in/yr)
A	0.2	18	0.04
B	13.9	12	1.67
C	82.0	6	4.92
D	3.9	3	0.12
Rough Estimate of Hellbranch Recharge:			6.75

[^] Using the resource referenced by the commenter.

Given the myriad variables associated with groundwater recharge calculation the rough estimate above supports the more site specific based estimation of groundwater recharge in the Hellbranch of 7 inches/year. Other studies and data support the findings of the TMDL. These include the ODNR DRASTIC database of groundwater recharge to deeper aquifers which indicate recharge values comparable to the ones calculated in the TMDL analysis, as does a joint study by USGS and ODNR and published in the document: *Use of Stream flow Records and Basin Characteristics to Estimate Ground-Water Recharge Rates in Ohio*. The recharge values calculated in this study compare very well to the ones calculated in the TMDL for all 3 active USGS gages in the Darby including the Big Darby Creek gage which began recording data in 1921 through today. Note the DRASTIC database is based on landscape and other factors and not on streamflow; hence, these studies arrive at similar recharge conclusions using different data types.

The commenter also discusses the reasonableness of requiring recharge in poorly drained soils. The recharge targets established in the TMDL for the Hellbranch are to protect the existing hydrologic regime, and are based on rates that are already being achieved in the watershed. The recharge rate in the Hellbranch watershed is a low recharge rate in keeping with the soil types within the basin. The commenter also references a number of excerpts from the TMDL concerning groundwater influence in streams of the upper Darby. The streams mentioned as being groundwater influenced in the TMDL are of particular note as they have higher groundwater contribution than most of the other streams in the watershed. However, that does not mean other streams in the watershed do not have any groundwater influence. The baseflow of the Hellbranch is primarily from groundwater; the Hellbranch is also developing more rapidly than any other sub-watershed in the Darby area. If the existing groundwater recharge is not maintained as the sub-watershed develops, the Hellbranch would be in serious danger of becoming an intermittent drainage way. The other sub-watersheds in the Darby will include hydrologic targets in the final report.

COLS

On Page A-4 OEPA classifies the lithology of deposits in order of increasing hydraulic conductivity as till, till with sand and gravel, fines with sand and gravel, sand and gravel with till, and sand and gravel with fines. However, on the figures on page A-5, A-7, A-8 and A-9 a different order is used that does not correspond to the order in the text. The order (from top to bottom) in these figures should correspond to the order in the text (from first to last) to make interpretation easier on the reader.

Response: The comment is noted.

B.4 Use Designations/WQS

Honda

Section 2 and Section 4 of the Report consistently compares Exceptional Warm Water Habitat (EWWH) segments of the BDCW to the Modified Warm Water Habitat (MWWH) segment consisting of FBC. Honda has concerns with the scientific validity of this comparison and the conclusions drawn from this analysis. The specific methodology used to perform this analysis should be part of the public record so it can be examined and verified. The Agency should expect to see a difference in the water chemistry and water quality between such two different stream segments based on the stream buffer structures and stream channel morphology, and not automatically conclude that any such differences are caused solely by Honda's "industrial" activity, as is suggested in the Report. (See, e.g., pp. 2-15, 4-4.) The parameters attributed to industrial activity all occur naturally in the soils and sediments of the area. While Ohio EPA has acknowledged that the Flat Branch meets its designated use, that of a MWWH, Honda is concerned that Ohio EPA is attempting to convert a MWWH stream into a EWWH and that this conversion will be an almost impossible task, even in the absence of Honda's operations.

Response: The use attainability analysis for streams in the Big Darby Creek Watershed was included in the technical support document (TSD) for the watershed, which is entitled: *Biological and Water Quality Study of the Big Darby Creek Watershed, 2001/2002; May 7, 2004*. This report is public information. While Ohio EPA expects some differences in stream chemistry due to the differences in use designation, some of the differences are extreme when comparing within the same major sub-basin (11 digit HUC 190).

Title 40 of the Code of Federal Regulations, Section 131.10(b) states:

In designating uses of a water body and the appropriate criteria for those uses, the State shall take into consideration the water quality standards of the downstream waters and shall ensure that its water quality standards provide for the attainment and maintenance of the water quality standards of downstream waters.

Flat Branch is meeting its designated use of Modified Warmwater Habitat (MWH), but the water quality of Flat Branch is interfering with the attainment of the downstream

Exceptional Warmwater Habitat (EWH) use. Water quality in Flat Branch must be improved to the extent that it no longer interferes with the attainment of the EWH use in Big Darby Creek.

DWJB

Lastly, the Darby Joint Board and Planning Group would like Ohio EPA to **consider** and **comment** on the following stream definitions to help clarify the variety of channels that exist in the watershed.

Natural Stream – A watercourse that existed historically and has a steady flow of water

Natural Altered Stream – A watercourse that existed historically, has a steady flow of water, and has been man altered

Historical Channel- A watercourse that existed historically and has periods of intermittent or no water flow

Man-Made Channel – A watercourse that did not exist historically and has periods of intermittent or no water flow

Maintained Man Made Channel – A watercourse that did not exist historically, has periods of intermittent or no water flow and is maintained by authority of Ohio Ditch Law.

Response: Ohio EPA does not feel that these terms add clarity to any description of waters of the State of Ohio. The Ohio Revised Code already creates a term for “historically channelized watercourse” and provides for some limited variance to antidegradation reviews for that type of watercourse. See ORC 611.12(C).

LL

Ohio uses aquatic life uses contrary to other states thus creating an unfair indictment of Ohio's stream conditions.

Response: The Agency does not share this outlook on the State’s water quality standards. Ohio EPA prefers to take an approach that provides an accurate assessment, an approach that has been validated by the National Academy of Sciences. USEPA is working with other states to improve their monitoring programs such that data of a quality comparable with the data generated by Ohio is produced.

LL

It is imperative that county maintained and privately maintained agricultural ditches that do not have potential to meet OEPA designated uses (WWH for example) should not be designated.

Response: Ohio EPA received similar comments when it released draft water quality standards rules for public comment in 2005. After reviewing these comments and meeting with officials and landowners, the Division of Surface Water has prepared proposed rules for the Director’s approval. This proposed rule package has excluded the county maintained, or privately maintained, ditches found in the draft rule, unless

Ohio EPA biological data from recent surveys documented WWH attainment, or the potential to attain WWH. The Director must approve the proposed rule, file with the Joint Committee on Agency Rule Review and consider additional public comments before the rule is finalized. However, it is important to keep in mind that downstream uses must be protected. All undesignated waters must still meet all chemical WQS associated with the WWH use designation, and must not contribute to impairment of the downstream aquatic life use.

LL

Undesignated channels/ditches should remain as such until additional monitoring is done. In addition, there are roadside ditches that have similar water flow characteristics. Why have these not been included in the Report?

Response: Roadside ditches are waters of the State unless they do not have a flow into other waterways. Roadside ditches are no part of the Agency's sampling program except in certain special investigations of unsanitary conditions, spills, or pollution incidences. Ohio EPA agrees that channels and ditches that have not been monitored to determine the appropriate aquatic life use should remain undesignated. However it is important to note that in order to achieve TMDL pollutant reduction targets that sources of total phosphorus, bacteria, and suspended solids in these waterways be scrutinized to determine ways to make cost effective reductions in these pollutants. All of these types of waterways contribute to overall pollutant loading in the watershed, and all of them should be evaluated for ways in which reductions can be made in order to contribute to achieving pollutant reduction targets.

TNC

Antidegradation goals - The TMDL should ensure no further decline in species richness occurs and streams not meeting Clean Water Act goals are restored. Rare and declining species must be protected. The TMDL should protect the Big Darby and tributaries at Outstanding State Waters (OSW) and Superior High Quality Waters (SHQW) levels, and protect the watershed's streams from further rare species losses. It should further clarify how the TMDL will ensure this protection; only limited discussion is provided as to protection of federally endangered species in Section 5.3.

What is the margin of safety used to assure protection of rare and declining species? How does this differ from another margin of safety in another watershed which does not have comparable rare and declining species occurrences? Because of its exceptional ecological value, Big Darby Creek and tributaries need a greater level of protection than that necessary to achieve the Exceptional Warmwater Habitat (EWH) used attainment level, and a substantial margin of safety is essential.

Response: We agree that efforts to manage and protect State and Federally listed rare and threatened species are important and that the State's water quality programs should assist in these efforts. Ohio EPA amended the State's antidegradation rule (OAC 3745-1-05) in 2003 to include a higher level of protection for waters that demonstrate high biological diversity and the presence of rare, threatened, or declining species. Big Darby Creek and some of its tributaries were assigned the OSW and/or SHQW designations in the 2003 rule making.

Seventy-five (75%) of the remaining available pollutant assimilative capacity for regulated pollutants which have water quality criteria is reserved (i.e. not allocated to sources) on Outstanding State Waters. This antidegradation requirement was incorporated in all applicable NPDES activities associated with the TMDL recommendations. Additional protection for the endangered species of the Darby was incorporated in the TMDL process by inclusion of stream setback requirements and recommendations, protection of groundwater infiltration, regulation of storm water quality, and inclusion of thermal load considerations in NPDES point source discharge permitting all of which are unique at this point to the Big Darby Creek TMDL.

Five percent (5%) of the total allowable load was reserved and unallocated to conservatively account for data and model uncertainties. The target in-stream concentrations for total phosphorus and total suspended solids were set at conservative levels to provide an additional margin of safety. These practices have been used in other (but not all) TMDLs produced in Ohio.

TNC

Flat Branch impairment and storm water management - Page 2-15 - Flat Branch is designated as Modified Warmwater Habitat (MWH), and "is not impaired." This stream is one of the lowest quality in the watershed, and the "not impaired" designation is very misleading. Flat Branch clearly contributes significant pollutants to the Big Darby Creek and pollutant loads are far above ecological goals (e.g., see Table 4.1.1.1). This stream, and sub-watershed, needs considerable improvement and a higher goal, clearly because it is not only damaged, but is affecting Big Darby also. Agricultural runoff and sediment delivery to the stream is readily observable in this watershed, and it already has land use development at approximately 10%, clearly demonstrating a need for adequately protective storm water management. Ohio EPA should require enhanced storm water management in this area. Comparable nonpoint source pollution and habitat problems exist in a number of other watersheds and need to be addressed in detail for environmental protection progress to be achieved.

Response: While Flat Branch is meeting its aquatic life use designation, it is interfering with the attainment of the downstream aquatic life use in Big Darby Creek. This condition is not acceptable under federal regulations (40 CFR 130.10(b)). As such conditions need to improve in the Flat Branch watershed such that they no longer interfere with attainment of the EWH use in Big Darby Creek. There are many potential improvements that are being evaluated, and additional data in this watershed is being collected. Should these efforts prove unsuccessful, the Ohio EPA may consider modification of the water quality standards for Flat Branch in order to be protective of downstream uses.

OFB

Assigning aquatic live use designations in the Big Darby Creek watershed must ensure that existing agricultural drainage systems remain intact and allowed to be maintained in the future. Many agricultural ditches have been created under Ohio's agricultural drainage laws. The goal of these drainage projects is to keep the water flowing by

constructing efficient ditch systems and ensuring that they are maintained and cleaned out when needed.

Ohio's water quality standards need to acknowledge that differences exist between man-made ditches, streams that have been altered or modified to improve drainage and offer flood control, and natural streams. Agricultural drainage ditches, urban storm drains and roadside ditches should not be considered fishable/swimmable and should be assigned an appropriate aquatic life used designations based upon their primary purpose – conveyance of excess surface and subsurface water.

Response: The Ohio WQS regulations do acknowledge that human-made channel and habitat modifications associated with agricultural drainage sometimes preclude meeting Clean Water Act goals. See definitions of Modified Warmwater Habitat and Limited Resource Waters in OAC 3745-1-07. However, Ohio EPA believes that federal regulations would prohibit the adoption of a primary water conveyance scheme as the commenter outlines. Title 40 of the Code of Federal Regulations Section 131.10 (a) requires the States to adopt water quality standards that are protective of fish, shellfish and wildlife, and specifically prohibits the adoption of water quality standards for "waste transport or waste assimilation" as suggested by the commenter. The full text of 40 CFR 131.10(a) states:

Each State must specify appropriate water uses to be achieved and protected. The classification of the waters of the State must take into consideration the use and value of water for public water supplies, protection and propagation of fish, shellfish, and wildlife, recreation in and on the water, agricultural, industrial, and other purposes, including navigation. In no case shall a State adopt waste transport or waste assimilation as a designated use for any waters of the United States. (emphasis added).

LDR

Page 1-5, Section 1.4 – Who determines what the "designated uses" of a stream should be? Is there any input from landowners? If one or two unusual species are found in a specific area, does this automatically mean the area is given the EWH designation? How do you know that the area shouldn't actually be designated WWH because the unusual species happened to migrate from an EWH designated area in another part of the stream?

Response: The task of designating the "beneficial uses" for streams in the State's water quality standards is an administrative rule making activity done by the Director of Ohio EPA. The Agency relies on a standardized process of data collection and interpretation of biological results to assign appropriate aquatic life uses. Other uses assigned include a water supply use (public, industrial, or agricultural) and a recreation use.

Input from landowners is typically not directly solicited in advance of preparing recommendations for the appropriate uses. The administrative rule making process does, however, provide for two separate opportunities for the public to comment on both the draft and proposed set of uses.

One or two unusual species recorded in low numbers at a location does not automatically trigger the assignment of the Exceptional Warmwater Habitat use. A stream segment needs to have not only the right species, the right number of species, but also the right number of individuals of the right species. This conclusion is based upon an analysis of carefully selected stream reference sites that allows Ohio EPA to predict the fish and aquatic insect communities that are likely to inhabit both WWH streams and EWH stream of a given region of Ohio.

LDR

Page 1-6, Section 1.4.1 – You indicate that “The Big Darby Creek watershed includes extensive stretches of stream that have the EWH aquatic life use designation.” Is it the intent of the Ohio EPA to make the entire watershed EWH? This has to be “wishful thinking” on your part, because it is not physically possible to take a watershed of this size and bring the entire length up to the EWH designation. How do you know what condition the watershed would be in today if there had been no human intervention? After all, you are dealing with nature. It is possible that the watershed would be in far worse condition than it presently is.

I understand you are recommending that drainage ditches be designated as warm water habitats. Many of these were manmade and are used by farmers. Although they are part of the watershed, it is ludicrous to attach an aquatic life use designation to a ditch.

Response: No, the Agency does not have plans to make the entire Big Darby Creek watershed an Exceptional Warmwater Habitat. We have monitored the stream conditions to determine what existing biological communities are present there today. We let the results of these standardized survey results tell us what the appropriate aquatic life use designation should be. Most of the larger streams and some of the smaller waterways in the Big Darby Creek watershed currently possess exceptional and coldwater communities as we have defined those categories of aquatic life in the State’s water quality standards.

In the process of setting State water quality standards Ohio EPA does **not** attempt to discern what water quality or biological conditions would be absent all human intervention. An analysis of carefully selected stream reference sites has been conducted that allows Ohio EPA to predict the fish and aquatic insect communities that are likely to inhabit the streams of a given watershed. While this approach sets a goal for water quality and biological condition that may require point and nonpoint source pollution abatement, we nevertheless know that the goal is within reach because it reflects conditions that exist in similar Ohio watersheds with lesser degrees of human disturbances.

Draft water quality standard rules released in 2005 did contemplate assigning the Warmwater Habitat aquatic life use designation to a number of waterways that are actively maintained for agricultural drainage. A series of conversations and tours with Madison County officials and landowners was helpful in understanding the situation within the watershed. The Division of Surface Water has made adjustments in the water quality standard rule package as a result of these discussions. We anticipate that

the Director will propose rules that retain the Warmwater Habitat designation only in situations where that level of biological condition was documented to exist. Ditches or other waterways where there were no biological samples collected, or where results indicated Warmwater habitat was not achievable, have been removed from the proposed rule.

COLS

Paragraph 3.2.5, Page 3-11. In the “Protecting the Downstream Use” section OEPA indicates that “... there are times when the applicable criteria in a water body may need to be more restrictive than those associated with its designated use, in order to protect the designated use of the downstream segment or stream.” While in principle this makes sense, practical implementation is another matter. In effect, what this allows is a continuously moving target. The regulated community needs and must have a set of standards that are clear. More specificity should be provided. For example in cases where a WWH reach or stream drains into an EWH reach or stream, OEPA could reserve the right to apply EWH criteria for a fixed specified distance upstream into the WWH area. If managed in this way, OEPA should identify those reaches or streams and the specified distance as part of the TMDL. In this context, at least the regulated community would be forewarned and can plan and implement appropriate actions.

Response: The comment is noted.

B.5 208 Plan

TNC

Use of the TMDL recommendations in the 208 plans - The final TMDL should further explain how the 208 plan will protect and enhance the biological integrity of Big Darby Creek and tributaries. Section 208 plan requirements should support and supplement the TMDL. How will they do this? What is the status of Ohio EPA’s analysis of the ESDA EAG recommendations, which are necessary to help meet the TMDL goals?

Response: The TMDL is a part of the 208 plan, rather than the reverse. Ohio EPA’s analysis of the ESDA EAG recommendations has been completed and incorporated into the draft 208 plan and draft NPDES storm water permit for construction activities in the Big Darby Creek watershed.

TNC

Section 5.2.3 Development – Because of growing need to address storm water impacts and habitat loss, The Nature Conservancy supports application of 208 requirements throughout the watershed, at the same level as for the ESDA, and at least as protective as recommended by the ESDA EAG in its November 2004 report.

Response: The comment is noted.

OEC

Several other areas of significance should be covered within subjects presented in the TMDL report. Without over dramatizing the degradation of the Darby system, time is of

the essence for Darby preservation. The loss of species and the indication of pollution are likely not fully expressive of the decline already in place. There should be timelines included in the final report that can set the stage for additional steps that will be required if voluntary measures undertaken do not stem the trend toward decline. If development is akin to adding air to a balloon at some point too much air can be added resulting in a collapse of the balloon. The TMDL report should identify a timetable mechanism by which “air” can be released to prevent a collapse.

Response: Ohio EPA has adopted the approach of inserting the requirements that are believed to be protective into control documents such as the NPDES General Permit for Storm Water Associated with Construction Activity for the Big Darby Creek watershed, and in the updated 208 plan. The storm water permit is subject to review and reissuance once it expires.

B.6 Authority

BC

Apply EPA’s expertise to strengthen the TMDL recommendations to achieve the most thorough and rigorous set of recommendations possible, based on the latest scientific data and analysis, in order to preserve and restore Darby Creek and protect its endangered species.

From my review of the TMDL, and from the content of the TMDL-related presentations and discussions, it is clear that the scope and rigor of the draft TMDL recommendations have been curtailed in order to make them conform to the boundaries of the EPA’s legal authority.

However, as the EPA has pointed out, there is an immediate and critical need for the most protective measures possible to be implemented in order to save the Darby. If inadequate measures are taken, irrevocable damage may be done, resulting in further degradation of Darby habitats and further declines and even loss of populations of endangered species.

The Ohio EPA has invaluable knowledge and expertise regarding what is needed to protect Darby. Where the EPA is aware of a threat and has the knowledge of a control or remedy needed for protection, it is critical that the EPA document its findings and recommendations, *regardless of legal authority*, so that this information will be available to other parties that are in a position to take the needed actions.

I understand the need to clearly define the scope of the document’s recommendations, but where necessary the distinction can be made between measures that EPA *will legally require* versus what it *recommends* be undertaken. The EPA can also qualify its recommendations in cases where the science is uncertain or there are unknowns. However, the EPA needs to err on the side of protection when there is doubt (which is also in keeping with the adaptive management principles set forth by the EPA for the TMDL process).

The EPA should also consult with ODNR, TNC, OSU, Darby Creek Association, and other agencies and groups involved to make this effort as collaborative as possible and to fully utilize the extensive available knowledge and expertise as regards Darby protection.

Given the above concerns, the following are examples of areas where the EPA should expand and strengthen the TMDL recommendations:

- Full protection of flood plains
- Enhanced riparian buffer requirements
- Defining and quantifying limits to impervious surfaces
- Improved storm water management, pollutant removal, and groundwater recharge methods
- Conservation development standards
- Other new, progressive, and/or innovative techniques and controls that would enhance protection

Response: Ohio EPA has presented the findings in the TMDL based on the best practical science available to us at this time. In the implementation recommendations, those actions that are Ohio EPA's responsibility will be acted upon within the scope of Ohio EPA's legal authority. The TMDL contains many items that are outside Ohio EPA's authority, and rely on voluntary implementation to achieve those items. Stream setbacks are an area such as this. Ohio EPA will implement the setbacks in the General Permit for Storm Water Related to Construction Activity for the Big Darby Creek Watershed where that permit is applicable. For agricultural and non-regulated activities implementation will be the responsibility of individual land owners or local governmental jurisdictions.

OFB

The fourth implementation mechanism for promoting improved drainage through environmentally sound means presented in the first paragraph on page 5-7 is a concern for the Ohio Farm Bureau. It is proposed that all petition ditch maintenance work and privately maintained drainage projects be required to install BMPs that improve ecological conditions downstream from the ditch maintenance area (specifically at the ditch outlet). Mandating these types of conditions on ditch maintenance projects goes well beyond the intent of the drainage project (removing excess water) and is outside the authority of Ohio EPA to regulate when a Clean Water Act Section 401 Water Quality Certification is not required.

Response: The paragraph referred to is a discussion of the Darby Creek Community Based Watershed Plan, not a regulatory document. Ohio remains concerned about the downstream effects of sediment and other materials from ditch maintenance projects. The extent to which these matters will be regulated under Section 404 of the Clean Water Act will continue to fall under the jurisdiction of the U.S. Army Corps of Engineers. Ohio EPA will remain engaged in that process to ensure protection of aquatic life uses to the extent the law allows.

COLS

Ohio EPA Only Has Authority To Establish TMDLs for Pollutants.

The City of Columbus is fully supportive of the goal of achieving all applicable water quality standards in the Big Darby, including aquatic use standards. However, the TMDL process is a limited tool; it is limited, by law and common sense, to pollutants for which Ohio EPA can develop a load or waste load allocation. There are several TMDLs listed in the draft Big Darby TMDL which are not pollutants, including habitat, bedload, floodplain width and flow. As Ohio EPA lacks the legal authority to issue TMDLs for these parameters, they must be deleted from this report.

Ohio EPA's legal authority to issue a TMDL is found in the Clean Water Act Section 303(d), which provides that a state shall prepare a TMDL for impaired waters for the "pollutants" identified by the Administrator. "Pollutant" is defined in the Act by example; except for heat, all of the examples involve physical materials, which are discharged into waters:

The term "pollutant" means dredged spoil, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal, and agricultural waste discharged into water.

33 USC 1362(6).

USEPA's regulations also limit TMDLs to pollutants. 40 CFR 130.2 defines a TMDL as the sum of the load allocations and waste load allocations for a stream. Waste load allocation is defined in terms of a source of pollution, and a load allocation is defined as the combination of non-point source pollution and the naturally occurring loading. Moreover, courts often refer to TMDLs as a control on pollutants. See e.g., Dioxin/Organochlorine Center v. Clarke, 57 F.3d 1517, 1520 (9th Cir. 1995) ("A TMDL defines the specified amount of a pollutant which can be discharged or 'loaded' into the waters at issue from all combined sources.")

Finally, USEPA's guidance explicitly states that TMDL's should be limited to pollutants. In "Guidance for 2004 Assessment, Listing and Reporting Requirements Pursuant to Sections 303(d) and 305(b) of the Clean Water Act" USEPA provides a category (4(C)) for streams that are impaired, but not because of a source of pollution. The guidance states that these streams should not have a TMDL. Moreover, the Agency specifically addresses flow, and states that it is not a pollutant. ("EPA does not believe that flow, or lack of flow, is a pollutant as defined by CWA Section 502(6).")

The clear legal limitation on TMDLs is also supported by common sense. The Ohio EPA does not have any legal authority to control land use decisions, which it would need to have to enforce a TMDL on a parameter such as habitat or flood plain width. Ohio EPA seems to acknowledge as much in the chapter on implementation, which states that one of the means of implementing these TMDLs is through local zoning. Ohio EPA cannot and should not dictate local land planning decisions.

The City of Columbus is fully supportive of the goal Ohio EPA is seeking to achieve. However, the goal will only be met through comprehensive, cooperative, multi-jurisdictional land planning. Such planning is taking place currently in the Big Darby Accord. Imposing a TMDL on the area that may conflict with those local decisions is neither wise nor legally justified.

Response: A TMDL is a means for recommending controls needed to meet water quality standards (Guidance for Water-Quality-based Decisions: The TMDL Process, US EPA, 1991, EPA440-4-91-001). 40 CFR 130.2(i) states that a TMDL calculation is the sum of the individual wasteload allocations for point sources and the load allocations for nonpoint sources and natural background in a given watershed, and that TMDLs can be expressed in terms of either mass per time, toxicity, or other appropriate measure. Aquatic organisms are affected by a combination of variables that are not limited to load based pollutants. Therefore, the attainment of WQS in Ohio requires that both pollutant loads and environmental conditions (pollution, or non-load based parameters such as habitat) be addressed when identified as impairing causes.

Supporting excerpts from the above referenced document include:

“The purpose of this guidance document is to explain the programmatic elements and requirements of the TMDL process as established by section 303(d) of the Clean Water Act and by EPA's Water Quality Planning and Management Regulations (40 CFR Part 130). A TMDL, or **total maximum daily load**, is a tool for implementing State water quality standards and is based on the relationship between pollution sources and in-stream water quality conditions. The TMDL establishes the allowable loadings or other quantifiable parameters for a waterbody and thereby provides the basis for States to establish water quality-based controls. These controls should provide the pollution reduction necessary for a waterbody to meet water quality standards....

Historically, the water quality-based pollution control program has focused on reducing the load of chemical contaminants (e.g. nutrients, biochemical oxygen demand, metals) to waterbodies. EPA has defined the terms load, loading capacity, and load allocation in regulations and technical guidance documents so that wasteload allocations can be calculated. Chemical contaminant problems will continue to constitute a major portion of pollution control efforts and the terms "load" and "load reduction" are used throughout this document. However, it is becoming increasingly apparent that in some situations water quality standards -- particularly designated uses and biocriteria -- can only be attained if non-chemical factors such as hydrology, channel morphology, and habitat are also addressed. EPA recognizes that it is appropriate to use the TMDL process to establish control measures for quantifiable non-chemical parameters that are preventing the attainment of water quality standards. Control measures, in this case, would be developed and implemented to meet a TMDL that addresses these parameters in a manner similar to chemical loads. As methods are developed to address these problems, EPA and the States will incorporate them into the TMDL process.”

The USEPA document *Guidance for 2006 Assessment, Listing, and Reporting Requirements Pursuant to Sections 303(d), 305(b), and 314 of the Clean Water Act* states the five part segmentation scheme developed by USEPA is a recommendation

only and not a requirement; therefore, the use of a Category 4c is also solely a recommendation and not an interpretation of legal authority. Further, the document states:

”Segments should be placed in Category 4c when the state demonstrates that the failure to meet an applicable water quality standard is not caused by a pollutant, but instead is caused by other types of pollution. Segments placed in Category 4c do not require the development of a TMDL. Pollution, as defined by the CWA is “the man-made or man-induced alteration of the chemical, physical, biological, and radiological integrity of water” (section 502(19)). In some cases, the pollution is caused by the presence of a pollutant and a TMDL is required. In other cases, pollution does not result from a pollutant and a TMDL is not required. States should schedule these segments for monitoring to confirm that there continues to be no pollutant associated with the failure to meet the water quality standard and to support water quality management actions necessary to address the cause(s) of the impairment. Examples of circumstances where an impaired segment may be placed in Category 4c include segments impaired solely due to lack of adequate flow or to stream channelization.”

Note, the USEPA states that such Category 4c segments do not require a TMDL, but does not prohibit such a development. Further, the example USEPA uses in the above paragraph concerning flow states that such segments may be placed in Category 4c, not that they shall be. This is not an explicit statement that TMDLs should be limited to pollutants nor does it state that TMDLs should not be done for Category 4c segments as the commenter states.

TMDL projects are not limited to only addressing or examining causes and sources that the Ohio EPA has legal authority to regulate. The TMDL program was developed to address situations where the NPDES program was insufficient to meet water quality standards; in Ohio this translates into areas where Ohio EPA does not necessarily have authority. The TMDL program does not grant such an authority, but instead provides a structured method to examine water quality problems and provide recommendations to address these issues regardless of our authority. Local governments may choose to create local ordinances in accordance with TMDL recommendations just as local land owners and other stakeholders may voluntarily choose to incorporate such recommendations into their personal choices. The TMDL gives a prescription for water quality attainment so that appropriate jurisdictions and stakeholders can make better informed decisions on issues that affect water quality.

COLS

Ohio EPA Has No Legal Authority To Determine the Appropriate Floodplain.

Ohio EPA has no authority to define or regulate the floodplain, as the General Assembly has given that authority to ODNR. R.C. 1521.03 places the authority over floodplains with ODNR’s Chief of the Division of Water, while R.C. 1521.13 requires the Chief to coordinate all floodplain management activities. Moreover, even ODNR has limited ability to control floodplain activities, as local jurisdictions, with oversight from ODNR and FEMA, issue floodplain fill permits.

Ohio EPA has no statutory authority to define or regulate floodplains. This TMDL must therefore be removed.

Response: Ohio EPA is authorized under Chapter 6111 of the Revised Code to assess flood plain issues for the purposes of making determinations of how flood plain issues affect water quality.

COLS

As discussed below, the City is fully supportive of Ohio EPA's goal of achieving all water quality standards in the Big Darby watershed. The City is also fully supportive of land use decisions that protect this valuable resource. However, we do not believe that Ohio EPA can or should dictate land use planning; such decisions must be made by local governments. Cooperative, multi-jurisdictional efforts, such as the ESDA EAG and the Darby Accord, will be far more effective in protecting the habitat of the Darby than the establishment of TMDLs that Ohio EPA has no authority to establish or enforce.

Response: Ohio EPA agrees that cooperative, multi-jurisdictional efforts such as the ESDA EAG and the Darby Accord are important for long term protection of water quality in Big Darby Creek. Ohio EPA has not dictated land use planning. Ohio EPA has defined the water-land interface in terms of the long term hydrologic cycle, which takes into account periods of high flow as well as periods of low flow. This definition paves the way for land use decision making that recognizes inundation as a normal occurrence in this area.

B.7 Impervious Surfaces

1000F

Specifically, we strongly support strategies to restrict the amount of impervious land cover, which would promote infiltration of water into the soil and groundwater, and adequate filtering of water pollutants, by requiring careful planning for the amount and location of development

Response: Rather than try to restrict the amount of impervious cover, Ohio EPA has adopted the approach of ensuring that adequate infiltration occurs through the use of requirements in the NPDES General Permit for Storm Water Related to Construction Activity for the Big Darby Creek Watershed.

TNC

While I expect we will submit full comments on the draft Big Darby Creek TMDL next week, I am providing the attached document, "The Etowah Habitat Conservation Plan Runoff Limits Program," prepared as a July 2005 draft by the University of Georgia and U.S.G.S. for your considerations comments on the draft [sic]. Note that instead of relaying [sic] on pollutant load estimates to determine capacity of the streams or watersheds, it bases the capacity for development on the impervious surface limits determined for sensitive aquatic species. This approach might more appropriately take into account the individually unknown effects of a wide variety of pollutant, habitat and hydrologic stresses. Ohio EPA uses biological indices as a better way to measure stream health, with that health being based on the responses of sensitive species. The

Agency is very aware that such measures are more appropriate than pollutant concentrations. Because of the need to protect rare, declining and sensitive species in the Big Darby watershed (e.g., spotted darter, bluebreast darter, northern riffleshell and other mussel species), please consider using such a biologically based approach, as in the attached document.

Response: The comment is noted, and it will be considered if resources are available for such future work on the Darby watershed.

OEC

Likewise while not typically the subject of TMDL reports the importance of the impact of impervious surfaces cannot be overstated. The report should attempt to identify this significant indirect measure of watershed health. Studies in other watersheds across the Midwest should be referenced to demonstrate the destruction that can occur to the hydrologic regime and concomitant irreparable damage that can occur to water quality from too many impervious surfaces in the watershed. This factor alone can mean the difference between success or system failure. Best management practices that are at the leading edge of controlling storm water should be referenced for use in the Darby watershed such as green roofs, porous pavement, bioswales, wetland treatment, rain barrels, cisterns and other techniques to mitigate the destructive and erosive forces of increasing storm water flow.

Response: The commenter is correct in indicating that impervious surface is an indirect measure of impacts on the hydrologic regime. Ohio EPA has chosen to set targets in the TMDL that are more closely linked to the hydrologic regime, namely infiltration, and storm water to base flow ratios. Ohio EPA believes these to be more protective than an indirect measure in this particular instance.

B.8 Nationwide Permits

BIA

We understand that the Ohio EPA is considering withdrawing its Section 401 Certification of Nationwide Permits in the Darby Creek watershed. Obviously, we believe that the Nationwide Permitting program is a valuable mechanism for obtaining timely reviews for minor impacts which do not have a cumulative adverse effect on water quality. To the extent that the Ohio EPA does withdraw the Nationwide Permit Certification, we would strongly encourage the agency to assure that it is capable of timely review and decisions on individual permit applications.

Response: Given the findings of the TMDL study of excessive sedimentation, the need for significant sediment loading reductions, the potential impacts to endangered species, coupled with the declines observed in endangered species, it is unlikely that any projects in this watershed could meet condition 11 of the Nationwide Permits. By withdrawing certification of these permits for the Big Darby Creek watershed, Ohio EPA clarifies the status of these permits for potential permittees. The comment regarding the need for and importance of timely review of individual permits is noted.

OFB

It is encouraging that Ohio EPA recognizes the challenges associated with managing ditches and other surface waterways in the Big Darby Creek Basin for agricultural drainage while considering ecological needs (Chapter 5, Section 5.1.4, Page 5-3). The removal of the blanket 401 certifications for small scale dredge and fill projects regulated under nationwide permits issued by the United States Army Corp of Engineers (especially NWP 03 – Maintenance, NWP -13 – Bank stabilization, NWP 40 – Agricultural Activities and NWP 41 – Reshaping Existing Drainage Ditches) in the Big Darby Creek watershed is a concern for the Ohio Farm Bureau and our members. Removing the blanket certifications removes the certainty of expectations placed on the permit applicant and adds additional time to the project review and approval process. Both are unacceptable.

Ohio EPA used a formal public review and comment process to establish conditions and/or restrictions for all of the Nationwide Permits applicable in Ohio. Establishing permit conditions ahead of time lets the applicant know up front what is expected from them. This level of certainty will be lost when the Nationwide Permits are replaced with individual permits where conditions and/or restrictions vary from project to project. Developing a specific set of Nationwide Permit conditions for the Big Darby Creek watershed (similar to what is being proposed for the General Permit for Construction Storm Water in Section 5.1.1 on page 5-1) would be preferred over the elimination of the use of Nationwide Permits in this basin.

Response: Given the need for protecting endangered species and high quality aquatic communities in this watershed, Ohio EPA believes that where applicable under current law, these projects should be subject to public participation on an individual basis. This allows for balancing social needs for drainage with appropriate protection on a system wide basis. Given the wide variety of aquatic life uses of tributaries in this system, and the demonstrated need to protect downstream uses, Ohio EPA disagrees with a 'one size fits all' approach. Ohio EPA notes the request for Big Darby Creek specific general permits, however, nationwide permits are issued by the federal government. Ohio EPA certifies that they comply with water quality standards. Since there are significant sediment loading reductions needed in this watershed, Ohio EPA will not certify these permits as meeting water quality standards.

B.9 Home Sewage Treatment Systems (HSTS (bacteria))

1000F

Specifically, we strongly support strategies to significantly strengthen storm water and sewage permit regulations by ensuring adequate treatment of chemicals, bacteria and solids from permitted discharges, home sewage treatment and disposal systems, and livestock so that water quality is improved.

Response: The comment is noted.

1000F

We also strongly encourage the collaboration of the Ohio Environmental Protection Agency and the Ohio Department of Health to ensure similar strategies are incorporated

into regulation of home sewage treatment. The opportunity seems particularly timely considering recently passed legislation enabling the Ohio Department of Health to develop new home sewage treatment system regulations.

Response: The comment is noted.

BIA

One of the most significant impacts to Darby Creek water quality is elevated fecal coliform from, in part, failed septic systems and package plants. Establishing development standards which will allow for economically feasible development in the watershed will allow for the extension of existing public sewer systems and the potential establishment of additional centralized sanitary sewer collection and treatment systems to eliminate these discharges. Absent reasonable development standards, the existing discharges are likely to continue and homes will continue to be constructed in the Darby Creek watershed. For lack of an alternative, these homes will rely on septic systems and present the risk of additional discharges in the future.

Response: The comment is noted.

TNC

Home Sewage Treatment Systems (HSTS) – Section 5.2.6 recognizes the HSTS problem in the watershed. While this section recognizes the important role of local health departments and the need for pollutant reductions, it does not identify a specific program for achieving these reductions. A program dedicated to adequately reducing these problems needs to be established and progress measured.

Response: Ohio EPA will work with local health departments to develop a strategy to reduce bacteria loading from HSTS upon approval of the TMDL by USEPA.

TNC

Individual home siting - The TMDL needs to make recommendations and establish requirements for adequate, environmentally protective siting of new individual homes, i.e., those not on central sewers. The impacts of individual homes and those in small subdivisions can be very damaging, such as limiting groundwater recharge, removing riparian vegetation, causing damaging erosion and channel scouring, and directly delivering pollutants. The TMDL needs to encourage local governments to establish protective policies. These are not in place in most of the watershed. Many of these sitings result in complete removal of riparian vegetation, or in obvious delivery of storm water and pollutants to tributaries.

Response: The TMDL is establishing the infiltration and storm water requirements that will be necessary to avoid impacts from new housing. These targets will be implemented in the NPDES General Permit for Storm Water Related to Construction Activity for the Big Darby Creek Watershed. Since all earth disturbing activities greater than one acre fall under this permit, it is Ohio EPA's best mechanism for implementing these requirements. In addition, the 2005 208 plan revision will include recommendations for local governments to consider adopting protections equivalent to the ESDA-EAG recommendations.

FWS

The TMDL would significantly reduce phosphorus loadings from direct septic discharges. However, there are currently few proposed reductions from wastewater treatment plants. It was unclear whether reductions in direct septic discharges would result from fixing the individual systems or expanding sewer lines to these malfunctioning systems.

It appears that the reduction in direct septic discharges would become the responsibility of local departments of health. Funding of this mandate may be problematic and could hinder the achievement of the proposed loading reductions.

Response: The commenter’s observation that there would be few proposed reductions in phosphorus loadings from wastewater treatment plants is incorrect. Except where specifically justified by the information available, all wastewater treatment plants in the Big Darby Creek watershed will be required to institute controls on Total Phosphorus in their effluent.

While reduction in loadings from HSTS will be a challenge, Ohio EPA will work with the local health departments to devise ways to achieve the necessary loading reductions.

B.10 Agricultural Influences

1000F

Specifically, we strongly support strategies to significantly strengthen storm water and sewage permit regulations by ensuring adequate treatment of chemicals, bacteria and solids from permitted discharges, home sewage treatment and disposal systems, and livestock so that water quality is improved

Response: The comment is noted.

BIA

The Darby Creek TMDL substantiates both that agricultural land uses far and away predominate in the Darby Creek watershed and that agricultural land uses have the most significant adverse impact on the watershed. The TMDL confirms that, except in the westernmost portion of the watershed, there is little significant residential or commercial development. Accordingly, to the extent to which there are pollutant sources or habitat modification adversely affecting the Darby Creek, they relate primarily to agricultural activities. This is particularly true with respect to elevated levels of total suspended solids (“TSS”) and phosphorus and the hydrogeomorphic modification of the Darby and its tributaries. In most areas, historical manipulation of stream channels, limited riparian buffers and TSS are directly related to agricultural land use. Livestock also contribute significantly to elevated fecal coliform levels in certain areas of the watershed.

As the TMDL makes abundantly clear, the Ohio EPA and other regulatory entities have limited authority to effectuate the necessary changes in agricultural land use practices to address water quality. The BIA’s members are very concerned that the land development and residential building sector will be unfairly burdened with expensive,

inflexible and perhaps unrealistic requirements which are imposed on these entities solely to address historical and current problems caused by agricultural uses. We understand that the Ohio EPA intends encourage the use of a number of voluntary initiatives that are available (some have been available for quite some time) to educate and assist farmers in the watershed to restore riparian buffers, protect and restore wetland areas and the like; however, these programs have not proven to be a workable near term solution for agricultural impacts.

As discussed in greater detail below, we are confident that “smart growth” can occur in the watershed in a manner that protects water quality. In contrast to many prior studies of the impact of often poorly planned urban growth on water quality, the proactive implementation of aggressive storm water controls, adequate protection and enhancement of riparian corridors and environmentally sensitive development design can protect and enhance the Darby Creek watershed without undue burdens on residential development.

Response: The comment is noted.

DG

I have some suggestions to promote short term and long term improvements for Hellbranch Run and Darby Creek:

AG storage systems tile dams and buffers with more tree planting FCSWCD and OSU Extension Office under Phd. Brown.

Response: The comment is noted.

TNC

Recognition of agricultural contributions - e.g., Page 4-15 – Big Darby Creek Headwaters - The total phosphorus contribution of row crops is significant in this area, as one example, and constitutes most of the phosphorus. While there is considerable development in this area that is adding to stresses on these streams, the document also should emphasize the problems caused by agriculture in this area. It is clear from casual observation that runoff from cropland is obvious during and after storm events, and riparian encroachment by agriculture is causing streambank failure and contributing nutrients and sediment.

In Box 2.2.1, page 2-12 - Agricultural row crops are not listed as a source of impairment in the upper Big Darby Creek sub-watershed. Because they constitute half of the land use, and are contributing sediments and nutrients based on casual observation, this stress should be identified. While past road construction is rightly identified as a source of impairment, continuous resupply of sediments from row crop agriculture is much more evident in the area.

Also, streambank erosion is clearly contributing sediment, and is especially observable where there has been channelization, where there are levees, where crops encroach upon the streambank, and where streambanks lack adequate vegetation. This source of siltation also is evident in many other areas of the watershed.

Response: The comments are noted. Agricultural row crops are not listed in Box 2.2.1 as a source of impairment because they were not identified as a specific source of impairment in that stream segment. This area does contribute to the overall nutrient enrichment of the watershed.

TNC

Measurement of agricultural stream quality protection effort progress – Ohio EPA estimates that Section 5.2.1 briefly describes voluntary programs to address agricultural pollutant loading reductions. Row crop agriculture's major contribution to phosphorus and sediments (60 to 85 reductions needed from nonpoint sources, mostly agriculture), and riparian encroachment are two significant problem sources in the watershed. We suggest a measurement program to develop accountability and help direct adequate attention to progress toward needed goals. This will help focus needs and action, and it could direct attention toward areas that need to be protected, and also to those that need to attain use designations. Measurement can be a powerful tool encouraging action, and helps reduce confusion about what progress is being made.

Response: Ohio EPA has established total phosphorus, sediment, and bacteriological targets against which agricultural pollutant reductions can be measured.

COLS

Row Crops

OEPA studied 20 subwatersheds as part of this effort. By far, the prevalent land use in all of these 20 subwatersheds was row crops. The range in percentage of row crop land use, per watershed ranged from 41.6 to 88.2 percent with an average of 62 percent. Likewise, the range in phosphorous contribution from row crops varied from 44.5 to 90 percent with an average of 80 percent. Considering that the largest contributor to the phosphorous loadings appears to be row cropping and that controlling it is likely to see the largest benefit in terms of phosphorous reduction, it is disconcerting that OEPA plans to rely on voluntary means for agricultural phosphorous reduction.

Response: Ohio EPA plans to rely on voluntary means for agricultural phosphorus reductions due to limitations in Ohio EPA's authority. This does not necessarily mean that relying on voluntary action will be ineffectual, but it does mean that the activities cannot be required.

B.11 Development

DB

We are property owners of an 80 acre farm in the Darby Watershed and we have been attempting to sell it for 6 years. During this period of time we have continuously been confronted with a moratorium by some part of government.

Each and every time we have come close to having a buyer it seems there is another moratorium passed and our buyers walk. No one wants to purchase land under a moratorium. We feel that we have been more than patient with allowing government to come up with some written guidelines and are looking forward to the end of this year.

We just hope that no one extends the moratorium and allows us to move on with our lives.

You see there are six of us who own this farm and we are surrounded on 3 sides by housing developments. It is nearly impossible to farm and the 4-wheelers from those subdivisions seem to think our farm is their playground. We had decided twenty years ago to sell the farm as we began reaching retirement age so that the proceeds would be our nest egg. At the present time our ages range from 55-75 years old with my 75 year old sister still working fulltime. As you can imagine, the NOT being able to sell the farm has caused quite a hardship for all of us.

Please do your best to see that all problems involving the Darby Watershed are resolved no later than the end of 2005 so that we may sell.

Response: The comment is noted.

DG

LID Low Impact Development can do more than constructed storm water systems (consultation with other cities). Reduce impervious surfaces and create a storm water utility for entire watershed.

Response: The comment is noted.

DG

Control for existing development should have planted and natural wetland infiltration and retention to improve appearance, habitat and pollution abatement.

A detail of construction for wetlands should be part of engineering plans (Dr. Mitch OSU Dept of Nat Resources).

Tree planting is a basic for this area and should be a mitigation technique for all development FCSWCD. Native trees and shrubs should be planted in all floodplains and stream banks with the owners consent.

Preservation should be the best and most frequently used method to prevent destruction of the watershed and westward expansion of the City of Columbus. Purchase and transfer of development, scenic/conservation easements, buy lease back... and other methods for compensating owners and reducing the development (Consultation with other cities such as Lexington KY).

Response: The comment is noted.

OEC

Build-out is the inevitable outcome of the release of the moratorium currently in place in the Environmentally Sensitive Development Area. While simultaneous efforts are underway to dampen the negative effects of this next phase in Darby's history (Darby Accord, ESDA EAG, and Darby 208 Plan) the Darby TMDL will stand alone as the

scientific high water mark for Darby protection. Does the report go far enough to give the Darby system an underdog's chance of surviving the next 30 years?

Response: Setbacks, pollutant reduction targets, and infiltration targets are all included in the TMDL. Attainment of many of these targets is based on voluntary action. To the best of our knowledge at this point in time, if all of these targets are attained, the system should meet its designated uses. We have a long way to go to meet some of the targets. It can also be said that we do not know all that we need to know about this watershed at this time. For that reason, Ohio EPA will be conducting certain continuing studies in the watershed to further refine our knowledge base.

LDR

Continued development in western Franklin County is a serious deterrent to a cleaner Darby Creek watershed. Even though there are restrictions and a moratorium on further development, waivers seem to keep being approved when some money is put on the table by rich developers. This in turn puts more pressure on the farmers and not-so-rich landowners along the streams of the watershed to clean up the creeks to make up for the pollution of the developers. It appears if you have money behind you, you can get around the regulations. This has to stop! If the developers continue to have waivers approved, there should be high-priced, ongoing financial compensations paid by those developers for the waivers. This money could be used to improve the health of the Darby watershed.

Response: Ohio EPA has issued a storm water permit specific to the Big Darby Creek watershed that will regulate storm water from development.

B.12 Area of Applicability (i.e., whole watershed or part)

1000F

We especially support the application of the above strategies to jurisdictions beyond Franklin County. This is a critical piece of the efforts to protect the watersheds considering the rapidly developing areas such as those surrounding Marysville, West Jefferson, Plain City, Jerome Township, and Northern Pickaway County.

Response: This issue will be addressed in the 208 plan for this watershed.

BC

Adopt the Franklin County ESDA-EAG recommendations for the Hellbranch Run, and extend these recommendations throughout the watershed thru the TMDL and 208 plans.

I urge the EPA to adopt the ESDA-EAG recommendations, complete the additional work that the EAG recommended be undertaken (including developing enhanced storm water regulations), incorporate these recommendations into the TMDL, and carry them forward for implementation throughout the watershed via the upcoming 208 plans. This would address some of the concerns I expressed in item #1, and in any case these

increased protective measures are sorely needed in many areas throughout the watershed

Response: Ohio EPA has issued a draft storm water permit specific to the Big Darby Creek watershed. The 208 plan is addressing the ESDA-EAG issues.

DCA

DCA fully supports these initiatives, and urges the EPA to continue in this direction. It will not be possible to protect Darby without the EPA providing guidance on these pervasive issues. We fully support the general tools the agency is proposing to use in addressing these issues, including reviewing wastewater permits with the new loading limits in mind, adding Darby specific requirements to general storm water permits, and updating all watershed 208 plans with ESDA-like protections.

Response: The comment is noted.

TNC

Section 5.2.3 Development – Because of growing need to address storm water impacts and habitat loss, The Nature Conservancy supports application of 208 requirements throughout the watershed, at the same level as for the ESDA, and at least as protective as recommended by the ESDA EAG in its November 2004 report.

Response: Ohio EPA is addressing the area of applicability for the ESDA-EAG recommendations in the 208 plan.

B.13 Flexibility

BIA

In order to accomplish the goals of the TMDL process to protect and enhance the Darby Creek, we believe it is essential that both the Ohio EPA and the other related regulatory agencies avoid rigid, prescriptive requirements and instead focus on providing reasonable objectives which would allow property owners to consider a number of mechanisms to meet those objectives. Implementation of flexible and practicable standards will encourage entities to consider a variety of approaches to meeting the overall goal. For example, if there is some flexibility in the required width of a riparian buffer, this may result in reduction of the buffer in one area, but the preservation of a much larger area of high quality riparian buffer in another. Similarly, different development sites will require different storm water collection and retention systems. Accordingly, the storm water standards should set realistic objectives without prescribing specific mechanisms for meeting those objectives.

The BIA's members are likely to be most affected by future storm water controls (both during construction and after development), riparian corridor protection and stream and wetland permitting. We understand that the Ohio EPA intends to develop storm water pollution prevention plan ("SWP3") requirements applicable to the entire Darby Creek watershed. While we understand the importance of minimizing any increase in sediment loads to the Darby Creek, we would encourage the Ohio EPA to craft the

general permit in a manner that provides clear objectives to the permit applicant while still providing adequate flexibility to address unique site conditions.

Response: Ohio EPA believes that an appropriate amount of flexibility has been built into the 208 plan and the NPDES General Permit for Storm Water Related to Construction Activity for the Big Darby Creek Watershed. Both products will be released for public comment before being finalized.

B.14 Miscellaneous

BC

Do everything possible to engage, inform, educate, and guide local government officials and residents throughout the Darby watershed, so there are better prospects for them to become active partners with the EPA in Darby protection.

The *Darby at the Crossroads* document published in June 2004 by Ohio EPA states:

“Public participation is key to effective implementation of TMDL projects.

.....The work to save the Darby does not fall to any one organization, agency or governmental entity, but is spread among many responsible parties and citizens.

.....The Darby needs everyone to be involved in the solution.”

The EPA can't do it alone, and has stressed the need for public participation. However, as a concerned citizen attending TMDL and other Darby related meetings I have seen only limited participation by the public and local officials in the TMDL process. The EPA needs to increase its efforts to reach out to its potential partners and share EPA knowledge and expertise with the public and local government officials throughout the watershed.

I understand that the upcoming 208 plan, which will incorporate TMDL recommendations, will be the primary mechanism for EPA to define and enforce more protective measures. Beyond that, it would help tremendously if the local jurisdictions received guidance from the EPA on incorporating the needed development standards and practices into their own local ordinances. This would serve to guide architects and engineers toward designing essential controls into development projects from the start, rather than leaving it to the EPA to have to continually override weak local regulations and redirect projects in a reactive mode. It would also enhance the possibility that local officials would act on their increased knowledge and awareness and take initiative to pursue more progressive and innovative approaches that go beyond the criteria and protective measures strictly required by the EPA.

In many cases, local officials already understand the need, and are willing to work to improve regulations to better protect Darby, but they need up-to-date information and guidance, and it needs to be communicated and presented in a form that is appropriate

to that audience. This is another area where it would be beneficial for the EPA to collaborate with other agencies and organizations, in developing these materials and providing them to the public and local officials.

Response: Ohio EPA has issued a storm water permit specific to the Big Darby Creek watershed that outlines requirements necessary to accomplish much of what the commenter cites.

DG

City staff and departments **MUST** be trained and required to do this activity or it **WILL NOT BE DONE**. Every bureaucracy has its naysayers and there must be education and promotion from the top (Mayor, Public Works, Engineer) for this to happen. City budgets must expand for new staff and equipment based on impact fees.

Homes in the floodplain must be relocated using FEMA grants. This is especially true south of Broad St along Alton Darby Road. Other examples exist throughout the watershed.

There are many issues but I feel these are basic to the watershed preservation plan I created and to improve water quality long term. A policy of tree replacement and streambank restoration combined with floodplain preservation and acquisition are critical.

The EPA must work with cities to achieve results and promote citizen participation.

Response: The comment is noted.

DCA

The concept of adaptive management was brought up in discussions among the EAG. Subsequently, the EPA outlined this model in its much-quoted introduction "Darby at the Crossroads," which appeared in the technical support document entitled *Biological and Water Quality Study of the Big Darby Creek Watershed, 2001/2002*.

The concept of adaptive management describes the entire suite of EPA activities in the Darby watershed, of which the TMDL is just one part. However, we believe that the report would be a more effective document if it devoted some space to placing the TMDL recommendations more explicitly within context of the adaptive management model.

The model is described this way in the TSD:

The Ohio EPA's TMDL program is designed to be a repetitive process...the process includes follow-up monitoring, feedback and adjustments to pollution control strategies (permits, best management practices, etc.) over a number of years to ensure success... [Adaptive management] is well suited to situations where we have incomplete knowledge or understanding of the pollution issues and the stream's response to the pollution. The current and

future impacts of development in the Hellbranch Run watershed on the exceptional biological communities of the Darby ecosystem certainly fit this description (p. 12).

And later:

Ohio EPA will apply the output from all this work (TMDL assessment and development results, amended Section 208 Plan, Hellbranch Forum output and comprehensive land use planning, if undertaken) in the adaptive watershed management model. The challenge will be to gradually meter the release of growth pressure through action, assessment, and adjustment of future actions (pp.12-13).

Adaptive management should be part of the fabric of all documents discussing Darby protection. Realistically, there are many unknowns in the effort to figure out what is affecting Darby biology. These unknowns are multiplied when we start trying to predict the future of a watershed that is facing innumerable changes in land use. It is absolutely essential that the TMDL, and every other EPA document dealing with Darby, remind stakeholders that this is a long-term, ongoing process of assessment, monitoring, and policy adjustments. We realize that many interests, in particular development interests, would prefer to have a set of hard-and-fast rules that they can live by. But realistically, we do not believe this is possible at this time.

We need the EPA to take the lead in this educational process. More specifically, what can the Darby community expect in the future if: 1) load targets aren't met, 2) standard biological indicators decline, or 3) species disappear? What if new scientific research improves our understanding of storm water thresholds or impervious surface tipping points? What if impacts from agriculture—which are extensive, but not subject to regulation—do not improve significantly? The implementation plan is made considerably weaker by the lack of stated consequences for failure to meet water quality goals in the Darby stream system. Because of the current critical risk to irretrievable aquatic resources, provision should be made in the TMDL for specific consequences of further declines in water quality. For example: a moratorium on water quality certifications in the Darby until a data basis for further granted certifications can be developed, increased restrictions on NPDES dischargers, or increased setback requirements and other restrictions on new developments.

Response: The TMDL process, as implemented in Ohio is an iterative process by nature. Imbedded in the process is a periodic return to previously sampled areas to collect new data to determine the status of streams. At present, the return interval is every 10-15 years. While this may seem like a long time, it is barely sufficient to implement the changes recommended in this TMDL report, and have the appropriate lag time (3-5 years) for the changes to be reflected in the stream biology. If loading targets are not met, or there are reductions in standard biological indicators, then the process will trip another TMDL effort, as necessary to achieve the restoration of aquatic life uses.

Over the short term, the periodic revisions necessary for NPDES permits, water quality standards and for the 208 plan provide a venue to adjust to new information that may come to light about the Big Darby Creek Watershed. In addition, the TMDL process has brought to light some areas that will require further study (e.g. Flat Branch). Ohio EPA has expressed the intention to continue to study those issues that remain unresolved at the time of TMDL completion.

GD

Pages 4-32 and 4-33 discuss the pollution around the Plain City WWTP discharge. The TMDL indicates that since Plain City is upgrading its WWTP that, if the plant is operated well, that the solids and nutrient loading from the WWTP should decrease.

However, the WWTP Upgrade and Expansion document WPCLF No.:CS392658-01 delivered to Plain City by the Ohio EPA in reference to the WWTP upgrade and expansion says:

Page 11 of 18:

"Because the project will increase flows and pollutant loadings from the existing WWTP, it was public noticed and reviewed in accordance with Ohio's Antidegradation Rule, OAC 3745-1-05. The revised NPDES permit was public noticed by Ohio EPA, and is currently out for public review and comment."

Also:

Page 16 of 18:

"Ohio EPA reviewed the proposed project with respect to OAC 3745-1-05, which requires an anti-degradation review for wastewater projects seeking permits from Ohio EPA to increase their discharge of pollutants to waters of the state. As part of this overall process, Ohio EPA issued public notice of the receipt of applications for a NPDES permit renewal and a PTI. ... The comments acknowledged the need for the project, but questioned the potential for adverse impacts from storm water generated by residential development that is expected to occur once the WWTP upgrade/expansion project is completed."

There are a number of issues with these statements. First, they do not agree at all with statements made in the TMDL about a reduction in pollutants. Second, the other major source of discharge very near the Plain City WWTP is a small storm water pipe from nearby housing developments. This concentrations of this effluent is twice background according to the TMDL. It seems that the expansion of the WWTP would increase this discharge as well.

Thus, it is unlikely, if not downright absurd, to predict that by upgrading and expanding the Plain City WWTP that pollutants will decrease when so doing will increase the pollutants and flow from BOTH major sources of nutrients.

In addition, in reviewing NPDES #4PB00016*FD it was noted that there are few limitations placed on most effluents. The only effluents with discharge limitations are:

- ph - S.U.
- Total Suspended Solids

- Oil and Grease, Hexane Extr Method
- Nitrogen, Ammonia (NH₃)
- Copper
- Fecal Coliform
- Mercury
- CBOD

Also, I have been unable to find any record of ANY public notice in the archive of the Ohio Newspaper Association regarding any public notices in relation to the Plain City WWTP.

Finally, the area where excavation is to be performed in order to upgrade the WWTP was used as a landfill for decades. Thus, in upgrading the Plain City WWTP, there is no telling what may leak into the Big Darby from disturbing the landfill. In correspondence, the Ohio EPA indicates that it not aware that the area was a landfill. It was.

Response: The TMDL centers on reductions in solids and nutrient loadings, whereas the permit is focused on all pollutants necessary to be regulated. Storm water runoff loading from the pipe downstream will not necessarily increase due to the expansion of the WWTP. Existing loading from the pipe will be investigated further in 2006. Future storm water loadings will be regulated through the construction storm water general permit for the Big Darby Creek watershed.

Honda

Honda is extremely concerned about the Report's allegations regarding the impact of "industrial activity" on the Big Darby. Honda is concerned that a portion, perhaps even a large portion, of the negative impacts in FBC reported by Ohio EPA are not caused by Honda's activities, but are attributable to the characteristics of the local soil, stream sediment, pre-Honda stream channel morphology, and/or sediment being carried onto Honda property by FBC tributary streams and ditches. Based on our experience, the soils in this area tend to be very "clayey" and are therefore subject to very slow settling times. We believe that the FBC "discoloration" that is frequently noted in the Report may not be a result of industrial activity taking place on Honda property, but may well be a result of the natural characteristics of the local soils and sediments.

Response: The comment is noted.

Honda

The Report makes references to industrial point sources as the cause of impairment for various parameters, e.g., metals, low D.O. (See pages 2-15 and 2-16.) As noted above, the only two industrial point sources that Honda operates in the FBC watershed are two permitted lime sedimentation basins that receive water from Honda's water softening plants. If metals **are** being generated from the water softening process, as Ohio EPA asserts, the source of the metals would be from the groundwater, not from the water softening process.

Honda is not required to analyze the lime softening discharge water for dissolved oxygen, thus no data is available to disprove or prove that this discharge is a source of

impairment for D.O. Honda requests that Ohio EPA provide the analytical data to support the claim that the permitted water softening process discharge points are a cause of impaired D.O.

Response: The existence of elevated metals and low D.O. are well documented in Flat Branch and upper Big Darby Creek. We acknowledge that the sources of metals and low D.O. are not clearly established and are still under investigation. In order to meet the requirements for listing the resulting impairment under Section 303(d) of the Clean Water Act, Ohio EPA chose to use the 'Industrial Point Sources' category from the narrow list of possibilities to reflect an unusual water quality condition. That choice reflected an exercise of 'best judgment' using the data that was available at the time.

Honda

Numerous vague and negative references to Honda can be found in the Report. Some of these references suggest, without any basis, that water quality impairment observed by Ohio EPA is caused by Honda. For example, page 2-27 states:

"In the headwaters of Buck Run, an unnamed tributary drains storm water from the Honda site".

This fact is certainly true, but Box 2.2.5 of the Report does not in any way identify Honda's storm water as a cause of impairment in Buck Run, and one wonders about the value of or need for the statement. Honda requests that the factual statement be eliminated or clarified to prevent any misunderstanding.

Another example can be found on page 5-2, which states:

In the upper Big Darby Creek major sub-watershed there is an **impact that may be associated with Honda's manufacturing activities that has not yet been clearly defined**, but is not as a result of violation of any existing permit conditions". (Emphasis added.)

Such a statement is, on its face, sheer speculation which unfairly and without any evidence targets Honda as a cause of some unspecified "impact". As noted above, and as acknowledged by Ohio EPA in the Report itself, Honda has been working collaboratively with Ohio EPA on FBC water quality issues and Honda feels that unsupported conclusions or theories, let alone sheer speculation, should not be part of the Report.

For another example, Section 4.1.8 on p. 4-27 of the Report notes similarities in the water quality of FBC and Buck Run. This section also includes two unsupported statements which clearly target Honda:

Similarities exist between water quality of Flat Branch, and of Buck Run, both of which receive discharges from Honda ... Other than the fact that they both receive discharges from Honda, no immediately apparent cause for this trend has been revealed.

The unmistakable inference of this passage is that Honda's activities and discharges, through some as-yet-unidentified mechanism, are causing these deleterious water impacts. Again, while we readily acknowledge that we do discharge to both of these streams, the discharges are different in terms of their sources and their characteristics, and neither Honda nor Ohio EPA can identify the sources or causes of the water quality impacts noted. While it is true that both the FBC and Buck Run receive water discharges from Honda, it may also be true that these stream systems have similar pedological, geomorphological, and/or hydrological characteristics that contribute to similar water quality conditions. We simply request that Honda not be targeted, either expressly or by implication, until the cause of a water quality problem has been investigated, evaluated, and demonstrated on the basis of objective technical information.

Response: The comment is noted.

Honda

The TMDL report accuses Honda of altering the hydrologic and hydraulic conditions of the Flat Branch stream. For example, at p. 4-4, the Report states:

The hydrologic and hydraulic of the Flat Branch sub-watershed as the watershed has been industrialized by Honda have resulted in increased peak flows to the Big Darby Creek mainstem.

First, we note that throughout the development and construction of the existing Honda facilities, all applicable construction and water pollution control permits were applied for and obtained only after Ohio EPA approval. For example, Honda currently maintains several storm water retention ponds and these ponds were constructed per specifications that were reviewed and approved by Ohio EPA. Second, the TMDL report states that increased flows are a direct result from Honda. Honda requests that flow data which objectively supports the cited statement be incorporated into the report. Finally, while Honda recognizes that the "channelized" nature of the FBC is of particular concern to Ohio EPA, it must be understood that the FBC was already a largely channelized ditch when Honda first purchased property in the watershed in the late 1970s.

Response: Ohio EPA's statement is meant to reflect observed conditions and is not meant to imply illegality or a failure to obtain necessary permits on behalf of Honda. For example, the paving of hundreds of acres of land as part of Honda's facility, though legal, would affect conditions such as recharge capacity and volume of runoff, which would in turn affect peak and low flows in Flat Branch. The industrial and construction storm water permits in effect at the time referenced did not address the issue of additive impacts of multiple storm water inputs to the hydrology of the whole watershed.

Honda

The TMDL report contains several references that are subjective and emotional by nature, e.g.:

p. 2-16: "Flat Branch is very turbid" (How does Ohio EPA define "very turbid?")

Response: Please see Figure 2.2.2.2. When one water body is transparent, and the other is opaque, the opaque water body is often considered to be turbid.

p. 2-16: “significantly elevated levels of” and “significantly lower” (How does Ohio EPA define “significantly?”)

Response: Statistically significant at a $p < 0.05$ level. In other words, significant at a 95% confidence level. This was the pre-selected level of significance applied to the analysis, however it is important to note that many of the differences observed would have passed a more restrictive level of significance as well (i.e. 99% confidence level).

p. 4-3: “However, the bedload, habitat, flood plain, and buffer measurements and indices in Flat Branch are very, very low. (How does Ohio EPA define “very, very low?”)

Response: Tables 4.1.1 and 4.1.3 of the Big Darby Creek TMDL report show the bedload, habitat, flood plain, and buffer measurements for Flat Branch as well as the target scores for comparison purposes.

p. 4-4: “as the watershed has been industrialized by Honda...” (What does Ohio EPA mean by “industrialized”?)

Response: The statement refers to the conversion of the natural land to impervious surface within the Honda property.

p. 4-4: “An effective solution to the above situation would have been...” (Ohio EPA is drawing conclusions without appropriate data and evaluation.)

Response: The comment is noted. The term ‘would’ will be replaced with ‘may’ in the final report.

Further, to reiterate a key Honda concern, while the data used in the Report may reflect a good snapshot, conclusions are made that are not well-defined or substantiated by the appropriate levels of data. As noted repeatedly above and in our several meetings, Honda believes that additional data gathering and careful evaluation must be completed before any conclusions can be stated, and it is our understanding that Ohio EPA concurs with Honda on this point.

Response: The comment is noted.

DWJB

1.2 No specific mention of Madison County 208 Plan

Response: The Draft Madison County Plan is not part of the TMDL.

DWJB

1.2 Is the TMDL a Plan? Report? Set of Recommendations? Different terms are used to describe the document in various places. We believe it is a **Report**.

Response: A TMDL is all of the above, as well as being an equation, and a process. The term TMDL is very broad. It is not necessarily appropriate to try to narrow the scope of the term without applying several descriptive words to each definition.

DWJB

1.4 *Darby Creek Watershed Action Plan* mentioned throughout – should be the **Darby Creek Community based Watershed Plan**.

Response: The comment is noted.

DWJB

2.6 The inclusion of the *source* and *date* on all maps would be useful

Response: The comment is noted.

DWJB

2.12 In table, the **Impairment** column – it states that 25% of sites are not attaining. How many sites does this include? It should read like page 2-30

Response: The comment is noted.

DWJB

2.13 It is difficult to define the land use based on the colors used in the pie charts. Listing the land use and a percent would be most useful.

Response: The comment is noted.

DWJB

2.30 How many impaired sites are on Robinson Run? 3 were sampled but only 2 documented

Response: All sites on Robinson Run are impaired. The number of sites has been corrected.

DWJB

2.30 Percentiles – Did not notice a good definition of percentiles

Response: If a frequency distribution of environmental data is divided into 100 equal portions, each portion is a percentile. The 90th percentile is equal to the value that exceeds 90% of those in the frequency distribution.

DWJB

2.42 The table on this page should include the river mile to which the aquatic life use designation is applied. Many people only look at the table and may be confused if no RM is listed.

Response: The second column of the table on page 2-42 (Table 2.3.1) gives the river mile of the referenced site.

DWJB

3.2 Several terms could be added to the definitions on the bottom of the page –

Stressors, Riparian Buffer, and Diel

3.8 Definition of *numeric targets* (2nd full paragraph)

3.9 General comment on Active Floodplain: Additional Research needed before widespread approval of this new idea

Response: The comments are noted.

DWJB

3.12 Does the GWLF model include tile drainage? If so does it assume that all poorly drained soils are drained? Less than 50% of poorly drained soils are drained in the Darby Watershed

Response: The GWLF model utilizes the Curve Number method. The Curve Number method can account for field tile response, but there is some flexibility with the method to adjust the curve numbers within a narrow range to reflect tilled versus non tilled soils. The statement the commenter makes “Less than 50% of poorly drained soils are drained in the Darby watershed” is different than information from the Soil and Water Conservation staff. Ohio EPA would be interested in seeing what data this statement is based on.

DWJB

3.13 Further description of the NRCS *Curve Number* in an appendix – in particular the determination of the hydrologic soil group and curve number

Response: The hydrologic soil group is determined by the NRCS and is published in the SSURGO soil data set. A description of the curve number and how to determine it is given at ftp://ftp.wcc.nrcs.usda.gov/downloads/hydrology_hydraulics/tr55/tr55.pdf . The curve numbers used in the TMDL project were based on the procedures recommended in this text.

DWJB

3.14 General comment – Land use data layer may be outdated since most is from 1992-94

Response: Page 3-14 of the Big Darby Watershed TMDL Report states the land use layers and associated years used in the report. The land use was updated for any development that had occurred up to 2001.

DWJB

3.16 Definition – *Sediment Delivery Ratio* (1st full paragraph)
Is soil erosion from development calculated in this Ratio?

Response: No. Urban land uses rely on a build up and washoff equation and not on the sediment delivery ratio used for non-urban land uses.

DWJB

3.28 In the 1st sentence of the 3rd paragraph - ... *the primary production (of what) is highest*. Is this referring to Algae?

Response: Yes, it refers to algal productivity.

DWJB

5.6 Nationwide Permit #27 – further explanation and definition

Response: As explained in Chapter 5, Nationwide Permit # 27 is the Nationwide Permit under which in stream work using natural channel design techniques can be performed. Due to the need to reduce sediment loadings to the Big Darby Creek watershed, Ohio EPA will be evaluating not certifying other Nationwide Permits in this watershed.

DWJB

5.6 Define the proposed permit for routine ditch maintenance work

Response: The permit discussed in Section 5.1.4 of the draft TMDL would be triggered by a situation where spoil piles created from routine ditch maintenance triggered the one acre threshold of earth disturbing activity similar to the NPDES Permit for Storm Water Related to Construction Activity. In short, it would require the spoil piles to be stabilized, and storm water related best management practices to be implemented where sediment removed from a waterway to ensure that non-regulated maintenance activities are being properly managed.

DWJB

Edit the 1st full paragraph by removing the words in parenthesis (or Exceptional Warmwater) and removing all words in italics (*within the ditch outlets (the higher gradient channels not actively “maintained” or cleaned of accumulated sediment and brush*))

Response: Ohio EPA has evaluated the comment and will not edit the sentence. Ditch maintenance should be done such that it does not impact downstream reaches of the stream. Any ditch maintenance activity that will result in impacts to downstream reaches is not exempt from the Clean Water Act, and must be done according to a 404/401 permit and certification.

DWJB

When communicating loading reductions the units utilized in the TMDL are often difficult to understand. Defining loading reductions in a common unit of measure such as lbs/year would assist the agricultural community

Response: The comment is noted.

DWJB

Through the review of the Stillwater TMDL Implementation (Section 5) the watershed group would like Ohio EPA to include in the Darby TMDL the same comments in regards to agricultural ditches and county maintained ditches.

Response: Ohio EPA will decline to add the requested comments because the comparison is not appropriate. Conditions in the Big Darby Creek watershed are not the same as the conditions in the Stillwater River basin.

LL

An overview of the Report contains figures, tables, and facts in metric rather than English. It is suggested that English numbers be put in parenthesis or add a conversion table in the Report. In addition, one has the firm impression that this Report was written and/or prepared either to meet Clean Water Act requirement or for use by colleagues. In either case, the product is not designed for implementation by non-professional persons. As a shelf product, it is an excellent reference document.

The Report refers to excessive total phosphorus. How much total phosphorus is needed for a healthy aquatic system?(3-3; 3-4)

It is believed that much of the data specific to the landscape is outdated, sources are not reflective of landscape conditions, all leading to loading estimates not reflecting true conditions.

Response: The suggestion to use English units is noted, and will be incorporated in to the final report if time allows. As a convenience for the reader the multiplication factor to convert from metric to English units is included in each table. The amount of total phosphorus needed (or can be handled) by a healthy aquatic system varies per waterbody. The TMDL report itself and the allowable total phosphorus loads established in it gives the amount of total phosphorus that can be handled by a healthy population.

The land use in the model is current through the year 2001; all other significant data is based on even more recent data. Even if the land use had changed by some large percent in the intervening 4 years, it certainly has not changed to more natural conditions. While the results may change to some degree should 2005 land use be used, it would still show that major loading reductions are needed in the watershed. The biology of the watershed is impaired and the general trend of declining endangered species populations all substantiate the bottom line recommendations of the TMDL report which are to reduce significant loads to the system and to allow the streams to interact with a healthy floodplain.

LL

3-3 - Refers to needs of a balanced ecosystem. I don't believe there is a balanced ecosystem when change is a constant variable in a watershed with human activity. Plant growth, shifting bedload sediment, streambank trampling are all examples of continuing change over time.

Response: A balanced ecosystem does not imply a static situation, but rather a dynamic balance. It is important to recall that change would be a constant variable in a watershed in the complete absence of human influences. Man induced variations to the watershed are another variable that will affect a stream's balance, but the stream can adjust to the variations if they are not too intrusive

LL

3-6 Ignores organic enrichment from wild animals and birds that is detrimental to meeting Ohio Water Quality Standards.

Response: The comment is noted. Organic enrichment from these sources has little significance when compared with human supplied sources of nutrients.

LL

3-7 What is meant by a more natural state? Did the natural state exist prior to Indians in Ohio? The glacial period? Between glacial periods and human presence in Ohio?

Response: A more natural state for the Big Darby watershed is one where forest and grasslands were the dominant land uses.

LL

3-8 What is a stream of moderate quality? Is "riparian quality" (3-10) defined anywhere? Is the stream part of "riparian quality"?

Response: A stream of moderate quality refers to a typical warmwater habitat stream. The term "riparian quality" is not defined specifically in the Report; however, the factors used in determining riparian quality in regards to the QHEI evaluation data sheet and are listed in section 4 of <http://www.epa.state.oh.us/dsw/bioassess/QHEIFieldSheet062401.pdf>. The riparian corridor is the interface between the water and the land; as such, it is difficult to separate the riparian area from the stream area. It is unknown exactly what stream characteristics in particular the commenter is referring to with the term "stream". Some stream characteristics are included in the evaluation of riparian quality; however, the actual stream itself is generally not a factor in evaluating riparian quality.

LL

3-12 Four of the variables for the GWLF model utilize land use and soil characteristics. Where in the Report is there an explanation of how the various land uses were derived. For example, what curve number and Antecedent Moisture

Conditions (AMC), (not Antecedent Soil Moisture) were used for the watershed and subwatersheds? A table would be useful.

Response: The requested information is not in the Report itself, but is available by contacting Erin Sherer at erin.sherer@epa.state.oh.us or at (614) 644-2890.

LL

4-2 How does an active floodplain assimilate pollutants?

Response: Active floodplain provides a depositional area where sediment and the pollutants that attach to sediment can be trapped and removed from the stream water. These deposited materials can be utilized by vegetation growing in the active floodplain.

LL

4-36 What is the rationale for the active floodplain widths? What values are to be derived? 5-7 talks about locally derived benefits.

Response: The active floodplain widths are based on principals derived by Dave Rosgen and on studies by ODNR hydrogeologists and OSU faculty. Factors influencing the active floodplain include geology, topography, the drainage area, stream velocity and discharge, sediment and bedload transport, particle size, and channel geometry among others. A description of the rationale for the active floodplain widths is given at: <http://utilities.ci.columbus.oh.us/project/docs/sizingstream.pdf> .

In addition to locally derived benefits that are listed on page 5-7, active flood plain increases the ability of the stream to process pollutant loadings, reduces velocity of the flow, thereby reducing bank erosion, and provides habitat for aquatic life.

LL

4-41 All land disturbance activities will cause impairment. Unless this is eliminated (not reasonable), impairment will continue.

Response: All land disturbance activities do not cause impairment. There are many watersheds and waters in Ohio that have land disturbance and are not impaired. Allowing a buffer between the stream and the land disturbance reduces the impacts of land disturbance on a stream. Utilizing geomorphologic principles in conjunction with economic needs decreases the risk of stream impairment. Managing the land thoughtfully with awareness of how land management and stream health interconnect also reduces the risk of stream impairment.

LL

Reference is made to current "left un-managed" on a watershed scale (5-4). What programmatic source of funding does OEPA plan to use for successful watershed management?

Response: Ohio EPA, Division of Surface Water intends to rigorously enforce requirements under current law. In that manner, much watershed management will be publicly or privately financed by those wishing to conduct regulated activities in the watershed. Ohio EPA, Division of Surface Water also administers the 319 Grant

Program, a competitive program under which grants may be obtained for projects that will result in restoration of impaired waterways or will demonstrably help to achieve the loading reductions necessary to achieve TMDL targets. In addition, the Ohio EPA, Division of Environmental and Financial Assistance has low interest loan money that can be used in some instances towards achieving TMDL targets. For those who undertake voluntary activities to improve water quality, there are cost share programs outlined in Chapter 5 of the TMDL report.

LL

Dam removal. Reference to removal of logjams affecting stream flows similar to dams should be included.

Response: The comment is noted.

LL

Chemical data - The Report does not include data such as defining the Sediment Delivery Ratio. What Sediment Delivery Ratios were used for the main stem and tributaries?

Response: The Sediment Delivery Ratio is a function of drainage area and is based on the equation found in: <http://www.vims.edu/bio/vimsida/UsersGuide.doc>

LL

The percent reduction for total phosphorus and suspended sediment are not realistic.

Response: The comment is noted.

LL

I appreciate the opportunity to respond to the voluminous and valuable data contained in the Report. I feel it is impossible to fully review the massive amount of data in an adequate manner within the review time OEPA has allowed. The 30 day extension was greatly appreciated

Response: The comment is noted.

TNC

Above all, the protection of the Big Darby Creek and its tributaries is a work in progress, and we expect the same of this TMDL, 208 plans, and local initiatives. We ask that Ohio EPA, and others, make decisions with the caution deserving of one of the best remaining examples of stream diversity in Ohio and the Midwest. Otherwise, we risk losing one of the last remaining and best examples of our natural heritage.

Response: The comment is noted.

TNC

Section 5.4 Dam Removal – Levees and quarries - The draft TMDL rightly recognizes the negative impacts of dams in the watershed, and should expand this recognition to other major habitat threats, including levees and stone and gravel quarries. It should

further address the impacts of and need to remove dams and levees, such as mapping of levees and review of the stream quality in these areas. Levees in the watershed are extensive (streambank encroachment is noted in Section 5.1.4, page 5-4), and observation suggests they play an important role in channel instability, probably affecting mussel survival.

The siting of gravel pits is a major threat to stream habitat quality in the watershed, especially along Big Darby Creek. Over time, the barrier between the pits and the stream degrades, and the stream can be "captured" by the pit and lose its lotic qualities. This is a threat in Union, Madison, Franklin and Pickaway Counties, where several active and abandoned quarries are in the floodplain, close to the streambank, and easily within the meander belt width of the stream. Failure of the streambank and loss of stream habitat is imminent in some locations, such as at the former Olen Corporation quarry downstream of Beach Road. A review of this problem and suggested solutions is warranted.

Response: An intention of the stream setbacks and active flood plain concepts recommended in the TMDL report is to reduce the need for future levees and to help the stream remain or become stable.

Another intention of the setbacks is to encourage land uses within the setbacks that are consistent with frequent inundation, in order to preserve the stream channel. Land uses that do or may result in the destruction of the stream channel should be avoided. A sand and gravel operation that poses a risk for stream capture could certainly be described as a land use inconsistent with the long term health of the watershed.

Chapter 5 of the TMDL will include an expanded section that discusses these issues.

OEC

Perhaps more is needed to provide the measure of scientific conservatism necessary to better guarantee that Darby remains the remarkable celebration of life the bathes the Little and Big Darby Creeks.

The Clean Water Act has the legal framework to allow development of a watershed based system of both individual and general NPDES permits. The Darby watershed is Ohio's golden opportunity to initiate a progressive system of permits that account for loading and effluent limits which can recognize the importance of the watershed approach. The importance of such an approach is crystal clear and would be supported by USEPA. We encourage OEPA to work with the USEPA Office of Research and Development and scientists in Region V to develop architecture for a watershed based system of industrial, agricultural and storm water individual and general NPDES permits.

Response: The Big Darby Creek TMDL includes a review of all permits in the watershed. In practice, the recommendation is no different than what was done for this TMDL. NPDES permits will be revised, and a new general permit for storm water will be issued to be consistent with the TMDL.

OEC

Similarly, an important report recommendation is the listing of appropriate commercial enterprise and inappropriate activities. Gravel extraction in the in the flood plain especially including dewatering to facilitate mining activities could be an example of an activity not permitted. Another might be factory farm livestock production that relies on a water based manure disposal system. A facility that uses a dry manure disposal system or even better the addition of advanced waste treatment such as solids removal and wastewater clarification could be more acceptable. Such a list may make initial contemplation of inappropriate activities less likely.

Response: The comment is noted. The stream setbacks and the descriptions of appropriate uses of the setbacks included in the report will aid individuals in making decisions about the appropriateness of various commercial enterprises.

Batt

On page 2-44 in Box 2.3.2, Overview of lower middle Big Darby Creek, the design flow for the Battelle Memorial Institute West Jefferson site is listed as 0.020 million gallons per day (MGD). In our current National Pollutant Discharge Elimination System (NPDES) permit issued may 25, 2005, and effective July 1, 2005, the effluent loading limitations are based on an average flow of 22,500 gallons per day for outfall 001 and 27,000 gallons per day for outfall 004. This gives a total average flow of 49,500 gallons per day (rounded to 0.050 MGD). The 0.050 MGD flow is also the design flow of the wastewater treatment plants.

Therefore, Battelle requests that the design flow and average flow in Box 2.3.2 Overview of lower middle Big Darby Creek on page 2-44 be changed to 0.050 MGD to be consistent with Battelle's NPDES permit.

Response: The design and average flow have been corrected as appropriate.

OFB

Upon initial review of the draft TMDL document for the Big Darby Creek Watershed, it is clear that Ohio EPA has put a lot of thought and effort into identifying ways to format the report to best present the information to the reader. Ohio EPA Division of Surface Water staff should be commended for their efforts. The format of this draft TMDL report should serve as a template for future efforts.

Response: The comment is appreciated.

OFB

The inclusion of the sub-basin overview boxes in Chapter 2 helps make the report easy to read and comprehend. By scanning these overview boxes, the reader quickly obtains an understanding of the presence of point source discharges, aquatic life and recreational use attainment status as well as identified causes and sources of use impairment for each of the sub-basins. The percentage of sampling sites that are not attaining their aquatic life designated uses are also presented. To help the reader grasp the extent of the data available to conduct the analysis of aquatic life impairment, the

total number of sampling sites used in the analysis should also be included in each overview box.

Response: The comment is noted.

OFB

The land use pie charts in Chapter 2 visually provides the reader with a quick understanding of the current land use conditions in each sub-basins[sic]. Because land use composition can change rapidly in Ohio, the date of the land cover data set used to develop each of the land use pie charges should be included on each pie chart. For ease of comparison between the sub-basin land use pie charts, the colors for each land use category should remain constant (i.e., bright yellow should represent urban grasses on all of the pie charts).

Response: The comment is noted. The suggestion is valuable; however, it may not be able to be incorporated into this final version.

OFB

Chapter 4 of the document contains pollutant allocation tables for each sub-basin of the Big Darby Creek watershed. These tables identify the existing and allowable load for total phosphorus, and suspended sediment in values of kilograms per year. The utilization of this unit of measurement, while being readily accepted and understood by the research community, is not easy for the general public to get their arms around. Ohio EPA should consider presenting the same information in the following manner. The values for total phosphorus in Table 4.1.1.1 on page 4-14 for nonpoint source runoff indicates a necessary annual load reduction of 95%. In other words, the existing load of 1,725 kg/y has to be reduced down to 81 kg/y or a difference of 1,644 kg/y. Given that this sub-basin has a drainage area of 5.90 square miles, on a per acre basis the 1,644 kg/y reduction comes to a value of slightly less than 1 pound of total phosphorus per acre per year. This value is one that can be easily understood by the general public and incorporated directly into an implementation plan.

Response: The comment is noted.

LDR

First of all, this is a very technical report, and most people will understand very little of what actually went into the report, how the various analyses were performed , and what the report is actually saying. It is very difficult to comment on something that you don't understand. I am sure there are many people who are vitally interested in this report and what it may mean to them as landowners along the streams within the watershed. However, due to the technical nature of the report, I doubt if many of them will comment on it. My fear is that you will equate lack of response with total agreement. Rather I think you should equate lack of response with lack of understanding or lack of knowledge of the existence of the report. There needs to be a better way to get this information to the individuals who are going to be affected by the report – the landowners along the streams within the watershed. These are the people who need to do something, and if they cannot understand what you are saying, or do not even know

the report exists, they are not going to implement any of the things you are recommending.

In addition, another factor you need to be aware of is that some of these people spent several years fighting a wildlife refuge along Little Darby Creek, because they wanted to keep their land out of government control. They may not be receptive to what they may perceive to be another infringement upon their personal property rights.

Response: The comment is noted.

LDR

Page 3-1, Section 3.0 – This section discusses loading capacity, allocation of allowable load, and allowable or target condition of the environment. You indicate that the analyses of these factors are determined by a large degree by modeling. I have a great respect for mathematics and equations, but I am not sure how you can ‘model’ nature.

This comment applies to the entire report, not just the loads modeling. What do you do if a model indicates that if you perform this activity, you should reach a condition of 4. You perform all the activities the model wants you to perform, but you only reach a 3. Does this mean the model is wrong? Do we say we did the best we could and stop? Or do we try to do the impossible because the model says we can? How do you fit nature into a model?

Response: A model is a representation of a state or a reality that is not practicable to observe directly. A water quality model is based on data, relationships, observations, and equations which represent different aspects of the environment that one is wishing to model. The loading model utilized in the TMDL does not strive to fit the entirety of nature into its framework. Instead, it focuses solely on simulating loading from certain sources, namely storm water runoff. The equations and data used in the model are based on decades of observations relating land use, soil type, storm data, and other factors to runoff loads; these equations are adjusted to the specific watershed by inputting site specific data.

The loading model used in the TMDL indicates that if you achieve a certain reduction in current load, you should reach a target level indicative of healthy streams in Ohio. However, the loading model is only one piece of the entire puzzle of the Darby. Other pieces as described in the report (stream set backs, habitat, etc) need to be reached as well in order to attain or maintain a healthy stream network. If the reductions in existing load as recommended in the TMDL report are attained (note, specific activities are not prescribed for loading reductions), and the targets are still not met then the other recommendations of the TMDL should be examined to see if these are being met or not. If all recommendations are being met and the target is still not reached, then the situation at that time would be re-examined to identify if a new stressor has been introduced or had been masked during the original assessment. The process would enter a new cycle of examination. The statement, “do we try the impossible” is a personal statement of the commentator. The purpose of the TMDL is to suggest a prescription for the Darby; for the most part, it is up to the individual land owner to determine what they are willing and able to do towards the prescription. The TMDL

does not dictate specific activities for land owners and others to strictly follow. The suggestions in the TMDL are not impossible, although they might be uncomfortable to some, and therefore viewed as 'impossible' by those individuals.

LDR

Page 5-6, Section 5.1.4 – This section discusses mitigation *downstream* of the proposed activity if attainment is not possible at the site of the problem. Whose responsibility does that become? Aren't you simply transferring the problem downstream, expecting people who did not cause the problem to fix it? This is simply passing the buck, probably most often to individuals who have fewer financial means to fix the problem than the people who caused the problem.

Response: The commenter raises an excellent point. The purpose for requiring mitigation downstream is designed to avoid the situation the commenter has suggested will occur. While the commenter is correct in saying that the issue will be transferred downstream, the intent is to make sure that the person who would be causing the problem takes responsibility for it and works with downstream land owners to ensure that it does not become a problem.

LDR

A number of years ago we cost shared with Madison County SWCD in a project to fence off a creek from access by cattle. Madison County SWCD paid for half the fencing materials, but paid for none of the labor because we provided that ourselves. They indicated they could not pay us for the labor, but if we had hired it done, they would have paid half the labor cost. We could not afford to pay half the labor cost – it was cheaper for us to provide all the labor and be reimbursed nothing for it. This shows a lack of willingness to work with the landowner. We were more than willing to do what we could to help clean up the creek, but the government would not meet us halfway. If these rules are still in effect, they need to be changed. If a farmer is willing to spend his time putting up fence for environmental improvements, the government should recognize that effort and compensate the farmer. Instances like this make the landowner reluctant to deal with the government.

As a result of fencing off the creek, we at least annually have to clean up along the fences where floodwater has deposited trees, branches, and other debris. This year we had to replace a number of posts and restring much wire. This is always done totally at our own expense. Again, we are trying to be conscientious stewards of the creek, and we end up spending much of our time and additional dollars each year trying to maintain the cleanliness of the creek, and are compensated nothing for our efforts. The efforts to keep the creeks clean are ongoing, but we see no assistance from the government. It appears to be a one way street – we are expected to do all the work, with nothing coming back to us.

Response: The comment is noted.

LDR

I feel that landowners, even if they read this report, really will not know what is expected of them. What specifically does the Ohio EPA want from the landowners? What is the

next step? Moreover, how will the landowners be compensated for work performed or land taken out of productive use?

Response: For agricultural land, there are programs mentioned in the TMDL that can provide compensation for agricultural land voluntarily taken out of service. For landowners not engaged in agriculture, it is a personal decision based on weighing the costs of work performed or land taken out of service weighed against how much they value a healthy watershed. Ohio EPA is asking land owners to minimize pollutant loadings from their land, and to concede that land adjacent to the stream will flood at times, and make land use decisions that are consistent with occasional inundation.

LDR

Many of my comments appear to be negative in nature. I want to stress that most people are in general agreement that they would like the Darby Creek watershed to be cleaner and healthier. But I think this report may be focusing on a utopia that is not possible to achieve. You may be asking too much, more than most landowners along the watershed can afford to give. Many of us feel we have been good stewards of the watershed for many years already, and you are trying to tell us that what we do will never be enough. However, we have proved that humans can successfully coexist with the natural environment. We must have been doing something right, or there would be no EWH designations anywhere in the watershed today.

Response: While there are certainly challenges to implementing the report, it is Ohio EPA's position that the pollutant reduction targets are achievable over time. It has been Ohio EPA's experience that most people are in general agreement that they would like the Big Darby Creek watershed to be cleaner and healthier which bodes well for the overall implementation of the pollutant reductions.

RHG

A major source of pollution on Darby Creek is the State of Ohio Prison Center at Orient. Raw sewage is routinely dumped. The state has repeatedly said they will update (the) sewage system. Never has.

Response: The Pickaway Correctional Institute (PCI) completed construction necessary to upgrade the wastewater treatment plant to comply with their NPDES permit in the summer of 2004.

FWS

We noticed on page 4-28 a graph showing that potassium contamination from Flat Branch was contaminating about 40 river miles of the upper Big Darby Creek with concentrations ranging from 40 mg/l to 4 mg/l. Wildrege et al., 1998 (Acute effects of potassium on Filtration Rates of Adult Zebra Mussels, *Dreissena polymorpha*, J. Great Lakes Res. 24(3):629-636) states that filtration rates of freshwater bivalves have not been measured, but ciliary activity (filtration) ceased when zebra mussel gills were exposed to 4.3 mmol/l (168 mg/l) of K+. Further, "Chronic exposure to extremely low levels of K+ is lethal to North American freshwater bivalves (Imlay, 1973). Imlay (1973) reported that a K+ concentration of 0.27 mmol/l is lethal to 90% of individuals of three unionid bivalve species in 52 days and only 0.18 mmol/l is lethal to two species within 8

months. Several investigators also report that valve activity patterns of the freshwater clam *Anodonta cygnea* are altered at K⁺ concentrations of 1 mmol/l (Loshtovants and Salanki, 1958; Lukacsovics and Salanki, 1968) (Waldridge et al, 1998 page 630) (0.27 mmol/l = 10.6 mg/l, 0.18 mmol/l = 7.04 mg/l, 1 mmol/l = 39.1 mg/l).

Potassium apparently interferes with a mussel's ability to use oxygen and results in asphyxiation at lethal concentrations. Potassium at lower concentrations can cause the valves of mussels to open and allow other toxicants access to tissues.

The information above would indicate that potassium concentrations found in upper Big Darby Creek could be having affects on freshwater mussels of their potential habitat. Ohio EPA may wish to more specifically address reductions of potassium in the Flat Branch and upper Big Darby Creek in the TMDL document.

Response: At present, Ohio EPA does not have enough information to include a potassium TMDL in this report. However, Ohio EPA has committed to further investigation of chemical inputs to Big Darby Creek from Flat Branch, and in the upper Big Darby Creek and will continue to collect information and conduct further studies on the potassium issue.

COLS

TSS Pollutant Loadings

OEPA's existing TSS pollutant loadings for the Hellbranch are significantly higher than the loadings for the same pollutants generated in the Hellbranch Forum loading modeling. This brings into question the loadings from all other subwatershed and watersheds. While pollutant loading modeling is certainly not an exact science, OEPA's loadings for TSS are almost seven times higher than the loadings from the Hellbranch modeling. Loadings from the Hellbranch modeling were calibrated to the Hellbranch gauge, so it includes all TSS contributions, including overland, bank erosion and construction (to the extent that construction activities were conducted during the 10 year period of record used for calibration). Given that OEPA had the gauge TSS data available for calibration, it would seem reasonable that the results would be more comparable. If, however, OEPA used its own short term data to calibrate the model, then the results are likely to be unreliable due to the relatively short period of record for OEPA's calibration data. If OEPA's results are found to be in error for the Hellbranch, then the results in other watersheds would also be in question.

Response: The Ohio EPA used the full period of record at the USGS gage on Hellbranch Run to calibrate the Hellbranch model. The hydrology calibration resulted in an R² value of 0.88. The TSS loading reductions were not based on model predictions, but instead were based on the actual data collected at the Hellbranch gage. The loading model used by the Ohio EPA calculates a loading per each month of the modeled period. The Hellbranch Forum loading model only calculates an annual loading. There is not sufficient data to calibrate for TSS either the Ohio EPA model or the Hellbranch Forum model as data was collected only sporadically on a daily basis at the gage. There were 133 data points available to ground truth the loading models to, both for the Hellbranch Forum and the Ohio EPA. It is a misconception to say the Hellbranch Forum loading model is calibrated for TSS. The Ohio EPA compared the actual loads as measured at the gage to loads generated with its loading model. It found the loading model to be underpredicting the TSS loads actually observed at the

gage. The difference was attributed to bank erosion and construction activities that are not predicted by either the Hellbranch Forum loading model or the OEPA loading model. The Hellbranch Forum loading model could not be 'calibrated' to the loading data at the gage for it does not take into account these major sources of load. In summary, the Ohio EPA model results at all three gages in the Big Darby watershed calibrated extremely well for the hydrology. In addition, the were closely groundtruthed with the existing data at the gages. Further, the Darby Accord modeling results on the Hellbranch agreed very closely with the Ohio EPA modeling results. It may be of value to Columbus to discuss the Hellbranch Forum modeling with the consultant who performed the work to better understand the results and the strengths and weaknesses of the model used for that effort.

COLS

Table 4.2.1, Page 4-34. The Habitat score for the Mainstem portion of the Big Darby from Sugar Run to High Free Pike appears to have a mistake. The stream is classified s EWH, so by having 4 modified attributes in the QHEI, it should have received a score of 0 for the "Total # of Modified Attributes" column, resulting in a total Habitat Score of 1, instead of 2.

Response: The comment is noted and the final report has been corrected.

DWJB-PG

The group believes that it should finish its assessment of each subwatershed and determine if the proposed TMDL load reductions are attainable, logical and economically feasible to each subwatershed area. Continuing with the current system of gathering information from landowners, local governments and agencies is a very important part of this process.

Response: Ohio EPA agrees that the group should continue its process. The TMDL report is an important source of information regarding quantifiable water quality improvement needs that should aid the group in its effort.

DWJB-PG

Findings from each subwatershed should be presented to the Joint Board for their input and approval. OEPA should include our findings and suggestion in the TMDL, before any final document is presented and any endorsement is made by governments, landowners or agencies.

Response: As the Darby Creek Community Based Watershed Plan and the TMDL are on different schedules, it will not be possible to wait until the plan is completed. Ohio EPA will not delegate its responsibility to conduct and complete a TMDL for the Big Darby Creek Watershed to the Joint Board.

DWJB-PG

The group believes that OEPA needs to be reminded that the cooperation and acceptance of the watershed community is the most important element in the success of a TMDL.

Response: Ohio EPA agrees that cooperation and acceptance of the watershed community is an important element in the success of a TMDL.

DWJB-PG

5.1.1 Storm Water Control: Changing rules for more stringent control over Storm Water Phase I and Phase II. How will this affect 208 and other plans already written?

Response: The 208 plan for Central Ohio will be able to accommodate these changes.

DWJB-PG

All noncompliant facilities will come into compliance by October 1, 2005? Is this attainable?

Response: Noncompliant facilities should not be waiting until October 1, 2005 to come into compliance. Compliance is a duty imposed by their NPDES permit.

DWJB-PG

5.1.4 Managing Drainage Needs, Channel Erosion and Flood Reduction Work: There are many rules changes referred to from designations, to 401 changes, to ditch maintenance, to new responsibilities for local health departments which are not final and should have been addressed and resolved before this TMDL was written. The document states agricultural drainage is necessary but then continues on by saying:

“Left un-managed on a watershed scale, agricultural drainage, erosion control and flood reduction practices are threats to the ecological health of the Big Darby Creek system. Ohio EPA studies have documented that the cumulative impacts of the water, energy and sediment delivered to Big and Little Darby creeks from all the ditch systems, and the more recent disturbances caused by road construction and industrial development along the northern edge of the watershed, are responsible for declines in indicators of biological health of the system. Additional stress to the system has been added by the activities of private landowners and public agency projects to control stream bank erosion and flooding in localized areas.

The challenge of implementing the TMDL recommendations, specifically those steps necessary to meet the sediment bedload, habitat and flood plain widths targets established in Chapter 4, will be to find acceptable methods that simultaneously manage and meet the human needs for agricultural drainage, erosion protection and flood reduction work and the ecological needs of the Big Darby Creek system. Recent scientific evidence suggest these dual objectives can be compatible” (Ward et al., 2002).

I was under the impression that 2 stage ditch design was not going to be pushed until more testing is done. Dan Dudley stated this at our meeting on April 14, 2005.

Response: While 2 stage ditches will not be a requirement, they have features that single channel ditches lack, such as an appropriately sized low flow channel, and some capacity for storage of higher flows. Ditch activities must be performed such that they do not interfere with attainment of pollutant load reduction targets, or with existing

aquatic life uses. There are many techniques that can be used to accomplish these objectives. 2 stage ditches are one option.

DWJB-PG

Questions and comments on the 401 permits and the removing of Big Darby from Nationwide Permit 27.

Nationwide Permit 27 controls practices which have minimal adverse effects on the aquatic environment such as removal of accumulated sediment, dikes and berms, restoration of stream meanders, removal of undesirable vegetation and other related activities (Army Core website, 2005).

A permit for routine ditch maintenance? Which BMP's are they going to attach?

Response: Ohio EPA will certify Nationwide Permit 27 as meeting water quality standards, as it typically involves a natural channel design or stream restoration. Ohio EPA will not certify nationwide permits for routine ditch maintenance in this watershed, and will require the submission of an individual 404 permit application and 401 water quality certification. This provides predictability to applicants, as in most cases, applicants for the nationwide permit for routine ditch maintenance will not be able to comply with nationwide permit condition number 11, protection of endangered species. BMPs will likely involve the minimization of discharges of sediment to downstream reaches, and consideration of downstream impacts of the proposed activity.

DWJB-PG

Page 5-7

"The Big Darby Creek watershed action plan is the fourth implementation mechanism for promoting improved drainage through environmentally sound means. The presentation in Chapter 4 of sediment bedload, habitat and flood plain width targets, allocations and recommendations for many small watershed units will allow a tailored approach to improving conditions within each sub-watershed area. Petition ditch maintenance work and privately maintained drainage projects on waters designated as Warmwater Habitat (or Exceptional Warmwater) should be performed with an eye towards installing BMPs that would improve sediment bedload, habitat and flood plain width characteristics within the ditch outlets (the higher gradient channels not actively "maintained" or cleaned of accumulated sediment and brush). Conversion of traditional ditch design and maintenance practices to innovative two-stage channel, flood plain excavation, or natural channel design features should also be encouraged. Cost sharing or other mechanisms of funding these efforts are possible (see sections 5.1.5.3 and 5.1.5.4)."

Again, this is not what I understood at the April 14, 2005 meeting. Dan Dudley said 2 stage ditches were not an approved scientific method. Why this being quoted as a forgone conclusion of recommendations the planning committee has not made?

Response: The statement does not mention or imply that this is a recommendation of the planning group. It does state that improved designs should be encouraged, as they are predicted to have less of a downstream impact than traditional designs.

DWJB-PG

5.1.5 Agricultural BMPs and Programs: Page 5-7 *“However, even with improvement in these factors it will be necessary to make incremental progress in reaching the phosphorus and sediment load reduction targets. This section describes how this can be accomplished through the work of several agriculturally oriented programs that stress voluntary adoption of BMP’s by landowners and operators.”*

What is meant by “incremental progress” and what is the timetable?

Response: Incremental progress is considered to be progress that continues in steps over time. There is no fixed timetable, but over a period of roughly 3 – 8 years would be considered to be making progress.

DWJB-PG

5.1.6 Local Authorities: Health Departments will play a major role in regulating household sewage treatment. Are they aware of the “pivotal role” they are to assume?

Response: Health Departments are authorized by Ohio law to regulate household sewage treatment. Their role in regulating these sources of pollutants will be important for achieving load reduction targets.

DWJB-PG

5.1.7 208 Plans: Are Pickaway, Logan, Champaign, and Union counties aware that OEPA will be writing their 208 plans if they don’t provide any input? Will Madison County’s 208 plan be affected?

Response: This TMDL report is not a 208 plan, it is part of a 208 plan. The 208 Plan for central Ohio will be public noticed in January, 2006.

DWJB-PG

5.2 Sectors of Society and the Big Darby Creek TMDL Recommendation

5.2.1 Agriculture

Last sentence in this section Page 5-15:

“Habitat improvements to meet QHEI targets are directly correlated with improvements to the aquatic biota, the ultimate arbiter of success of a TMDL project.”

Does this include maintained ditches? Seems like the ultimatum of “plant trees or else” is implied.

Response: The statement is a statement of a fact. The QHEI and results from sampling of aquatic biological communities are strongly correlated. Statement of a fact is not an ultimatum. It is a statement that describes an activity that will be highly effective in achieving goals of the TMDL, which would be improving habitat to meet QHEI targets. Planting trees may be an efficient way to accomplish this in some circumstances.

DWJB-PG

5.2.5 Municipal Point Sources – are these changes going to cause more tax payer dollars for raising the bar?

Response: The lowering of effluent limitations for municipal point sources to meet the capacity of the system they discharge into may cause increases in user rates.

DWJB-PG

5.2.6 Private Point Sources – home sewage systems – private homeowners are to maintain their systems and keep them up to date. Health Departments are being charged with pointing out failures and achieving load reductions. How is each county health department going to address this and enforce? (New rules may address these issues)

Response: Ohio EPA will work with the local health departments to plan best approaches to achieving load reductions in areas of health department responsibility.

DWJB-PG

5.4 Dam Removal: Is there a real problem with dams in this watershed? Would need to evaluate disturbance to take out and what harm removal could cause. Need to check inventory and find out what they are referring to. (Only 2 dams remain and the one in Milford Center is partially breached).

Response: Dams may play an important role in the health of endangered species by blocking routes for host species to travel to acceptable habitat.

DWJB-PG

5.5 Implementation Strategy and Reasonable Assurance: Where are the reasonable assurances for the watershed that rules will not change in “mid-stream” when efforts are being made? How high will the “bar be raised” in this process? Just how much will the TMDL process work with reduction efforts or will more rules and limitations simply “turn off” landowners when fish, bugs and mussels are given more importance than the health and economic stability of the people?

Response: The first reasonable assurance is the amount of time and effort invested by the state in creating the TMDL report. This is a data intensive process that has produced solid results. Changing or revising the results would require new data to be brought into the problem and to be considered, and it would require that the new data come up with different results. The data intensive approach used for the Big Darby Creek Watershed TMDL provides for robust results.

In spite of the data intensive approach, there has been no data submitted to support the notion that valuing a high quality aquatic resource results in damage to anyone’s economic stability, with the exception of comments from landowners who want to sell their land for development, a practice dependent upon the ability of the watershed to handle the excess storm water generated by the land conversion. The health of people is a definite concern of the TMDL, and it has resulted in the establishment of loading

reduction targets for pathogens so that the recreational uses of this watershed are no longer impaired.

B.15 Biological Assessment

DCA

The TMDL's biological assessment of the Darby watershed is of course extensive, and it would be a disservice to all who worked on it to criticize the work that has been done so far. Having said this, the Darby conservation community has recognized for years that the standard EPA biocriteria system has its limitations when it comes to assessing outstanding streams of Darby's caliber. These limitations are significant, especially given the state's antidegradation responsibilities.

The biggest problem is that the Ohio EPA's biocriteria system does not consider freshwater mussels—Darby's most sensitive and significant aquatic resource--and only indirectly considers rare or endangered species (sensitive fish count positively in IBI scores, but the status of their populations is not specifically addressed). *As a result, Darby has lost or is losing mussel species and some of its rarer fish, and yet is still attaining its Exceptional Warm-water Habitat designation in many areas.* For example, according to the TMDL assessment, the Big Darby mainstem is fully attaining its biocriteria standards for all of its length from the Prairie Oaks Metro Park to its confluence with the Scioto River. At the same time, the mussel community in the mainstem has shown a serious decline. This divergence between attainment status and actual instream conditions of the mussel fauna must be evaluated, explained, and solutions proposed in the TMDL.

Response: In Appendix B.7.4 of the TSD (Trends in Unionid Mussel communities) extensive analysis of trends of current and historical population, water chemistry, spill, and sediment information were examined to ascertain causes and sources of declines to better protect mussel populations in the future. Recommendations appropriate to better protect the mussel populations were incorporated into the TMDL process as well as other current basin protection activities

DCA

The TMDL's analysis has other limitations. For example, although biocriteria scores give a linear snapshot of the watershed—the attainment map—they do not provide a picture of the watershed through time. To understand the Darby ecosystem, and thus begin to understand how to protect it, it is critical to understand the trends in species diversity and abundance. To help give a better picture of the true state of Darby's biodiversity, DCA is submitting two documents with these comments. The first is an annotated list of Darby's fish, the second an annotated list of Darby's mussels. Both are specifically designed to illustrate trends in species health in these two critical aquatic faunas. These documents consolidate the best available data on the subject, with sources listed in each document. In general, sources used are EPA sampling, museum records, sampling and observations by historical naturalists, and sampling and observations by recent naturalists.

Response: In Appendix B.7.4 of the TSD (Trends in Unionid Mussel communities) a list of mussel species collected through time in the Darby basin was created from current and historical data *from EPA sampling, museum records, sampling and observations by historical naturalists, and recent sampling and observations by naturalists*. Extensive analysis of trends of current and historical population, water chemistry, spill, and sediment information were examined to ascertain causes and sources of declines to better protect mussel populations in the future. Recommendations appropriate to better protect the mussel populations were incorporated into the TMDL process as well as other current basin protection activities.

DCA

The fish and mussel tables we are submitting list the 151 fish and mussels of the Darby watershed. Fifty-one of these species have been identified by the state of Ohio as being of particular conservation interest. This includes species which are endangered, threatened, or of special concern, and also fish species that the EPA has identified as sensitive and “declining” throughout the state. In these documents, trends are indicated by colors: red indicates an extirpated species, orange a severely declining species, yellow a moderately declining species, white a stable species, and green an increasing species. The timeframe of these tables varies with available data, but in general they reflect trends over the last few decades.

The tables illustrate the divergence between the fish community and the mussel community. Although a number of Darby fishes are in decline—mostly in the headwaters—as a whole Darby’s fish community appears to be relatively stable, with perhaps 10-15 percent of species in decline—not an insignificant number, by any means, but generally in line with attainment data. In contrast, Darby’s mussels have clearly undergone a precipitous, serious decline. At least 15 species are listed as being in various stages of decline, or roughly 35-40 percent of the fauna, depending on which species you consider part of the regular community. (Please note: species richness analysis of Darby’s mussels can be misleading, as over the last few decades the stream has seen an influx of 5 or 6 species that may or may not have been part of the prehistoric fauna. This tends to augment richness numbers at any given site, essentially masking the loss of other species.)

Although the EPA’s analysis did pick up a number of problems in the watershed through its standard biological, habitat, and chemistry testing, these problems and their solutions were based on bugs and fish; therefore there is no guarantee that the problems detected are the same ones that are affecting mussels, or, if they *are* the same problems, there is no guarantee that the load targets recommended for fish and bugs will fix these problems for mussels. On the contrary, the fact that mussels are declining at a much greater rate than fish indicates that these faunas do not share similar sensitivity to existing stressors. As one probable example, there is strong evidence that the decline of mussels in the lower Big Darby is at least partly due to mussels’ greater sensitivity to storm water loads.

The fact that the EPA has a standard biocriteria assessment system that it uses statewide does not preclude the agency from using other means of assessment, especially given the Clean Water Act’s unambiguous directive to protect all uses of a

stream. In fact, we believe the EPA has an *obligation* to evaluate all existing uses of a stream, including its use as a mussel refuge. In conversations with EPA officials, DCA has argued that Darby should be designated a Tier 3 stream for antidegradation purposes. We believe that Darby fits every conceivable requirement of that designation, including overall public support for taking that step. However, if the agency is unwilling to designate Darby a Tier 3 stream, we certainly believe that the EPA must demonstrate a specific strategy to protect Darby's mussels.

In short, for the TMDL to be complete it needs to address the mussel situation. We recommend that the agency seek additional advice from mussel experts, including consultation with the U.S. Fish and Wildlife Service. Mussels are Darby's most unique natural feature, and if they cannot be maintained the agency will not be succeeding in its task of preserving Darby's high quality.

Response: The OEPA did make a thorough as possible mussel analysis (many extra months of effort). Besides other historical and current causes and potential sources identified, a major issue identified in the mussel trends analysis (Section B.7.4 in the Appendix of the TSD) was mussel sensitivity to storm water loads and the loss of stable habitat where long-lived beds have been affected. We have been keeping abreast of some current applicable chemical toxicity data and spatial density and reproduction with regards to mussels (though some is provisional or in experimental research phases). That research is continuing at the federal level. We have consulted with USFWS; more interaction will likely be occurring in the future concerning endangered species in the Big Darby Creek basin. To counteract the probable lower reproductive success in scattered low density populations, it is possible that human intervention by part of state and national agencies, public and private groups in cooperatively working together to supplement mussel populations might be needed. The moving of individuals to stable beds to increase density, the rearing and restock juvenile individual species or possibly glochidia-infested fish (as scientifically capable and shown credible by research) are all possibilities to enhance and increase individual critical species after initial NPDES and TMDL directives have been implemented to correct identified issues. Usually the USFWS is the lead organization working with qualified groups and individuals orchestrating such an effort. With the amount of protected or park areas encompassing big and Little Darby Creek, these efforts are certainly viable options in future protection efforts.

Ohio EPA has relied on the endangered species recovery plans available (1), prepared by the experts (USFWS) to determine appropriate actions to take in this TMDL. The TMDL has outlined significant pollutant reductions as necessary for the long term health of the Big Darby Creek watershed. If Total Phosphorus and sediment reductions necessary to meet the TMDL targets are achieved in this watershed, it will go a long way towards meeting the needs of the sensitive species. Based on that rationale, Ohio EPA intends to move forward with activities targeted towards achieving these pollutant reductions. During this period, more information about the specific needs of these sensitive species may emerge. This is in keeping with the strategy of adaptive management.

TNC

Section 5.3 Endangered Species Protection - In addition to the clubshell (*Pleurobema clava*), the TMDL should address protection of the northern riffleshell (*Epioblasma rangiana*). While we agree with what is said about the clubshell, Ohio EPA also needs to address loss of mussel host habitat and host water quality requirements.

Response: Critical reaches of Big Darby Creek will improve through NPDES actions (elimination of periodically toxic discharges from small WWTP through tie-in to regional WWTP with also another new WWTP to capture previously poor performing STPs and formerly unsewered areas with direct NPS runoff to BDC), which are anticipated to prevent future episodic events. Careful monitoring of regional WWTPs in area will be critical and therefore a priority for OEPA.

LDR

Page 2-25, Table 2.2.4 – In this table, how can the Big Darby Creek be “impaired” when there are no undesirable habitat attributes present at this site?

Response: Big Darby Creek is impaired in this stretch due to a fish kill from the release of contaminated water from a feed mill in Milford Center. The aquatic community has been slow to recover in this zone for unexplained reasons.

FWS

The TMDL document should require future mussel surveys to ascertain the effectiveness of the TMDL objectives in protecting Federally-listed endangered mussels.

Response: The comment is noted.

FWS

We encourage the removal of dams as suggested in the TMDL document. Removal of dams would be beneficial to Federally-listed endangered mussels.

Response: The comment is noted.

COLS

Page 2-36, Second Paragraph. The first sentence of this paragraph indicates that the “Aquatic life uses in the middle Darby Creek are impaired.” However, based on the graphic in Figure 2.3.1, more than 50% of the Big Darby (the “predominate stream” in the subwatershed) is in full attainment status. To classify the entire subwatershed as impaired when more than 50% is meeting Ohio water quality standards is an overstatement. Since this section of the report is intended to “assess” the condition of the waters in each subwatershed, a more objective assessment should be provided, one that delineates the upper part of the watershed separately from the downstream portion of the watershed. Similar, more objective assessments are provided in other portions of the document.

Response: The assessment of the attainment status of this subwatershed was identical to those assessments for other subwatersheds, and was performed within HUC 14 boundaries. The impairment in the mainstem is attributable to the discharge

from the Plain City wastewater treatment plant. The impairment in the tributaries is from different sources.

COLS

Page 2-38, Second Paragraph. The first sentence indicates that full recovery to EWH was evident from I-70 downstream to the terminus of the sub-watershed. However, the graphic in Figure 2.3.1 indicates the stream from Fitzgerald Ditch to the terminus of the sub-watershed is in full attainment status. Either the graphic or the text should be revised to provide consistency.

Response: The comment is noted.

B.16 Sufficiency of Sampling

Honda

If Honda has reviewed the Report and Ohio EPA's June 28, 2004 *Biological and Water Quality Study of the Big Darby Creek Watershed, 2001/2002* correctly, Honda understands that Ohio EPA's key concerns regarding low dissolved oxygen ("D.O.") concentration and high total suspended solids ("TSS") in the Flat Branch are, from a quantitative standpoint, largely based on a total of less than 15 samples taken from 3 sampling points on 5 days (July 2, 16 & 30, August 27, and September 10) in the summer of 2001. See *Biological and Water Quality Study of the Big Darby Creek Watershed, 2001/2002* at pp. C.1.26 -27.)³

First, Honda notes the disparities in these sample results; for example, with respect to TSS, the July 2nd sampling event detected levels in excess of 100 mg/l at two of the sampling sites, while on all other dates at these same two locations the TSS samples were below 50 mg/l. Similarly, with respect to D.O., the July 16 sampling event detected D.O. levels of 3.8 mg/l at two of the sampling sites, while on all other dates the D.O. level at these same two sites ranged between 4.4 mg/l and 7.0 mg/l (and therefore exceeded Ohio EPA's minimum criteria for both the MWH and the WWH designation).

Second, Honda notes that it has undertaken many water quality improvement activities in the FBCW since the date of these sampling events, and Honda cannot help but wonder whether the 2001 and 2002 data is truly representative of conditions in FBC today.

Honda does not focus on the date of and/or disparities within Ohio EPA's data in order to dismiss its importance or challenge its accuracy. Rather, Honda wishes to emphasize its belief that it is extremely difficult and potentially dangerous to draw meaningful conclusions based on a very small "snapshot" of data which was collected three to four years ago. It is for this reason that Honda hopes to work with Ohio EPA to develop plans for additional sampling events so that any conclusions reached are based on adequate amounts of current, accurate, and precise data

³ Honda is also aware of the D.O. data collected from the BDC via datasonde CMUs on August 20-22, 2002. (See *Biological and Water Quality Study of the Big Darby Creek Watershed, 2001/2002* at p. B.4.2.) Similarly, this too represents a single sampling episode conducted several years ago.

Response: Ohio EPA conducted a detailed survey of the confluence of Flat Branch and Big Darby Creek in June and July of 2004 to collect data to support the water quality modeling effort. These data are remarkably consistent with the 2001 data. The data variability cited by Honda in the above comment support an episodic impact on the waterbody such as can be associated with rain events, industrial activities, or other intermittent sources. Variability in water quality data is not an unusual occurrence in such impacted streams, and it is not an indication of inaccurate data. In addition, the TSS concentrations cited above are all very elevated in comparison to the typical stream in Ohio, regardless if the concentrations are just below 50 mg/l or at 100 mg/l. Again, a strong indication of an unusual disturbance present in the Flat Branch sub-watershed. For these reasons, Ohio EPA strongly supports the ongoing data collection Honda is performing in an effort to clearly identify the source or sources of the disturbance to Flat Branch.

Honda

As noted above, the Report is based on a sampling event that occurred in 2001 and 2002. As noted in the introduction, Honda has been working on improvements which will positively impact the water quality of FBC and notes that many of these improvements were implemented or enhanced after the 2001 Ohio EPA study, thus the collection of new data may generate new results. Honda has been working with Ohio EPA for some time to address potential FBC water quality issues and Honda believes that these improvements are not reflected in Ohio EPA's data or the Report.

Response: Ohio EPA acknowledges the work that Honda has done. However, the water chemistry data collected in 2004 indicate unusual water chemistry comparable to the findings of the 2001 study.