



Division of Surface Water Response to Comments

National Pollutant Discharge Elimination System (NPDES) General Permit for Discharges of Storm Water Associated with Construction Activity Located within Portions of the Olentangy River Watershed

Ohio EPA General Permit No.: OHCO00002

Agency Contact for this General Permit

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Ohio EPA held a public hearing April 9, 2014 regarding NPDES General Permit for Discharges of Storm Water Associated with Construction Activity Located within Portions of the Olentangy River Watershed (OHCO00002). This document summarizes the comments and questions received at the public hearing and/or during the associated comment period, which ended on April 11, 2014.

Ohio EPA reviewed and considered all comments received during the public comment period. The name of the commenter follows the comment in parentheses.

The following comments were submitted by Friends of the Lower Olentangy Watershed (FLOW)

Comment 1: **How does the requirement to mitigate within the 14 digit HUC apply to ODOT?**

Response 1: Ohio EPA has updated the permit and replaced the referenced 14-digit HUC watersheds with 12-digit HUC watersheds – please see Response 42 for additional information. Based on experience learned during the first generation permit it has been determined that more flexibility is needed for this requirement in some instances. As a result, language has been added to Part III.G.2.c to provide this flexibility when needed. This would apply to all permittees covered under the general permit.

Comment 2: Please change pg 17 of 42. Part III G SWP3 requirements 2 c, Paragraphs 1, 2 and 3. Add 3rd party to environmental requirements. The Friends of the Lower Olentangy Watershed (FLOW) is concerned that since the Ohio Department of Natural Resources Scenic Rivers group is no longer willing to hold conservation easements that there will be no eyes on Olentangy. FLOW would like to be considered as a non-holder signatory so that we can be aware of all of the easements.

Response 2: Ohio EPA evaluated this comment but no changes to the final permit were made. Please see Response 25 for additional information.

Comment 3: The 30' narrative setback for ephemeral and intermittent streams is less than the 10 x bankfull width calculated for streams based on drainage area (using TMDL recommended streamway calculation $W=143DA^{0.41}$). The narrative diverges considerably from the recommended calculated setback above 0.25 sq. miles of drainage area. Please see the attached table and graph - Setback Comparisons. Compared to larger streams, functioning headwater streams assimilate considerable more nutrients through nutrient cycling. FLOW is concerned that the stability and function of these smaller streams may be at risk with a narrower setback than what is recommended for Exceptional Warmwater Habitat (EWH) class water quality. Dublin Stormwater Manual Setbacks are based on Drainage Area and better approximate the target "10 times the bankfull channel width" suggested to maintain EWH waters. Can similar setbacks be considered for ephemeral and intermittent streams over ~0.25 sq. miles drainage area?

Response 3: Ohio EPA evaluated this comment with issuance of the first generation of the Olentangy general permit. Ohio EPA feels that the current setbacks associated with ephemeral and intermittent streams address a water quality benefit. In addition, the general permit requires the implementation of post-construction water quality BMPs to further provide not only a water quality benefit but a stream erosion protection component. Ohio EPA believes that implementation of both the setback requirements and post-construction BMPs will facilitate the intent of protecting overall stream integrity. No changes to the final permit were made based on this comment.

Comment 4: Page 18 of 42 needs a graphic to show the zones.

Response 4: Ohio EPA has four figures that provide graphic representations of the riparian setback and riparian setback mitigation requirements. These figures will be maintained on the following website for guidance:
http://epa.ohio.gov/dsw/permits/GP_ConstructionSiteStormWater_Olentangy.aspx

Comment 5: Does the Delaware County MS4 permit require townships (as co-permittees) to have ordinances or other regulatory mechanisms that match the Olentangy Permit? Stream setbacks or the use of other non-structural land-use controls fall under the jurisdiction of townships, not the county stormwater engineers. It appears that the 2 permits' requirements don't filter down to the urbanized townships where initial conversations about these setbacks would be beneficial.

Response 5: The small MS4 general permit requires that a MS4 have an ordinance or other regulatory mechanism to be, at a minimum, equivalent to the technical requirements set forth in the Ohio EPA NPDES General Storm Water Permit(s) for Construction Activities applicable for the MS4's permit area. All MS4s within OHCO00002 permit area will have two years from when their coverage under the upcoming small MS4 general permit renewal (OHQ000003) is granted to update their regulations.

Comment 6: Page 6 of 42 requires that the SWP3 be submitted 45 days before construction. FLOW is concerned that this is too soon before construction to protect stream setbacks and will only catch those needing to supply mitigation for intrusion into the setback. During the regulated community workshop in 2013, frustration was expressed that the land developer is not talking early (to request flexible zoning for example) in order to avoid a setback. By the time discussions begin at the local level, the site design is already done and paid for. Is there a way to get earlier compliance/avoidance of setbacks? Would OEPA consider requesting a pre-application concept drawing that shows stream setbacks and other items identified on Page 13 (Oi, Oii, Oiv, Ovi and Oxiii) to match the Rainwater and Land Development Manual Chapter 1 (page 8).

Response 6: The permit requires that the Notice of Intent (NOI) and Storm Water Pollution Prevention Plan (SWP3) be submitted at least 45 days prior to the initiation of ground disturbance. Ohio EPA reviews all Olentangy SWP3s submitted and only approves coverage once all conditions of the permit are satisfied. The comment was evaluated for possible changes to the application requirements but no changes were made. Ohio EPA believes the current application requirements successfully ensure compliance with the permit conditions.

Comment 7: **Regarding the re-notification requirement (Page 7 of 42) Part 1, paragraph 5- if a permittee was approved for their setback under version 1 of this permit, will they have to redesign their project to meet the new setbacks in version 2 or provide mitigation if construction was not started under Version 1 of the permit?**

Response 7: OHCO00001 provided three methods to delineate riparian setbacks; whereas, OHCO00002 provides two methods. OHCO00001's "Site Specific Riparian Setback Delineation" has been merged with the existing method of delineating with the setback equation ($W = 143DA^{0.41}$) and sizing from the ordinary high water mark. With OHCO00001, sizing the calculated setback from the ordinary high water mark evenly on each side sometimes resulted in protection of non-functional riparian areas. Therefore, OHCO00002 requires that the distance calculated from the equation be centered over the meander pattern of the stream such that a line representing the setback width would evenly intersect equal elevation lines on either side of the stream. This change will result in only functional floodplain being protected and is only applicable to perennial streams with no regulatory 100-year floodplain established.

Part III.B of the permit requires permittees continuing coverage from the previous generation of the permit (OHCO00001) to update their SWP3 within 180 days of the effective date of OHCO00002 to ensure this permit's requirements are addressed. However, there are provisions in Part III.B which allows a permittee to not update a portion of their SWP3 if the new condition would be infeasible to implement because it was not required by OHCO00001. Projects with initial coverage under OHCO00001 will not be required to update their riparian setback delineation, based on the change discussed above, if they can demonstrate that such change is infeasible for their project.

Comment 8: A Stormwater Pollution Prevention Plan includes construction and post construction stormwater however the public notice seems to minimize the importance of decreasing runoff quantity and only focuses on contamination of stormwater with pollutants.

Response 8: Implementation of the permit's sediment and erosion controls, post-construction requirements and riparian setbacks will have a positive effect on both hydrology and pollutant removal in storm water discharges.

Comment 9: Part III Paragraph A- SWP3- FLOW is concerned that the described focus of the SWP3 plan is mainly to address pollutants. A site designer is unlikely to foresee the cumulative effect land-use changes have on our watershed's floodplain function, hydrology, and water quality. (Ohio EPA sampled 9 streams in rapidly urbanizing Delaware County for recent TMDLs. None of these streams met baseline water quality biological life targets, reportedly due to 'urbanization' and increased runoff. Also see the attached file that documents OLENTANGY LAND AND WATER CHANGES.)

The importance of the setback, preventing runoff through non-structural BMPS (especially woodland protection), infiltrating and replenishing groundwater, managing the extra volume of stormwater runoff and minimizing the peak runoff as they relate to anti-degradation of the EWH waters in the Olentangy Watershed should also be clarified.

Response 9: This comment was evaluated for possible permit changes but no changes were made to the final permit. Ohio EPA will ensure that conditions of OHCO00002 are satisfied through SWP3 review and approval of all applications and periodic site inspections.

Comment 10: Part III Paragraph B- Timing- FLOW is concerned that the SWP3 would only be implemented upon initiation of any building/road construction activities. It is more clearly stated on page 3 of 42 that construction activities includes any clearing, grading etc). Could you add that language in the timing paragraph to confirm that grading and clearing are included?

- Response 10:** Ohio EPA does not believe additional language is needed here. Part VII.G defines “commencement of construction” as the initial disturbance of soils associated with clearing, grubbing, grading, placement of fill, excavating activities or other construction activities. Part III.B clearly indicates that the SWP3 must be implemented upon initiation of construction activities.
- Comment 11:** **Would Ohio EPA consider an Olentangy Panel similar to the Darby Accord Panel? This panel of citizen volunteer experts could also review SWP3s for a compilation of non-binding comments.**
- Response 11:** Ohio EPA would be open to participating in such a panel if developed.
- Comment 12:** **Page 15 Paragraph A- Please change “shall” to “must” in the non-structural preservation methods section. Please also add language encouraging people to minimize imperviousness. See the Rainwater and Land Development Manual Chapter 1, Section 1.2, Page 8, Paragraph 2 for consideration.**
- Response 12:** A “shall” is equivalent to a “must.” Most USEPA permits use “must,” whereas, Ohio EPA typically uses “shall.” No changes were made to the permit based on this comment.
- Comment 13:** **Page 15 of 42- Please add a reference to the Delaware Regional Planning stormwater setback maps to show developers the potential for streams on their development property. Maps created to match the current permit setbacks are available at:**
http://www.dcrpc.org/DOWNLOADS/oef_home.htm
- Response 13:** Ohio EPA will include a link on the following web page for guidance:
http://epa.ohio.gov/dsw/permits/GP_ConstructionSiteStormWater_Olentangy.aspx
- Comment 14:** **Page 16 of 42- Inspection of Setback Delineation before construction activities: The Big Darby riparian setback (Franklin County) requires a 7 day pre-construction meeting with an Administrative Officer or Franklin Soil and Water Conservation District to inspect on-site designation of setbacks and fencing prior to**

construction. The City of Dublin also requires an inspection before any earth disturbance activity. The portions of Franklin in the Alum Creek and Big Walnut watershed also require a pre-construction meeting to protect setbacks. The Ohio Balanced Growth model ordinance also suggests inspection of the riparian setback delineation, initiated by written notice prior to soil disturbance. Can this type of pre-construction, setback-delineation inspection be added to help developers comply with their setbacks? (A spreadsheet comparing local setback regulations is available at the dcrpc.org link above, See Section 2, Local Setback Study)

Response 14: The permit requires that the SWP3 clearly delineate the boundary of the required stream setbacks. In addition, the permit requires that any setback distances be clearly displayed in the field prior to any construction related activity. Ohio EPA believes that our current review process has been appropriate and effective based on experiences gained by the first generation Olentangy permit. No changes to the permit were made based on this comment.

Comment 15: **The City of Columbus's stormwater manual and the Big Darby Watershed Riparian Setback (Franklin County) require permanent signage to identify setbacks. Could similar language be added to this permit to make it consistent for developers' compliance?**

Response 15: This permit requires that any setback distances be clearly displayed in the field prior to any construction-related activity. However, the permit will not require that permanent signage be installed to identify setbacks. Ohio EPA believes that such a requirement should rest with the local government, if they so choose.

Comment 16: **Page 16 of 42- Please include an image to explain, preferably a plan view image or marked up aerial to demonstrate the new setback widths being centered on the stream way.**

- Response 16:** Ohio EPA will include such a figure on the following web page for guidance:
http://epa.ohio.gov/dsw/permits/GP_ConstructionSiteStormWater_Olentangy.aspx
- Comment 17:** The new centered streamway setback is an improvement in protecting floodplain! Thanks. However, new mapping of the outer setback will need to be done for perennial streams where FEMA has not mapped the 100 year floodplain. Since the previous OEEF grant funded mapping of setbacks was based on the 2009 permit, can Ohio EPA help FLOW out with developing new GIS setback maps?
- Response 17:** Ohio EPA will provide assistance in updating the Geographic Information System layers to the extent which resources allow.
- Comment 18:** Page 17 of 42 Paragraph ii. There is no motivation to restore intermittent or ephemeral channels since the stream restoration buffer of 100 feet on each side is larger than the stream setback for these hydrology types. FLOW recommends the 10 times the channel width calculated streamway for restored intermittent streams (or the 30' setback, whichever is greater) and the 30' per side setback for restored ephemeral streams. As it stands now, we are concerned that the language will be a disincentive to developers and that currently entrenched streams will remain entrenched. This would result in missed opportunities.
- Response 18:** The intent of this permit part was to address previously modified, low-gradient headwater streams with very large flood plains. This universe is very small within the permit area. However, permittees may choose stream restoration as a mitigation measure for all streams to be evaluated on a case-by-case basis. This issue is evaluated during the SWP3 review.
- Comment 19:** Page 16 & 17 of 42- Riparian Setbacks & Mitigation - FLOW offers the following table of this permit's riparian setbacks and mitigation to clarify requirements:

Stream Type	Streamside Buffer		Outer Buffer
	Zone 1 Mitigate 4:1*	Zone 2 Mitigate 3:1*	Zone 3 Mitigate 2:1*
Mainstem Setback per side of OHWM	first 30'	from 30 to 100'	100 yr floodplain
Perennial (continuous) Setback per side of OHWM	first 30'	from 30 to 80'	100 yr floodplain or calculated width centered on meander
Intermittent (runs dry)	30'		
Ephemeral (only after rain) Setback per side from center line	30' (mitigate 2:1)*		
Olentangy Permit Guidance on Prohibited Uses in Setbacks	No installation of structural sediment controls or structural post-construction controls. No construction activity (clearing, grubbing, excavation, filling) shall occur, without appropriate mitigation, within the streamside buffer except activities associated with		No impervious surfaces, structure, fill, or activity that would impair the floodplain or stream stabilizing ability of the outer buffer shall occur without appropriate mitigation

* Mitigation must occur within the same Watershed Assessment Unit (labeled 'Map Units' on the permit coverage area map. Mitigation is reduced by 50% (4:1 to 2:1 for example) if within the watershed of the same stream.

Response 19: This comment was evaluated but no changes to the final permit were made. The existing permit language will remain unchanged and the four figures which provide a visual/graphical representation of the riparian setback and riparian setback mitigation requirements will be maintained at the following web page

http://epa.ohio.gov/dsw/permits/GP_ConstructionSiteStormWater_Olentangy.aspx

Comment 20: Is an OEPA environmental covenant filed with the plat?

Response 20: Such environmental covenants are filed with the appropriate County Recorder's Office and attached to the deed and are to be adhered to by subsequent land owners.

Comment 21: FLOW requests an electronic copy of the locations of all existing Olentangy stormwater permits and Olentangy Stormwater Mitigation. Does a GIS map exist?

Response 21: A list of all projects issued coverage under the Olentangy construction storm water general permit can be viewed at:
<http://epa.ohio.gov/dsw/permits/gplist.aspx>

An interactive map exists for all projects issued NPDES construction storm water general permit coverage since January 2011 at the following web page:

<http://wwwapp.epa.ohio.gov/dsw/maps/construction/index.php>

For documents that do not reside on Ohio EPA's web page, please follow the instructions at the following web page to request a public document:

<http://epa.ohio.gov/dir/publicrecords.aspx>

Comment 22: Page 18 of 42. Please clarify that mitigation may not occur in already protected areas (i.e. no double dipping) and mitigation should occur in an equivalent ecologic zone (Stream Zone 1 impacts should require Stream Zone 1 Mitigation). No upland mitigation will be acceptable.

Response 22: The concerns raised with this comment are addressed during the SWP3 review. Ohio EPA believes the permit's mitigation ratios address the intent of successful mitigation and overall preservation of water quality.

- Comment 23:** Page 18 of 42. Please change “all mitigation shall” to “all mitigation must”.
- Response 23:** As indicated in Response 12, a “shall” is equivalent to a “must.” No changes were made to the permit based on this comment.
- Comment 24:** Please add “An environmental covenant with Ohio EPA shall only be considered after the applicant has demonstrated all of their efforts (names and contact numbers) to find an entity willing to hold a conservation easement”. FLOW is concerned that conservation easements are not popular due to the 3rd party cost associated.
- Response 24:** Ohio EPA understands the commenter’s concern and does discuss the use of conservation easements during the SWP3 review process. However, Ohio EPA believes that the use of environmental covenants have sufficient capability of the intent of this requirement. No changes were made to the final permit based on this comment but this concern will continue to be evaluated over this permit term.
- Comment 25:** Environmental Covenants with Ohio EPA should also have a 3rd party signatory like a watershed group, a park district or a soil and water conservation district to provide eyes on the area proposed for protection in perpetuity.
- Response 25:** Environmental covenants can have true third-party holders but they are not absolutely required. Environmental covenants, as currently required by the permit, are enforceable by Ohio EPA as non-holder as well as units of local government. Ohio EPA evaluated this comment but no changes to the permit were made.
- Comment 26:** Page 19 of 42. e. Velocity dissipation devices are required in this permit revision. Please clarify what these devices are. Is there a resource to refer to for appropriate design of velocity dissipation structures, including how to calculate if they will provide the required ‘non-erosive flow velocity’?
- Response 26:** Velocity dissipation devices are structural BMPs used to minimize or prevent the erosion of exposed soil and/or stream beds. These devices are placed within a storm water

conveyance to prevent ditch erosion or at the end of a pipe or hose to prevent the rapid water velocity from causing erosion. Such examples include, but are not limited to, grass swales, level spreaders, rock lined channels, outlet protection, rock check dams and diversion berms and terraces. Design standards for these velocity dissipation BMPs can be found in Chapters 3 and 4 of Ohio's Rainwater and Land Development manual. This manual can be obtained at the following website:

<http://www.dnr.state.oh.us/water/rainwater/default/tabid/9186/Default.aspx>

Comment 27: Page 19 of 42, f, ii. Conditions where a sediment settling pond is required are clarified in a later section of the permit. For clarity, can the requirements for when a settling pond is needed be specified in this section?

- where runoff exceeds the design capacity of silt fence or other sediment barriers...please reference the Silt Fence table, currently on page 21.
- where runoff exceeds the design capacity of inlet protection....please specify that inlets receiving runoff from one or more acres requires a settling pond (page 21).

Response 27: This comment was evaluated but Ohio EPA believes no changes to the final permit are warranted.

Comment 28: Page 20 of 42 - Sediment settling pond: new requirement for skimmer, if feasible. What would be a situation where a skimmer, or equivalent, would not be feasible?

Response 28: The following are situations that Ohio EPA believes would make it infeasible to design sediment basin outlet structures that withdraw water from the surface:

- if general permit coverage was obtained under the previous generation of the general permit and the sediment settling pond has been installed, and
- situations evaluated on a case-by-case basis by Ohio EPA.

Comment 29: Page 20 of 42 - Sediment settling pond: to clarify proper design expectations, a sketch of a skimmer and settling pond configuration would be useful, or refer to Rain Water and Land Development Manual (RLDM) Chapter 6.

- Response 29:** Part III.G.2 of the permit recommends that the erosion, sediment and storm water management practices used to satisfy the conditions of this permit should meet the standards and specifications in the most current edition of Ohio's Rainwater and Land Development manual or other standards acceptable to Ohio EPA unless otherwise specified as a condition of this permit. Standards and specifications for sediment basins and dewatering device design can be found in Chapter 6 of Ohio's Rainwater and Land Development manual. A definition in Part VII of the permit is included for the manual. A web link to the manual will be added within the definition.
- Comment 30:** **Page 14 and 20 of 42 - Sediment settling pond: design information required within SWP3 is clarified on page 14 of 42 (FLOW appreciates that this was added). What sediment settling pond inspection/maintenance information is required within the SWP3?**
- Response 30:** Part III.G.2.j of the general permit requires the SWP3 to ensure that "...all sediment control practices must be maintained in a functional condition until all up slope areas they control are permanently stabilized. The SWP3 shall be designed to minimize maintenance requirements." Part III.G.2.k of the general permit states, "At a minimum, procedures in an SWP3 shall provide that all controls on the site are inspected at least once every seven calendar days and within 24 hours after any storm event greater than one-half inch of rain per 24-hour period." Part III.G.2.k.i of the general permit requires that "sediment settling ponds shall be repaired or maintained within 10 days of the inspection." To summarize, the general permit requires that SWP3 ensures that sediment settling ponds be maintained and inspected at least once per week until final stabilization is achieved and general permit coverage is terminated.
- Comment 31:** **Page 20 & 21 of 42 - Silt Fence: The Rainwater and Land Development Manual (Chapter 6, Sediment Controls) has been updated since the last issuance of this permit, to include Filter Berms and Filter Sock. Shall the permit clarify conditions and specifications for the use of these devices?**
- Response 31:** Part I.F.1.a of the general permit requires construction operators to submit an NOI application and an SWP3 at least 45 days prior to the scheduled initiation of construction

activities. Part III.G.2 of the general permit states that Ohio EPA recommends using the standards and specifications in the most current edition of Ohio's Rainwater and Land Development manual or other standards acceptable to Ohio EPA. When the Agency reviews the SWP3, we will ensure that the detail drawing shows the proper installation of sediment barriers such as filter berms and filter socks.

Comment 32: **Silt fence or other sediment barriers: it is not clear if the properly installed condition must be illustrated within the SWP3. Is this required by page 19 "The SWP3 shall contain detail drawings for all structural practices"?**

Response 32: Part III.G.2 of the general permit states "Ohio EPA recommends that the erosion, sediment, and storm water management practices used to satisfy the conditions of this permit should meet the standards and specifications in the most current edition of Ohio's Rainwater and Land Development (see definitions) manual or other standards acceptable to Ohio EPA unless otherwise specified as a condition of this permit." As stated in the above comment, the SWP3 must include detail drawings of all structural practices. Part I.F.1.a of the general permit states "...operators who intend to obtain initial coverage for a storm water discharge associated with construction activity under this general permit must submit a complete and accurate NOI application form, approvable SWP3 and appropriate fee at least 45 days prior to the commencement of construction activity." When Ohio EPA reviews the SWP3, the Agency will ensure that the detail drawing shows the proper installation of silt fence or other sediment barrier.

Comment 33: **Is the inspection/maintenance frequency of Silt Fence and Diversions, and Inlet Protection to be required within the SWP3?**

Response 33: Part III.G.2.k of the general permit describes the inspection requirements and deadlines to respond to the required maintenance for repairs and deficiencies identified during an inspection. Since Part III.G.2.k is part of Part III.G (Storm Water Pollution Prevention Plans), the inspection and

maintenance requirements of Part III.G.2.k must be included in the SWP3.

Comment 34: Pages 21 and 22 of 42, Construction activities that do not include the installation of any impervious surface (e.g. soccer fields) are not required to comply with post construction stormwater management. These projects do compact the soil, and are typically underdrained, so more runoff will be generated. A recent addition to the Rainwater and Land Development Manual (Appendix 9) explains how the soil hydrologic group (infiltrating capacity) is reduced after construction. FLOW suggests these types of projects must comply with post construction stormwater management requirements of this permit.

Response 34: This comment was evaluated but no changes were made to the final permit.

Comment 35: Page 22 of 42, The WQv in this permit is the WQv from a 0.75 inch rainfall, to result in the capture and treatment of the entire volume for 85% of the average annual storms. The average annual storm data for Ohio was last updated in 1980, based on storm data from 1931 to 1980. Storm intensity and annual precipitation volume in Ohio has trended upward the last decade. Is there a more current study of annual storm data for Ohio or this specific watershed? Does management of the WQv from a 0.75 inch rainfall still result in treatment of 85% of the total annual storm events? And is 85% of the average annual storm events still sufficient to minimize channel and bank erosion from developed areas, given the recent changes in hydrology?

Response 35: As stated in the answer to Q&A number 7 of Ohio EPA's Post-Construction Question and Answer document, the water quality volume (WQv) was selected "...to determine a 'maximized capture volume' where capture of larger storm events does not significantly result in greater pollutant removal (Urbonas and Stahre, 1993)." This approach was considered to be "...the best bang for the buck" at removing

pollutants in storm water runoff and to minimize channel and stream bank erosion due to runoff from developed areas. Although the annual rainfall totals in Ohio during the past 20 years have been above normal, the future average annual rainfall in Ohio should not vary greatly from the 50-year period of 1931 through 1980. Ohio EPA may consider future rainfall data for the Olentangy River Watershed during the next five years to determine if a change to calculating the WQv should be done in future generations of the permit.

Comment 36: **Pages 21 and 26 of 42, Post-Construction Storm Water Management of Small Construction Sites (1 to 5 acres): Small construction sites are not required to detain and draw-down the WQv. Are small sites required to manage the increased post-construction runoff volume due to land use change? Please specify the minimum requirements for small sites. Could a table be added to clarify the difference between post-construction storm water management required for smaller construction sites (1 to 5 acres), and what is required for larger construction sites (>5 acres).**

Response 36: An operator of a small construction activity is required to install a structural post-construction BMP. Due to limited available space on some small construction activities, the general permit does not mandate a minimum water quality volume (WQv) or a minimum amount of time to release the detained volume of storm water runoff. However, the general permit does require the structural post-construction BMP to improve water quality. Although a minimum WQv is not required, the answer to question number 14 in Ohio EPA's Post-Construction Question and Answer document states "...if the BMP selected for use on a small site is one found in Table 2 of the general permit, the WQv and draindown criteria should still be applied to the design of the BMP to assure proper operation." If the operator chooses a BMP from Table 2 of the draft general permit, Ohio EPA expects that BMP to meet the same WQv and drain time design criteria unless the operator can show in the SWP3 that there is not sufficient space to achieve this design.

Comment 37: Can you provide an example of a good stormwater management protection for a 1 acre site?

Response 37: The most ideal post-construction BMP for a small construction activity is one that achieves water quality enhancement and requires little maintenance. A properly designed bioretention area will substantially reduce total suspended solids (≥ 80 percent) as well as other pollutants (e.g., metals) and will need the least amount of maintenance of all BMPs for small drainage areas. Bioretention areas also decrease the volume of runoff due to infiltration and evapotranspiration and will reduce the temperature of the runoff during the late-spring, summer and early-fall seasons.

Comment 38: Page 21, all SWP3s must rationalize and select post-construction BMPs to “address anticipated impacts on channel and floodplain morphology, hydrology, and water quality” related to the proposed land use. Yet on page 26, it says small site SWP3s must include measures to control pollutants in post-construction storm water discharges where flows exceed pre-development level. The focus is on pollutants, not other anticipated impacts. Can the importance of measures to protect intact riparian corridors and reduce/manage urban runoff be added (as in comment 9)?

Response 38: Ohio EPA expects all post-construction BMPs for small construction activities to address water quality. The operator of a small construction activity must still consider runoff impacts to surface waters of the state including small streams and wetlands when selecting a post-construction BMP. Although the general permit does not contain language on the BMP discharge rate for small construction activities, Part III.G.2.h of the general permit states that, “Concentrated storm water runoff from BMPs to natural wetlands shall be converted to diffuse flow before the runoff enters the wetlands. The flow should be released such that no erosion occurs downslope. Level spreaders may need to be placed in series, particularly on steep-sloped sites, to ensure non-erosive velocities. Other structural BMPs may be used between storm water features and natural wetlands, in order to protect the natural hydrology, hydroperiod and wetland flora. If the applicant proposes to discharge to natural wetlands, a hydrologic analysis shall be performed. The applicant shall attempt to match the pre-development hydroperiods and hydrodynamics that support the

wetland.” Since storm water discharges that directly enter a fourth order or larger stream will have negligible impacts to the stream, a structural post-construction BMP that focuses on pollutant removal may suffice.

Comment 39: **Small site post-construction storm water management: in another EPA explanation**
<http://www.epa.state.oh.us/dsw/storm/cgppcqa.aspx>, #14) the rationale for appropriate small site post construction BMPs is clearer. ...”because Ohio EPA does not require that BMPs (for small sites) be designed to treat the WQv, alternative BMPs may be selected for use on these sites. In some instances, a strictly non-structural approach may be appropriate.” And, “if a structural BMP from Table 2 is chosen for a small site, the WQv and draindown criteria applies”. Could this language be added to clarify intent of small site post construction BMPs?

Response 39: Ohio EPA evaluated the comment but believes no changes to the current permit language are needed.

Comment 40: **Page 23 of 42, the WQv Runoff Coefficients and Calculation. PLEASE SEE ATTACHED “RUNOFF COEFFICIENT STUDY” to illustrate below comments:**

- **40-1. The calculated value of C using impervious fraction leads to markedly lower WQv than all other methods. (The authors of this method intended a graph be used to determine “i” for single family residential development.) If the same formula is used to figure a “weighted average” C value of mixed land cover, then the result is closer to other methods. Could it be clarified to use the “weighted average” method when the C value formula is the chosen method?**
- **40-2. Woodlands and permanent open spaces have a runoff coefficient of 0.00 in the West Virginia Runoff Reduction methodology. Compacted lawns (managed turf) have runoff coefficients from 0.15 to 0.25, based on the soil type. Since forest cover loss is an issue in the watershed needed addressed, and the Rainwater and Land Development Manual recently published Appendix 9 with guidance for adjusting HSG Soil type due to construction**

compaction, please update the runoff coefficient to add the forest/preserved open space and coefficients for managed turf by soil type. (This will both incentivize woodland protection and soil protection/remediation, and will also make this permit flexible enough to be utilized in the event the Runoff Reduction method is adopted within this permit period.)

- **40-3. Open space types are not equal. Woodlands, meadows, brushy successional fields will infiltrate more water than compacted lawns. TR55 has some guidance about land cover types with lower CN numbers, based on HSG Soil type. If Forest/Permanent Open space is listed on the table of C values, can there be guidance as to what is quality 'open space'**
- **40-4. If Forest/Permanent Open space is an option on the table of C values, there will need to be assurance that these remain protected as a permanent stormwater non-structural BMP, unless mitigated. Is there a mechanism to add these areas to the permit (e.g., deed restriction, environmental covenant, stormwater maintenance agreement) to assure permanence?**

Response 40:

The C equation was developed using U.S. EPA Nationwide Urban Runoff Program (NURP) data collected from multiple land uses covering the range of imperviousness from a few percent to more than 90 percent impervious. We have not seen a reference that stated or implied the impervious area versus C relationship was based solely on single-family residential.

We realize open space is not all equal from a storm water hydrology and water quality standpoint, and encourage non-structural practices that protect the storm water management function of open space – see, for example, Non-Structural Preservation Methods (Part III.G.2.a); Riparian Setback Requirements (Part III.G.2.b); and Non-Structural Post-Construction BMPs (Part III.G.2.g). We are aware of the West Virginia Runoff Reduction Methodology, but have not fully reviewed or evaluated their method, or its technical basis. We are reviewing West Virginia's and others' approaches to crediting protection or creating more functional open space, and may create a similar credit mechanism in future permits.

Comment 41: **Redevelopment Projects (page 25). A 20 % reduction in WQv is needed for re-development (with the same footprint). FLOW saw a re-development project in Columbus fail to address marked streambank erosion and sediment caused by site runoff because the Stormwater and Drainage Manual did not require it. Can remediation of obvious existing sediment, erosion or water quality problems due to existing runoff or improperly designed structural controls be a requirement during redevelopment?**

Response 41: Redevelopment projects are projects on land that was previously developed where the redevelopment of that land will not increase the runoff coefficient. If no structural post-construction BMPs are installed, the runoff volume, flow rate and amount of pollutants will remain the same. Ohio EPA's draft general permit requires either a 20 percent reduction of impervious surface, the inclusion of a structural post-construction BMP sized for 20 percent of the WQv for the entire property, the inclusion of a structural post-construction BMP sized for 100 percent of the WQv for 20 percent of the property, or a combination of any of the above (i.e., 10 percent reduction of impervious surface and a BMP for 10 percent of the WQv). If a redevelopment project will increase the runoff coefficient, then some of the redevelopment project may be considered new development and the operator will have to treat 100 percent of the WQv for the added impervious surface. Please see Q&A number 16 of Ohio EPA's Post-Construction Question and Answer document at the following website address: <http://epa.ohio.gov/dsw/storm/CGPPCQA.aspx>. When all operators of redevelopment projects reduce impervious surface and/or include WQv treatment for some of the redeveloped property, the quality of the receiving streams should improve.

Comment 42: **FLOW understands that Ohio EPA is going to change the permit language to reflect the new 12 digit hydrologic unit code (HUC) boundaries. There are several major changes in the boundaries between the 14 digit boundaries and the 12 digit boundaries. FLOW has not had a chance to evaluate what the impact of this change will be. Please see the attached example.**

Response 42: Ohio EPA's Integrated Report and TMDLs use a 12-digit HUC scale. For consistency, Ohio EPA has updated this

permit and replaced the referenced 14-digit HUC watersheds with 12-digit HUC watersheds. By switching to the 12-digit HUC, the most southern 12-digit HUC (05060001 11 02) extends further south than OHCO00001's original permit area. In order to not change the permit area, only a portion of this 12-digit HUC will be applicable and will have the same most southern boundary as was applicable in the previous generation permit.

It is important to note that the permit area boundaries have not changed. The permit area for OHCO00002 will include the following 12-digit HUCs and are identified in Part I.A of the permit:

12-digit HUC
05060001 09 02
05060001 09 01
05060001 09 03
05060001 10 07
05060001 11 01
05060001 11 02 (Only portion as depicted in map)

Please see Attachment A of the permit for permit area boundaries. An electronic version of Attachment A can be viewed at
http://epa.ohio.gov/dsw/permits/GP_ConstructionSiteStormWater_Olentangy.aspx

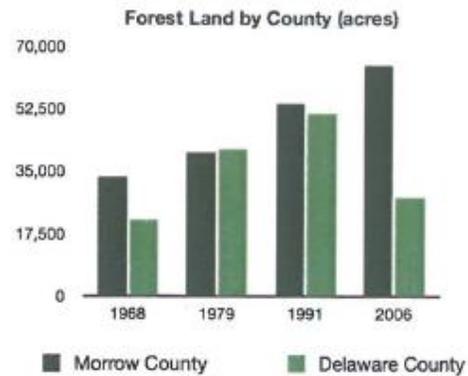
End of Response to Comments

Attachments to Comments Received

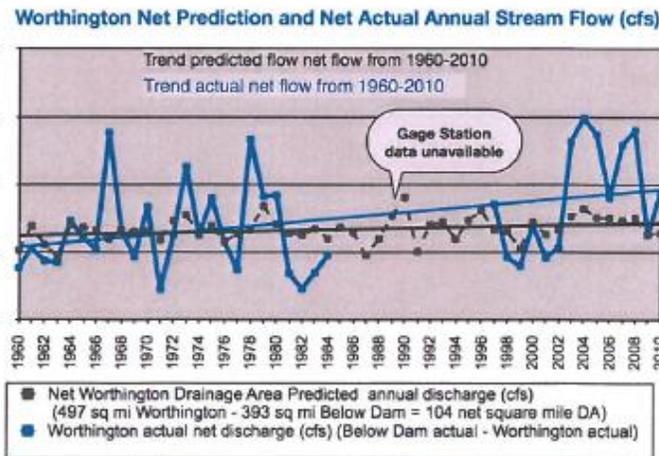
OLENTANGY LAND AND WATER CHANGES

The Olentangy TMDL report in 2007 indicated that rapid urbanization was the biggest threat to the Exceptional Warm Water Habitat in Delaware County. Studies were conducted over the last 2 years to prepare educational materials, funded by an OEEF grant. These studies record specific observations about the impact of urbanization on hydrology and natural lands. The visuals below record data and observations from the study:

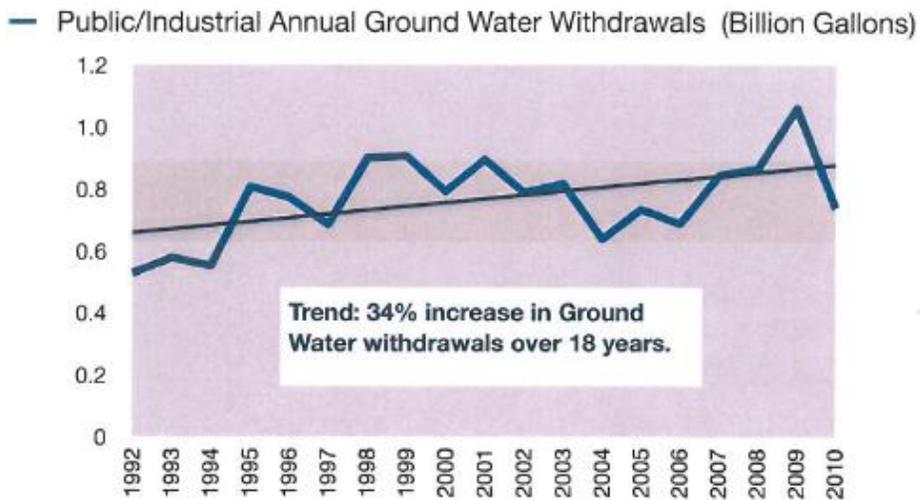
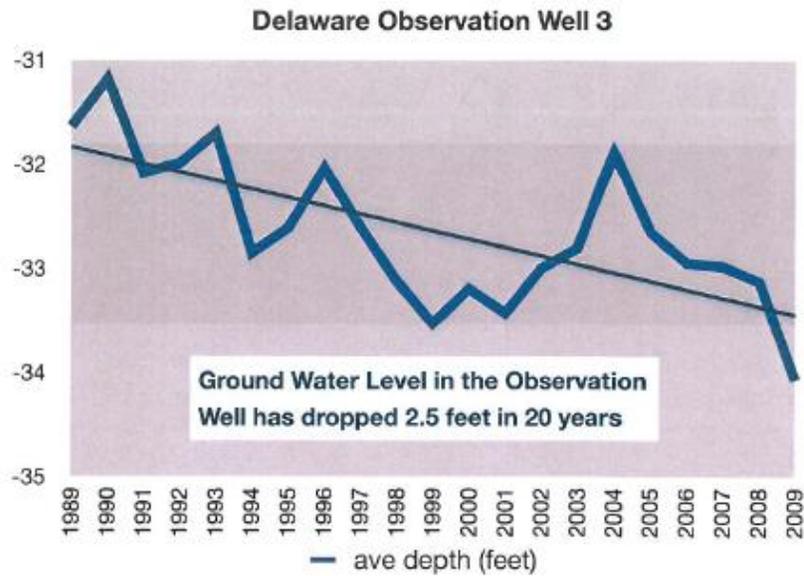
- 1) Delaware County lost ~50% of its forest cover between 1991 and 2006....from 17% to 9% forest cover.



- 2) Annual stream flow at Worthington was graphed (subtracting out the flow below Delaware Dam, to isolate the flow of water over the through the land in rapidly urbanizing southern Delaware County). The black trend line shows the annual river flow rate predicted by the amount of annual precipitation (based on the model created from 1931-1980 data, expecting 30% of the rain that falls will 'run-off' and feed stream flow). The blue line shows the actual river flow rate, significantly higher than predicted.



- 3) Since more water is flowing into the streams and river, then most likely less water is infiltrating into the ground and recharging ground water supplies. These graphs show a dropping water level in the Delaware observation well, and an increasing demand for ground water.



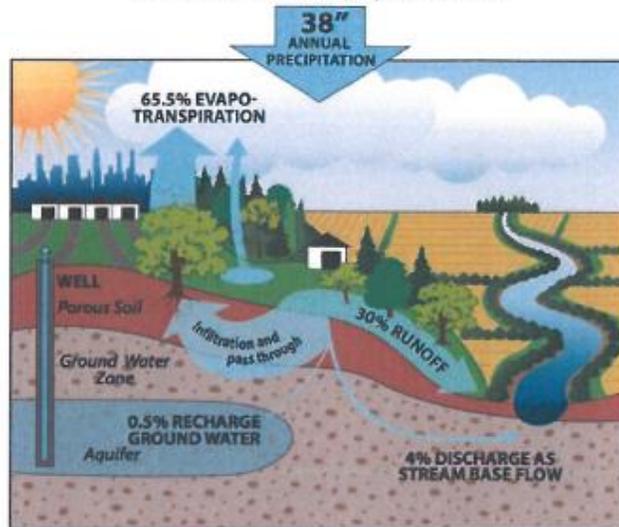
4.) Finally, these images were created to illustrate the changes to hydrology on a watershed scale, due largely to urbanization. (Some of the increase in annual stream flow can also be attributed to increasing storm intensity...an increased frequency of storms greater than 3 inches.)

Increased stream flashiness and flooding has been observed. Wildcat run, for example, used to flood once a year. After upstream development, it now flows over its banks about 5 or more times a year. A resident in Orange county reported increased flooding and erosion of the stream bank and some of her back yard after upstream development. SR 315 and 98 had to be temporarily closed in 2013 due to flooding.

Flashy hydrology leads to lower base flows. Water-Willow, which thrives in shallow water, is now observed along the river where it was not growing before. Lower base flows reduces aquatic life quality in streams.

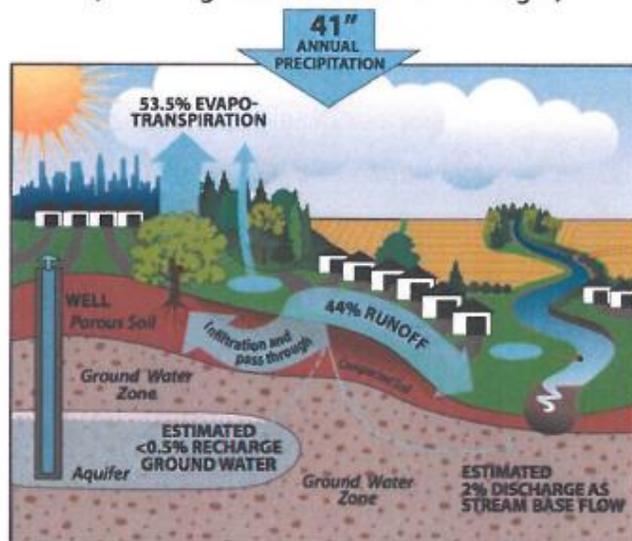
Olentangy Permit Area Water Cycle

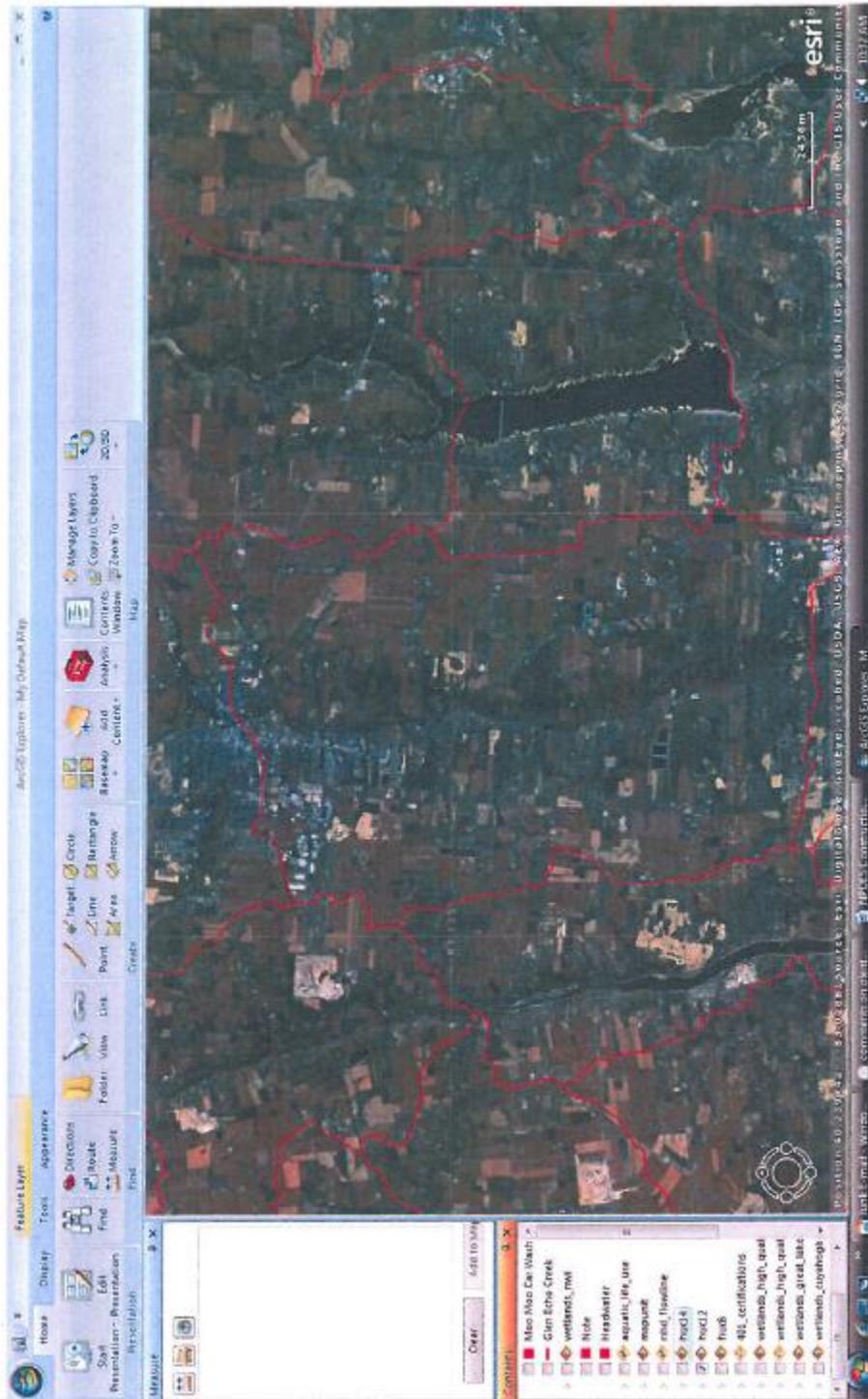
(Based on 1931-1980 period data)



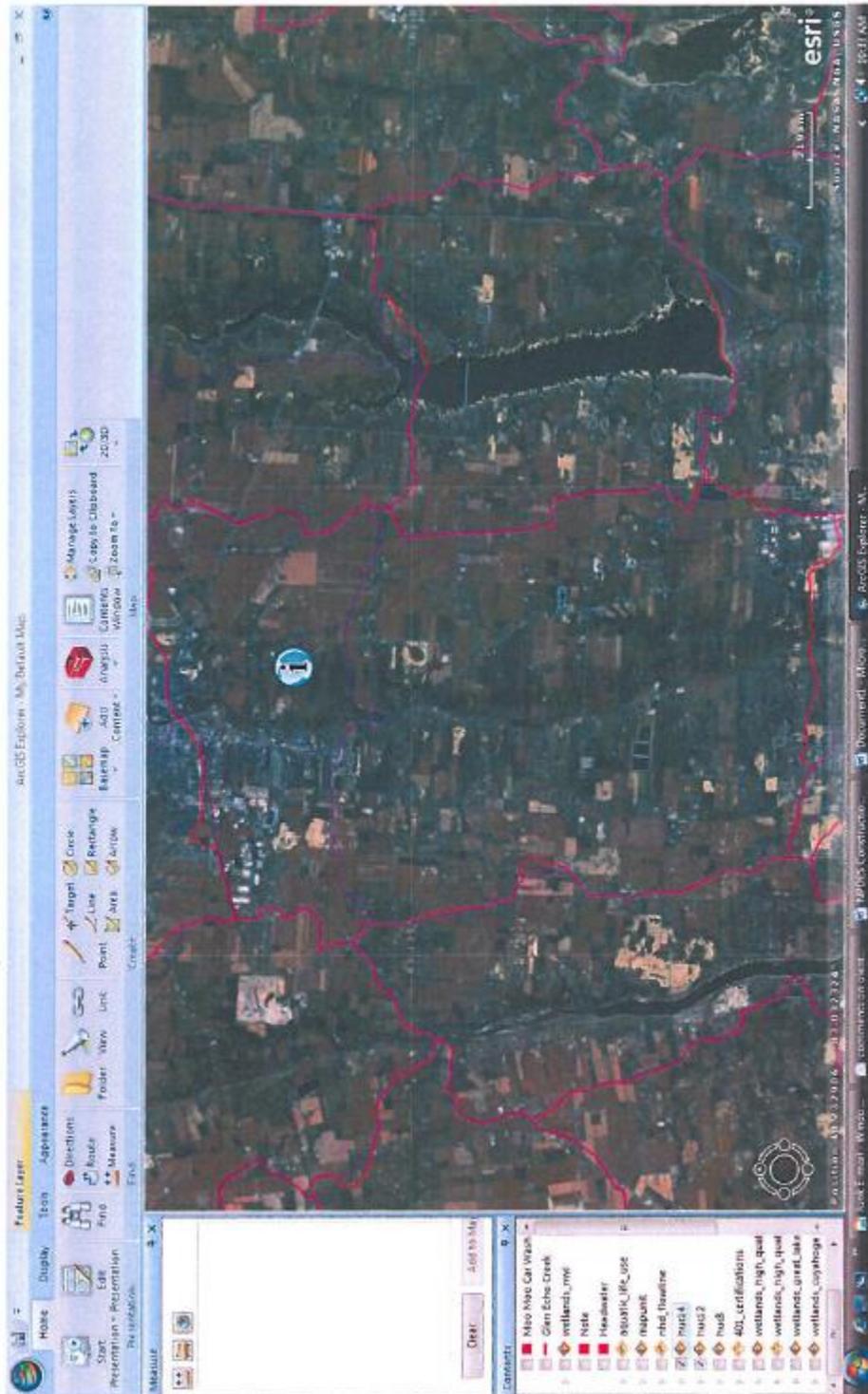
Olentangy Permit Area Water Cycle

(Reflecting 1980-2010 Land Use Changes)





12 Digit HUC boundary shown in red



14 digit HUC boundary shown in Purple