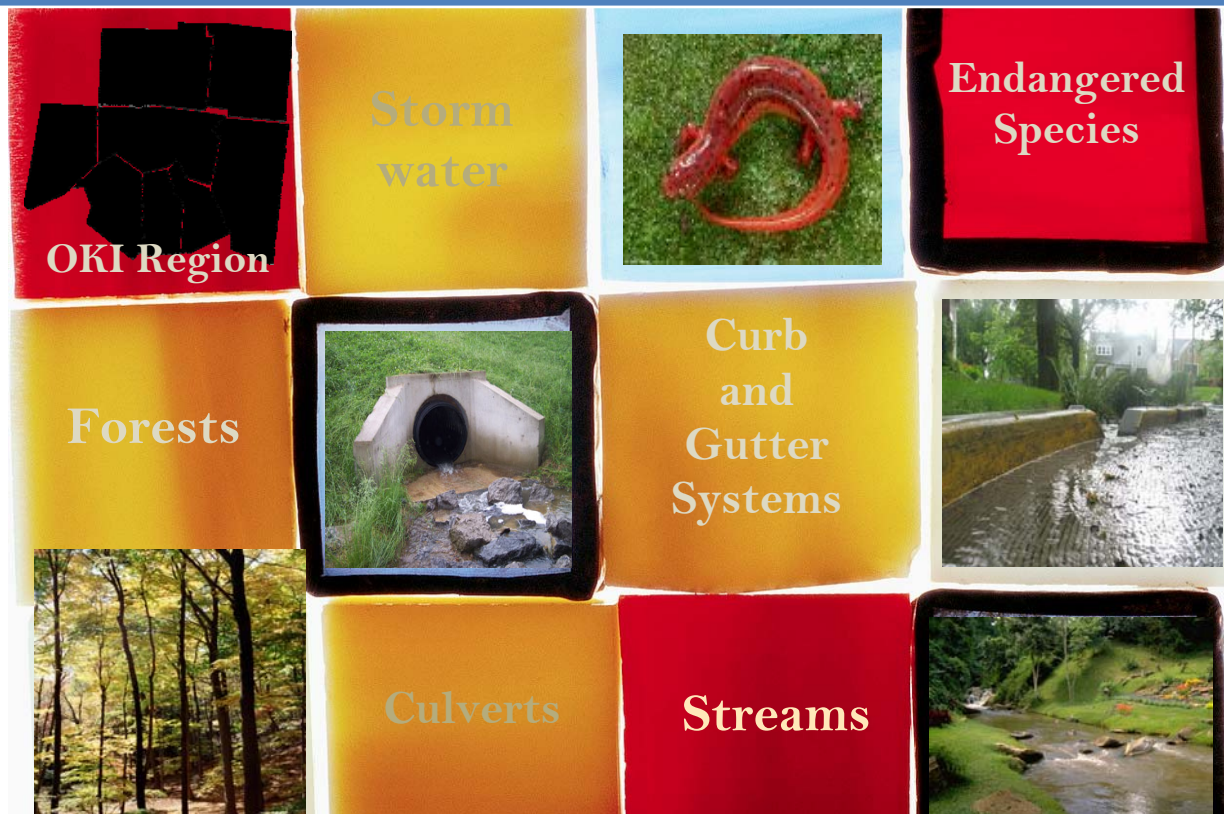


Environmental Consultations in Regional Transportation Planning



OKI's Consultations Process and Discussion
With Local Agencies in 2010-2011



Environmental Consultations in Regional Transportation Planning

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June, 2011

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Executive Summary

OKI Environmental Consultations with Local Agency Consultations, 2010-2011

OKI environmental consultations bring new insights to transportation planning. Consultations expand opportunity for transportation investments to advance sustainable development and reduce negative and costly environmental impacts.

As a new process, the consultations involve new agencies in the transportation plan's development and provide opportunity to consider:

- the cumulative environmental effects of transportation improvements (in addition to project-level impacts),
- options for avoiding impacts that result in mitigation and related costs,
- the extent and vulnerability of the region's least impaired environmental resources,
- the potential for local development and stormwater management strategies to reduce environmental impacts, and
- the local effects of state conservation plans and programs.

This report is a summary of OKI's consultations process and discussion with local agencies that includes:

- an explanation of the requirement for consultations and its intent,
- the schedule, participation, and format for OKI consultation sessions,
- lists of least impaired streams and species at-risk by county,
- local agency comments on the transportation plan's environmental effects,
- environmental impacts of major concern to state agencies,
- local practices to conserve stream corridors, reduce impervious cover and stormwater runoff, and manage roadway runoff,
- local agency views of the effectiveness of county development, stormwater management, and conservation strategies to reduce environmental impacts,
- a map for comparing "regionally significant environmental resources" with the developed area and recommended transportation improvements, and
- results of a survey of local agency familiarity and use of state conservation plans and programs (to be provided to state agencies).

Highlights of OKI consultations with local agencies are presented below.

Process for Environmental Consultations

- Federal requirements call for metropolitan planning organizations (MPOs) like OKI to conduct environmental consultations that involve a comparison of the transportation plan with environmental resources identified for state conservation or protection.

- Consultations are intended to result in better decisions for improving transportation that more fully account for environmental effects and their financial consequences. They provide opportunity to avoid negative and costly environmental impacts that can result from highway expansion and conventional development trends and practices.
- OKI consultations involved seven sessions and 44 agencies with conservation, land use planning, parks, storm water management, or water resource management responsibilities (34 agencies participated in discussions).
- Each session featured an explanation of information used for the comparison and a discussion of where and how environmental resources may be adversely affected by the transportation plan and related development – and how adverse effects might be avoided.

Environmental Resources Considered

- OKI identified environmental resources for their regional significance based on state investments, regulations, or policies, which in turn indicate where transportation projects are likely to require mitigation and incur increased costs for impacts not avoided and where resources warrant conservation.
- Regionally Significant Environmental Resources are classified into five categories: State-Conserved Area (state parks, wildlife areas, and preserves), Scenic River (the Little Miami River), Regionally Significant Streams, Wetlands, and Endangered, Threatened, and Rare Species.
- OKI identified each county's Regionally Significant Streams and the information in state wildlife plans, water quality standards, water quality Integrated Reports, or antidegradation policy that document the value of these streams for conservation.
- OKI identified the native species per county that are listed at federal or state levels as endangered (in danger of extinction), threatened (likely to become endangered within the foreseeable future), or otherwise at risk.

Conclusions from Discussion of Local Strategies

- Environmental impacts from transportation improvements and related development that are of major concern to state agencies include concerns that:
 - forested tracts remain intact,
 - stream corridors remain functional for wildlife movement,
 - roadway runoff be diverted from direct entry into streams (and highway projects avoid infringement on riparian zones),
 - streams not already impaired be protected, and
 - the growth of impervious surface be constrained.

- Local development strategies do not effectively address state agencies' major environmental concerns, as indicated by:
 - a general lack of development practices that conserve forested areas, stream corridors, stream quality, and stream channels and of provisions to protect unaltered or high quality streams,
 - few requirements or incentives to reduce impervious surface (may be the development impact of greatest concern),
 - infilling of streams or piping streams into culverts as common practice, and
 - prevalent use of curb-and-gutter systems that discharge roadway runoff into streams.
- Stormwater management strategies offer new potential for addressing major environmental concerns, as indicated by local initiatives that include:
 - expanded use of stream buffers to manage stormwater (these conserve the stream corridor and benefit wildlife),
 - development of local performance data and consideration of incentives to encourage use of green infrastructure for managing stormwater,
 - increased use of watershed-based planning for stormwater management,
 - use of roadway reconstruction and expansion projects to reduce stormwater impacts and/or restore impaired resources, and
 - planning for Union in Boone County to potentially have below-ground parking and stormwater storage areas.
- Stormwater management strategies for roadways are and will be major determinants of environmental resource conditions, as indicated by these individual and summarized comments:
 - "Federal and state highway projects do not operate with the same stormwater rules as local projects" (state transportation departments are responsible for determining how roadway runoff from federal and state facilities is managed).
 - "The positive side of federal and state transportation projects is the opportunity to fix existing stormwater problems. To retroactively deal with stormwater impacts is more costly than dealing with impacts on the front end."
 - The environmental impacts and financial costs of curb-and-gutter, which is standard practice for managing roadway runoff, could be reduced through greater use of alternative practices, but this is a back-burner issue for most local agencies.
- Strategies that could be more effective in reducing costly environmental impacts include:
 - Local development codes could increase the use of best management practices (BMPs), but code changes of any kind are difficult to implement.
 - Comprehensive plans could be strengthened for protecting environmental resources, although their role as guidance documents limits their effectiveness.
 - Conservation easements would be used more frequently if property owners were provided with property tax reductions or other effective financial incentives.
 - Watershed-based planning is increasing for stormwater management, but the greater challenge is to guide development on a watershed basis (watershed-based planning and

zoning is complicated by the need for multi-jurisdictional cooperation; the Balanced Growth Plan for the Middle East Fork in Clermont County could result in a model for other areas).

- To entice developers to use best management practices, incentives have to be part of the picture.

At the federal level, the financial implications of increased mitigation and continued development trends are the basis for the requirement for consultations. These financial implications are also relevant at the local level, as indicated by this comment:

- "Interest in conserving natural resources is increasing because of the economic angle – protection is in the interest of the pocketbook. The cost of replacing or restoring natural resources should make it a no-brainer to see the need to protect them."

At the local level, agencies that understand the value of better environmental protection face numerous obstacles to their efforts to develop more effective strategies. Obstacles include the other demands and responsibilities addressed by local agencies, the need for demonstration projects and education to increase public understanding, and the need for incentives to encourage changes in conventional practices. In spite of obstacles, progress is indicated by this comment:

- Environmental concerns are now at the table – they are being discussed and considered.

The core issue of the consultations is also key to sustainable development and environmental stewardship and the OKI Strategic Regional Policy Plan: the need for development to occur differently if unimpaired environmental resources are to be maintained and costly impacts avoided. The consultations provide for a comparison of the transportation plan with environmental resources, but the outcomes will depend on local response and initiatives.

Transportation influences where development occurs. OKI's transportation plan and local governments play a role in determining how the transportation system grows and -- to differing degrees -- how development impacts are managed.

- In the outlying areas where the region's least degraded environmental resources are located, local governments have the opportunity to put measures in place and take initiatives for avoiding or reducing the environmental and financial consequences of traditional development.
- In developed area where environmental resources are impaired, local governments may use transportation improvements, re-development projects, and stormwater management as opportunity to restore resources and revitalize communities – to remove streams from pipes (replace culverts with overpasses), replace gray infrastructure with green infrastructure for infiltrating runoff, restore trees and native vegetation, and set development back from the stream edge.
- This current round of consultations will be used by OKI to make future consultations more effective. In the future, consultations will provide insights for considering proposals for improving transportation before projects are recommended.

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Chapter 1

OKI's Process for Local Environmental Consultations

As part of its transportation planning process, OKI conducted environmental consultations with local agencies in 2010-2011. Consultations are required to provide for a comparison of the transportation plan with environmental resources identified for state conservation or protection.

This document describes the process and environmental data that OKI developed to support that comparison and summarizes discussion with local agencies. Discussion focused on where and how local environmental resources may be adversely affected by the transportation plan and related development -- and how adverse effects might be avoided.

This first round of OKI consultations clarifies the transportation system's environmental effects and their financial implications. As a process that can result in better decisions for improving transportation, consultations are to be integrated into the development of each regional transportation plan update.

The Role of Consultations in Transportation Planning

Environmental consultations are a recent requirement for regional transportation planning. Metropolitan planning agencies like OKI are to consult with state and local conservation, environmental protection, and land use management agencies concerning the transportation plan's development. These consultations are to involve a comparison of the transportation plan with environmental resources (per 23 CFR Sec 450.322 [g]). This new process expands participation in the transportation plan's development and consideration of potential environmental effects and their financial implications.

The comparison that is central to the consultations serves to clarify how the transportation system and potential improvements contribute to environmental impacts or consequences that increase financial costs -- and how those impacts and related costs can be reduced. At a project level, improvements that avoid the need for environmental mitigation can result in lower costs. At a broader scale, the cumulative result of transportation improvements and related development on environmental resources is tied to public expenditures such as flood control, water treatment, stormwater management, and species recovery efforts. Planning provides opportunity to change conventional transportation and development trends and practices and reduce negative and costly environmental impacts.

The financial implications of increased mitigation and continued development trends are the basis for the federal requirement for consultations. Consultations are integrated into transportation planning as a strategy to advance sustainable development and environmental stewardship. Consultations are intended to result in better decisions for transportation planning that more fully account for environmental effects and their financial consequences.

As a new process for transportation planning, consultations provide opportunity for reducing environmental impacts that add costs, but they do not determine the outcome. The results of the consultations will depend on local understanding of the transportation plan's environmental effects and on subsequent decisions and initiatives. Progress in reducing public sector costs can be advanced by:

- transportation improvements that do not require mitigation,
- development that avoids impacts to Regionally-Significant Environmental Resources,
- development and stormwater management practices that reduce environmental impacts,
- local initiatives to more effectively conserve high-quality and scarce resources, and
- public policies and development processes that better account for environmental resource values.

Local Agency Participation

OKI consultations with local agencies involved seven sessions staggered over a six month period in 2010 and early 2011. The sessions were arranged as follows:

- four in Ohio (separate sessions for Butler, Clermont, Hamilton, and Warren Counties),
- two in Northern Kentucky (one for Boone, Campbell, and Kenton Counties combined and one with the major storm water management agency/ Sanitation District No. 1), and
- one in Indiana (Dearborn County).

The agencies invited to participate in the consultations are involved in conservation, land use planning, parks, storm water management, or water resources. OKI invited 44 agencies to participate in a consultations session. Those that were unable to participate were contacted after the session and provided with information from the meeting to facilitate their involvement in future consultations.

All together, 34 agencies and 39 individuals participated in the environmental consultations. Participants were mostly county level agencies but included some multi-county and Cincinnati agencies, as indicated by the following list of agency types:

- conservation (county Soil and Water Conservation Districts in Ohio and Indiana, county Conservation Districts in Kentucky, county Natural Resources Conservation Service),
- land use planning (county level),
- parks (county level and Cincinnati),
- storm water management (Sanitation District No. 1 of Northern Kentucky, county level agencies or offices in Ohio and Indiana, Cincinnati), and
- water resources (Clermont County Office of Environmental Quality, Historic Hoosier Hills Resource Conservation and Development, Miami Conservancy District, ORSANCO).

Meetings were scheduled to accommodate the largest number of participants available for one of several possible meeting dates. Appendix A lists the date of each session, the agencies and staff that participated, and the agencies contacted.

Consultations Discussion Framework

OKI developed a framework to guide discussion for all consultations sessions. In this framework, each session began with an explanation of the environmental resource information used for comparison with the transportation plan. The remainder of the session provided for the comparison, which was a discussion guided by three sets of questions for considering where and how environmental resources may be affected by the transportation plan and related development – and how adverse environmental impacts might be avoided.

The four major topics of discussion in the consultation sessions are listed below, along with key information used as a basis for discussion. Each of these topics is addressed more fully in the following report sections, which summarize the discussion by local agencies and details the discussion framework.

Regionally Significant Environmental Resources

Resources identified by the states for conservation or protection are referred to as Regionally Significant Environmental Resources in OKI's consultation process. Resources are classified in five categories: State-Conserved Area; Regionally Significant Streams; Scenic River; Wetlands; and Endangered Threatened, and Rare Species. In each consultations session, OKI described the categories, presented a map and tables that identified local resources within categories, and explained the state data sources used to identify them. Each presentation was modified to account for state differences in plans and policies and county-specific resources. Section 2 describes the environmental resources considered in the consultations and summarizes their review and discussion.

Recommended Transportation Improvements

The consultations include discussion of where environmental impacts may occur as a result of transportation improvements recommended for expanding highway capacity. This discussion is the geographic-based part of the comparison. Section 3 presents local agency comments on potential environmental impairments and benefits related to individual transportation projects and the overall plan.

Local Strategies for Addressing Major Environmental Concerns

Local agencies identified practices in place for protecting local environmental resources from major impacts of the transportation system and development projects. They clarified how local development, stormwater management, and conservation strategies work and do not work to protect local environmental resources, and they discussed the potential to strengthen existing strategies.

Section 3 presents discussion related to state agencies' concerns that

- forested tracts remain intact,
- stream corridors remain functional for wildlife movement,
- roadway runoff be diverted from direct entry into streams and highway projects avoid infringement on riparian zones,
- streams not already impaired be protected, and
- the growth of impervious surface be constrained.

Local Consideration of Strategies Suggested for Reducing Environmental Impacts

Local agencies discussed the feasibility of strengthening five strategies suggested by state agencies for their potential to reduce adverse environmental impacts. Section 4 presents discussion of obstacles and opportunities for protecting environmental resources more effectively through local use of

- low-impact development and green infrastructure for managing stormwater,
- best practices integrated into local code,
- comprehensive plans,
- conservation easements, and
- watershed planning.

Consultation Outcomes

The consultations provide opportunity to consider the transportation plan's potential environmental effects, the environmental and economic benefits of reducing harmful effects, and local options for better protecting environmental resources. The outcome of the consultations depends on local response and initiatives.

This current round of consultations laid the groundwork to make future consultations more effective. Its value includes developing a baseline of environmental data for comparison, introducing the concept of Regionally Significant Environmental Resources and the economic benefits of their protection, and bringing agencies with different responsibilities together to consider issues of shared concern. This round of consultations with local agencies focused on OKI's 2008 regional transportation plan. In the future, consultations will occur during the transportation plan's development and before its adoption. Consultations will provide insights for considering proposals for improving transportation before projects are recommended.

For consultations now and in the future, the underlying issue considered is how to develop while maintaining environmental resources that warrant conservation or protection. Transportation improvements are one factor that affects development impacts on environmental resources; local agencies also considered the impacts of the existing transportation system and its influence on where development occurs and how its environmental impacts are managed.

The remainder of this report presents local discussion for considering:

- What environmental resources should be conserved for the future?
- Can those resources be degraded as a result of recommended transportation improvements or related development?
- How are those environmental resources protected by local development strategies?
- What local strategies could reduce adverse impacts to those resources?
- The results of the consultations will be determined by how local responses to those questions change over the future.

The results of the consultations will be determined by how local responses to those questions change over the future.

Chapter 2

Discussion of Regionally Significant Environmental Resources

Environmental Resource Categories

Regionally Significant Environmental Resources represent state conservation plans, maps, and inventories in a comparison with the regional transportation plan. The resources within the OKI Region that are included in these state conservation documents and data are referred to as Regionally Significant Environmental Resources in the consultations process. They represent a priority for conservation or protection because of state investments, regulations, or policies. For the most part, project impacts to these resources require mitigation and increase costs.

OKI defined five categories of Regionally Significant Environmental Resources. Appendix B contains a map and tables with information on the local resources within these categories. These are high quality or rare resources and/or help to sustain other high quality or rare resources. The environmental and economic value of these resources and their functions is not discussed here but is the basis for their selection as resources that the states conserve or protect.

OKI presented information on each category at the beginning of the consultation sessions to provide a common understanding for use in the comparison. Information included explanation of why and how the states conserve or protect these resources and the sites of local resources. The presentation was modified per session to account for differences in state plans, programs, and policies and for descriptions of the resources located within each county. Appendix C provides the version presented for the consultation sessions in each state and information on the locations of Regionally Significant Environmental Resources in each county.

Each category of Regionally Significant Environmental Resources is defined in Table 1 and further described below.

State-Conserved Area includes state parks, wildlife areas, and preserves. These are areas where states have invested to conserve natural resources. Preserves, which protect rare species as part of state efforts to conserve remnants of their natural heritage, are distinguished from other State-Conserved Area by establishment under state law. Preserves account for 5% of State-Conserved Area. Sites are coded on the map, listed in Table 2 of Appendix B, and explained in Appendix C per state.

Scenic River is the Little Miami River, which is designated at national and state levels for outstanding qualities that warrant conservation for present and future generations. The Little Miami River is a State Scenic River for its entire length, a National Scenic River north of Foster, and a National Recreational River below Foster. Its conservation value is indicated by the Little Miami River's inclusion among the one quarter of one per cent of rivers in the National Scenic River Program. Appendix C contains the explanation provided per state.

Regionally Significant Streams are high quality streams identified for conservation or protection by the states. OKI classified streams in this category based on their having one or more of four criteria. Appendix B contains a map that identifies these streams and Table 3 lists the Regionally Significant streams and stream segments in each county, the indicators of its ecological value used as basis for its classification, and the state programs that represent selection criteria. Appendix C provides explanation of the state programs and lists the streams in each county that meet each criteria.

The following criteria are the basis for classifying streams as **Regionally Significant**.

Conservation priority in the state wildlife plan: Streams or stream segments are considered Regionally Significant if they are designated as a state priority area for conserving aquatic species. Every state has developed a wildlife conservation strategy for conserving habitat before wildlife becomes more rare and protection becomes more expensive.

Designated use in state water quality standards: Streams or stream segments are considered Regionally Significant if they are designated for use as Exceptional Warmwater Habitat or Coldwater Habitat in Ohio or as Outstanding State Resource Water in Kentucky. Uses are designated for individual streams based on existing and potential conditions. Designated Use is a key part of the strategy for achieving the Clean Water Act goal to maintain and restore surface waters to levels that support fish and wildlife (more specifically, to levels that provide for the protection and propagation of fish, shellfish, and wildlife and recreation).

Assessment results in the state Integrated Report: Streams or stream segments are considered Regionally Significant in Ohio if they meet some designated uses; in Kentucky, if they fully support their aquatic habitat designation; in Indiana, if they fully support their designated aquatic life use. Integrated Reports contain water quality data and classify streams in one of five categories to indicate the state's progress in meeting the national water quality goal.

Ecological value in state anti-degradation policy: Streams or stream segments are considered Regionally Significant if they are classified as Outstanding State Water or Superior High Quality Water in Ohio policy or as Exceptional Water in Kentucky policy. Anti-degradation policy defines procedures in state code to keep clean waters clean, so that the quality of the cleanest streams is protected rather than lowered to the level of minimum water quality standards. Dischargers can reduce water quality, but not below conditions that support existing uses.

Wetlands are areas where transportation projects are likely to involve additional costs if impacts to wetland functions are not avoided. Local wetlands are widely dispersed and most are small. The map in Appendix B does not include wetlands except for a symbol for the Oxbow of the Great Miami River, which is 2500 acres of habitat important for rare species and migration.

Wetland functions are of such value (regardless of wetland size) that most are protected by federal and state law. Appendix C contains the explanation provided per state.

Endangered, Threatened, and Rare Species are indicators of area/resources where transportation projects are likely to involve additional costs if impacts to habitat are not avoided. Table 4 in Appendix B lists species by county that are native to the OKI Region and listed at federal or state levels as endangered (in danger of extinction), threatened (likely to become endangered within the foreseeable future), or otherwise at risk. The table also includes data on global heritage rank. Appendix C contains the explanation of this data provided in the consultation sessions.

All together, the OKI Region has 161 species that are federally or state listed. Of the 100 animal species, nearly two thirds depend on aquatic habitat for survival, and nearly half of these are “critically imperiled” or “imperiled” at global levels. The data on listed species indicates the value of this region’s least impaired rivers and streams, wetlands, and natural areas for species survival. The intent of federal and state policy to protect natural resources classified here as Regionally Significant Environmental Resources is partly to avoid the financial implications of a growing list of endangered species.

Table 1. Regionally Significant Environmental Resources

Category	Description
State-Conserved Area	<ul style="list-style-type: none"> ▪ State parks, state wildlife areas (Ohio) and wildlife management areas (Kentucky), and state preserves ▪ Areas where states have made investments that conserve natural area
Scenic River	<ul style="list-style-type: none"> ▪ Little Miami River ▪ Rivers designated in the national and state Scenic River Systems based on their outstanding qualities (national system includes one quarter of 1%, or 166, of the nation's rivers)
Regionally Significant Streams	<ul style="list-style-type: none"> ▪ High quality streams or stream segments identified for conservation or protection by the states ▪ Streams or stream segments that meet one or more of the following criteria: <ul style="list-style-type: none"> ▪ Identified as a priority for conserving aquatic species (per state wildlife conservation plan) ▪ Designated for use as high-quality habitat (per water quality standards in state code) ▪ Documented as supporting its designated use for aquatic habitat (per 2008 state Integrated Report on water quality) ▪ Protected for its current use as high quality habitat (per classification in state Antidegradation Policy for maintaining the stream's current habitat use)
Wetlands	<ul style="list-style-type: none"> ▪ Includes all wetlands regardless of size ▪ Includes the Oxbow of the Great Miami River (habitat important for rare species and migration) ▪ Areas where transportation projects are likely to involve additional costs if impacts to wetland functions are not avoided
Endangered, Threatened, and Rare Species	<ul style="list-style-type: none"> ▪ Species native to the OKI Region that are listed at federal or state levels as endangered (in danger of extinction), threatened (likely to become endangered within the foreseeable future), or at risk ▪ 161 species native to the OKI Region are state listed (includes species federally listed); of the 100 animal species, nearly two thirds depend on aquatic habitat for survival, and nearly one half of these are “critically imperiled” or “imperiled” at global levels ▪ Indicators of area/resources where transportation projects are likely to involve additional costs if impacts to habitat are not avoided

Local Agency Perspectives

In addition to an explanation of Regionally Significant Environmental Resources, each session provided opportunity for clarifying perspectives on the conservation need or value of these and other local environmental resources. Local perspectives were provided through a survey process, discussion of local conservation needs and priorities, and a suggestion for regional transportation planning.

Survey on Environmental Resource Categories

The consultations process integrated a survey into the explanation of Regionally Significant Environmental Resources at each session's beginning. The intent was to clarify local agency perceptions of resources conserved or protected by the states, awareness of state conservation policies and programs, and use of state conservation documents and data.

The survey and a summary of results are provided in Appendix D. Sixteen questions were asked for which the average scores ranged from 45 to 19. Survey responses will be used to provide insight to state agencies and to design future consultations. For state agencies, survey results may indicate needs to increase local awareness of resources that warrant protection, of opportunities for influencing state policy or advocating for local resources, or of the availability of data or state plans or policies for use in local planning and conservation efforts.

From regional and local perspectives, the survey results are a basis for the following observations.

- Greater awareness of state anti-degradation policy could expand local agency participation in opportunities to advocate for the least impaired local streams to be classified for the highest levels of protection.
- Greater awareness of designated uses for streams could increase local efforts to use the development process and conservation strategies to help streams maintain or attain water quality standards.
- Greater awareness of stream assessment categories could improve understanding of the environmental and financial implications of local streams' water quality conditions.
- Greater familiarity of the potential for specific local streams to conserve rare species could advance local efforts to use the development process and conservation strategies to protect these streams.
- Greater awareness among land use planning agencies of state conservation policy and programs, state conservation plans and data sources, and the conditions of local environmental resources could result in stronger efforts to conserve Regionally Significant Environmental Resources and distinguish their conservation value from the more general needs of other resources.

Discussion of Local Conservation Needs and Priorities

To facilitate discussion of local agency perspectives on environmental resources needs, and also facilitate the comparison with the transportation plan, OKI developed county versions of the regional map. The county map was presented to local agencies following the presentation of Regionally Significant Environmental Resources. The map included environmental resources shown on the regional map and also the following additional data:

- major parks and preserves (sites over 100 acres),
- other greenspace (smaller parks and greenspace-related uses such as golf courses, cemeteries, and camps),
- additional streams,
- watershed boundaries (for hydrologic unit code/HUC 12 watersheds), and
- tree canopy data for Kentucky counties (large-crown tree canopy in tracts 100 acres or more).

To initiate review of county maps, participants were asked: Are there other resources or areas that should be added to the Environmental Resources shown on the map, as relatively unimpaired or conservation-worthy, or other types of resources? Suggestions for additional sites, revisions to site-specific information (boundaries, names), additional base map features, and use of local data sources are not included in this report but are being addressed or considered by OKI for its base data and future consultations.

Suggestions for types of environmental resources that could be added to the map for their conservation value or for potential inclusion in future consultations are listed below:

- farmland
- forested area
- prime farmland soils
- prime groundwater recharge areas (highly permeable soils over the aquifer; areas over the aquifer with very high rates of infiltration, where storm water runoff percolates downward rather than flowing into surface streams)
- soils valuable as habitat
- sole source aquifer boundary
- source Water Protection Areas/SWPAs (areas that contribute to a well or well field over a specified time span)
- streams: areas where stream setbacks are required or recommended
- streams: concentrations of headwater streams
- streams: designated Water Trails
- streams with mussel beds

As a basis for discussing local conservation priorities, local agencies were subsequently asked: If money were available for restoration or protection, where should it be spent first? Consensus on priorities for conservation and restoration investments would be useful at regional and local levels for planning, conservation, and mitigation. This issue was broached in the consultations to provide perspective for fuller discussion in the future.

The consultations process obtained local perspectives on conservation priorities for Regionally Significant and other environmental resources as indicated below.

- The environmental resource mentioned most frequently as having the greatest need of protection was not a site-specific resource but “streams.” Comments included:
 - *The greatest need for restoration or protection is in relation to streams.*
 - *Riparian corridors are the priority for restoration or protection.*
- The most effective approach to conserving streams was not a focus of discussion, but suggestions made during discussions indicated diverse opinions. The following comments suggest where to target conservation for streams:
 - *natural flood plains that are still left are the highest priority within priority area (within the stream corridors);*
 - *the headwaters,*
 - *the mainstem and work up the tributaries,*
 - *the property most threatened,*
 - *streams where investments in restoration or conservation have already been made.*
- The term “Regionally Significant Environmental Resources” applies to resources identified for state conservation or protection, but discussion indicates that other resources may be perceived as equally significant. Local agencies are interested in conserving and protecting environmental resources that are impaired as well as those that are not impaired. They identified resources where investments are being made in restoration as important to the local communities. The comment was made that: Restoration and acquisition are both important and should have equal priority for funding.
- References to environmental resources that are not classified as Regionally Significant but are the focus of a local conservation effort or suggested as warranting conservation include the following:
 - *areas along the I-74 corridor / potential to develop an I-74 greenway*
 - *Banklick Creek watershed*
 - *East Fork of the Little Miami River,*
 - *Licking River, especially the southern part,*
 - *Mill Creek,*
 - *Ohio River east of the Little Miami River / Ohio River still has value as habitat,*
 - *Western Wildlife Corridor / a greenway corridor of wooded hillsides along the Ohio River from the Mill Creek near downtown Cincinnati to the Great Miami River bordering Indiana,*
 - *Whitewater and Great Miami River Corridors.*
- Local agencies that could help protect environmental resources identified for state protection or conservation are not necessarily familiar with the environmental value, quality, or scarcity of those resources. In general, the Little Miami River’s designation as a Scenic River is widely recognized, but the Whitewater River and the Oxbow of the Great Miami River

are examples of resources with relatively low local profiles for their environmental functions and their roles in sustaining other significant resources.

Suggestion for Regional Transportation Planning

At one consultations session, discussion at the end of the session evolved into a suggestion for using the regional transportation planning process to better protect Regionally Significant Environmental Resources and also help local governments reduce costs for environmental impacts. The suggestion was for OKI to develop a scoring system to account for regionally-significant environmental resources in transportation project funding (in addition to considerations addressed by the scoring factor for the Strategic Regional Policy Plan). OKI will be responding to that suggestion as part of its preparation of the 2012 update of the transportation plan.

The discussion leading to this suggestion included the following observations:

- the prioritization system for transportation funding needs to better account for state concerns about Regionally Significant Environmental Resources;
- a transportation planning process or funding mechanism needs to include incentives for avoiding impacts to Regionally Significant Environmental Resources;
- environmental assets and concerns can be considered in the project design process but there are no consequences unless the findings affect funding eligibility;
- a scoring system could help local jurisdictions plan better so that projects that involve federal funds are not confronted with delays or increased costs to address regulatory requirements related to mitigation of environmental impacts (project sponsors are further penalized when transportation projects that use Surface Transportation Program/STP funds fall behind schedule); and
- a scoring system could be used to incentivize local governments to consider how a project will affect environmental resources and to secure their jurisdiction's environmental assets.

Chapter 3

Discussion of Recommended Transportation Improvements

Consideration of the Transportation Plan

Each consultation session provided for a geographic-based comparison of the regional transportation plan and Regionally Significant Environmental Resources. Participants identified locations where environmental resources might be affected by individual transportation projects or the cumulative or long term results of combined projects or related development. Discussion included both harmful and beneficial environmental effects.

In the consultations process, the “transportation plan” represents the recommended transportation system, which is a combination of the existing system and recommended improvements. On the map used for comparison, the transportation plan is represented as:

- Developed Area (corresponds to area served by centralized sewer), which represents area with major investment in roadways and other urban infrastructure and services that support development, and
- Transportation Improvements, which are recommendations for expanding highway capacity per OKI’s 2008 regional transportation plan and are classified as:
 - scheduled (committed to be built) or
 - recommended (eligible for funding), and further classified as:
 - lane additions to widen existing roadways or
 - new roadways to be built on new alignment.

The map in Appendix B shows transportation improvement locations, classifications, and code. Table 1 in Appendix B lists project codes by county and includes project descriptions.

Local Agency Perspectives on the Plan

Each session provided opportunity for considering the transportation plan’s cumulative environmental effects or regional-scale environmental issues. The basis for discussion was: For comparison at a regional scale, please consider the potential for cumulative effects. Do you have comments on the transportation plan’s potential environmental effects? on where Environmental Resources may be affected by the plan – in the region, or in your county?

Local agency comments were related to the plan’s focus on highway improvements and to the potential for transportation projects to improve environmental conditions.

Comments related to the plan’s focus on highway improvements were:

- *The transportation system is still too auto-oriented. It’s not diverse enough. Can there be more transit? Can there be more bike facilities? The system is too light on buses, and too light on bikes. Cleveland provides an example for increasing transit use – it has dedicated lanes for bus.*
- *In developed area, scrap improvements to roads. Put in transit.*

Comments related to the potential for transportation projects to improve environmental conditions were both project-specific, which are included in the following sub-section, and general. General comments viewed highway improvements as potential opportunity to remedy environmental problems and new roadways as opportunity to make investments up front that can avoid costly impacts later. Storm water management agencies advocate for highway projects to be integrated with effective stormwater management technologies and avoid stream impairments that lead to future public expenditures related to Total Maximum Daily Loads, flood damage, restoration projects, etc. Agencies involved with parks and conservation advocate for highway projects to be used to maintain or restore stream and wildlife corridors by including such provisions as tree cover, day-lighted streams, and bridge spans that provide habitat connectivity below. Comments included:

- *Roadway projects are opportunity to fix what we know is broken with the stormwater system.*
- *How will increased runoff from the increased pavement be handled? Will bio-swales be used?*
- *Examples of Sanitation District No. 1 and community partnerships with the Kentucky Transportation Cabinet include 1) working for use of Goebel Park in Covington as a project area for water quality mitigation (instead of discharging highway runoff into the Ohio River), 2) retrofit of a state/KYTC detention basin to be a bio-detention basin, and 3) terraced reforestation along I-75.*
- *The Eastern Corridor project includes advanced mitigation concepts for Clermont County in which green infrastructure projects outside of the project area would be used to mitigate for project environmental impacts (advanced mitigation projects are being identified for Hall Run and Salt Run).*

Local Agency Perspectives on Projects

Each session's opportunity for considering place-based environmental impacts at a project-level was framed by questions: Do you have comments on any individual transportation projects? Have you comments on any individual Environmental Resources or sites?

Comments on individual transportation projects, environmental resources, or sites are provided below by county session (same county as the project location with one exception). Comments identified local agency concerns about adverse environmental effects and also identified opportunity for capitalizing on transportation projects to reduce existing environmental problems.

Environmental resources for which local agencies identified concerns about impairments from recommended transportation improvements are:

- aquifer (Great Miami River buried valley aquifer),
 - environmentally sensitive area (Dearborn County habitat for the Indiana bat, which is federally endangered),
 - farmland; Agricultural Districts (in Northern Kentucky),
 - flood plain (Little Miami River and tributaries), and
 - stream quality; headwater streams (related to ridge top impacts in Northern Kentucky); Gunpowder Creek in Boone County, Tanners Creek in Dearborn County, Wilson Creek in Dearborn County).
-

Environmental impacts mentioned as concerns are:

- flooding,
- management of stormwater from the transportation project, and
- secondary impacts (environmental impacts from development facilitated by the transportation improvement).

Opportunities that local agencies identified for using transportation projects to improve environmental conditions were related to:

- addition of green infrastructure for stormwater management (along I-75),
- creation of greenway in a highway corridor (along I-74 and I-75 in Ohio),
- improvement to water quality by reducing combined sewer overflows (in Hamilton County and Northern Kentucky),
- reconnection of habitat (along I-74) and
- reforestation (along I-75 in Ohio).

The potential impacts and opportunities listed above are associated with the following projects. Projects preceded by an asterisk were mentioned for their potential to improve environmental conditions. Numerical codes that precede the project can be used to reference information on project status and description in Table 1 of Appendix A (note that this table applies to data in the 2008 regional transportation plan).

Butler County Session

SR63 Extension between US 127 and SR 63 at SR4 #20499

- The SR63 Extension goes through a part of St. Clair Twp. that is over the aquifer and zoned for industrial use; it will bring development to that area. Care needs to be taken as the road is constructed and as development occurs. Major industry already in the area wants to protect the aquifer quality. Marketing for new development should be focused on water users that are also interested in protecting water quality. Development will happen.
- The area proposed for SR63 extension is 10% sink: storm water runoff does not flow to surface streams but percolates downward. Permeable soils over the aquifer have a high rate of infiltration and tend to soak up runoff – these are recharge areas. Area around the Village of Seven Mile has unique storm water infiltration issues that will need another whole level of coordination if development occurs.

Clermont County Session

Eastern Corridor/SR32 Relocated as new 4-lane facility between U.S. 50 and Eight Mile Road #669 in Hamilton County

- Concern about impacts of the Eastern Corridor project on Clermont County.
- What happens in Clermont County is affected by what happens outside of the county near its borders.

(Note that concern is for this project's secondary impacts, which are environmental impacts related to development facilitated by transportation improvement.)

Hamilton County Session

Eastern Corridor/SR32 Relocated as new 4-lane facility between U.S. 50 and Eight Mile Road #669

- The Eastern Corridor project will cross the Little Miami River and be in the flood plain.

I-71 Martin Luther King Interchange part of #692

- This project will be a “game changer” that will affect that area’s transportation pattern and bring new challenges and opportunities.

***I-74 project code not available / not applicable**

- When I-74 is upgraded, the park agency will work for Shepherd Creek in Mt. Airy Forest to be removed from the culvert, which will allow for re-connection of wetlands and forested area (recommended in *Cincinnati Highways Greenspace Master Plan Strategy*).
- The county park district is looking at the potential to develop an I-74 greenway.

***I-75 expansion (Ohio approaches to Brent Spence Bridge and Thru-the-Valley/I-75 Interchange reconstruction and widening between Paddock Rd. and I-275) #75119, #76256, #77889, #82286, #82288**

- Planning is underway to use the entrance to the bridge as an opportunity to green the interstate.
- I-75 corridor expansion through Clifton provides the Metropolitan Sewer District of Greater Cincinnati/MSD with an opportunity for major sewer separation. MSD is working with the Ohio Department of Transportation/ODOT to build a conduit under the highway for stormwater storage (stormwater will be discharged into the river’ a 12’ diameter pipe is planned). Sewer separation will be extended east to Burnett Woods.
- Interchange reconstruction creates new area that can be used for preservation, raingardens, and green technologies.
- The Cincinnati park department will be requesting an expanded bridge crossing over the Mill Creek to allow for connective greenspace underneath and for reforestation along the entire length.

Warren County Session

SR123/SR63 Connector (Glosser Road widening and extension) #NP22

The new connector will cross nice floodplain.

Northern Kentucky Session concerning KY 536

KY 536 overall #6-158.00, #6-352.00, #702, #6-17.03, #6-17.04

- Recommended improvements warrant further consideration because the alignment passes through very rough terrain and through a lot of farmland.
- Understand the need of this project for improving transportation but stress the need for understanding its water quality impacts.

KY 536 in Boone County (widening to 5 lanes between US42 and I-75) #6-158.00

- Stormwater management improvements are needed for this facility. The provisions for managing runoff from this facility should be similar to what the county would require from a private development project, but that determination will be made by Sanitation District No. 1/SD1 and the Kentucky Transportation Cabinet/KYTC. This project should be subject to requirements that address consistent standards, but there is history of exceptions for managing stormwater from roadway projects.
- Uncertain about how runoff will be managed from Mt. Zion Road's proposed expansion, which will affect Gunpowder Creek -- and the potential to develop a 20-acre site as a park if flooding will not occur.

KY 536 in Campbell County (extension of existing roadway between US 27 and KY 9) #6-352.00

- Two recommended projects in Campbell County go through Agricultural Districts.

KY 536 in Kenton County (widening to 5 lanes between Boone County line and KY 17, major widening and relocation between KY 17 and KY 16, 2-lane facility on new alignment between KY16 and KY 177) #6-162.00, #719, #734

- The Conservation District has concerns about the SR536 extension across Kenton County.
- The SR536 extension across Kenton Co. has environmental implications related to crossing ridge tops.

Northern Kentucky Session concerning I-75

***I-75 in Kenton County reconstruction and widening and Brent Spence Bridge replacement #702, #6-17.03, #6-17.04**

- The I-75 improvement and Brent Spence Bridge replacement is opportunity to address water quality impacts of stormwater. To retroactively deal with stormwater impacts is more costly than dealing with impacts on the front end. This transportation improvement can be used to help eliminate combined sewer overflows all the way from Kyles Lane.
- The construction of a new bridge to replace the Brent Spence Bridge is potential opportunity to fix the largest combined sewer overflow in Northern Kentucky.

Dearborn County Session

Pribble Road (widening between SR48 and SR 1) #512

- A re-visit **to the proposal for the SR 48 bypass** would raise environmental concerns for the effects of cuts through environmentally-sensitive areas (bat habitat) and for Tanners Creek.

Scenic Drive (widening between Wilson Creek Road and SR 48) #501

- If this project moves forward, there will be concerns for impacts to Wilson Creek.

*Potential for improving environmental conditions

Chapter 4

Discussion of Local Strategies for Addressing Major Environmental Concerns

Local strategies are major determinants of how transportation improvements and related development will affect Regionally Significant Environmental Resources. Local strategies include regulations, policies, and practices that influence the development process; local regulations and incentives for stormwater management; and local incentives and priorities for conservation.

The consultations included discussion of local strategies for addressing five major environmental impacts identified by state agencies in OKI's earlier consultations. Local agencies were asked how their counties address environmental impacts related to state concerns that:

- forested tracts remain intact,
- stream corridors be conserved,
- roadway runoff be diverted from direct entry into streams,
- streams not yet degraded be protected, and
- the growth of impervious surface be constrained.

The resulting discussion indicates local strategies that are in place or being advanced; it does not account for all strategies used in the region nor used by participating agencies. Based on the consultations, indications are that the major concerns discussed are not effectively addressed at the local level but that some concerns will be better addressed in the future as a result of stormwater management strategies or other local initiatives. Discussion indicates that local governments:

- do not take initiative to conserve forested area,
- are expanding the use of stream buffers that can help conserve stream corridors,
- commonly use curb-and-gutter systems that discharge directly to streams,
- do not distinguish high-quality streams as needing higher levels of protection, and
- allow for reducing impervious surface in the development process but generally do not require or encourage it.

This section summarizes discussion for each of the five environmental concerns. It includes references to strategies being used (in tabular format) and comments on strategy limitations, potential, and alternatives. Discussion provides a basis for considering the transportation plan's potential effect on Regionally Significant Environmental Resources:

- What are the potential effects of the highway system and related development on Regionally Significant Environmental Resources?
- Are additional or alternative local strategies needed to conserve Regionally Significant Environmental Resources?
- What local strategies have the greatest potential to protect Regionally Significant Environmental Resources?

Conservation of Forested Tracts

Basis for Discussion: A shared and major concern among state conservation agencies is that forested tracts – and other large blocks of habitat – be left undivided... that they should not be dissected – it’s “Better to avoid forest” all together. How is this issue addressed in your county?

Summary of Comments: The local development process is not used to conserve forested area, although some area is conserved by provisions for conserving other resources, such as flood plains and stream corridors. Local efforts to conserve forested area are primarily those of park and conservation agencies that are related to acquisitions (funds are limited) and promotion of state and federal conservation and tax-reduction programs and good management practices.

Counties do not have strategies that focus on conserving forested areas nor protecting them from adverse impacts. Comments were:

- *How are forested tracts protected? They're not.*
- *There is no protection of forested land at the county level.*
- *Conservation of forestland is not addressed in county regulations.*
- *This issue is not addressed in any of the three counties, unless property is purchased.*
- *Forest is not protected if it's privately owned.*
- *In non-residential development, it's common practice to remove all trees.*
- *[Related to efforts to keep grazing animals off of forested slopes] Land management by the property owner is entirely voluntary, unless cost-sharing is involved. The only regulation of forested area is related to cost-sharing programs.*
- *Regulations to prevent destroying trees in the development process may be considered by some as "a taking," since owners can cut trees on their property, although other restrictions that are regulated might also be protested as "a taking".*

Local agencies are aware of the value of conserving forested area, as indicated by comments:

- *The more that forestland can be kept intact, the better.*
- *Dissecting of large tracts should be a concern.*
- *The quality of the forest should be considered.*
- *Wooded wetlands classified as Category 3 would typically have high levels of biodiversity and might contain or provide habitat for threatened or endangered species.*

Strategies in the development process discussed for contributing to conserving forested or wooded area are presented in Table 2 and listed below, along with comments.

Table 2. Local Forest Protection Strategies

NOTE: Information represents discussion and does not fully represent county strategies; shaded area indicates no discussion.

	4 Ohio counties	3 Kentucky counties	Dearborn County
Development strategies that can protect forested areas			
Flood plain regulations	Butler County		
Regulation of forested wetland	State regulations applied to Ohio counties		
Treeline buffers	Treeline requirements are under development in Warren Co. (5 townships)		Vegetative buffers required between properties
Wellhead regulations	Butler County		
Local efforts and available programs for protecting forested areas			
Acquisition/purchase	Grant through Ohio Water Resources Restoration Sponsor Program	1 of 2 tools for conserving forestland	
Canopy data	Near completion for Hamilton County	Developed for all three counties	
Easements		1 of 2 tools for conserving forestland; primarily held by public agencies or nonprofit organizations	
Tax-benefit programs	Ohio Current Agricultural Use Value / CAUV		Indiana Classified Forest Program

Flood Plain Regulations and Wellhead Regulations

- Much of Butler County's forested area is in flood plains and stream corridors; these forests are indirectly protected by flood plain and wellhead regulations.

Regulation of Forested Wetlands

- Clermont County contains forested wetlands classified as Category III wetlands by Ohio EPA (potential habitat of threatened or endangered species, high quality forested wetlands, mature forested riparian wetlands). For projects with impacts, the applicant must show that there is a public need for their project and provide for mitigation.

Treeline Buffers

- *Warren County is re-writing development code (applicable to five townships) to try to maintain buffers for treelines along roads and around farms (would separate farms from each other and from development).*
- *Dearborn County requires landscaped buffers for yards. Where trees are established along the property line, the developer is encouraged to maintain them rather than remove them and then re-plant new trees.*

Other local efforts or references to state and federal programs for conserving forested area that were mentioned during discussion are included in Table 2 and listed below, with comments.

Acquisition of Forested Area

- *Clermont County Park District obtained a grant through a collaborative effort of county agencies to purchase 67 acres of forest along the East Fork of the Little Miami River. This Forest Reserve can potentially be expanded to conserve a corridor segment with higher ecological value. The grant was from the Ohio Water Resource Restoration Sponsor Program.*
- *Purchase of property is one of the tools for conserving forestland in the Kentucky counties (the other is easements).*

Canopy Data

- *Forest canopy data for SR 536 extension in Campbell County was developed in detail with on-ground field level data.*
- *The new canopy study in Hamilton County will provide information to road planners.*
- *[Boone, Campbell, and Kenton Counties have canopy studies.]*

Easements

- *Conservation of forested area is provided through easements held by Conservation Districts, Park Districts, and Conservancies (also by private landowners, but many of these are for agricultural lands).*
- *Easements provide one option for conserving forestland in the Kentucky counties (the other is purchase of property).*

Tax-Benefit Programs

- *Ohio's Current Agricultural Use Value (CAUV) program provides tax benefits to owners of forested area. It can help conserve forested property, especially in areas without sewers (although there are no regulations).*
- *Indiana's Classified Forest Program provides tax benefits to property owners. The program is popular in Dearborn County, especially in areas with higher taxes. It's promoted by the Historic Hoosier Hills Resource Conservation and Development and the Soil and Water Conservation District.*

Forested locations that were mentioned are as follows.

- *A lot of the forested area tends to correlate with flood plains and river corridors; the buried valley aquifer underlies them.*
- *The county has a lot of wooded wetlands.*
- *The East Fork corridor is heavily wooded, and this is being considered in the Balanced Growth Project.*
- *Protection of wooded corridor along the road is referenced in the SR32 land use plan.*
- *Mt. Airy Forest was bisected by I-74.*
- *There is a section of Colerain Township [where] larger lots and no sewer can help conserve the forested area, although there are not regulations. There are also some CAUV participants in some of this area.*
- *50% of the Laughery Creek watershed is in forest, because of steep slopes.*

Conservation of Stream Corridors

Basis for Discussion: Another prevalent concern is for wildlife corridors and habitat connectivity. From a state view, wildlife movement and migration are critical for genetic diversity and can be critical to species survival. Roads are barriers that reduce mobility and increase wildlife mortality – especially for some species. In developed areas, stream corridors can be critical for habitat and travel. The core concern is that streams and greenspace connectivity allow for wildlife travel. How is this issue addressed in your county?

Summary of Comment:

Development decisions do not typically consider impacts on stream corridors and greenspace connectivity. As development occurs, it's conventional to infill streams or "pipe" them into culverts. In flood plains, development is regulated, but permits can allow for development with or without mitigation. There is, however, increased use of stream buffers to set development back from the stream edge in order to better manage stormwater, which also benefits wildlife.

Local agencies reported that stream corridors are not conserved for their wildlife benefits or may not be conserved at all. Comments were:

- *The state concern is not addressed in the county.*
- *Nothing provides for this in Northern Kentucky.*
- *The need for wildlife corridors is not being addressed or regulated.*
- *The county's watershed plans recommend riparian protection, but protections are not in place.*
- *The need is addressed in the development process on a site-by-site basis rather than as a process to protect a resource.*
- *There is a need for a preservation ordinance that applies to a stream boundary. An example of the need is a 200' stretch of Ohio River frontage with serious erosion problems after it was bulldozed for a development project. Development corridors can occur without destroying streams.*

The prevalent practice throughout the region’s developed area is for streams to be placed in pipes, and that practice is sustained in most local development codes. Countering the conventional practice is an increasing use of stream buffers. The use of stream buffers is likely to increase because of its value for stormwater management. One comment was:

- *To require maintenance of the natural stream channel is to save costs for storm sewers, etc.*

Stream buffers were called “the biggest thing” available at the county level for protecting environmental resources. Their potential was indicated by the comment that, “One intent of Kentucky Dept. of Water requirements for stream buffers is to protect natural channels.” Stream buffers help conserve bank stability, water quality, stream flow, and recharge process, which in turn help maintain stream corridor functions for habitat, stormwater conveyance, and flood storage and help conserve forestland and wetlands.

Butler County has the region’s most effective stream buffer requirements, but most of the region’s other counties have stream buffer requirements recently established, in development, or under consideration. Table 3 indicates the status and requirements for stream buffers by jurisdiction and additional strategies mentioned for their use or potential to conserve stream corridors.

Table 3. Local Stream Corridor Protection Strategies

NOTE: Information represents discussion and does not fully represent county strategies; shaded area indicates no discussion.

Strategy	Butler Co.	Clermont Co.	Hamilton Co.	Warren Co.	Boone Co.	Campbell Co.	Kenton Co.	Dearborn Co.
Stream Buffers	Required in unincorporated areas via Flood Damage Prevention Regulations	Not required except in Jackson Twp.; under consideration in Balanced Growth Project; recommended in watershed plans	Recently required for members of the county storm water district (all townships and 30 municipalities)	Encouraged by subdivision regulations (apply to five townships); requirements may be proposed for zoning code	Required by the state in General Construction Permit KYR10 administered by the Ky. Division of Water			Required in subdivision reg.s but not for development of individual lots (development via single permits may exceed that of subdivisions)
Status by county					Required in subdivision reg.s (Article 3, Section 32.5) to be consistent with state requirements		<ul style="list-style-type: none"> Required for headwaters of Banklick Creek Will be considered in county compr. Plan update 	
Width of required buffers	<ul style="list-style-type: none"> 75' setbacks for streams with 1 or more tributaries Required setbacks and non-regulated streams are mapped 	50' setbacks in Jackson Twp.	10'-50' based on watershed size; 25' for watersheds 100-1200 acres; can be expanded or reduced as provided for in regulations	<ul style="list-style-type: none"> Based on stream size; to be proposed as 50', 75' or 100' in zoning code Recommended setbacks are mapped in subdiv. reg.s 	50' for sediment-impaired waters and 25' for high-quality streams. The buffer begins at top of bank.			
							50' for headwaters of Banklick Creek	
Local flood plain regulations (Comment: Remaining natural flood plains are highest priority for conservation within stream corridors.)	Contain requirements for stream setbacks; area within setback is to be undisturbed or natural area (helps conserve and expand forest area)				Counties and communities have little control over flood plain development; flood plain managers have limited authority for permitting. State Flood Plain Management regulations define process for obtaining permits for development from the Ky. Division of Water and U.S. Army Corps of Engineers. Development that is allowed may be required to pay money to mitigate impacts or may avoid fees, depending on project impact.			
Maintenance of surface streams / Limitations on stream piping			In Cincinnati, the conventional development practice is for streams to be piped	Works with developers for streams to be maintained (not piped); considers that zoning would be more effective than subdiv. reg.s	KDOW requirements under General Construction Permits are intended to protect natural channels.			

Table 3. Local Stream Corridor Protection Strategies

NOTE: Information represents discussion and does not fully represent county strategies; shaded area indicates no discussion.

Strategy	Butler Co.	Clermont Co.	Hamilton Co.	Warren Co.	Boone Co.	Campbell Co.	Kenton Co.	Dearborn Co.
Fewer culverts / greater use of crossings								
Longer bridges (connectivity under bridge allows for wildlife travel)								
Day-lighting of streams in culverts/in pipes			Opportunities related to combined sewer overflow reductions and interstate reconstruction		Opportunities related to combined sewer overflow reductions and interstate reconstruction			
Trails to conserve greenspace in stream corridors				Strong public interest in trail development via surey and local advocacy group				
Acquisitions to purchase priority conservation areas in stream corridors		Obtained grant to purchase forested tracts along a major stream (potential to conserve high-quality segment grant from OH Water Resource Restoration Sponsor Program)						Limited funds prevent park district from protecting streams by acquiring property
Easements under agricultural conservation programs								
Project Negotiations				Works with developers for streams to be maintained rather than piped				Conditions to protect streams can affect re-zoning approval

Features in the Butler County stream buffer requirements especially effective for conserving steam corridors are provisions for 75-foot setbacks (set to protect from bank slippage), an undisturbed or natural buffer (conserves forest area and wildlife habitat), and application to streams with one or more tributaries (only First Order streams are excluded). Requirements are contained in the county flood plain ordinance that applies to unincorporated area (*Flood Damage Prevention Regulations, Section 6*). Developers supported the regulations as beneficial to their interests.

The effectiveness of stream buffers as a strategy for conserving streams and wildlife corridors is limited by exclusions to the areas and developments to which it can be applied. Comments were:

- *Protection for smaller streams, for headwaters and other streams without tributaries, is warranted to conserve habitat but would be more difficult to regulate.*
- *It's hard to enforce regulations to keep state roadway projects outside of the buffer area.*
- *The same rules need to apply to individual homeowners as to developers, but it's hard to do by ordinance. The cumulative impact of excusing individual properties from buffer requirements can be larger than the impact of subdivision projects.*
- *It's questionable how the Kentucky ordinance will be applied and what streams will be protected -- there are a lot waivers.*
- *It's difficult to apply stream setbacks to non-residential development.*

There are numerous obstacles to strengthening stream buffer requirements or expanding their use. Comments were:

- *Kentucky counties and communities have little control over development in the flood plain; local flood plain managers have limited authority for permitting. State flood plain management regulations make it relatively easy to obtain permits for development from the Kentucky Division of Water and the U.S. Army Corps of Engineers. The permits allow development to occur but may require the developer to pay money to mitigate impacts, or fees can be avoided, depending on project impact.*
- *Storm water regulations are viewed as "anti-development," and provisions for the riparian buffer are the most contentious.*
- *The riparian buffers required in the stormwater regulations were negotiated as "the middle ground," but the "middle" is not very conservation-oriented. The "middle ground" is affected by concerns that buffers are a "taking away" (a property rights issue).*
- *Riparian buffers would be great, but it's hard to get them into ordinances because they occupy land (perceived as "a taking").*

Strategies other than stream buffers can help conserve the role of stream corridors for use by wildlife. Table 3 lists strategies used or with potential in the OKI Region, based on discussion, and they are listed below with comments. These are strategies for addressing what Indiana's state wildlife plan reports as the number one problem for wildlife in urban areas, which is the degradation of movement or migration, in addition to providing other benefits.

Maintenance of Surface Streams / Limitations on Stream Piping

- *In the development process, the conventional practice is for streams to be piped.*
- *In Ohio, zoning could protect surface streams from piping more effectively than subdivision regulations.*

Fewer Culverts/Greater Use of Crossings and Longer Bridges

- *Policy is needed for fewer culverts, for greater use of bridges instead of culverts, and for bridges to be longer so that parcels on each side of a roadway are connected and the stream corridor can continue functions for flooding and wildlife movement.*

Day-Lighting of Streams in Culverts or Pipes

- I-74 widening will provide opportunity to remove Shepherd Creek in Mt. Airy Forest from a culvert so that wetlands and forested area can be re-connected. This highway segment has the highest number of deer kills in the state.
- A major wastewater treatment management agency is considering day-lighting streams it has piped as one option for reducing water in the sewer system, but projects are limited by money and space. These projects should help revitalize neighborhoods and have community buy-in (by providing benefits such as improving parks or providing community assets) and help change blighted conditions (related comment that economic development is not just about new development but also about preserving and restoring the natural system).

Trails to Conserve Greenspace in Stream Corridors

Trails could help conserve stream corridors. In the park survey, "walking trails" was the most popular response for needed facilities; there is uncertainty about the ability to journalize and establish easements.

Acquisitions to purchase priority conservation areas in stream corridors

- Clermont County Park District obtained a grant through a collaborative effort of county agencies to purchase 67 forested acres along the East Fork of the Little Miami River. This Forest Reserve can potentially be expanded to conserve a corridor segment with higher ecological value. The grant was from the Ohio Water Resource Restoration Sponsor Program.
- Dearborn County Park Department's options to protect streams are limited by lack of money to acquire property (all but four acres of county park land have been donated). Once land is acquired, thought, it does not cost much to maintain it.

Easements under agricultural conservation programs

- Agricultural conservation programs focus on blocks of property and not riparian corridors, but it would be less expensive to conserve just the stream frontage if funds were available. Stream frontage is less productive cropland and the least productive real estate area and has the greatest conservation impact, so easements in stream corridors can provide "the biggest bang for the buck."

Project negotiations

- In Dearborn County, subdivision of land results in a re-zoning process that allows for conditions to be applied that protect streams. The application for re-zoning has elements for conditional approval, so approval is based on addressing issues. The conditions depend on whether development involves a minor subdivision or a larger subdivision. Larger developments are governed by more rules.

Diversion of Roadway Runoff from Streams

Basis for Discussion: There was discussion by state agencies of the need for highway projects to avoid infringement on riparian zones. Comments were that the potential for adverse impacts is exacerbated on roadways adjacent to a stream – that “roadways are pathways for salt and contaminants” and that runoff creates “changes to stream temperature and velocity.” One concern is that roadway runoff be diverted from direct entry into streams. How is this issue addressed in your county?

Summary of Comments:

Contrary to being diverted from streams and rivers, roadway runoff is commonly discharged to them directly from curb-and-gutter systems and is a source of local stream pollution and stream channel degradation. For existing roads in developed areas and for new roads -- even in rural areas -- curb-and-gutter is standard practice. The environmental impacts and financial costs of managing roadway runoff could be reduced through greater use of alternative practices, but this is a back-burner issue for local agencies. For state and federal highways, state transportation departments are responsible for determining how roadway runoff is managed. The continued use of conventional practices has enormous implications for local streams. Reconstruction and expansion projects provide opportunities for managing stormwater so that environmental impacts are reduced or even repaired (discussed in Section 3).

Runoff impacts on streams are affected by a roadway’s proximity to the stream (comment: one reason for developing the stream buffer is to keep roadways outside of the buffer area), but those impacts are dwarfed by the effect of stormwater runoff that’s piped directly into streams. Throughout the region, roadway runoff is discharged directly to streams from curb-and-gutter systems (piped systems that convey runoff through storm sewers and discharge to catch basins or directly to streams). Comments were:

- *Most of the runoff from roadways is piped directly into streams, and the issue is generally not addressed in the county, except in some new projects.*
- *Most new roadways are required to have curbs and gutters.*
- *Curb-and-gutter is expensive, but it’s the standard requirement for roads in dense areas.*
- *Subdivision regulations require curb-and-gutter – there are no obstacles to this practice.*
- *The major concern is for getting water off the streets. Street runoff goes into streams.*
- *New roadways are supposed to discharge runoff to basins; there are still a lot of roads that don’t.*

Roadway runoff damages streams by its content, volume, and velocity. Requirements for pretreatment (residency before runoff enters the stream) reduce but may not prevent stream impairments. Comments were:

- *Roadway runoff changes pH -- which is a significant water quality concern -- in addition to its effects on increased salts, contaminants, stream temperatures, and velocity.*
- *Pre-treatment usually involves retention and settling, which reduces pollutants and temperature impacts but not necessarily impacts from road salt or runoff volumes.*
- *The usual practice is to keep treatment within the existing right-of-way, which reduces treatment’s effectiveness. This level of treatment will not enable streams to meet Clean Water*

Act Standards but avoids the expense of purchasing additional right-of-way -- requirements for additional right-of-way or higher levels of treatment could significantly slow project implementation.

- *Some jurisdictions are reducing road salt impacts by "precision salting" or use of salt alternatives, which help address Phase II stormwater requirements.*

Regulations that govern stormwater management practices are continuing to evolve. The federal Phase II NPDES Storm Water Permit Program classifies road-related storm sewer systems as small municipal storm sewer systems (sMS4s) and divides managerial responsibility among local and state agencies. State transportation departments are responsible for managing the stormwater, construction, and operational impacts of their highway systems. Comments were:

- *The MS4 regulations need to be applied equally.*
- *Federal and state highways have a huge impact on stormwater and streams. The Kentucky Transportation Cabinet/KYTC issues its own permits and determines how to dispose of stormwater for new roads built with state and federal funds -- these roads are exempt from local requirements that apply to private developments. Sanitation District No. 1/SD1 is responsible for determining how runoff from other roads is delivered to streams (previously the responsibility of local communities).*
- *Transportation requirements "pay the price" of protecting the Little Miami River from stormwater impacts, in contrast to the lack of requirements for private development, even large scale private projects.*
- *Why do the state and SD1 both have responsibilities for post-construction regulations? The post-construction piece is the problem for water quality. Cities have to have pollution prevention in place, but that's not the case with state and federal projects.*
- *For state transportation departments, the usual focus is to get a road built and not be slowed down by looking at stormwater impacts. If a roadway project impairs stream quality, the costs will be paid when the Total Maximum Daily Load/TMDL is done. To retroactively deal with stormwater impacts is more costly than dealing with impacts on the front end.*
- *Northern Kentucky stormwater requirements are inequitable for private development and public roadway projects (example of a commercial project required to construct a large detention basin vs. a state roadway project that resulted in stormwater damage to residential driveways).*

Table 4 indicates practices used or considered for managing roadway runoff by jurisdiction that were mentioned in the consultation sessions, for which discussion and comments are below.

Table 4. Local Practices for Managing Roadway Runoff

NOTE: Information represents discussion and does not fully represent county strategies; shaded area indicates no discussion.

Strategy	Butler Co.	Clermont Co.	Hamilton Co.	Warren Co.	Boone Co.	Campbell Co.	Kenton Co.	Dearborn Co.
Use of curb-and-gutter	Required for public roads (including subdivisions in rural areas)	Required for all new streets			Required for areas with density >1 unit/acre	Required	Required	Required for areas with density >1 unit/acre
Disposal of discharge from curb-and-gutter		Point of discharge is a problem for areas previously without curb-and-gutter	Discharge is commonly to streams	Allowed to be discharged to streams if pre-treated (retention & settling reduces pollutants & temperature but not road salt or volume impacts)	<ul style="list-style-type: none"> For roadways for which SD1 has responsibility for managing runoff (previously the responsibility of local communities), SD1 determines how roadway runoff is delivered to streams (e.g., basins, pre-treatment, ...) For new roads constructed with state or federal funds, Ky. Transportation Cabinet/KYTC determines how to dispose of stormwater 			Discharge is directly to streams except for areas with combined sewers (overflows to streams are being corrected)
Use of alternatives to curb-and-gutter	Waivers can be made for private roads and PUDs		Changes to design manuals under consideration by county stormwater mgmt. agency	Standards in place for constructing rural streets without curb-and-gutter	Alternatives allowed for areas with <2 units/ acre		Alternatives are to be considered in revision of subdivision regulations	
Swales for infiltrating runoff (LID practice)	Not allowed in current regulations	No allowance for bio-swales in unincorporated area	Limited by lack of space in developed areas; dry swales allowed for parking lots					

The widespread use of curb-and-gutter is partly attributed to inappropriate application of state practices to local roads. Comments were:

- *The Ohio Department of Transportation/ODOT requires curb-and-gutter for urban sections.*
- *ODOT codes influence local codes and practices, but county codes apply to unincorporated area. The use of curb-and-gutter for transportation improvements where there was not curb-and-gutter before is an issue of concern (for impact on local streams).*
- *Best management practices allowed for state roadway projects are not necessarily appropriate or enforceable at a local level (such as infiltration trenches to divert runoff from direct entry into streams).*
- *If ODOT funds are used, then things have to be done the ODOT way, even though state standards may be excessive for local infrastructure.*
- *Stormwater from state roadways can be discharged to a roadside swale or ditch, whereas stormwater from local streets in new developments is managed by storm water regulations for subdivisions.*

Alternatives to curb-and-gutter stream discharges were mentioned and their use, potential, and limitations. Comments were:

- *Many roads in rural areas have ditches to drain stormwater runoff, but ditches are not necessarily allowed for new roads in rural areas. (Comments were made about concerns for maintaining ditches and that some property owners fill ditches to make it easier to mow the grass.)*
- *The county really should get the option for swales back into the regulations.*
- *There's the potential use of roadside ditches to provide linear detention.*
- *What about design criteria for road and ditches?*
- *Consideration is being given to adding dry pipes to ditches rather than installing curb-and-gutter, to the use of berms along the larger roads, and to subdivision regulation allowances for dry swales or infiltration in parking lots, but there is nothing on the books.*
- *Roadway runoff from developed property is discharged to a basin. Local streets for new development are managed by storm water regulations for subdivisions.*
- *Efforts are begin made to get detention/retention basins placed on highway ramps, but the state transportation department is resistant because of liability issues. There is also the option to use wetlands for the ramps, but the problem is the need to replace wetlands if they are disturbed by roadway maintenance.*
- *The state constructed two lakes to hold runoff from a U.S. 42 segment that have become amenities for subdivisions. This was a regional alternative to constructing eleven detention basins and would be appropriate for local planning – it's a win-win example.*
- *The county engineer may be willing to make regulatory changes to allow for swales that are currently prevented by road design requirements, but the fire departments fight for design standards with wide streets. Many have a stake in this issue.*

The difficulties of changing from curb-and-gutter stream discharges were discussed. Comments were:

- *We need a different attitude toward road design, with swales and less infrastructure, but this issue is met with great resistance.*
- *Change in developed area is limited by the need for space to discharge the stormwater.*
- *A change from curb-and-gutter would not necessarily work in areas with higher densities.*
- *There would be opposition to the use of alternatives, which are perceived as having higher cost.*
- *Highway Department major concerns are for drainage and maintenance, for which it has experience with curb-and-gutter but not with alternative systems.*
- *Progress is being made to add features that mitigate water quality impacts but not the quantity impacts.*
- *It's hard to apply a non-traditional approach.*
- *There is a need for demonstration projects that increase public education and understanding of options to street-and-gutter.*
- *Efforts are underway to be greener, but progress is slow.*

Local agencies made suggestions for increasing the use of curb-and-gutter alternatives. Suggestions were:

- *Revise subdivision regulations to allow for ditches/rural roads and swales (low-impact-development/green infrastructure).*
- *The regulations should be modified so that curb-and-gutter is not required.*
- *Develop categories of public roads that allow for alternatives to curb-and-gutter, such as a category of public roads in rural areas.*
- *Use ordinances to specify the use of curb-and-gutter in certain situations -- the developer or planning staff could request a waiver.*
- *Context sensitive street design would be key to solution – it matches street features such as storm water management and width to the size and conditions of the area served.*

Protection of the Least Impaired Streams

Basis for Discussion: We heard that “Any relatively un-degraded stream has as much potential conservation value as any other.” The concern is that streams not already impaired be protected in the development process. How is this issue addressed in your county?

Summary of Comments:

Local development and stormwater management regulations do not differentiate for stream conditions. Project negotiation may help conserve a stream segment that is unaltered or high quality, but the development process does not account for the environmental value or scarcity of such streams nor the implications of the observation that “It’s cheaper to avoid an impact than to mitigate for it.” The need to protect the least impaired streams is further obscured by the fact that stream degradation tends to be a cumulative process.

Local development processes do not consider the benefits of protecting streams not already impaired for their environmental value or for long-term financial consequences. Comments were:

- *All streams are treated the same in the development process.*
- *Setback requirements and rules are the same for all local streams regardless of stream quality.*
- *Stream quality is not considered at all; the development process does not account for differences in stream quality.*
- *Streams are protected by a development process applied per site rather than a process to protect a resource.*
- *A project has been proposed – and can be built – that would be the first subdivision to contribute warm water flows in a watershed with a spring fed creek.*

The following comment is contrary to preceding comments, but applies to state requirements for projects that use federal funds rather than to local requirements for project review:

- *For the Little Miami River, everyone weighs in for projects with potential impacts.*

Local agency interest in clean streams reflects diverse perspectives and conflicting priorities. Comments were:

- *Natural flood plains that are still left represent the highest priority for conservation within stream corridors.*
- *Headwater streams are not protected by county provisions; conservation should begin with headwaters.*
- *Riparian corridors that are most impacted should have the highest priority.*
- *Low quality streams also need to be protected.*
- *All streams should have to be protected as high quality. Current state policy allows the less clean streams to be polluted more.*
- *State policy that allows the quality of clean streams to be lowered is in disregard of the financial consequences.*

Constraints on Impervious Surface

Basis for Discussion: The development impact that may be of greatest concern is the growth of impervious surface. There appears to be a direct correlation between water quality and pervious surface. The literature refers to imperviousness above 10% of a watershed as the beginning of species loss and over 25% as degradation -- and it's hard to bring water quality back after there is too much impervious cover. The concern is that impervious surface be limited in the development process. How is this issue addressed in your county?

Summary of Comments:

Local development strategies include options but few incentives for reducing impervious surface. Stormwater management agencies are interested in strategies to reduce impervious surface that adds water to their sewer systems, but areas where stormwater reductions are most needed are areas that are most developed. Efforts to reduce impervious surface in developing areas are limited. Roadway width is a major factor contributing to impervious cover, but there is little agreement on appropriate widths among local agencies with different responsibilities. Parking lot size is another factor that affects impervious cover.

Impervious surface decreases stormwater infiltration and increases stormwater runoff which it affects runoff volumes, velocity, and pollutant content. The stormwater runoff from roads, rooftops, driveways, and parking lots is a major source of stream and habitat degradation. The cost of traditional practices for managing stormwater runoff translates into enormous expenses for the construction, operation, maintenance, and effects of sewer systems (including costs to reduce combined sewer overflows). Options for lowering the costs of stormwater management include greater use of alternative practices (i.e., green infrastructure) and reductions in impervious surface.

The impervious percentages referenced above apply to watersheds, but imperviousness often exceeds 25% of a site. It is the cumulative effect of imperviousness within a watershed that causes stream impairments. The challenge is to develop differently – to both encourage

development and limit impervious surface, as part of the larger challenge to accommodate new development without degrading environmental resources.

Table 5 summarizes strategies by jurisdiction that focus on reducing impervious surface that were mentioned in the consultations. Additional discussion of these strategies is below. Strategies that help reduce impervious surface but are more focused on stormwater management or watershed planning are referenced in Section 5 (i.e., Low-Impact Development/LID and green infrastructure).

Table 5. Local Strategies for Reducing Impervious Cover

NOTE: Information represents discussion and does not fully represent county strategies; shaded area indicates no discussion.

Strategy	Butler Co.	Clermont Co.	Hamilton Co.	Warren Co.	Boone Co.	Campbell Co.	Kenton Co.	Dearborn Co.
Conservation design, cluster development, and Planned Unit Developments /PUDs (include less impervious cover than conventional development)	Allowed by county zoning code (but not incentivized); PUDs are promoted by zoning code	PUDs promoted by subdivision regulations for unincorporated areas		Allowed by zoning for both sewered and unsewered areas - 5 submittals (2 are in litigation) - have provided less open space than intended (about 30% vs. 50% ideal)				Considered in discussions of re-zoning but has not been allowed
Regulatory Restrictions on impervious cover		Some township zoning codes have provisions for controlling impervious surface			Not part of county regulations			Impervious percentages not addressed in ordinances
Stormwater fees to incentivize less impervious surface			Incorporated into Hamilton County Storm Water District rate structure		Incorporated into Sanitation District No. 1 rate structure for non-residential properties; industrial user bills are credited for less impervious surface			
Limited Parking Spaces in Commercial Areas	Can be required for new commercial development per zoning (6 townships)	included in zoning (6 townships)						May be encouraged in commercial areas by county planning department (up to 90% peak)

Alternative Development Patterns / Cluster Development, Conservation Design, and Planned Unit Developments/PUDs

For new development, impervious surface and runoff can be reduced below levels of conventional development by clustering or consolidating structures, preserving open space, and reducing street width. These conditions are permitted in Cluster Development, Conservation Design, and Planned Unit Developments/PUDs (and Low-Impact Development/LID discussed in Section 5). Some counties are considering promoting these alternatives by allowing them “by

right” rather than by negotiation, which would expedite the development process and could encourage their implementation. Comments were:

- *Cluster development would affect stormwater runoff and could be in the county’s interest.*
- *PUDs are promoted in the zoning code revisions and some comprehensive plans, but these are policy documents that do not incentivize.*
- *Areas have to be zoned for cluster development, or otherwise it remains just an option.*
- *Conservation developments may not occur unless areas are specifically zoned for them.*

The open space preserved in these alternative developments can be an issue of concern in their creation, both for developers and local governments, related to their maintenance needs and greenspace value. Comments were:

- *Open space management in conservation design developments is a problem, regardless of whether the open space is the responsibility of homeowners or left in a natural state.*
- *A major objection to cluster development is concern about homeowner association management of undeveloped area, but the same concern applies to stormwater retention structures.*
- *The developer has options on who maintains the greenspace, but the county cannot police it except through the zoning inspector.*
- *The type of greenspace conserved – which is not required to have ecological value – and provisions for its maintenance are generally not helpful for conserving resources of environmental significance.*
- *Preferred requirements for greenspace would be a minimum of 50% greenspace and an optimum of 65%.*

Street width is another point of contention in the creation of these alternative developments. Comments were:

- *Developers like allowances for higher density, and builders are promoting the concept. The obstacle has been government allowing for reduction in road size.*
- *The fire departments fight for design standards with wide streets (even in areas where highway widths are narrower than what is required for subdivisions). Fire departments often promote wider streets for access and turns. Many have a stake in this issue.*

Regulatory Restrictions on Impervious Cover

Local agencies alluded to the use of zoning and subdivision regulations to promote practices that reduce impervious cover but did not indicate such applications in their counties, except for allowing for alternative development and variations in parking standards. Comments were:

- *Zoning and subdivision regulations could be used to manage the extent of imperviousness, but zoning would be needed by watersheds instead of townships.*
- *Deerfield Township has done some of this (requirements for “islands”, percentage of pervious surface, landscaping in parking lots).*

Stormwater Fees

Stormwater fees are a strategy for reducing stormwater flows to the sewer system by discouraging the use of impervious surface or rewarding the use of permeable materials. Comments were:

- *The storm water district's rate structure is based on impervious surface.*
- *Incentives for industrial users are in place via credit on bill for less impervious surface.*
- *The City of Florence, which has its own stormwater management regulations, offers credits (i.e., lowered stormwater bill) for 25 years to development projects that provide for stormwater retention.*
- *Green infrastructure technologies cost more up front but are less expensive long-term, which benefits the property owner rather than the developer. The developer's interest is related to storm sewer fees.*

Limited Parking Spaces in Commercial Areas

Parking standards (that specify number of spaces) can be applied through zoning regulations or project negotiations to reduce impervious cover. Table 5 indicates the use of parking standards for commercial areas, but standards can also be applied to other types of non-residential uses.

Chapter 5

Discussion of Five Strategies for Reducing Environmental Impacts

Strategies that would protect Regionally Significant Environmental Resources would account for the cumulative and development-related effects of transportation improvements as well as project impacts. The most effective strategies at a local level would avoid adverse environmental impacts and be in place prior to highway expansion or development. General strategies for avoiding adverse environmental impacts that were mentioned in the state agency consultations are to improve the existing transportation system rather than build new facilities and to conduct better planning – to put protective provisions in place before development occurs.

Strategies discussed in the local consultations included five suggestions made by state agencies for potentially strengthening resource protection at the local level. Local agencies were asked about the potential for their county to conserve the most significant environmental resources through greater use of these strategies:

- low-impact development/LID and green infrastructure for reducing stormwater impacts,
- integration of best practices into development codes,
- conservation elements in local comprehensive plans,
- conservation easements, and
- watershed planning.

The resulting discussion indicates that the suggested strategies could protect environmental resources more effectively but that local agencies have a limited ability to implement them. Local agencies discussed progress and obstacles in their efforts to expand the use of the suggested strategies. The consultations indicate the following:

- Low-impact development/LID and green infrastructure can reduce stormwater's adverse environmental impacts and may lower certain costs, but greater implementation at the local level depends on more incentives and local performance data.
- Integration of alternative best management practices (alternative BMPs) into development codes would increase their use, but code changes of any kind are difficult to implement.
- Comprehensive plans would be more effective for protecting environmental resources if they had stronger conservation elements, but their effectiveness is inherently limited by their role as guidance documents.
- Conservation easements may be used more widely if they were better publicized and facilitated, but property tax reductions or larger financial incentives to property owners would be more effective in promoting greater use.
- Watersheds are viewed as impractical for land use planning and zoning because of the need for cooperation among multiple jurisdictions, but they are being used increasingly for stormwater management and other types of planning.

This section summarizes discussion of the potential to implement state-suggested strategies to protect Regionally Significant Environmental Resources more effectively. The following discussion should be considered in conjunction with discussion in Section 4 as a basis for considering the transportation plan's potential effect on Regionally Significant Environmental Resources, as framed by questions at the end of the first page of Section 4.

Green Infrastructure for Stormwater Management

Basis for Discussion: State agencies discussed the need for low-impact development and green infrastructure for reducing stormwater impacts -- for greater use of rain gardens, trees, flood plains, etc. to detain and filter runoff before it enters streams. Could requirements or incentives for low-impact development and green infrastructure help to better conserve your county's most significant Environmental Resources?

Summary of Comments:

Low-impact development (LID) and green infrastructure can reduce stormwater's adverse environmental impacts and may lower certain costs, but greater implementation at the local level depends on more incentives and local performance data. These strategies, which include the use of alternative best management practices for managing stormwater (alternative BMPs), are allowed in many of the region's developing and re-developing areas but are not widely used. Implementation is slowed by uncertainties about performance, cost, and maintenance and a reluctance to use the unfamiliar. Local demonstration projects, testing, and leadership are facilitating greater use of LID and green infrastructure, but bigger incentives are needed to expand interest and counter the use of conventional practices.

Low-Impact Development (LID) uses site design and green infrastructure (alternative best management practices/alternative BMPs) to maintain runoff volumes close to pre-development levels. LID includes less impervious cover than traditional development projects (concepts similar to alternative development patterns discussed in Section 4). The green infrastructure incorporated into LID infiltrates or otherwise reduces stormwater runoff and reduces the need for gray infrastructure (e.g., storm sewers, detention ponds, retention basins).

Table 6 indicates local use of LID and green infrastructure that involves the following three BMPs (references were also made to the use of rain barrels and green roofs).

- Rain gardens are shallow depressions planted with vegetation and designed to retain and infiltrate stormwater and filter pollutants. They receive runoff from areas such as parking lots, rooftops, and driveways. Rain gardens have been installed throughout the region but are not numerous.
- Grassed swales (bioswales) are landscape features designed to slow and filter runoff and result in stormwater infiltration.
- Permeable paving uses pervious/porous materials that allow stormwater to percolate through to the soil below (alternative to impervious materials).

Table 6. Local Stormwater Runoff Reduction Strategies

NOTE: Information represents discussion and does not fully represent county strategies; shaded area indicates no discussion.

Strategy	Butler Co.	Clermont Co.	Hamilton Co.	Warren Co.	Boone Co.	Campbell Co.	Kenton Co.	Dearborn Co.
Low Impact Development / LID ...	Can be applied where Conservation Developments are allowed by zoning	Allowed in PUDs by regulations but depends on negotiation	Allows for LID (does not include a standard % for greenspace as provided by PUD reg.s)	Not included in regulations but Conservation Design and clustering are allowed	<ul style="list-style-type: none"> To be allowed by subdivision and zoning regulations that are under development by SD1 and will subsequently be incorporated into local regulations (per Kentucky law) To be incorporated into Kenton Co. regulations when updated (to be consistent with SD1 regulations) 			
Green Infrastructure / alternative best management practices for managing stormwater	Allowed in conservation developments by the zoning (not required)	Allowed in PUDs by regulations but depends on negotiation	Would increase if tax incentives being considered by MSD were implemented	Facilitated by Phase II stormwater requirements and by Conservation Design regulations	<ul style="list-style-type: none"> May increase as result of SD1 efforts (considering financial incentives; developing a BMP manual for engineering departments for meeting water quality standards on a project basis) - It's to a city's advantage to search for opportunities to add green infrastructure and partner with SD1 because the consent decree is tied to expenditures. 			Encouraged during review of project proposals, but initiative has to come from the developer
Rain Gardens	A few have been installed in the Mill Creek watershed	<ul style="list-style-type: none"> Installed on individual basis & pilot project Promoted by stormwater mgmt. dept. Inclusion in subdivision regulations has been discussed 						<ul style="list-style-type: none"> Allowed by county 7 have been established (all through grants)
Grassed swales / bioswales					<ul style="list-style-type: none"> Under consideration by SD1 for allowance "by right" in development regulations Under design for Mall Road 			
Permeable paving			Allowed by county code		Applied to test local suitability by SD1			Encouraged by county planning

Local agencies are interested in using LID and green infrastructure and expect it to be used more widely. Comments were:

- *In many areas, Low Impact Development/LID (green infrastructure) would work and be cheaper to construct.*
- *The OKI Region includes areas with very high infiltration rates where LID practices are suitable and swales or rain gardens would work.*
- *The Metropolitan Sewer District of Greater Cincinnati/MSD is looking at "green" for stormwater management.*
- *Sanitation District No. 1 is focused on green infrastructure. SD1 has looked at the urban core and uphill development to identify opportunities for green infrastructure that can minimize the need for gray infrastructure.*
- *Developers like LID if it allows for higher density, and builders are promoting the concept.*
- *Builders are making greater progress with "green" than developers.*
- *Industry and developers are beginning to embrace LEED development (a green building certification system that can include green infrastructure for managing stormwater).*
- *The use of tax incentives for green infrastructure has been considered but not yet pursued.*

Regardless of LID and green infrastructure benefits, local agencies have uncertainties about performance and costs. Comments were:

- *Many of the alternative BMPs being applied have not been proven -- long-term performance, management needs, and costs remain uncertain. Are alternative BMPs really less expensive than conventional practices? More alternative BMPs need to be implemented to provide local data that would establish long-term feasibility.*
- *Greater use of "green" is discouraged by up-front costs and its unpredictability.*
- *Pervious paving sounds great, but there have been problems with clogging and implementation.*
- *Tests of pervious paving on local clay soils have not worked well. The technology is new.*
- *There are public concerns about standing water in swales.*
- *The challenge is that there is not enough local information.*
- *NOTE: The Cincinnati Zoo and Cincinnati Area Professional Green Infrastructure Network/CAPGIN are documenting alternative BMPs' performance and developing a clearinghouse of practices that work best locally.*

Local agencies also have concerns about the management of green infrastructure -- responsibilities, costs, and access -- similar to concerns about detention basins. Comments were:

- *BMPs: Decisions are needed on who is responsible for maintenance and who will cover maintenance costs. / Detention Basins: The concern with detention and retention basins is for maintenance, but the county does not want that responsibility. Cost is another issue of concern.*
- *BMPs: Responsibility for long-term maintenance implies the need to be able to access private property to make repairs. / Detention Basins: There are usually no easements for accessing the structures. Abandoned detention and retention facilities are a problem. Safety (drowning incidents) and liability issues may bring the county to address maintenance issues.*
- *BMPs: Green infrastructure is often on private property and relies on private citizens for maintenance. / Detention Basins: Many of the county's retention/detention basins no longer*
- *work because the management agency has not been able to access them to make repairs or remove clogs.*

Management issues are an obstacle to greater use of LID and alternative BMPs regardless of similarities to detention basin issues. Comments were:

- *Regulations to allow for LID open up maintenance issues. The approach being developed is for communities to be responsible for day-to-day maintenance and for the stormwater management agency to be responsible for major types of maintenance (clogged soils).*
- *BMPs that are not maintained fall short of their potential benefits (such as rain barrels that are not emptied and then overflow). For those BMPs that rely on property owners for maintenance, behavior must change, but that can't be done through regulations alone. More than regulations are needed to change behavior on storm water management.*

Other obstacles to greater use of green infrastructure are resistance to change and the lack of incentives to induce change. Comments were:

- *Rain gardens could be effective if incentivized -- there would be more interest in constructing rain gardens if money were available for construction.*
- *In many parts of the region, developer preference is for detention basins.*

- *A developer has a familiar model and can sell it. A product builder takes a model and applies it over and over. Changes can cause problems.*
- *Developers have no motive or incentive to install green infrastructure technologies.*
- *Alternative BMP technologies may be available, but installation has to be easy for contractors and easy to replicate.*
- *We need a different attitude toward road design to include more swales and less infrastructure, but this issue is met with great resistance.*
- *One of the obstacles to LID is that county regulations are unyielding when it comes to road design.*

Incentives are needed to expand the use of LID and green infrastructure. Comments were:

- *Financial incentives are critical for performance.*
- *LID and green infrastructure need to be incentive-driven, and these incentives should come from the state.*
- *There should be incentives for "green" – incentives are needed to limit impervious surface in new development.*
- *How can jurisdictions get greenspace without incentives, unless they zone areas for greenspace.*
- *There's nothing that encourages anyone to do one or the other – nothing to encourage LID. Unless there's a trigger, it won't happen.*
- *Incentives have to be part of the picture.*

Incentives have to be adequate. Comments were:

- *The storm water district gives credits/reduced fees to facilitate the use of BMPs, but they are too low to provide an incentive -- they don't pay for the cost.*
- *County storm water district / storm water service fees are so low that they do not counter the use of conventional practices.*

Integration of Best Practices into Development Codes

Basis for Discussion: It was mentioned that "The best practices are often precluded by existing codes and ordinances." Are there "best practices" that are deterred by existing codes or ordinances, or changes needed to existing codes to promote certain "best practices"?

Summary of Comments:

Integration of alternative best management practices (alternative BMPs) into development codes would increase their use, but code changes of any kind are difficult to implement. Regardless of their potential to reduce environmental impacts and financial costs, changes to zoning and subdivision codes are hindered by the amendment process and by a general lack of understanding of development costs and environmental resource value. Another option for increasing the use of alternative BMPs involves negotiating their voluntary use with developers.

Local agencies recognize that changes to local development codes could increase the use of better development practices. Comments were:

- *Change in local codes is difficult and takes time, but it's the only way.*
- *[We are] aware that portions of codes are obstructions to some BMPs.*

- Existing building codes that require a variance for the use of BMPs discourage new practices.
- BMPs need to be allowed "by right,"
- Codes and zoning may need to be revised so as not to discourage developers from implementing new techniques.
- Lots of communities have regulations that are counter to green practices.
- One of the obstacles to LID is that county regulations are unyielding when it comes to road design.
- Engineering design standards could use upgrading.
- The regulations should be modified so that curb-and-gutter is not necessarily required.

The difficulty of changing development codes was attributed to many factors, including conflicting opinions and priorities among local agencies within a jurisdiction, resistance to change in general, and a lack of understanding of development costs and impacts. Those factors are listed below with comments.

Conflicting opinions and priorities Comments were:

- It's difficult politically to create regulations. It's difficult to get local officials to vote on regulations, and it is the unhappy property owners that go to public meetings to voice opinions.
- BMPs that reduce environmental impacts may have adverse affects on other public agency concerns. For change to occur, all affected agencies have to be brought into the process.
- Concerns for the environment takes a back seat to concerns for safety issues and maintenance costs.
- The highway department is the only agency with a problem with LID. Its major concerns with road design are for drainage and maintenance.
- Different jurisdictions within a county have conflicting regulations. Cincinnati has a rule that downspouts cannot be disconnected, which is contrary to efforts to reduce storm sewer flows (a revision to the city ordinance has been drafted with caveats for downspout disconnections in Hillside Districts and some other areas).
- Local weed laws can counter BMPs. Cincinnati's noxious weed list includes species suitable for rain gardens and as alternatives to lawns that require mowing.
- Cincinnati and Hamilton County have different approaches for stormwater infrastructure: Cincinnati places infrastructure in the city streets; the county is removing infrastructure to easements alongside the roads (storm sewers under the roads are a long-term maintenance issue).

Resistance to changes of any kind Comments were:

- Regulatory changes are not seen as removing obstacles but as adding obstacles. Any change is difficult.
- Agencies and jurisdictions are taking baby steps to change portions of codes that they know are obstructions to some BMPs, but every change is a political problem.
- Resistance occurs to change in code, regardless of quality of change.

A lack of understanding of development costs and impacts Comments were:

- *Education is needed to expand understanding of conservation needs -- quality of development is expected but not understood by most residents.*
- *Until communities and the public understand the long-term fiscal impacts of half acre lots, there will be no change. Education is needed on fiscal results of non-efficient planning and development.*
- *The general public doesn't recognize the value of the resources we have (wastewater is treated, water is free).*
- *Studies indicate that low-density residential development does not pay for itself, but communities need a better understanding of the fiscal element. The need is for a balance between quality of life and expenses of development, and better tools for decision-makers.*
- *There is willingness on the planning side to enhance the code, but resistance because the community does not understand.*

Changes to local codes would increase the use of alternative BMPs, but other changes are also needed for codes to be truly effective. Comments were:

- *Subdivision regulations have limited authority to promote best management practices.*
- *Subdivision regulations would often be more effective than zoning for regulating development practices, but state code limits local authority.*
- *Unless there is a state ordinance to fall back on, the county can't enforce/protect from environmental impacts to the level it would like.*

An alternative to increasing the use of alternative BMPs through code is the use of negotiation during project review and approval. Comments were:

- *Best practices can occur through negotiation as well as through code.*
- *Boone, Campbell, and Kenton Counties require development plans that involve looking at the development site and its resources. The provisions for stormwater management are not codified but are called for in the review process. The review process brings out issues for consideration by planners that are not addressed by regulations, and involves negotiation and trade-offs.*
- *Property to be developed for a subdivision needs to be re-zoned, which is a process guided by county ordinances that require considering environmental criteria (such as slopes, wetlands, and proximity to flood plain) that are discussed during the application's review. The application's approval is based on addressing issues.*

Comprehensive Plans

Basis for Discussion: OKI actively promotes the development of comprehensive plans. Transportation projects consistent with comprehensive plans are awarded extra points that enhance their chances for funding. How could comprehensive plans be more effective for conserving high-quality resources?

Summary of Comments:

“The comprehensive plan is a toolbox, but it’s not a strong toolbox for environmental resources.” Comprehensive plans would be more effective for protecting environmental resources if they had stronger conservation elements, but their effectiveness is inherently limited by their role as guidance documents.

A comprehensive plan is a fundamental tool for local jurisdictions to define goals and policies that can guide decision-making about the built and natural environment. It provides a basis for considering potential environmental and financial consequences before decisions are made on transportation improvements, infrastructure investments, or development projects.

Kentucky and Indiana require comprehensive plans for counties and municipalities as a basis for zoning authority. Ohio allows counties, townships, and municipalities to develop comprehensive plans but does not require them. Seven of the OKI Region’s eight counties have current comprehensive plans; three of these apply countywide and four apply to portions of the county. Table 7 indicates the jurisdictions covered by county comprehensive plans. Many of the jurisdictions that are not covered by a county plan have their own comprehensive plan.

Local agencies discussed the limitations of comprehensive plans for protecting environmental resources. Comments were:

- *Policy documents – such as comprehensive plans and allowances in zoning codes – can promote strategies or practices for reducing environmental impacts, but they do not incentivize and they do not insure results.*
- *The County needs to take its comprehensive plan to the next level with zoning or subdivision regulations that are more than guidelines.*
- *The comprehensive plan is at an operational level; it serves as a resource of planning information when there is a need to focus on an individual issue.*
- *The development process is caught up in the details of code and the goals are forgotten to protect farmland, riparian corridors, etc. Environmental resources are overlooked in the details.*
- *In Ohio, the county is dominated by townships and they have zoning authority, which limits the effectiveness of a comprehensive plan at the county level.*
- *Most townships in this county have zoning, so the county comprehensive plan is a less effective tool.*
- *Even when a plan includes agriculture conservation in detail, it’s lost in the generality of the plan.*

Table 7. Jurisdictional Authority of County Comprehensive Plans

Strategy	Butler Co.	Clermont Co.	Hamilton Co.	Warren Co.	Boone Co.	Campbell Co.	Kenton Co.	Dearborn Co.
County comprehensive plan	<ul style="list-style-type: none"> ▪ County plan applies to unincorporated area ▪ County zoning and subdivision regulations apply to the 6 townships of Hanover, Lemon, Madison, Milford, Oxford, & Ross 	<ul style="list-style-type: none"> ▪ County plan 1979/not applicable ▪ County subdivision regulations apply to unincorporated area ▪ Townships have zoning authority ▪ Six townships have compr. plans 	County plan applies and planning services are available to 12 townships and to 37 municipalities	County zoning and subdivision regulations apply to the 5 townships of Franklin, Harlan, Turtle Creek, Union, & Washington	County plan, zoning, and subdivision regulations apply to all of the county	County plan and zoning apply to unincorporated areas and to the 6 cities of Crestview, Dayton, Silver Grove, Southgate, Melbourne, & Woodlawn	County plan, zoning, and subdivision regulations apply to all of the county	County plan, zoning, and subdivision regulations apply to all unincorporated area

Suggestions were made for improving the ability of comprehensive plans to protect environmental resources. Comments were:

- *If the comprehensive plan is a toolbox, then the environmental portions need to be improved. The plan refers to the needs of schools, and schools have a plan. If the environment is important, then it too needs a plan.*
- *If comprehensive plans identified all riparian corridors and their land use, then communities may be able to see the benefits of conserving those systems.*
- *Comprehensive plans should include maps/GIS data showing a “green layer” of parcels that the community is interested in protecting, such as hillsides, riparian corridors, significant parcels, tree canopy, and maybe soils layers for infiltration value (indicative of where certain BMPs would work best). Data would indicate where habitat is vulnerable to impacts.*
- *Comprehensive plans could include discussion of tools such as Transfer of Development Rights/TDRs and density bonuses for protecting environmental resources that are sensitive or have conservation value.*
- *Comprehensive plans should include an economic analysis, because the availability of resources to build something does not mean that resources are available to maintain it.*
- *Plans should include a fiscal component as a basis for determining if more units are needed to cover costs of infrastructure or if costs can be handled at all – this provides an educational view.*
- *The comprehensive plan could place more emphasis on conserving agricultural area.*
- *The comprehensive plan and regulatory policy can be used to clarify the pros and cons of development impacts.*

Reference was made to effective local comprehensive plans. Comments were:

- *Some jurisdictions have begun to consider high quality resources in their comprehensive plans, such as St. Clair Township and Oxford Township.*
- *The Oxford Township Plan has designated conservation areas, so the developer would have to change zoning for development to occur in these areas.*

Conservation Easements

Basis for Discussion For high-quality resources, it was suggested that area needs to be acquired that is to be protected, in order to offset concerns about “taking land out of development.” It was suggested that local entities take more initiative to inform property owners of tax benefits and assist with conservation easements -- and that even modest financial incentives could increase conservation. If property owners had more information and assistance, could high-quality resources be better conserved? Is this a feasible strategy for conserving significant resources?

Summary of Comments Local agencies promote and facilitate conservation easements, but this strategy is not likely to be widely used without larger financial incentives. More information could increase interest in establishing easements, but property owners can become discouraged by the process and the low level of financial compensation in comparison to the costs of establishing easements and their land’s loss of development rights. A reduction in property tax might be one option for increasing easements.

Conservation easements may be used more widely if they were better publicized and facilitated, but property tax reductions or larger financial incentives to property owners would be more effective in promoting greater use.

Conservation easements take land out of the development process through a legal process initiated by the property owner. The property’s owner, heirs, or purchasers retain use of the site for which the easement is held by public agencies or private organizations. Easements can be established under several federal and state programs that provide financial incentives via the tax code.

Conservation easements are used throughout the region, as indicated by comments below.

- *The county park district will be focusing more on conservation easements than acquisitions.*
- *Easements and purchase of property – are the only tool for conserving forestland in the Kentucky counties.*
- *In conservation easement programs, the first goal is to protect along water courses.*
- *Many of the organizations that hold easements in Hamilton County also promote conservation and target sites for acquisition.*
- *A lot of property owners are favorable to conservation easements. People call the park district with interest in easements.*
- *It seems that property owners are aware of the option, especially those with large tracts.*

More information could increase interest in easements, but a lack of information is not the only obstacle to establishing easements and is not an obstacle likely to be addressed by local agencies. The comments below are direct responses to the question “If property owners had more information and assistance, do you think that more high-quality resources would be conserved?”

- *Yes, more information would help, but public agency staff levels are decreasing. County staff talks with property owners about conservation easements when discussing property development – they take the opportunity when it arises, but time and money are needed for education.*
- *Yes, especially if there were financial assistance.*
- *Not necessarily. Conservation depends on the individual landowner, and depends on their stage of life. But, more information doesn't hurt.*
- *Maybe, but interest would depend on other factors, too.*

Stronger financial incentives would be the most effective means of increasing easements, based on the following comments.

- *There's not enough incentive for easements, and when NRCS/SWCD did have money it was still a tough sell.*
- *Conservation easements do not get a break on property taxes (they receive a benefit for federal taxes). If state and local governments also gave tax breaks, it would incentivize the establishment of easements.*
- *At the end of the process, the property owner may not get the incentives or assistance expected/needed. The process is difficult.*
- *The county has never discussed a tax levy or other mechanism to purchase conservation easements, but [the county Soil and Water Conservation District has discussed] the need for a reduction in local property taxes to incentivize easements and the need to consider easements for 30 years instead of perpetuity.*
- *There are up-front costs to a conservation easement.*

Other factors also limit the use of easements. Comments were:

- *May not want easements because acreage can finance retirement.*
- *Private property rights are a big issue, and many don't see the big picture or benefits. It's a personal and political issue. Information would help.*

Watershed Planning

Basis for Discussion: There were strong suggestions for a watershed perspective for considering stream impacts from impervious surface -- that watershed boundaries be used for planning and zoning and as the basis for development and conservation decisions. Comments were for decreasing impervious surface by clustering infrastructure around developable areas, and providing open space and protecting sensitive areas for their importance on a watershed scale. Is it feasible to plan development and protect environmental resources on a watershed basis? Could watershed planning protect your county's Regionally-Significant Streams?

Summary of Comments:

Watersheds are viewed as impractical for land use planning and zoning because of the need for cooperation among multiple jurisdictions, but they are being used increasingly for stormwater management and other types of planning. Watershed-based initiatives and collaboration appear to be increasing while the challenge remains of how to guide the development process on a watershed basis.

Watershed-based planning would be the preferred approach if land use planning and zoning could be carried out across political boundaries. Comments were:

- *Watershed planning should be common practice, but the obstacle is political boundaries.*
- *Watershed planning is a sound rationale, but it's hard to carry out.*
- *Watershed zoning is not practical because of multiple jurisdictions with authority.*
- *Watershed planning looks great on paper, but when two jurisdictions are brought to work together it's a conflict. Politics and old boundaries are hard to change.*
- *Watershed plans – such as those for the East Fork of the Little Miami River – are a key strategy and feasible, but implementation is politically challenging.*
- *A watershed approach requires cooperation among multiple jurisdictions, which is not practical for zoning and would need to be incentivized for planning (through funding eligibility or other financial incentive for participation).*
- *It's probably not a practical approach because of political boundaries. It won't work as a primary focus.*

Watershed-based planning is being used increasingly to address stormwater issues by local communities with Phase II responsibilities, by agencies responsible for reducing stormwater flows to combined sewers, and by conservation agencies developing watershed plans to address nonpoint source runoff issues (“319 grants”). These programs can reduce development’s stream impacts but may not affect the development process, except for in northern Kentucky, where Sanitation District 1 has authority that crosses jurisdictional boundaries. Comments were:

- *There is more watershed planning than ever. Planning and zoning entities operate at the county level, but other agencies are moving toward a watershed perspective. A lot of collaboration is occurring.*
- *In Hamilton County, watersheds are the basis for much of the planning for reducing stormwater runoff. Storm water district regulations support watershed planning.*
- *Sanitation District No. 1/SD1 I Northern Kentucky is using a watershed approach.*
- *SD1 has a Request for Proposal (RFP) for a watershed master plan for Gunpowder Creek, which would be the first in a series and be the basis for considering flooding as well as water quality.*
- *Banklick Creek is the pilot for many of SD1 planning approaches and BMPs.*
- *Watersheds are the basis for the 319 grants for Gunpowder, Woolper, and Banklick Creek watersheds.*
- *Watershed plans have been developed for the East Fork of the Little Miami River with recommendations that would protect streams and stream corridors, but the recommendations are not required.*
- *East Fork planning has used this approach for ten years.*

Other initiatives were suggested or referenced that involve watershed-based planning to reduce development impacts. Comments were:

- *Watershed planning within political boundaries could be used for trading for credits for impervious area.*
- *The county stormwater district may be creating a capital fund for projects that involve joint planning among jurisdictions.*

- *The [watershed-based] Balanced Growth project is an effort to balance growth with conservation.*
- *EPA is looking at hydrology and promoting a watershed approach for storm water management.*
- *State grants are becoming more based on watersheds.*
- *An alternative under Ohio law is the creation of a District, which can influence development on an advisory basis but have no zoning or other regulatory authority.*
- *Watershed planning would increase if SWCDs are regionalized.*