Part One:
Management Plans
Kentucky Watershed Management Framework, Mobilization Strategy

Participation by local stakeholders is an important component of the watershed approach. Gaining the participation of local governments, businesses, civic groups, and citizens requires that they recognize a need, understand the watershed approach, and see something to be gained by participating. Few now see any needs or know much about watershed management. Basin coordinators, members of basin teams, and other partners in the framework must promote greater understanding of the water-related issues that affect the river basin, the particular local conditions of individual watersheds, and what responses are possible.

The mobilization strategy for the Kentucky River Basin provides a tiered list of watersheds to structure and focus outreach efforts by the basin team and basin coordinator during the next five years. The strategy charted during 2001 targeted three priority watersheds for development of local watershed task forces during the first cycle. Seven others are targeted for mobilization of stakeholders with a view to forming task forces in some of them during the second basin cycle. These are watersheds with well-established needs in which some governments, groups, or individuals evinced an interest in watershed action during the first cycle and where further support might develop. The plan also highlights 22 watersheds where the needs for restoration or protection of water resources and the potential for local support justify early outreach during the second cycle. The remaining watersheds (65 of the 97 in the basin) will be targeted only for a general watershed message until results of the second-cycle assessment and ranking are complete. New information and new watershed rankings will then be injected into the process, and priorities can be modified.

Stakeholder outreach serves both to gather and to disseminate information. Because we now have in hand the results of the first intensive monitoring and assessment of the Kentucky basin, we have more information to offer. It will also be possible to partly anticipate which watersheds will top the next rankings in the 2005 Assessment Report, something we could not do the first time around, without the benefit of previous results. Thus we can reach out earlier in the cycle than we could before, focus on specific watersheds, and tailor our presentations to communities there. Identifying watersheds where the watershed approach is practical requires considerable time and effort for discussions with local stakeholders. Such contacts should begin as early in the cycle as possible so that we have adequate means to judge the feasibility of watershed action during prioritization in year 3. Our experience trying to mobilize task forces during the first basin cycle also suggests that coordinators need to target specific watersheds early in the cycle,
facilitate establishment of partnerships, and actively build support among stakeholders for the watershed approach. Familiarizing local officials and citizens with the framework is a part of that process. More important, however, is constructive discussion of challenges, threats, and potential solutions. Early outreach in the 29 watersheds in categories II and III will not simply evaluate local interest in task force development, it will build it.

Activities for each of the mobilization strategy’s four categories are outlined below, and the watersheds targeted for each are listed in the accompanying table. These categories provide a guide for action through the first three years of the second cycle (2002-2005). Once new watershed assessments and rankings are issued at the end of year 3 (2004-2005), mobilization will shift to a new stage and some or all of the watersheds in each category will move to a higher category. Mobilization activity in years 4 and 5 (2005-2007) will focus heavily on task force development for a new set of priority watersheds (and the activities outlined in category I). Flexibility to capitalize on opportunity is important, so activity in particular watersheds may be ratcheted up even during the first three years of the cycle.

See page 21 for a list of watersheds by mobilization category and page 147 for a map of the mobilization strategy.

**General Mobilization Plans by Mobilization Category**

**I. Watersheds targeted for task forces during cycle 1**

*(priority watersheds)*

*Goal*

Foster and support a group of stakeholders capable of sustaining watershed action in a coordinated or collaborative fashion.

*Objectives*

- Facilitate communication among stakeholders and assist in identifying shared priorities.
- Provide liaison between partner agencies and local stakeholders.
- Disseminate information about local watershed conditions and local issues.
- Raise awareness of watershed dynamics (see IV).
- Provide information on funding opportunities.

*How will activities be targeted?*

These watersheds were identified on the basis of needs and feasibility, as evaluated via the assessment report, ranked watershed list, regional meetings, and other sources.
Where and when will activities occur?

In the watersheds of the Red River Gorge, South Elkhorn Creek, and Eagle Creek mouth. Work began in 2001 and will continue as needed. Task forces are anticipated to become self-sufficient. From a mobilization standpoint, efforts to expand and solidify participation may continue into year 1.

What activities will be targeted?

Local stakeholder meetings, agency technical meetings, watershed field trips, and task force workshops were held in these watersheds last year. The basin team and basin coordinator will provide technical, informational, and/or logistical support for activities in these watersheds. Framework partners will support stream monitoring, planning, and action through technical advice, in-kind assistance, and funding priorities, and the coordinator will serve as a liaison. See the next section for detailed information about issues and action items identified in the workshops and preceding meetings.

II. Watersheds targeted for mobilization

Goal

Build the local capacity for watershed action by increasing awareness of local conditions, raising interest in watershed protection, and linking stakeholders.

Objectives

☐ Facilitate communication among stakeholders.
☐ Disseminate information about local watershed conditions and local issues.
☐ Raise awareness of watershed dynamics (see IV).
☐ Promote the watershed framework and related programs.

How will activities be targeted?

These watersheds were identified on the basis of needs and feasibility, as evaluated via the assessment report, ranked watershed list, regional meetings, and other sources. Prioritization within this group of watersheds and identification of potential local partners will be done by the basin coordinator and basin team on an ongoing basis.

Where and when will activities occur?

In the following seven watersheds: Cutshin Creek, Hickman Creek, Lower Howard Creek, Muddy Creek, North Elkhorn Creek, North Fork Kentucky River headwaters, and Rockhouse Creek. Mobilization efforts will take place during years 1 to 3 (2002-2005) and continue as justified by developments. In year 4
(2005-2006), or earlier if warranted, additional watersheds may be targeted for these activities.

**What activities will be targeted?**

- Presentation of a general watershed message and specific local information at meetings of local groups or via displays at local events.
- Distribution of printed material.
- Establishment of dialogue among stakeholder groups, and facilitation of local meetings for exchange of views and ideas.
- Liaison to appropriate partner agencies.
- Documentation and initial evaluation of local resources and priorities.

**III. Watersheds targeted for early outreach**

**Goal**

Increase awareness of local issues and foster interest in the framework.

**Objectives**

- Disseminate information about local watershed conditions and local issues.
- Raise awareness of watershed dynamics (see IV).
- Publicize the watershed framework and related programs.

**How will activities be targeted?**

These watersheds were identified on the basis of needs and feasibility, as evaluated via the assessment report, ranked watershed list, regional meetings, and other sources. Prioritization within this group of watersheds and identification of potential local partners will be done by the basin coordinator and basin team on an ongoing basis.

**Where and when will activities occur?**

See accompanying table for a list of the watersheds in this category. Outreach efforts will take place during years 1 to 3 (2002-2005) and continue as long as they are justified by developments. In year 4 (2005-2006), or earlier if warranted, additional watersheds may be targeted for these activities, but the emphasis will shift to category I and II activities.

**What activities will be targeted?**

- Presentation of a general watershed message and specific local information at meetings of local groups or via displays at local events.
- Solicitation of local views on issues and needs.
- Documentation of local resources and local priorities.
IV. Watersheds targeted for a general watershed message

Goal

Make more people more aware of what a watershed is and why watersheds are significant. Raise the profile of the watershed framework.

Objectives

- Raise awareness of watershed dynamics (including the effects of land use on water, the relationship of watershed surfaces and flow, the nature and prevalence of nonpoint source pollution, and the interrelation of biological communities and water quality).
- Publicize the watershed framework and related programs.

How will activities be targeted?

All watersheds not targeted for more specific outreach fall into this category.

Where and when will activities occur?

See accompanying table and designations in individual watershed summaries. Specific messages will be delivered, as time allows, in communities where opportunities arise, or through print or broadcast media that reach large sections of the basin, and through the UK and framework web sites. These activities will be done as time allows through years 1 to 3 (2002-2005).

What activities will be targeted?

Dissemination of brief messages in printed, electronic, or broadcast format and possibly presentations or exhibits.
Watersheds by Mobilization Category

I. Priority Watersheds, Targeted for Task Forces in Cycle 1 (3 watersheds)
   Eagle Creek mouth (see pages 44, 370)
   Red River Gorge (see pages 24, 260)
   South Elkhorn Creek (see pages 32, 33fs0)

II. Watersheds Targeted for Mobilization in Cycle 2 (7 watersheds)
   Cutshin Creek (see page 210)
   Hickman Creek (see page 314)
   Lower Howard Creek (see page 300)
   Muddy Creek (see page 294)
   North Elkhorn Creek (see page 332)
   North Fork Kentucky River headwaters (see page 160)
   Rockhouse Creek (see page 162)

III. Watersheds Targeted for Early Outreach in Cycle 2 (22 watersheds)
   Benson Creek (see page 340)
   Boone Creek (see page 304)
   Cane Creek of Red River (see page 266)
   Clear Creek (see page 322)
   Dix River – Herrington Lake (see page 280)
   Dix River headwaters (see page 276)
   Eagle Creek above Tenmile Creek (see page 362)
   Glenns Creek (see page 326)
   Grapevine Creek (see page 180)
   Griers Creek (see page 324)
   Hanging Fork Creek (see page 282)
   Hardwick Creek (see page 270)
   Jessamine Creek (see page 316)
   Lytles Fork & Eagle Creek headwaters (see page 360)
   Meadow Creek (see page 232)
   Middle Fork headwaters (see page 208)
   Middle & South Forks of Red River (see page 264)
   Paint Lick Creek (see page 310)
   Red Bird River (see page 220)
   Silver Creek (see page 308)
   Spears Creek & Mocks Branch (see page 286)
   Troublesome Creek (see page 182)

IV. Watersheds Targeted for a General Watershed Message (65 watersheds)
   Watersheds not listed above will be targeted only for a general watershed message until results of second-cycle ranking and targeting are complete.
Kentucky Watershed Management Framework, Monitoring Strategy

Goal

The Framework’s collaborative monitoring effort is intended to collect data on the health of watersheds throughout the river basin, not only to evaluate general conditions but also to identify specific problems and solve them.

For the second basin cycle, the program aims to develop a detailed scientific understanding of the impairments detected during the first cycle, and so achieve the capability to solve the underlying problems.

Partner agencies will also continue to screen the Kentucky River basin for new or undetected impairments and threats, as well as the general conditions of the water resources.

In addition to the cyclical monitoring effort, groups (or agencies) with specific local interests may also collect data to identify sources and solutions. Kentucky River Watershed Watch has undertaken focused sampling in several watersheds to document the spatial distribution of specific problems.

Objectives

- Identify specific sources of each impairment and obtain better spatial resolution for the degree and extent of the impairment.
- Obtain the data required to complete TMDL analyses.
- Fill data gaps remaining after first-cycle monitoring.
- Verify results in watersheds where data, stakeholder knowledge, and other information require confirmation.
- Sample the fixed and probabilistic networks to monitor long-term trends in water resources and to obtain statistically valid samples for a basin-wide overview.

How and where will activities be targeted?

Monitoring is carried out by a consortium of framework partners. Members of an interagency monitoring workgroup compile a plan detailing who will monitor what at which sites. In compiling the second-cycle monitoring plan, monitoring resources will be allocated to streams and watersheds in priority order until they are exhausted. The priority order will be established by the interagency monitoring workgroup using a list of documented first and second priority impairments (and TMDL status) along with input from the river basin team. Task force watersheds will be the top priority. Basin team input will be based on first-cycle data, results of GIS analyses, local knowledge, and professional best judgement.
The emphasis on monitoring further upstream than the 1998 stations at the bottoms of watersheds will focus more effort on smaller streams and on headwaters watersheds. Impaired streams in the three task force watersheds will be among the targets of efforts to enumerate and locate the sources of the problems identified during first-cycle monitoring. Aside from fixed and probabilistic sites, sampling will occur primarily in those watersheds with first-priority impairments (nonsupport of aquatic life or swimming) or with high potential impact ratings. The 2003-2004 Kentucky River Basin Strategic Monitoring Plan will specify monitoring sites and the division of labor among partner agencies.

When will activities occur?

The basin team will discuss monitoring priorities during summer 2002 and present an initial set of recommendations in September 2002. The interagency workgroup will meet to plan for the Kentucky River basin during autumn 2002 and will finalize the basin monitoring plan in January 2003. Monitoring will begin in March 2003. Additional monitoring may be scheduled during spring and summer 2005 to follow up on specific findings from the main round of data collection and meet task force needs.

What activities will be targeted?

Groundwater evaluations will focus on filling gaps in the existing knowledge base and facilitating groundwater assessments for each watershed. Assessments in each basin are ongoing.

Monitoring of fish populations in fourth-order streams will also be extended to fill gaps, but will otherwise focus on tracking changes at previously sampled sites. This is because smaller streams further up in the sampled watersheds cannot support the same fish as larger waterways, so that the analysis is not suited to those areas. The Kentucky Department of Fish and Wildlife Resources will cover 50 to 60 sites for fish. In the smaller streams, habitat assessments and censuses of macroinvertebrates and algae will be employed. The DOW Nonpoint Source section will handle mostly streams on their priority list, and other programs or agencies will cover the rest.

Macroinvertebrate analysis will also be done for a set of randomly selected sites for the probabilistic dataset. Biological and water quality data will continue to be collected by the Division of Water at the fixed network sites, including reference reach streams.

Bioassessments, bacteriological sampling, and surface water quality measurements will be the primary means of collecting information for targeting watershed action and/or TMDLs. Preliminary source identification (via GIS and remote sensing), ground truthing, and rapid bioassessment protocols will be employed in up to 30 watersheds. Division of Water staff will do the bacteria and water quality sampling, and a contractor will perform the rapid assessments.
Watershed Plan for the Red River Gorge Watershed (051002-04-120) and Region

The Red River Gorge watershed is largely wooded, much of it is managed by the U. S. Forest Service, and its streams are mainly in good condition relative to the rest of the basin. Other watersheds in the Red River drainage are also mostly forested, with many healthy streams. Yet illegal dumping, the loss of streamside vegetation, erosion, and runoff from towns, fields, mines, and mills are a concern in many places in the drainage, and pathogens in several creeks threaten public health. The Red River Gorge watershed is in Wolfe, Menifee, and Powell counties.

The Red River Task Force seeks to improve watershed conditions in the entire Red River region while maintaining economic and recreational opportunities. One priority is to make it easier for landowners and homeowners to obtain funding for improvements that benefit both them and the watershed. Other priorities are to eliminate straight pipes and garbage dumping throughout the area, to promote awareness and appreciation of the watershed, and to minimize the adverse impact of outdoor recreation on the land and water. The means to all these ends will be a broad, locally based, regional network for communication and cooperation on watershed issues.

The following watershed plan emerged through the combined input of local task force members and agency personnel who participated in a series of meetings on this watershed, culminating in a planning workshop (see list of participants on page 30). Task force members and agency personnel examined monitoring data, agency programmatic information, and local knowledge assembled through the framework process as a factual background for the meetings. During the workshop, an independent facilitator asked planning participants to identify the issues they felt were most important. Next, the group went through a priority-setting process to highlight the issues and actions of greatest concern to the group. Finally, they discussed what steps should be taken next to address issues in the watershed.

Goals and strategies for action are listed on page 26. A color map of the Red River watersheds appears on page 129. The watershed summary for this watershed appears on page 260.

Assessment and Ranking (2000)

Ranking metrics

The Red River Gorge watershed ranked high in the protection category of the framework prioritization formula. The watershed includes the Red River Gorge Geological Area, the Clifty Wilderness, and parts of the Red River designated as an outstanding national resource water, a state wild river, a federal wild river, and a federal scenic river. The watershed ranked in the medium group for potential and
observed impacts. The adequacy of water supplies is an issue there. Permitted discharges and discharge violations in the watershed are both well above average. Population without access to public sewers is also above average for the basin, and nearly 300 straight pipes and failing septic systems have been identified in the section of the watershed served by Eastern Kentucky PRIDE.

**Agency data assessment**

Of 236.4 miles of streams in the watershed, 67.5 miles were assessed for the 2000 305(b) report. Only one 1.5-mile segment failed to support all uses: an unnamed tributary of Swift Camp Creek that runs through Campton does not support aquatic life, based on biological data. Sedimentation contributes to impairment of the stream. The other twelve assessed stream segments fully support aquatic life.

The unnamed tributary of Swift Camp Creek was not on the 303(d) list before the watershed management year 2 assessment, so there is not yet a TMDL. The Red River in Menifee County was listed as a second priority for TMDL analysis of aquatic life impairment by nutrients and sediment (river miles 59.9 to 94.2); a portion of the segment identified in 1998 fully supported aquatic life in the 2000 assessment (59.4 to 65.9). DOW plans to delist the entire segment. Another segment of the Red River—mostly in the Red River mouth watershed but partly in this one—that was a first priority for TMDL development in 1998 will also be delisted after being designated in full support in the 2000 assessment.

**Volunteer data**

During summer 1999, a Kentucky River Watershed Watch site on the Red River exhibited elevated chromium and selenium. A site on Swift Camp Creek showed elevated chromium. Sites sampled during 2000 and 2001 did not show detectable levels of these metals.

**Identification of Issues and Opportunities (2001)**

This watershed ranked seventh in the basin in protection score. Two-thirds of the watershed is managed by the U.S. Forest Service as part of the Daniel Boone National Forest. The Forest Service is interested in watershed management and willing to focus on this watershed, which already is among the most monitored in the basin because of USFS stream sampling. Jon Walker, the hydrologist for the Daniel Boone National Forest, strongly supports participation in the framework, and had undertaken a watershed analysis of the Red River Gorge watershed. USFS has authorized use of funding for water sampling and watershed inventory in support of task force activities. Other ongoing projects of USFS, such as a long-term plan for the gorge, will dovetail with framework goals. Watershed Watch also plans to expand its monitoring in this part of the basin, including a focused series of sampling for fecal coliform.
In much of the watershed, conditions are good. Twelve of thirteen assessed stream segments fully support aquatic life. The one that does not (in the town of Campton) could become a model for watershed task force work in addressing sedimentation. This watershed as a whole can also be a model application of the watershed approach to preservation of resources. Many places in the watershed are threatened by their very popularity as recreational sites: overused campsites and informal picnicking areas along waterways are becoming hot spots for erosion and direct contamination of streams. The Forest Service is seeking innovative ways to provide recreational opportunities while protecting the water, the stream banks, archaeological sites, and endangered species. Other local concerns include the impacts of dumping, all-terrain vehicles, and logging outside the national forest.

The watershed provides water to the Campton public water supply system and receives treated sewage. The sewage system has some problems, but it is in the process of being upgraded.

Community support for protection of the Red River has been strong in the past and should be strong in the future. The Friends of the Red River sponsors two annual tire roundups to remove junk from the riverbed. PRIDE projects have cleaned up dumps as well. Watershed Watch monitors sites in the region. The Forest Service, conservation districts, and various citizen groups provide a nucleus that will be expanded to include other stakeholders.

Although the Red River Gorge watershed is not a headwaters watershed, it is the portion of the Red River that is most feasible to protect. It is thus an important part of the Red River drainage. The Gorge watershed includes the Clifty Wilderness, the Red River Gorge Geological Area, and sections of the Red River designated a wild and scenic river. It receives water from the Stillwater Creek watershed and the Red River headwaters watersheds: there is very little data on water and habitat quality in these two headwaters watersheds, which are heavily wooded but lie outside the National Forest. Outreach efforts for the Red River might easily target all the watersheds within the drainage of the Red, even while more active management activities focus on the Gorge watershed. The tributary of Swift Camp Creek that is impaired is a headwaters stream. A restoration project focused here or on other such tributaries would be capable of clearly documented progress.

Planning Workshop (October 2001)

Goals and strategies for action

Priorities

- Promote awareness and appreciation of the watershed.
- Work to eliminate straight pipes and garbage dumping throughout the area.
- Provide opportunities and incentives for landowners to restore streamside vegetation.
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- Moderate the impact of outdoor recreation by addressing overuse of trails and dispersed campsites.

**Additional watershed issues**

- Find ways to eliminate the problem of sawmill waste that blackens water, keeping in mind that logging is economically important.
- Evaluate the effects of stormwater runoff from Campton into Swift Camp Creek, including sewage during rain events.
- Take advantage of funding for stream restoration in old mined sites.

**Jurisdictional challenges**

Cross-county watersheds and a history of competition between counties pose difficulties in forging a collaborative effort. Counties differ in such areas as the qualifications for agricultural financial assistance. There are also jurisdictional differences between congressional districts: for example, PRIDE funding has not been available in Powell County in the past. Cooperation is further complicated by the fact that the drainage includes three area development districts (ADDs), three field offices for the state environmental protection agencies, two resource conservation and development districts (RC&Ds), and three area conservation districts (ACDs). Participation of local residents from every county is essential: “outsiders” won’t get the job done. Local citizens should direct the effort and keep government in the background.

**First steps**

- Expand the Red River Task Force. Include all those present, bring friends, involve the conservation districts, invite extension agents, educators, health departments, community groups, sporting clubs, churches, and others.
- Focus on the entire Red River drainage (including parts of Clark, Montgomery, Powell, Estill, Menifee, Wolfe, and Morgan counties.).
- Garner local support and participation across all counties. Don’t allow a stigma of “outsider” activists to develop.
- Address issues stemming from jurisdictional fragmentation and intercounty competitiveness. Need more coordination among groups and agencies.
- Hire a local watershed coordinator to enhance participation, education, and coordination.
- Boost low participation in programs (such as PRIDE and cost-sharing for BMPs) that could positively affect the watershed. The up-front money required for many programs is a barrier: find ways to ease this burden.
- Promote education (for children and adults) about this watershed and about interrelationships of land use and human activities with public health, recreation, water quality, and fish and other aquatic life.
- Build in a concern for private property and satisfy property owners.
**Increasing coordination of ongoing activities and enhancing participation**

The task force should pursue regional cooperation and promote more use of existing programs for farmers and landowners. Relevant programs include: phase one agricultural funds for forage improvement, etc.; statewide funds for ag water quality activities (reimbursable); Farm Bill appropriations, depending on what passes; EQIP funds; conservation easements under various programs; KDFWR private lands programs; CARA funds for cleanup of pollution; KDFWR In Lieu Fee funding for stream restoration; and USDA Forest Service programs for riparian areas. PRIDE now offers grants to pay for straight pipe elimination, and PRIDE funds dump cleanup projects on a reimbursement basis.

The Conservation Reserve Program is a central tool. A continuous signup process is available to protect streams and lakes, plant trees, build fencing (cost share at 90%), and provide funds for gravel access and city water for cattle. The off-stream filter strip (20-180 feet) or riparian buffer (50 feet on each side of stream) is more popular in Powell County and Bath County, where farms are larger. This program pays rental fees on cropland, based on soil type.

The task force should try to provide money up front to people using the reimbursable programs, perhaps through a non-profit trust fund with the ability to supply short-term loans or advances for future reimbursables. The Kentucky Waterways Alliance, local banks, and RC&Ds might be potential sponsors for this initiative. It might be possible to negotiate payments at the end of each phase of a project, rather than at completion.

Discrete projects at specific sites can serve as focal points for cooperative efforts. The recently completed USFS hydrologic condition analysis contains specific ideas for solving problems; restoration projects are planned along Swift Camp Creek. USFS is working in Spaas Creek to improve that area and monitor illegal off-road vehicle use. Local groups could influence increased funding for USFS management. USFS is committed to finishing the forest management report in 2002. Friends of Red River holds an annual river cleanup at two sites during May and June. Heartwood and Sierra Club have helped to clean up of Swift Camp Creek and Sand Hill dump.

**Expanding local participation in the task force**

- Approach people where they live.
- Hire a local coordinator. The Kentucky Waterways Alliance could act as tax-exempt umbrella for funding a watershed coordinator. They would also consider helping to secure funding for a coordinator. Contact The Nature Conservancy to find out how the local coordinator for Horse Lick Creek has succeeded.
- Private lands biologists and district conservationists are valuable resources.
- Stocking trout and muskie in the Gorge area and elsewhere has potential for gaining support from the fishing population, for water quality.
Friends of Red River will meet to address the local participation issue.

Make use of educational programs and materials from the Division of Conservation and USFS: the Gladie Cultural and Environmental Visitor Center provides an education outlet and source.

**Watersheds to include in jurisdiction of the task force and watershed plan**

- Red River headwaters watershed (051002-04-110)
- Red River Gorge watershed (051002-04-120)
- Stillwater Creek watershed (051002-04-130)
- Middle & South Forks of Red River watershed (051002-04-140)
- Cane Creek watershed of Red River (051002-04-150)
- Red River mouth watershed (051002-04-160)
- Hardwick Creek watershed (051002-04-170)
- Lulbegrud Creek watershed (051002-04-180)

**Data Collection**

- Assemble sampling results from USFS and Kentucky River Watershed Watch and examine these for future monitoring needs.
- Evaluate the effects of stormwater runoff from Campton into Swift Camp Creek, including sewage during rain events.
- Develop a better understanding of the sediment problem in the impaired Campton tributary of Swift Camp Creek.

**Watershed concerns, by area**

**Upstream areas**

It is important to include upstream areas that influence the lower watersheds, especially the agricultural areas of the Red River headwaters and Stillwater Creek watersheds and the mining impacts from upstream. Sediment from mining, agriculture, and logging needs to be addressed. Part of the headwaters of South Fork is used by off-road vehicles. Restoration of old mined sites is possible. There are straight pipes and garbage dumping above Lacy Creek. Establishment of riparian zones above Big Branch is important. At Big Branch there is a notably high cancer rate among women, but the significance of this has not been established.

**Swift Camp Creek**

In the Swift Camp Creek drainage, permitted and unpermitted sewage inputs and runoff from Campton need monitoring. Participants wonder how prepared the county is for spill incidents. The area contains many high-quality streams: Dog Fork is one of six brook trout streams in the state. Overuse of trails and dispersed campsites along the stream causes sedimentation, compaction of soil, accumulation of garbage, and contamination of the creek by food waste and human waste.
Indian Creek

In the watershed of Indian Creek, overuse of trails and dispersed campsites causes problems, as in Swift Camp. Old rock quarries and their impacts are not all known. Sawmill waste fouls some creeks. Stream crossings have become almost dams in places, posing barriers to fish migration. Off-road vehicle use is extensive.

Spaas Creek

Off-road vehicle impacts are significant in the Spaas Creek area. One county road was designated for four-wheelers by the fiscal court.

Downstream areas

Powell County and areas downstream of the Gorge watershed have more agriculture adjacent to the river than the upstream counties. Agricultural activity has multiple impacts, including sedimentation. From Stanton downstream, logging practices and sawmill waste piles may have an impact, particularly in Big Amos and Morgan Hollow. Fecal coliform bacterial contamination tends to increase from upstream to downstream.

Entire watershed

Watershed-wide issues include the loss of protective riparian vegetation along streambanks and the effects of erosion and sediment on aquatic habitat and on ecosystem function. Other concerns are the impacts of storms on the creeks, and concerns about health and safety related to drinking water quality, possible toxic sites, animal waste management, and visual blight from dumping of household garbage and solid waste. The side effects of natural gas drilling and exploration, include saline water, should also be considered, especially in the South Fork Red River. The potential mining of oil shale in the region might raise other issues.

Participants in the Red River Workshop Phase

Workshop was held October 9, 2001, at Campton

Local Representatives
Dan Dourson, Powell County resident
Kim Feeman, Friends of Red River
Wade Gibbs, Wolfe County PRIDE Coordinator
Jason Issac, Kentucky Division of Conservation regional office
Amy Kistner, Church of the Good Shepherd
Jim Lacy, Wolfe County Conservation District
Russ Miller, Wolfe County Solid Waste Coordinator
DuWaine Morton, Kentucky River Watershed Watch
Donnie Richardson, USFS, Stanton District Office
Randy Smallwood, NRCS, Menifee and Bath counties
Rita Wehner, USFS, Stanton District Office

State and Federal Program Representatives
George Chalfant, USFS, Daniel Boone National Forest
Jorge Hersel, USFS, Daniel Boone National Forest
Lew Kornman, Department of Fish and Wildlife Resources, Fisheries
Bill Sampson, Department of Fish and Wildlife Resources, Watersheds
Jon Walker, USFS, Daniel Boone National Forest

Staff
Jennifer Thompson, facilitator (Kentucky Natural Resources Leadership Institute)
Pamla Wood, workshop recorder (Licking River Basin Coordinator, DOW)
Greg Epp, Kentucky River Basin Coordinator (KWRRI for KRA)
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Watershed Plan for the South Elkhorn Creek Watershed (051002-05-270)

The South Elkhorn Creek watershed is among the largest and most populous watersheds in the basin. It includes urban and suburban areas and agricultural land. The top priorities for the watershed are to mount a determined effort to reduce the pollution from urban stormwater runoff, to prevent flood losses, to safeguard public health by tracking and eliminating sources of pathogens in surface waters, and to reduce phosphorus loading that threatens the ecological balance of the streams. One strategy that addresses all of these goals is the adoption of new approaches to planning new development and designing drainage systems. Another is restoration of trees and other natural vegetation adjacent to streams. Educational outreach is critical for raising public awareness of the problems and solutions, in both urban and rural sections. More specialized training can help specific groups implement measures to prevent these problems.

The following watershed plan emerged through the combined input of local task force members and agency personnel who participated in a series of meetings on this watershed, culminating in a planning workshop (see list of participants on page 42). Task force members and agency personnel examined monitoring data, agency programmatic information, and local knowledge assembled through the framework process as a factual background for the meetings. During the workshop, an independent facilitator asked planning participants to identify the issues they felt were most important. Next, the group went through a priority-setting process to highlight the issues and actions of greatest concern to the group. Finally, they discussed what steps should be taken next to address issues in the watershed.

Goals and strategies for action are listed on page 35. A color map of the South Elkhorn Creek watershed appears on page 149. The watershed summary for this watershed appears on page 330.

Assessment and Ranking (2000)

Ranking metrics

Rankings of the South Elkhorn Creek watershed were high for every segment of the framework prioritization formula. Groundwater sensitivity is higher than almost anywhere in the basin (4.82 compared to a mean of 3.21 and median of 3). The numerous stream impairments demonstrate the stress placed on the watershed. In addition, potential impact scores suggest high risks to water resources: the concentrations of livestock are high for the Kentucky River basin, as is the population without public sewers and the projected rate of population growth. Only one watershed has more permitted discharges, and only three have accumulated more discharge violations. Only one watershed has more potential contamination sites.
Agency data assessment

Of 122 miles of streams in the watershed, 59.9 miles were assessed for the 2000 305(b) report, and six assessed creek segments (17.8 miles) did not fully support all of their designated uses, based on biological and water-quality data. Pathogens, organic enrichment, alterations of flow and habitat, agricultural practices, municipal point sources, storm sewers, and urban runoff contribute to the impairment of these streams. Specifically, the 2000 305(b) assessments show that: Lee Branch in Midway only partially supports primary contact, due to pathogens; Wolf Run in Lexington fails to support primary contact and only partially supports aquatic life; one segment of South Elkhorn Creek fails to support aquatic life due to siltation; and three segments of Town Branch in Lexington only partially support aquatic life; two of these segments of Town Branch were assessed for primary contact and failed to support it, due to pathogens. Several of these streams are already on the list of impaired waters for conditions identified in previous assessments. Total maximum daily load (TMDL) plans are under development by UK for low dissolved oxygen and high levels of nutrients in South Elkhorn Creek and Town Branch. UK is also undertaking TMDL studies on pathogens to address problems in Town Branch, Wolf Run, and South Elkhorn Creek.

Volunteer data

Kentucky River Watershed Watch samples seventeen sites in the watershed. Data for Beals Run, Steeles Branch, and one of the sites on South Elkhorn Creek show high levels of bacteria indicative of fecal contamination (above 200 colonies/ml). Lee Branch exhibited elevated sulfate levels. Phosphorus levels at every site where it was analyzed were well above the level that may cause potential nutrient enrichment problems (> 0.1 mg/l). Town Branch and three sites on South Elkhorn showed nitrate nitrogen concentrations above 10 mg/l, which is the drinking water supply standard and EPA’s maximum contaminant level. Lead, copper, selenium, and thallium were significant in several samples. Traces of the organophosphate insecticide chlorpyrifos were detected at a few sites.

Identification of Issues and Opportunities (2001)

The watershed is among the most polluted and most populated in the basin, but it is also the focus of many efforts to prevent and reverse degradation. The Bluegrass Conservancy and Thoroughbred RC&D have secured $100,000 for a program to purchase easements to reduce nonpoint source pollution specifically in the South Elkhorn, North Elkhorn, and Elkhorn Creek watersheds. The purchase of development rights program in Fayette County will also help preserve open space.

The Planning Committee of the Lexington-Fayette Urban County Council resolved at their session January 22, 2001 to support the city’s involvement in a Framework task force for the South Elkhorn. Council members are concerned with
and active in issues such as stormwater management, greenspace preservation, and stream restoration projects.

Lexington’s engineer in charge of water quality has implemented a number of programs to characterize and rectify water pollution in the city’s streams. Public education and public involvement are an important emphasis in these programs.

The county has planning and zoning, and water and water quality management are central to the greenway master plan, now under development. Fayette County’s water quality assessments and stormwater studies are conducted on a watershed basis. The county’s Division of Engineering plans in the near future to inspect stormwater and KPDES permits, watershed by watershed, in a new initiative to encourage full compliance. An administrative procedure to deal with violations of the county’s antidegradation statute has been proposed as a means to streamline proceedings that must now go to district court.

Potential partners in Fayette County, in addition to the urban-county government, include Town Branch Trail, a not-for-profit group whose object is to create a greenway along Town Branch. Rehabilitating the stream corridor, restoring natural habitat, and addressing water quality impairments in the creek are important to creation of the greenway. The group is dedicated and well organized, has already obtained grants and donations in excess of $22,500 for the trail project, and is building impressive public support for the concept. There is great potential for synergy between goals for the trail and wider watershed management objectives, as is evident from the report prepared by the Environmental Quality Committee of Town Branch Trail (choose “Explore” at http://www.townbranch.org/).

There is significant interest in this watershed outside Fayette County. The basin team’s regional meeting for the Bluegrass drew people from five counties, and the South Elkhorn watershed was the first priority of more than 75% of the participants. The watershed also received fully 50% of votes for participants’ top three priorities, although nine of the eighteen watersheds in the region received votes. Those from Franklin and Scott counties supported attention to the South Elkhorn, but interest was especially strong in Woodford County.

Watershed Watch has more volunteer sampling sites in the South Elkhorn Creek watershed than in any other Kentucky River Basin watershed. Volunteers come from all five counties of the watershed. The local strength of this organization will be a significant asset in terms of both monitoring capability and citizen involvement. The group is producing Citizen Action Plans for both the South Elkhorn and the Town Branch/Wolf Run subwatersheds (see page 108).

In Woodford County, the Judge-Executive sees the Kentucky River basin as a useful basis for regional cooperation and planning. He chairs the Board of Health and is working to limit the collective impact of septic systems on water quality. The Board of Health and Fiscal Court have considered various means to ensure regular maintenance and inspections. The county engineer represented the judge at
our regional meeting and expressed further interests in parks and planning as they relate to water issues. Kentucky River Watershed Watch would like to focus on contamination of Woodford County streams by septic systems. Lees Branch and the South Elkhorn Creek itself are of particular interest to both the county and Watershed Watch.

The South Elkhorn Creek watershed represents a prime opportunity for inter-jurisdictional cooperation to solve water problems and protect land and water. Human and financial resources are more concentrated than in other parts of the basin, and awareness is high. Because the watershed is so large, it will make sense to focus early attention on the subwatersheds where impairments and local interest are both clustered: in Woodford County and central Fayette County. These areas can serve as proving grounds for approaches that can subsequently be applied to other parts of the watershed and adjacent watersheds in the counties. A focus on the watershed as a whole can be maintained for protection measures and public education efforts.

TMDL development is well advanced in this watershed in comparison to most of the basin, meaning that a task force here will have some analyses to work with in devising strategies for the restoration of impaired streams. Dr. Lindell Ormsbee of The Tracy Farmer Center for the Environment is directing the TMDLs for streams in this watershed and plans to engage the task force as an advisory body for the process. The South Elkhorn Creek watershed is a headwaters watershed. There is no USGS gage in the watershed, although there is one on the North Elkhorn and one on Elkhorn Creek.

**Planning Workshop (September 2001)**

**Goals and strategies for action**

**Priorities**

- Raise awareness about stormwater pollution to reduce contamination.
- Investigate stormwater treatment options.
- Strengthen spill prevention and response capability for Town Branch and elsewhere.
- Identify strategies to address stockyard and muck pile runoff.
- Determine nutrient load in South Elkhorn and how much comes from each source (TMDL is in progress, and sewage plant permit revision is coming).
- Promote planning, design, and development processes that take watershed issues into account.
- Facilitate development of a greenway along Town Branch, ensuring that the greenway is incorporated into the designs for both the landfill closure and the extension of Newtown Pike.
First steps, by issue

**Watershed planning.** Pursue a regional conference to exchange ideas with decision makers and implementers in local governments. Advocate the best construction practices. Address topsoil removal from construction areas, urban sedimentation from construction runoff, design of water retention structures for both flow control and water quality, and the importance of appropriate riparian buffers. Hold urban site design workshops and trainings: a list of watershed planning trainers is available on the Framework web site. Promote greater consideration of impervious surfaces and of soils and geology in planning. Develop and implement TMDLs, and address the Town Branch sewage discharge. Promote a greenway adjacent to Town Branch. Keep abreast of Ag Water Quality Act activities. Reduce livestock access to creek.

**Urban stormwater.** Install drain markers indicating the stream each street drain is connected to. Fayette County is beginning this in spring 2002 and other counties can take advantage of the program they have developed. Compile a map of watershed hotspots for potential water pollution. Review hot spots to determine whether facilities hold correct permits and to identify facilities that should have KPDES permits or should be routing effluent to sanitary sewers rather than storm sewers. Develop a call list for reporting incidents in each county to the appropriate authority.

Implement an educational outreach program on urban stormwater runoff, nonpoint source pollution, best lawn and garden practices, and proper disposal for homes and businesses. Target Town Branch and Wolf Run first.

**Riparian buffers (streamside vegetation).** Assemble riparian buffer articles and a database of property owners to send these articles to. Talk to neighborhood organizations or civic groups about riparian zones, building on Bev Juett’s project. Establish buffers on government properties to demonstrate projects.

**On-site sewage.** Develop a program to disseminate information on the needed maintenance of septic systems. Increase communication and connection between this group and the state health department.

Organizational priorities

- Affected audiences need to be involved in order for the effort to succeed: there is concern that the framework process is agency driven. What is the appropriate role for the agencies and individuals present?
- Share information and networking to maximize existing efforts. Distribute the water quality data already collected more widely, and coordinate data collection to fill gaps in knowledge.
- Partner with existing programs on education and publicity.
- Meet on an interest group level: the whole group to meet less frequently; the smaller groups to meet more often. Priority interests are Town Branch,
urban stormwater runoff, on-site sewage systems and maintenance, riparian buffers (streamside vegetation), and flooding as it relates to watersheds.

- Establish a “working group” of county/city authorities and DOW authorities to work together for enforcement issues.
- Hold a regional seminar/conference/workshop for community planners and authorities to discuss land use issues and watershed management.
- Include landowners in the process.

Watershed priorities and actions by issue

Urban runoff

- Hold a regional conference to share ideas on urban runoff with decision makers and implementers in local governments.
- Install drain markers indicating the stream each street drain is connected to. Fayette County is beginning this in spring 2002, and other counties can take advantage of the program they have developed.
- Compile watershed hotspots for potential water pollution. Review these to determine whether they have the permits they should.
- Lawn care education campaign needs funding.
- Case studies from Lexington for other cities.
  - Herbaceous cover needs variance from noxious weed ordinance.
  - Detention/retention basin management (400 basins in Fayette County):
    planting trees on homeowner-held land.
  - Water quantity models are in development for Lexington, watershed by watershed, for retrofitting areas in Fayette County to minimize flooding.
  - Construction and lack of sediment control authority: an education for other communities. Training citizens on how to take people to court if they are improperly constructing.

Streamside vegetation zones

- Education is the key. Inform the public to stop mowing creekside areas in general and to let vegetation grow back naturally along the banks.
- Identify the areas of greatest need and focus there.
- Start by establishing buffers on local government property.
- Urban forestry grants are available for urban buffers.
- Buffer zones would benefit from increased rental rates for the Conservation Reserve Program (state funds; $66/acre rental; cost share is $99/acre).
- Bev Juett has a mailing list for riparian landowners. (She did an educational project in Woodford, Scott, and Franklin Counties on the South Elkhorn.) Get a newsletter article out as first step. Newspaper and newsletter articles for neighborhood associations, web resources, etc. are useful media.
Kentucky River Basin Management Plan

Septic/onsite wastewater systems

- Need better standards for siting new systems and rehabilitation of existing systems, and need more uniform inspection by the local health departments.
- Need to review and revise standards for regulating installation and maintenance: state has the authority to do this. Must more clearly define the division of authority and responsibilities between DOW and Department of Public Health. An action plan developed for the Kentucky Environmental Quality Commission is an attempt to help with this.
- The educational process for the owners, installers, and regulators of septic systems should be ratcheted up.
- Prioritize and then target problem areas for more intensive new outreach programs.
- Health departments could distribute educational materials with inspections.
- The secondary home market could provide educational materials during the transfer of property. Materials are available from DOW. Potential legislation would require inspection of wastewater system before property changes hands.

Flooding

- Enforce floodplain construction laws and permits more thoroughly.
- Encourage local governments to undertake stream restoration rather than drainageways.
- Have city engineers and local officials engineer better retention basins.
- Mount joint efforts between local government and other agencies to study the hydrology (Corps of Engineers).
- Increase the size of riparian buffers by involving both public support and private landowners. Currently, stormwater regulations require 25’ of non-disturbance zone on either side of a stream and other buffers and easements.

Town Branch

- Main issues: urban stormwater, solid waste/garbage, sewage treatment plant, stockyard.
- Main resources or programs: TMDL and stormwater permitting. Both are short of staff and lack political support at times.
- Short term strategy: Lexington will work with state government to come up with targeted areas to work on. They will target problems that are solvable and can garner the needed resources and political will.
- TMDLs will calculate limits on phosphorus, but can they fix the problem?
- Lexington will send letters soon to holders of stormwater permits, to remind them of responsibilities.
Part One: Management Plans

- Work with agencies implementing the landfill closure plan to ensure compatibility with a Town Branch greenway.
- Organize cleanups to remove solid waste in streambeds and along banks.
- Need proactive ways to act rather than reacting to problems.

Data Collection
- Define which concerns are actually problems and which are most pressing.
- Develop a mechanism to more specifically define sources of impairments.
- Gather sources of data for the watershed, and identify further data needs.
- Distribute information already available; share data.

Watershed concerns, by area

Town Branch and Wolf Run

The Town Branch and Wolf Run subwatersheds, in central Lexington and western Fayette County, are affected by many impacts and have diverse needs.

Impacts on Town Branch and Wolf Run
- Urban runoff, via storm sewers that run to streams, includes nonpoint source pollution of many types, among them lawn chemicals and fertilizer.
- Stormwater also carries frequent spills and discharges.
- Other concerns include solid waste, landfill leachate (the city plans to cap and close the landfill), and stockyard runoff. Fecal coliform bacteria contaminate Town Branch above the sewage treatment plant.
- The treatment plant discharges phosphorus and organic matter, as well as transferring large quantities of water from the Kentucky River (source of the city’s water supply) to Town Branch.
- Riparian/streamside buffers have been lost during the development of the watershed, and there has been a dramatic increases in impervious cover in the headwaters. For example, the watershed of Wolf Run is more than 60% impervious.
- The increase in impermeable surface affects water quality, water quantity, and geomorphology. Productive agricultural bottom lands downstream often flood as a result of rapid runoff from impervious surfaces.

Needed action for Town Branch and Wolf Run
- Mount a stormwater education campaign so that people know that storm sewers drain to Town Branch and know how to prevent damage. Creeks are “invisible” to most of Lexington: we need to attract attention to them and make them a focal point.
- Identify facilities that should be routing effluent to sanitary sewers or that should have a KPDES permit.
Kentucky River Basin Management Plan

- Promote revegetation of riparian areas and urban forestry opportunities to improve the watershed.
- Ensure that a greenway is incorporated into the landfill closure plan and the design for the Newtown Pike extension.
- Obtain needed assistance for the McConnell Springs contamination site.
- Clean up accumulated solid waste in and near streams.

South Elkhorn above Town Branch

- Need assistance from DOW to ensure that industrial discharge/stormwater permits are enforced (Fayette County will be asking to see permits).
- LFUCG Ordinance 16, section 73, says anything that is added to stormwater that makes a chemical or physical change to stormwater is illegal. Encourage LFUCG to enforce that law.
- The airport abuts the creek and its tributaries. Cave Hill Creek or South Elkhorn Creek will be moved for airport expansion. Also, de-icing glycol materials affect water quality.
- Filling or rerouting stream systems produces loss of aquatic habitat and hydrologic modifications that decrease baseflow. Such practices are particularly common in developing areas of northern Jessamine County and southern Fayette County.
- In the Hunertown Road area near Shannon Run, septic systems are built low and close to the bedrock and not adequately installed.
- Muck piles, composting operations, and stockyards are present in the South Elkhorn watershed.

South Elkhorn below Town Branch

- This section of the creek is affected by Town Branch nutrient loads.
- High fecal bacterial levels are common after rainfalls in most agricultural zones.
- Runoff from cattle operations.
- Runoff from pastures turned into horse farms, with increased spraying for pasture maintenance.
- Inadequate leach fields at mobile home parks.
- Plans and potential for new development, which include a stockyard and commercial/industrial development, Woodford EDA.
- Other development sites: Lees Branch; I-64 interchange at Midway/KY 341; Rte. 421; Fishers Mill (Woodford/Scott line).
- New bridge construction concerns: cleaning woody debris and how they are going to construct the bridge and reroute traffic, controlling sediment.
- Head of South Fork to the Forks of Elkhorn: development causing flooding.
At the Forks of Elkhorn, the severity of floods is increasing. Bacteria and nutrients from livestock and fertilizer runoff are a concern there too.

Watershed-wide issues

- Onsite wastewater issues: get people to maintain septic tanks and to keep records. Information is available via homeowner plan, groundwater protection plan, and Farm-A-SYST; must find ways to reach homeowners with this material.
- Dispel the misconception that properly installed and maintained septic systems will protect groundwater in karst. Encourage better design of septic systems.
- Riparian/streamside buffers and development: promote protection and expansion of streamside vegetation. Narrow line of trees is not adequate for wildlife or to protect water quality.
- Urban/rural runoff and contaminants and impervious surfaces.
- Urban construction: sedimentation from poor practices. Also, removal of topsoil increases impervious surface for all practical purposes.
- Low-level dams impacting fish habitat, siltation, eutrophication.
- Nutrient load: what are the sources?
- Improve Elkhorn for smallmouth bass.
- Livestock access to the creek leads to animal waste in water and bank degradation.
- Nonpoint source pollution from lawn chemicals and agriculture.
- Need for coordinated decision making on watershed issues (such as the impervious cover) across jurisdictional boundaries.
- Sanitary sewer overflows: inflow and infiltration into collection systems during wet-weather events, also illegal roof drains and sump pumps. These overload the treatment plant and cause bypasses that result in raw sewage being discharged.
- Pressure for development in northwest Fayette County, Leestown Pike, etc.
- Loss of streams, riparian areas, and habitat is widespread: not much effort to mitigate for stream loss.
- Homeowners, street flushing into storm sewers and creeks.
- Retention and detention basins: choose options for better design.
- Are there treatment options for stormwater runoff?
- Ignorance of geology and soils in making decisions about development.
- Solid waste in creeks: where does it come from and why?
- Enforcement and intergovernmental coordination/cooperation.
Participants in the South Elkhorn Workshop Phase
Workshop was held September 5, 2001, at Midway

Local Representatives
Lynn Brammer, DOW Frankfort Regional Office
Arthur Craig, County Engineer, Woodford County
Amanda Curry, NRCS Ag Water Quality program, Woodford County
Don Dampier, Kentucky River Watershed Watch
Stan Dyer, property owner and canoeist, Elkhorn Creek
Charles Farmer, NRCS, Fayette County
Fred Goins, Vice Judge Executive, Franklin County
Joe Gormley, County Judge Executive, Woodford County
Don Hassall, Blue Grass Area Development District
Yvette Hurt, Town Branch Trail, Inc.
David Gabbard, Lexington-Fayette water quality engineer
Steve Jackson, Lexington Division of Environmental and Emergency Management
Bev Juett, Kentucky River Watershed Watch
Phillip Kring, Magistrate, Franklin County
Bill McGowan, Kentucky River Watershed Watch
Kerry Prather, Department of Fish and Wildlife Resources, central Ky. fisheries
Whitney Probst, Scott County Conservation District
Jim Rebmann, Lexington-Fayette Planning
Randal Rock, NRCS, Woodford County
Clay Smitson, Department of Fish and Wildlife Resources, private lands wildlife
Patrick Thompson, UK policy intern
J.R. Williamson, Scott County Fiscal Court

State Program Representatives
Benjy Kinman, Department of Fish and Wildlife Resources, Fisheries
Gary Levy, DOW Enforcement Branch
Bennie McWain, DOW Facilities Construction Branch
Ed Neal, DOW Water Resources Branch
Beverly Oliver, DOW Groundwater Branch
Shanda Pace, DOW Nonpoint Source Section, grants administration
Ron Price, DOW Program Planning, grants administration
Bruce Scott, DOW KPDES Branch
Bob Ware, DOW Assistant Director and Kentucky River Authority
Corrine Wells, DOW Nonpoint Source Section

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Staff
Jennifer Thompson, facilitator (Kentucky Natural Resources Leadership Institute)
Pamla Wood, workshop recorder (Licking River Basin Coordinator, DOW)
Greg Epp, Kentucky River Basin Coordinator (KWRRI for KRA)
Lee Colten, Watershed Framework Manager (DOW)

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Watershed Plan for the Eagle Creek Mouth Watershed (051002-05-410)

The Eagle Creek mouth watershed is largely agricultural, but it is likely to experience development in the near future. The terrain is steep, so the potential for erosion is high. The watershed contains a number of small streams with problems, and Eagle Creek itself carries high concentrations of bacteria. There is general concern about the nutrient and sediment runoff from agricultural land and of sediment runoff from construction activities. One priority is to promote practices for construction and land management that can prevent soil loss and degradation of the streams. A principal strategy is to fund implementation of the existing 1992 watershed plan for the Lick Creek subwatershed. Another priority is to eliminate the pathogen contamination of local streams. A new regional sewer system and a study of the total maximum daily load for pathogens will help with this. Other priorities are to foster a regional discussion of development, design, hydrology, and flooding and to determine what is needed to restore degraded creek sections and minimize losses from flooding. Landowners, local government, citizens and other stakeholders have a leading role to play in developing specific plans.

The following watershed plan emerged through the combined input of local task force members and agency personnel who participated in a series of meetings on this watershed, culminating in a planning workshop (see list of participants on page 50). Task force members and agency personnel examined monitoring data, agency programmatic information, and local knowledge assembled through the framework process as a factual background for the meetings. During the workshop, an independent facilitator asked planning participants to identify the issues they felt were most important. Next, the group went through a priority-setting process to highlight the issues and actions of greatest concern to the group. Finally, they discussed what steps should be taken next to address issues in the watershed.

Goals and strategies for action are listed on page 47. A color map of the Eagle Creek mouth watershed appears on page 151. The watershed summary for this watershed appears on page 370.

Assessment and Ranking (2000)

Ranking metrics

Eagle Creek mouth watershed was the only watershed in the north end of the basin that rated a high ranking of overall need for action under the framework prioritization formula. A cluster of stream impairments among tributaries to Eagle Creek was one reason. The level of bacteria in Eagle Creek itself, and its conse-
quent failure to support use for swimming was another. The potential for agricultural erosion was calculated to be 5.35 tons/acre, substantially higher than the 3.2 tons/acre mean for all watersheds in the basin (values for watersheds ranged from 0.57 to 9.79, with a median of 2.96 tons/acre).

**Agency data assessment**

Of 89.4 miles of streams in the watershed, 40.8 miles were assessed for the 2000 305(b) report, and 25.9 miles fail to fully support all designated uses. Three of the nine assessed creek segments in this watershed do not support their designated uses. Segments of two other streams only partially support theirs. The upper end of Eagle Creek (the only place in watershed that was assessed for bacteria) had levels of bacteria too high to support primary contact recreation. A short stretch of Buck Run (siltation) and part of Moseby Branch (flow alteration and habitat alteration) fail to support aquatic life. Lick Creek (siltation and habitat alterations) and Twomile Creek (flow alteration) only partially support aquatic life.

Eagle Creek proper (creek miles 0 to 38.8) was listed for TMDL development (nutrients and pathogens) in 1998, at that time as a second priority. UK’s Tracy Farmer Center for the Environment is conducting the TMDL under an EPA grant. The tributaries of Eagle Creek in this watershed were not on the 303(d) list before the watershed management assessment, so there are as yet no TMDLs. The tributaries will be listed on the 2002 303(d) list in October 2002, and TMDLs will be scheduled then.

Most of the identified impairments within the watershed are in lower-order tributaries rather than on the main stem of the creek. Achieving and documenting improvements should not, therefore, be complicated by inflow of contaminated water from upstream watersheds, and focused restoration projects would be quite feasible on tributaries such as these.

**Volunteer data**

Kentucky River Watershed Watch took one sample from Eagle Creek in July 1999, near the bottom of the watershed, and the fecal coliform count was very low. No samples were collected there in 2000. In July 2001, samples from two sites on Eagle Creek, at the head of the watershed, yielded fecal coliform counts of 610 and 810 col/100 mls. Dissolved oxygen values from all three sites were in the 5-6 mg/l range.

**Identification of Issues and Opportunities (2001)**

Eagle Creek emerged as the regional priority at the meeting held for the northern counties of the Kentucky River basin in Owenton (January 2001). Participants in the regional meeting and in subsequent discussions provide a nucleus of
Kentucky River Basin Management Plan

service personnel who can provide technical expertise. The Eagle RC&D Council is prepared to take a guiding role in this effort and offers a multi-county organization and experience with grant writing and program development. Members of the council include county and city officials and members of conservation boards. Theoda Franklin, the Regional Coordinator for the Council, has supported the Framework process from its beginning. The local NRCS district conservationists have also participated in our meetings.

Local concerns are a microcosm of the basin: major issues include water supplies for homes and livestock, sewage disposal, and agricultural effects on sediment, stream banks, and pathogens. Flooding concerns many residents of the watershed because of recent severe and frequent flood events. Streamside vegetation is lacking in many places. Woodland management, overgrazing, and loss of habitat for small game and songbirds are also a problem.

Owen County is reorganizing its water utilities, and the county government is keenly interested in water supply and source water protection issues. Some of these issues will be beyond the scope of a watershed task force, but they can be addressed at a basin or regional level. Others are watershed-level issues. Several of the counties, for instance, have been pursuing ways to increase the compliance of septic systems and reduce their impacts on water quality.

Watershed meetings organized by the Kentucky Waterways Alliance in 2001 drew mainly people from Sanders, where the mayor, Jack Ogden, and members of the town council took an active interest. Flooding and siltation in Eagle Creek and Lick Creek were among their leading concerns. The group expressed interest in development strategies that would minimize impacts on the watershed and creek.

NRCS developed a watershed plan for the Lick Creek subwatershed in 1992. Funding the implementation of this plan is an important goal.

A new sewage collection line for a regional wastewater treatment plant in Carrollton will be operational this spring, serving Glencoe, Sparta, and Sanders. The project will eliminate all package treatment plants except those at Eagle Valley Camping Resort and Eagle Creek Resort. It can also be expected to divert some of the sewage that now reaches the creek from failing septic systems or straight pipes. The Speedway’s temporary package plant will be eliminated once the sewer line is complete. People along the line will be required to connect to the sewer system: KRS 037 requires hookup. There is no regional sewer authority. The TMDL (total maximum daily load) research now underway will evaluate whether bacterial contamination of the creek remains a problem once the sewer is in use, and the TMDL analysis will provide a strategy for solving remaining contamination. Implementation of solutions can be facilitated by the watershed management framework process.
Planning Workshop (September 2001)

Goals and strategies for action

Development, hydrologic change, and flooding

Residential and commercial development on highly erodible land (e.g., the Sparta and Sanders area) is likely to become rapid. Future development around the Kentucky Speedway could have substantial impact on runoff volume. Already, severe streambank erosion is evident in places (e.g., Folsom/Glencoe area), and sedimentation elsewhere (e.g., Sanders area) has filled channels and degraded fishing.

These effects may be related to watershed changes well upstream (such as the increased percentage of impervious cover associated with new development). Hydrologic modification and streambank erosion will occur as permeable surface is lost to development, and present stormwater retention requirements are not adequate (especially at 35 & I-71) to prevent destabilization of streams. Flooding is also an issue: development in the floodplain of Eagle Creek and its tributaries should be discouraged. New ways to protect the creeks and the water quality while creating growth opportunities are desirable.

Sediment and nutrient runoff

There is general concern about nutrient and sediment runoff from agricultural land and siltation from construction activities. Better design and management practices should be encouraged. Construction BMPs could reduce water quality impacts caused by projects near the interstates. Promoting BMPs in agriculture can protect natural resources in the watershed, without causing hardship to farmers. The NRCS has developed a master plan for the Lick Creek subwatershed, but needs funding to put the plan into action. The restoration of streams—for example, Moseby Branch and Lick Creek—whose condition has been degraded should be a priority.

Pathogens

Residents want to protect public health and maintain and enhance recreational opportunities related to the creeks, i.e., fishing, swimming, canoeing, etc. The new sewer line will help eliminate use impairments caused by pathogens. However, malfunctioning septic systems and unmanaged livestock waste may continue to contaminate groundwater and streams. It is imperative that all who can should continue to tap on to the new sewer lines. The risks of sewer bypass due to either mechanical failure or flooding should not be forgotten. The increased demand on wastewater systems from future development is also an important issue. Flooding impacts on septic systems north of Sparta and animal waste and septic systems in unincorporated areas of Lick Creek watershed are a concern.
**Priorities**

- Promote county-wide ordinances requiring connection to sanitary sewers and a focus on regional wastewater treatment.
- Health departments need to disapprove new septic systems in sewered areas. DOW can work with local health departments on enforcing sewer hookup requirements.
- Promote proper land management, especially for agriculture and forestry (overgrazing) through existing cost-share programs. Implement BMPs for erosion in Lick Creek, according to the existing plan.
- Foster regional discussion of development, design, hydrology, and flooding.
- Educate the public about damages caused by instream activities (such as dredging, channel modification, all-terrain vehicles, etc.) to counter lack of knowledge about restrictions on disturbing creek banks and creek bottoms.
- Involve the agricultural community, particularly landowners, and other stakeholders.
- Coordinate with universities for monitoring and analysis.
- Find resources to support research for grant applications.

**Data Collection**

- Institute additional biological monitoring to help identify origins of impairments in tributary streams and more widely assess stream health.
- Ascertain the sources of pathogens with a broader sampling coverage and develop implementation strategies to reduce fecal loading (the TMDL will provide some of this).
- Evaluate the impact of development upstream of this HUC on flooding, sedimentation, etc.
- Investigate the need for more accurate floodplain maps and how to get them.
- Obtain complete land use and riparian zone analysis, including ground-truthing, to identify opportunities for increasing streamside vegetation and erosion controls.

**Critical Partnerships**

- UK Tracy Farmer Center for the Environment (TMDL results, in 2 years).
- RC&D Council network.
- NRCS Lick Creek Plan and landowners.
- Local Conservation Districts.
- UK Cooperative Extension network.
- 109 Solid Waste Boards (could be activated?).
- Local leadership: mayors, county judges, magistrates, health departments.
Agency Support

- County or local ordinances may be needed to enforce continued hookup to sewer lines. The county health departments and DOW can cooperate in enforcement.
- State and federal authorities could re-map floodplains.
- DOW will help coordinate local implementation of TMDL plan.
- DOW may conduct sampling and monitoring, help coordinate volunteer samplers, and help train citizen monitors.
- DOW has 604(b) funds for planning regionalized wastewater management.
- In Lieu Fee program (KDFWR) is a potential funder of stream restoration.
- Division of Conservation has state cost-share funds for agricultural BMPs.

Watershed concerns, by area

- Upstream of this watershed, the major issues are the effects of development on hydrology and water quality. At the extreme end of the drainage, Scott County will be constructing a dam and creating an impoundment for water supply.
- In Tenmile Creek, which joins Eagle Creek at the head of the Eagle Creek mouth watershed, bacteria endanger contact recreation, especially for children but also for fishing and canoeing, and the low quality water affects fishing, as well.
- Information and implementation strategies are needed throughout the Eagle Creek mouth watershed to address bacterial contamination.
- Streambank erosion is cutting into a highway between Glencoe and Folsom.
- Near Sparta there is significant potential for development. Planning/zoning is new in Gallatin County. Septic systems north of town lie outside the sewage area.
- In the Sanders area, flooding patterns appear to be changing, and people would like to assess the impact of upstream development and possible responses. Updated floodplain mapping would help to better manage the floodplain program and prevent losses.
- In the Lick Creek subwatershed, erosion could be reduced through grazing practices and other land management approaches. Animal waste is largely uncontrolled, and septic systems outside the sewer area are sometimes affected by flooding.
- At Buck Run, the segment impaired was reevaluated and subsequently reduced to less than one stream mile; degradation appears to be limited to one property.
Participants in the Eagle Creek Workshop Phase
Workshop was held September 25, 2001, at Carrollton

Local Representatives
Gretchen Bartley, Division of Water (DOW) Florence Field Office
Larry Brown, Eagle RC&D Council
David Crawford, City of Sanders
Jeff Crosby, Department of Fish and Wildlife Resources
Theoda Franklin, Eagle RC&D Coordinator (NRCS)
Linda Hunter, Eagle RC&D Council and Division of Conservation regional office
Gene McMurry, County Judge Executive, Carroll County
Ron Meyer, Division of Forestry local field office
Jack Ogden, Mayor of Sanders
Kim Strohmeier, UK Cooperative Extension, Owen County
Glenn Yost, Director of Creasey Mahan Nature Preserve

State Program Representatives
Julia Clark, DOW Water Quantity Management
Clark Dorman, Kentucky Waterways Alliance
Gary Levy, DOW Enforcement Branch
Joel Murphy, DOW Nonpoint Source Section, grants administration
Danny Peake, DOW Nonpoint Source Section
Kevin Ruhl, DOW Total Maximum Daily Load program
Bill Sampson, Department of Fish and Wildlife Resources, Watersheds
John Shuttleworth, DOW Groundwater Branch
Mike Tipton, DOW Facilities Construction Branch
Bob Ware, DOW Assistant Director and Kentucky River Authority member

Staff
Jennifer Thompson, facilitator (Kentucky Natural Resources Leadership Institute)
Pamla Wood, workshop recorder (Licking River Basin Coordinator, DOW)
Greg Epp, Kentucky River Basin Coordinator (KWRRI for KRA)
Lee Colten, Watershed Framework Manager (DOW)

Reference
Point of Contact

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Kentucky River Basin Management Plan
Introduction to Program Management Plans

The Kentucky Watershed Management Framework provides a dynamic, flexible structure for coordinating watershed management across the Commonwealth of Kentucky. It is not a new program, simply a new way of coordinating existing programs and building new partnerships that will result in more effective and efficient management of the state’s land and water resources. Among the benefits of this approach are:

- Better information for decision making
- Increased ability to resolve complex water resource problems
- Improved coordination among governmental agencies
- More opportunities for citizens to get involved
- Increased ability to demonstrate benefits of environmental management
- More cost-effective use of public and private funds

Coordination of activities takes place on three different levels: state, river basin, and watershed. Efforts at each level are linked together and integrated through communication forums including a statewide steering committee, river basin teams, and local watershed task forces. A statewide basin management schedule facilitates efficient use of available human and financial resources by focusing major watershed management efforts (such as monitoring) on one portion of the state at any given time.

The framework process is explicitly cyclical: watershed data are to be re-analyzed at five-year intervals, and watershed planning is to be extended and improved in each cycle. The framework thereby will connect existing state and local programs in a new geographic focus—the watershed—and eventually promote new and more comprehensive efforts mobilized around watersheds.

This document sets forth priorities for the second cycle of watershed management in the Kentucky River basin (2002-2007). The management plans in this section summarize how agency activities will be coordinated. The fifth year of each cycle is designated for implementation. Although many activities are focused in that year, in reality, the implementation of the diverse activities of framework partners occur throughout the cycle. Participating programs prepared management plans to outline how each program targets its activities to specific locations within the basin and when they will implement each element of the program.

These plans do not constitute a comprehensive, prescriptive plan for management of water and waterways in the basin. Instead they set out the criteria and processes that guide each program to take particular action in particular watersheds or particular points within watersheds. We envision that as the framework’s watershed approach is more fully implemented the plans for the basin will become more fully integrated and will provide geographic priorities articulated in greater detail.
Kentucky River Authority

Goal

The Kentucky River Authority will maintain and manage water resources of the Kentucky River basin to provide a clean and reliable water supply for the citizens of the basin.

The Kentucky River Authority will provide leadership and a common forum for all stakeholders of the Kentucky River basin in order to promote the highest and best uses of the water resources of the Kentucky River basin.

Objectives

Maintain and manage water resources of the basin (Quantity).

☐ Provide adequate and reliable water supply through planning and through implementation of capital projects and programs to effectively manage the Kentucky River basin as a raw water source.

☐ Identify and promote the development of alternative water sources as an Authority, or by supporting the efforts of others.

Provide a clean water supply for citizens in the basin (Quality).

☐ Preserve and improve the quality of the water resources of the Kentucky River basin by initiating and supporting water quality programs and initiatives.

☐ Plan and implement or support capital improvements in the Kentucky River basin for the purpose of water quality monitoring.

Provide leadership and a common forum for all stakeholders in the basin (Leadership).

☐ Secure support and funding for KRA programs and projects.

☐ Work with and among other agencies, entities, and the public to coordinate and lead efforts that will accomplish the mission of the KRA.

☐ Establish and maintain communications with residents and stakeholders of the Kentucky River basin. Provide opportunities for them to have input and participate in the activities of the KRA.

How will activities be targeted?

Projects will be targeted as part of a unified water resource plan for the basin. Some services, such as waterline leakage detection, are provided upon request.

Where will activities occur?

Infrastructure improvements will be concentrated on stabilizing, improving, and planning how to best utilize the locks and dams on the Kentucky River. All other activities will occur throughout the Kentucky River basin on an as-needed basis.
Part One: Management Plans

What activities will be targeted?

- Development and implementation of a Drought Response/Valve Operating Plan, to ensure a safe, adequate, and equitable supply of raw water stored behind the locks and dams of the Kentucky River.
- Continued funding for stream flow and water quality gages located throughout the Kentucky River basin.
- Stabilization of the locks and dams of the Kentucky River.
- Work with other agencies to identify alternative water supplies within the basin.
- Provide funding for leak detection services, in order to reduce “unaccounted for” water losses.
Division of Water, 
Drinking Water Branch

Goal

The Drinking Water Branch (DWB) in the Division of Water (DOW) is responsible for regulating public and semipublic drinking water systems in Kentucky. The mission of the DWB is to protect public health by ensuring the provision of safe, reliable water for human consumption. Kentucky seeks and has been granted primary implementation and enforcement responsibility for rules promulgated under the federal Safe Drinking Water Act (SDWA). KRS 224, KRS 151 and 401 KAR Chapter 8 provide the authority for and overall function of this program.

Objective

In order to maximize health protection for drinking water, it is necessary to optimize turbidity removal and control microorganisms while keeping potentially hazardous disinfection by-products (DBPs) at a minimum.

How will activities be targeted?

Everyone uses treated water—for drinking, cooking, bathing, and many other purposes. Numerous contaminants may enter drinking water sources, treatment processes and finished water distribution systems in various ways. The most common drinking water contaminants are bacteria, turbidity (particulate matter that can allow pathogens to survive), DBPs and inorganic chemicals such as nitrate, arsenic, barium and cadmium. In order to maximize health protection for drinking water, it is necessary to optimize turbidity removal and control microorganisms while keeping potentially hazardous DBPs at a minimum. The consequences of microbial water contamination are severe. Several U.S. communities have experienced the consequences of contaminated water resulting in localized epidemics of gastrointestinal distress, including some deaths. Kentucky has not had a documented water-borne disease outbreak caused by contamination of a public drinking water system in decades. Vigilance by the Commonwealth’s public water systems and oversight by state drinking water program staff ensure that levels of contaminants meet health standards or are removed to below detection levels.

Indicators that trigger action and where. The DWB will review parameters detected during the monitoring year of the basin cycle that may: (1) be found to exceed a maximum contaminant level (MCL), (2) have the potential to cause the finished water of a public water system (PWS) to exceed an MCL, or (3) cause a PWS to provide additional treatment.
Where will activities occur?

Some activities are statewide, by law; however, some activities may be targeted or emphasized, as outlined above in the targeting section.

What activities will be targeted?

Comprehensive performance evaluations (CPEs) of systems and technical assistance (CTA) to water systems in optimizing treatment processes and resolving treatment problems. A prioritization formula is used to rank systems in need of evaluation and assistance. If rankings are equal, then an emphasis will be placed on PWSs in the river basin, during the implementation year of the basin plan.

Training field inspectors. Emphasis will be placed on training inspectors as to the conductance of sanitary surveys and routine inspections of PWSs, during the implementation year of the basin plan.

Review and approval of any modification to or construction of new drinking water infrastructure, including chemical feed changes and points of application. Whenever plans and specifications for the construction of a new water treatment plant (WTP) or the expansion of an existing WTP are submitted to the DWB for approval, review will be conducted with an emphasis on what is going on in the entire basin, during the implementation year of the basin plan.
Division of Water, Groundwater Branch, Wellhead Protection Plan Program

Goal
The goal of the Wellhead Protection Plan (WHPP) Program is to protect the quality of public drinking water supplies using groundwater as a source by managing potential contaminant sources within a designated area around a public well or spring.

Objective
The WHPP program addresses groundwater protection issues at the community level by assisting local planning teams with the development of wellhead protection plans for their public water supplies. Section 1428 of the Safe Drinking Water Act (SDWA) requires that each state develop a wellhead protection program. In addition, the Source Water Assessment Plan (SWAP) requirements of the SDWA require that all public water systems in Kentucky must complete the SWAP process by March 2003. The SWAP process for public water systems in Kentucky using groundwater is participation in the WHPP program. Completion of the WHPP constitutes completion of the SWAP process. The WHPP program is administered through the Water Supply Planning regulation (401 KAR 4:220). The responsibility of the Division of Water is to establish and maintain the lead role in facilitating the WHPP process for the state. Since success of the program depends on community involvement, priority is given to those communities most willing to cooperate, and focusing efforts in a specific watershed may meet varied success as the communities within the basin may not be at a stage to cooperate or may be unwilling to go through the WHPP process for various reasons (e.g., a small system may anticipate regionalization). Clean Water Act Section 106 Grant commitments require semi-annual reporting to EPA. Biannual reporting to EPA on WHPP is required by the SDWA. The WHPP program also provides the Drinking Water Branch with a semi-annual report to incorporate in the SWAP to EPA.

How will activities be targeted?
Contacts will be made by the Wellhead Protection staff, or its contractor (KRWA, the Kentucky Rural Water Association), with each public water supplier in the basin that uses groundwater as its source and has not participated in the WHPP process, to initiate the process. Activities will be focused in areas where communities within the priority basin are willing to become involved in protecting their water supply.

On-site hydrogeologic investigations will be performed by Wellhead Protection staff to delineate protection areas (e.g., well inspections, pumping tests, hydrologic mapping) and assist in delineating protection areas and performing potential contaminant source inventories. Groundwater Protection Plan (GPP) compliance assistance visits will be conducted at all sites within the basin, where possible. The Wellhead Protection staff activities will be focused in areas where communities are willing to become involved in protecting their water supply.
Where will activities occur?

Activities outlined above will be targeted where appropriate within the basin management unit for implementation purposes.

What activities will be targeted?

In the implementation year—year five—the Wellhead Protection staff will contact public water systems that use groundwater as their source to initiate the wellhead protection process. Staff will provide technical and educational assistance to public water supplies and local governments involved in wellhead protection.

During monitoring—years one to two—Wellhead Protection staff, or KRWA, will perform on-site hydrogeologic investigations, where needed, to obtain information necessary to delineate protection areas (e.g., well inspections, pumping tests, hydrologic mapping) and assist in delineating protection areas and performing potential contaminant source inventories. In year five, Wellhead Protection staff, or KRWA, will provide on-site GPP compliance assistance. Wellhead Protection staff, or KRWA, will also provide the GPP program staff with maps of the wellhead protection area and a copy of the complete contaminant source inventory and susceptibility analysis for use in identifying sites of high priority.

The Wellhead Protection staff will develop state-level management controls and integrate wellhead protection measures into existing and proposed regulations and conduct presentations on wellhead protection at public meetings to increase public awareness on an on-going basis. In year five, the Wellhead Protection staff, or KRWA, will distribute approved wellhead protection plans to appropriate agencies and stakeholders in the priority basin.
Division of Water, Groundwater Branch, Water Well Drillers Program

Goal

The Water Well Drillers Program goals are to ensure water wells are properly constructed to provide a safe water supply for groundwater users, and to ensure wells are constructed to protect groundwater from contamination through the well bore.

Objective

The program is designed to ensure water well drillers meet minimum education and experience standards, and receive continuing education throughout their career. The program provides minimum construction standards for water wells and monitoring wells to ensure the well itself does not become an avenue for groundwater to become polluted from surface pollutants, or from the intermixing of aquifers of different quality.

How will activities be targeted?

The program will target water well inspections and technical assistance at private and public water supply wells in areas of the Kentucky River Basin where private water wells predominate as a source of water and where groundwater quality problems occur (e.g., iron- and sulfur-rich water, etc.). Wells may also be targeted for inspections in areas of the basin with large populations relying on private and public groundwater, or by domestic water well owners who have complaints concerning well water quality or quantity problems.

The program will also target inspections of water well drillers operating in these areas, arranging to be on site when water wells and monitoring wells are being constructed. These may be focused in areas of higher priority, either in priority 11-digit Hydrologic Unit Code watersheds (HUCs), if applicable, or in areas with a predominance of private wells as the source for drinking water and with well water quality problems.

In addition, the program will establish site visits or inspections with drillers not submitting records, with drillers with whom we have had a history of compliance problems, and with drillers that use new or unique techniques that may provide information beneficial to other drillers and the program. This will be done by comparing the number of well records received over a given period with the well tags provided to the driller.

The program will target 11-digit HUCs where water wells are a major or significant source of drinking water and where water problems (e.g., bacteriological, iron water, or sulfur water) are common and areas where a significant number of monitoring wells are installed as part of remediation of groundwater contamination.
Where will activities occur?

All approaches and responses listed below will be targeted in the Kentucky River Basin Management Unit.

What activities will be targeted?

The water well drillers program reviews well records submitted by well drillers for compliance with standards, corrects and enters this data into the DEP Consolidated Groundwater Database, conducts well inspections of wells, and provides technical assistance to well owners and well drillers.

At targeted wells, staff will focus on addressing well construction, and modification issues with well owners, as well as best management practices (i.e., maintenance, pollution prevention) related to the well.

When conducting inspections of water well driller operations, staff will evaluate how certified drillers are constructing wells, learn new techniques, and provide technical assistance and training to drillers who may be having problems.

Work with certified drillers, regional field offices, and communities to identify uncertified drillers constructing wells within the Kentucky River Basin and take enforcement action against uncertified drillers pursuant to violations.

This may be by giving them technical advice over the telephone, mailing information to them, or it may require a site visit to inspect the well. The well inspection might require sampling the well water for water quality, and the well camera may be used to try and determine well construction problems, etc.

Schedule (approximately one per month) a water well or monitoring well site visit with one of the certified drillers operating in the basin.
Division of Water, Groundwater Branch, Groundwater and Geological Technical Assistance

Goals

The Groundwater Branch provides technical assistance to the public to protect and preserve groundwater resources and because it fills a valuable assistance niche in the Commonwealth.

Objective

The Groundwater Branch provides technical assistance to the public (e.g., well owners, consultants, etc.), programs within the Department of Environmental Protection, and to other agencies on technical and programmatic issues relating to groundwater hydrology (e.g., karst issues, on-site disposal, aquifer viability, groundwater modeling, etc.), quality, and quantity, and geological issues. There is no mandate per statute or regulation for much of this technical assistance. Rather, the Groundwater Branch originally functioned almost solely in this role and has continued this type of valuable service because of technical expertise within the branch.

How will activities be targeted?

Technical assistance will principally be provided on an as-needed basis and as requested. As much of the technical assistance the Groundwater Branch staff provides is ad hoc, we are unable to focus this assistance into a watershed. However, where the programmatic synergy exists, such as with drinking water program, we will, to the extent possible prioritize our technical assistance in the priority watershed and particularly in the high priority watershed as much as possible.

Where will activities occur?

Assistance may be provide statewide, but may be targeted as outline below within the Kentucky River Basin Management Unit.

What activities will be targeted?

Groundwater Branch staff provides technical assistance to private well owners in regard to water quality and well maintenance issues. This includes providing information over the phone, conducting site visits (e.g., sampling wells, identifying impacts to groundwater and the source of impacts,

Groundwater Branch staff provides technical assistance to DEP programs (ERT, Solid Waste, UST, RCRA, Superfund, Drinking Water, Water Quality, and the Commissioner’s Office on groundwater and geological issues regarding groundwater quantity and quality issues, well construction, modeling, siting
considerations, karst issues, groundwater sensitivity, and departmental approaches to groundwater issues, among others.

Groundwater Branch staff provides technical assistance to other agencies (e.g., Cabinet for Health Services, local health departments, the AWQA, Kentucky Geological Survey, Kentucky Water Resources Research Institute, US Geological Survey, WRIS) regarding groundwater issues as they relate to on-site disposal, wells, monitoring, protection, karst issues, best management practices and groundwater pollution prevention, among others.

Groundwater Branch staff members provide technical assistance to public water systems utilizing groundwater in wellhead protection planning, aquifer modeling, viability and water quality concerns, and raw water and special projects monitoring.
Division of Water, Groundwater Branch, Groundwater Protection Plan Program

Goal

The goal of the Groundwater Protection Plan (GPP) program is to improve groundwater quality and prevent degradation of groundwater resources.

Objective

This program is designed to achieve this goal through the development and implementation of best management practices to attain groundwater pollution prevention. The requirements of the Groundwater Protection Plan program are stipulated in 401 KAR 5:037.

How will activities be targeted?

GPP program staff will contact and conduct inspections of facilities within selected Wellhead Protection Areas of the watershed, as approved by the Division of Water. Presently there are few public water systems in the Kentucky River Basin that have an approved Wellhead Protection Plan, therefore the number of wellhead protection communities within the priority basin where on-site visits will be conducted is dependant on progress in the wellhead protection program. Facilities that will be contacted and inspected for GPP purposes will be those facilities identified as potential contaminant sources in the applicable wellhead protection plan. Contact information describes the GPP program and goals, provides guidance regarding development and implementation of a GPP, and informs the receiver that GPP staff will be in the area on specific dates to view their activities and provide assistance with the development and implementation of the GPP. A public notice is also printed in the most local paper, and announcements are made on the radio, if possible.

GPP program staff will develop or update generic GPPs and best management practices (BMPs) guidance for well owners and well drillers and provide this to information to Water Well Drillers program staff for dissemination in priority areas as identified by the Water Well Drillers program staff. GPP staff will assist Water Well Drillers program staff in conducting on-site inspections regarding wells, on-site disposal issues, and other issues relating to GPP and wells, as requested.

GPP program staff will provide technical and compliance assistance in non-wellhead protection areas in the Kentucky River watershed where groundwater pollution has been identified or is suspected as playing a role in overall degradation, as identified by the basin planning team, monitoring data, or other program staff working in an area, and where the implementation of GPPs could improve water quality.
Where will activities occur?

Activities will be targeted in the Kentucky River Basin Management Unit.

What activities will be targeted?

The Groundwater Protection Plan program works with individuals, businesses, and communities to ensure that GPPs are being developed and implemented where required and to determine compliance. Program staff work with regulated entities by providing guidance and technical assistance in the development and implementation of GPPs, and by reviewing GPPs for compliance with 401 KAR 5:037 and providing feedback to regulated entities.

Program staff will work with the Wellhead Protection Program staff and wellhead protection plan communities to provide technical assistance to residents and businesses conducting activities within wellhead protection areas in the Kentucky River watershed, and particularly in priority 11-digit HUCs (if applicable), that require a GPP and do on-site verification of GPP implementation in wellhead protection areas. Program staff will work with the Water Well Drillers program staff in targeted basin areas to provide best management practice guidance to water well and monitoring well owners and drillers. Program staff will work with groundwater technical assistance program to provide groundwater protection best management practice guidance in areas of priority. For instance, the priority HUC areas may have groundwater issues related to on-site disposal or water wells and the GPP program staff will provide guidance and technical assistance to residents and businesses in these areas in the development and implementation of GPPs in these areas.
Division of Water,
Water Resources Branch

Goal

The primary objectives of the Water Resources Branch are the protection of human health and safety through the permitting, compliance, inspection, and enforcement of flood plain activities and dam safety. The protection of aquatic life and water supplies are also provided by Water Withdrawal Permitting; long-range planning to support drinking water supplies is provided by KRS 151.110-118, 401 KAR 4:220, 1996 Safe Drinking Water Act Reauthorization, and a new section to KRS 224A.

Objectives

The first editions of water supply plans were completed for all counties in July of 1999. The plans are required to be updated on a five-year cycle.

How will activities be targeted?

- Database review for quality assurance, completeness, and currency will follow phase one activities for scoping and information gathering.
- Because of the requirement to update water supply/management plans every five years, these plans should be updated in year four of the basin management cycle.
- Floodplain protection inspections must, of necessity, follow the degree of risk posed to life and property. However, among floodplain construction activities that lead to violations of equal risk, first emphasis could be given to those in the second phase of the management cycle.
- Floodplain activities will be prioritized for inspections based on the potential threat to life and property.
- Water withdrawal use will be prioritized for inspections or follow-up confirmation based upon the potential for adverse impacts to other permitted users, the environment, and aquatic habitat.

Where will activities occur?

Many activities within the branch must be performed on a risk-based approach, such as with dam safety inspection, and therefore must be performed statewide where need occurs; however, many activities, as outlined below may be targeted to a basin.

What activities will be targeted?

- The branch will perform quality assurance checks on all databases. In particular, the Water Withdrawal database will be reviewed for intake
locations, use amount, ownership, etc. during years one to two of the basin management cycle. Likewise, the floodplain permits and dams information databases will be updated as well.

- The branch will be working with the planners at the various Area Development Districts to shift the planning cycles to fit as closely as possible to the planning year of the watershed management cycle. (Some accommodations will have to be made, of course, since county lines don’t fit exactly with watershed boundaries.)

- Compliance inspections will be conducted for floodplain and water-use compliance and then prioritized for resulting enforcement activities in year one of the basin management cycle.

- Processing applications for floodplain permits and water withdrawal permits, and taking subsequent enforcement actions on violations (which require the majority of personnel resources) must occur on an as needed basis.

- Dam inspections are performed on three multi-year rotating cycles, based upon hazard classifications. Class C dams are inspected on a one-year cycle; Class B dams are inspected on a two-year for cycle; Class A dams are inspected on a five-year cycle.
Division of Water, KPDES Program, Watershed Permitting

Goal

Protect waters of the Commonwealth, per Section 106 of the Clean Water Act, by issuance of Kentucky Pollutant Discharge Elimination System (KPDES) permits for all regulated discharges and development and application of Total Maximum Daily Loads (TMDLs).

Objective

Permits will be re-issued on KPDES permittees on a rotating basin approach, one basin at a time each year. Permits will be processed in a “domino-like” fashion as one goes through a basin management unit (see map of basin management units below). Public meetings may be coordinated within subbasins or watersheds of a given river basin.

Also, Section 303(d) of the federal Clean Water Act requires states to list all impaired waters, develop TMDLs for the pollutant(s) causing the impairment, and then implement needed measures to restore the stream segment.

How will activities be targeted?

Per Section 106 of the Clean Water Act, all regulated dischargers will be issued KPDES permits under the rotating basin schedule, or watershed permits. Historically, The KPDES program has historically issued permits on a state-wide basis, as permits came up for re-issuance or were submitted to the agency. The agency will continue to process permits as they are submitted to the agency. However, all individual KPDES permits will be evaluated under a watershed or basin approach and, after July 2001, KPDES permits will be issued on a watershed basis, a practice known as watershed permitting.

TMDLs will be calculated for the first-priority 303(d)-listed streams and, subsequently, for the second-
priority 303(d)-listed streams, within a given basin (see graphic box, *Watershed Management and the TMDL Program*). The TMDL program is being administered in this manner in order that agency resources can be leveraged more efficiently. It should be noted that not all first-priority TMDLs (as provided in the 1998 303(d) list or subsequent listings) will be developed during the first cycle of the watershed framework due to certain watershed units having a large number of first-priority sites.

*Where will activities occur?*

KPDES permits will be issued basin-wide, proceeding “domino-like” up or down the basin, in year five of the rotating basin management cycle for a given basin (see graphic box, *KPDES Watershed Permitting*). TMDLs will be calculated for first-priority watersheds and then second-priority watersheds within a given basin in years two to three of the basin cycle (see graphic box, *Watershed Management and the TMDL Program*).

*What activities will be targeted?*

1. Kentucky has been in the process of moving toward watershed permitting since 1997. KPDES permits have been issued/reissued and cycled into one of five sets of basin management units (6-digit HUCs). Starting in July 2001, KPDES permits are scheduled to be issued on a watershed basis referred to as watershed permitting.

The five respective basin management units and the scheduled watershed permitting (done on a state fiscal year basis) are as described in the figure to the right. The sequence for each of the five respective basin management units repeats itself starting July 1, 2006.

Permits will be processed in a “domino-like” fashion as one goes through a basin management unit. In this manner, permits for small watersheds (11-digit or 14-digit HUCs) within the larger basin management unit will all be processed within the same time period (e.g., week, month, etc.). The process will continue all the

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### KPDES Watershed Permitting

1. **Kentucky River** - July 1, 2001 to June 30, 2002
2. **Salt & Licking Rivers** - July 1, 2002 to June 30, 2003
3. **Upper & Lower Cumberland and Tennessee Rivers** - July 1, 2003 to June 30, 2004
4. **Green & Tradewater Rivers** - July 1, 2004 to June 30, 2005
5. **Big Sandy, Little Sandy, & Tygarts Rivers** - July 1, 2005 to June 30, 2006

### Watershed Management and the TMDL Program

- The TMDL program has been incorporated into the Watershed Management Framework in Kentucky as shown below:

<table>
<thead>
<tr>
<th>TMDL Cycle</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
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<tr>
<td>Monitoring</td>
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<td>X</td>
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<td></td>
<td>X</td>
</tr>
</tbody>
</table>
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69
way through the basin by proceeding to each successive subbasin (note directional arrows in Basin Management Units map). This allows the agency to have a more focused attention on technical reviews.

2. In the context of evaluating the smaller, subbasins of concern, or priority watersheds, public involvement should be enhanced as a result of watershed permitting. Groups of permits will be public noticed concurrently in order that public participation can be conducted and coordinated on a local level. In some situations, public hearings may be conducted for multiple permitted entities rather than one permit at a time.

The Division of Water maintains a listing of KPDES permits to be processed, and when each is set for review within each respective basin management unit for a given state fiscal year. As new discharges are permitted outside of the normal basin cycle, they will be placed into the appropriate basin management unit with a short-term permit.

Note. Due to complications in cycling in all individual KPDES permits, the Kentucky River Basin and the Salt and Licking River Basins will not be fully sequenced starting in July 1, 2001 and July 1, 2002 respectively. The Upper and Lower Cumberland River Basins and the Tennessee River should be fully sequenced by July 1, 2003.

3. In addition, during the course of each monitoring cycle in the Watershed Management Framework, new impaired waterbodies are found (or de-listed), thereby requiring the development of TMDLs for those waterbodies in subsequent TMDL cycles. For example, in the Kentucky and Salt/Licking Basin Management Units, an additional 400 waterbody/pollutant combinations were identified for the April 2002 303(d) listing. This is in addition to the 218 water bodies listed statewide in the 1998 303(d) list, equating to 367 waterbody/pollutant combination TMDLs to be developed.

Under the monitoring phase of the TMDL program, for each basin management unit several of the chemical quality monitoring sites established under the Watershed Management Framework are earmarked for TMDL development (~20%). Under the development phase of the TMDL program (as of 6-1-01) 44 TMDLs have been developed, 9 segments have been de-listed, and 14 TMDLs are in development. Where possible, prioritization of TMDL development is done in conjunction with selection of priority watersheds within a respective basin management unit.

This allows stakeholder groups in the watershed to have the TMDL available for their use during the implementation phase. For example, in the case of priority watersheds, a TMDL could be implemented in a coordinated manner (targeted funding, best management practices, regulatory requirements, etc.) in order to expedite the restoration of an impaired water.

With respect to the KPDES program, permits issued for discharges into
impaired waters must account for the impairment during the course of the permit determination. Where a TMDL has been developed and a point source is contributing to that impairment, the KPDES permit must implement the TMDL accordingly. Where a TMDL has not yet been developed, KPDES permits must be issued such that the discharge does not contribute to the impairment (i.e., pollutant(s) causing the impairment). KPDES permits could be modified or denied depending upon the specific situation (ex, new or expanded discharge).

What is a TMDL or Total Maximum Daily Load?

A calculation of the maximum amount of a pollutant that a waterbody can receive and still meet water quality standards and stream uses, and an allocation of that amount to the pollutant’s sources.

\[
\text{TMDL} = \text{WLAs} + \text{LAs} + \text{MOS}
\]

WLAs are wasteload allocations (point source discharges)
LAs are load allocations (non-point contribution, including background)
MOS is the margin of safety, either explicit (a discrete number) or implicit (a conservative assumption)

Any questions regarding the Division’s KPDES or TMDL programs can be directed to Kevin Ruhl or Bruce Scott of the KPDES Branch at 502-564-3410.
Division of Water, Water Quality Branch, Nonpoint Source Section

Goal

“The vision of the Kentucky Nonpoint Source Pollution Control Program is to protect the quality of Kentucky’s surface and groundwater from nonpoint source (NPS) pollutants, to abate NPS threats, and to restore degraded waters to the extent that water quality standards are met and beneficial uses are supported” (KDOW, 2000).

“Kentucky’s long-term goal is to encourage and promote implementation of all BMPs necessary to meet water quality standards and maintain all designated used by 2015” (KDOW, 2000).

Objective

Delisting at least three TMDL/303(d) watersheds by 2005 is one measurable outcome of the watershed process.

How will activities be targeted?

Nonpoint Source (NPS) Section staff members have been assigned to each of the River Basin Teams. NPS staff attend River Basin Teams meetings, provide NPS guidance and information, and share River Basin Team news with other NPS Staff members. Their role is one of advisor and communicator; NPS Staff are not formal/working members of the River Basin Team.

NPS Biologists are monitoring subwatersheds and tributaries within selected 305(b) impaired or TMDL/303(d) watersheds in order to provide more information to River Basin Team Members who are involved with developing individual Watershed Action Plans.

Prior to the implementation phase of the Watershed Approach, bonus points are awarded to projects implementing NPS public education and outreach during year 1 of the cycle. For example, a Green River Basin outreach program will be funded under the Federal Fiscal Year (FFY) 2001 Grant.

Projects seeking Section 319(h) funds for implementing NPS controls are competitively ranked based on EPA’s “nine key elements.” Bonus points are awarded for projects that are integrated with the Kentucky Watershed Approach (points range from 0-8; Basin Coordinator input crucial). For the Kentucky River Basin, implementation of watershed action plans will receive bonus points under the FFY 2003 Grant (to be announced Fall 2001).

Because the FFY 2001 Incremental Grant is behind schedule and is currently under development, the NPS Section will plan to include one or two priority Kentucky River Basin watersheds in the call for applications.
Where will activities occur?

Programmatic activities are primarily targeted in TMDL watersheds, 303(d) watersheds, and watersheds with a demonstrable threat within the targeted basin.

What activities will be targeted?

- Within each Kentucky River Basin priority 11-digit HUC, NPS Staff will participate in identifying local leaders to be involved/invited to participate in developing specific watershed action plans.
- Staff will attend as many priority watershed public meetings as possible.
- Staff will conduct subwatershed/tributary monitoring in selected 305(b) impaired or TMDL/303(d) watersheds in coordination with the Watershed Cycle.
- The NPS Section will assign bonus points to watershed action plans that are integrated with the Watershed Approach Program (for Section 319(h) funding).
- Watershed Action Plans must target subwatersheds in order to compete for Section 319(h) funds.
- Section 319(h) funds have been allocated to several projects in the Kentucky River Basin. Each River Basin Coordinator has been provided a spreadsheet that lists each NPS project and the River Basin that the project covers. Unfortunately, our NPS database is not yet complete, and thus, we cannot identify the specific 11-digit HUC affected by each NPS project.
Division of Water, Water Quality Branch, Water Quality Certification Section

Goal

Section 401 of the Clean Water Act states that projects and activities should not discharge pollutants into the Waters of the U.S.

Objective

- To certify that activities result in no discharge of pollutants to Waters of the U.S. or that pollutant sources are mitigated.
- To minimize or mitigate loss of wetlands and streams.
- To foster restoration activities to restore structure and function of the waterbodies of the U.S. through incentives, mitigation, certification conditions, denials of certifications, or in lieu fees funding.

How will activities be targeted?

Water quality certification are considered and issued based upon projects initiated within the Commonwealth and submitted by application to the Division of Water for Section 401 Water Quality Certification. However, concentrated inspections of previously certified projects will be targeted based on the following criteria:

- In the targeted basin in years 1 and 2 of the rotating basin cycle.
- Where the potential exists for environmental impacts. This is defined as projects previously issued a Water Quality Certification or 404 Permit and having a larger stream relocation or wetland fill activity.

Where will activities occur?

This program can only act where complaints or monitoring data indicates failure to secure the proper Section 401 Water Quality Certification or Section 404 permit from the US Army Corps of Engineers. In that sense, it is complaint- or application-driven, statewide.

What activities will be targeted?

Projects received by the Water Quality Certification (WQC) Section are project- and application-driven. Most projects are one-time projects. However, inspections of certified projects are manageable and the WQC Section will concentrate on inspecting stream and wetland impact projects in year two of the basin cycle, along with other Field Operation inspections.

Also, in order to focus resources on the basin’s priority watersheds, the WQC Section will give an additional 25% mitigation credit for restoration work completed in a priority watershed of the basin in the fifth year, or implementation year,
of the basin cycle, provided the work is compatible with the needs of the watershed. Mitigation credits are the numerical values associated with various types of stream restoration and/or enhancement activities times the length of work for each activity, with full scale stream restoration being the most valuable activity, bank stabilization being of lesser value, and existing stream corridor protection being the least valuable activity that can be used as compensatory mitigation for permanent stream loss. These credits will be allowed as an incentive for restoration work in watersheds targeted by the River Basin Team.
Division of Water,
Facilities Construction Branch

Facility Plan Reviews

Goal
State regulation 401 KAR 5:006 requires wastewater regional planning agencies to submit a wastewater facility plan.

Objective
In an effort to provide incentives for good planning and management of wastewater, the Division of Water has devised a planning schedule of activities that fits into the overall watershed management schedule (see accompanying diagram) and encourages proactive planning, through opportunities to access additional funding.

How will activities be targeted?
Areas or watersheds with documented in-stream water quality problems, related to wastewater discharges, may be targeted for application of 604(b) funding to support wastewater planning.

The wastewater planning cycle has been developed to allow a county or city planning authority to develop wastewater plans with 604(b) grants during years three and four of the watershed management cycle in a given basin.

DOW facility plan review efforts are currently driven by EPA funding and new developments in the area. DOW will target efforts to enforce the 20-year rule to review all facility plans submitted.

Where will activities occur?
Wastewater facility plans are updated when the following occurs:

- A new regional facility is to be constructed within the planning area.
- The capacity of an existing regional facility is to be expanded by >30%.
- The population served is to be expanded by >30%.
- A regional facility applies for EPA assisted grant or loan funds.
- A regional planning agency considers the submission to be in the best interest of the public and the environment.

What activities will be targeted?
Applications will be sent to, and funding provided for qualified systems, for wastewater planning. In order to move facility planning into a basin cycle, DOW will require that facilities plans are submitted on a schedule that allows improvement of existing treatment and collection facilities in the implementation year of
the basin cycle. Regional Wastewater Plans (201 Wastewater Facility Plans) must be revised at least once every 20 years.

During the second year of the basin cycle, an inventory will be conducted of the status of facility plans in the basin (implementation is scheduled in year five). Letters will be sent to any regional planning agency in the basin that has a plan more than 17 years old. The agency will be asked to procure an engineering firm to prepare and submit the planning document. Procurement of the engineer and preparation of the plan will require a year or more. Review by DOW and other involved agencies, including necessary modifications, will require nearly an additional year. During the implementation year, design and construction of needed wastewater facilities will proceed.

State Revolving Loan Fund

Goal

The Water Quality Act of 1987 allowed EPA to make grants to capitalize Water Pollution Control State Revolving Funds (SRFs). These funds are provided to allow loans to communities to build wastewater treatment systems. When federal funding ends, the SRF is to be maintained in perpetuity to replace previous federal grant programs.

Goals of Kentucky’s SRF are to:

- Maintain a self-sustaining revolving loan program to improve and protect water quality and public health.
- Manage an effective/efficient SRF.
- Provide low-cost financial assistance.
- Ensure compliance with state and federal goals.
- Ensure technical integrity of the program
- Ensure proper accounting, audit and fiscal procedures.
- Promote regionalization and elimination of straight pipe discharges and failed septic systems.

Objective

The federal law requires an Intended Use Plan that includes:

- A priority list of proposed construction projects of publicly owned treatment works.
- A description of goals and objectives of the state’s SRF.
- Assurances for meeting federal requirements.
- The criteria for distribution of funds.

How will activities be targeted?

A project priority ranking system and priority list have been developed. The priority system contains various factors to assess the impact of the existing dis-
charge and assess the cost of the project. The formula has been modified to include
a watershed factor. Following the necessary public participation process, priority
points for applicants will be calculated based on the new formula. The new
priority list will be effective October 1, 2001.

Where will activities occur?

Projects will be targeted and prioritized for funding based upon the priority
ranking system. Data on use support and an additional watershed factor will
encourage targeting funds to wastewater treatment systems in watersheds with
waters that are impaired from wastewater discharges (point or nonpoint source)
and where they address the issue of concern.

What activities will be targeted?

As applicants reach the point in the process where a funding commitment is
appropriate, a determination will be made as to priority for this particular project.
If it is determined that the project has priority, a recommendation will be made by
DOW to the Kentucky Infrastructure Authority that a funding commitment is
appropriate. The determination of priority is based on priority points and funding
available. In the event a project is scheduled for funding and is unable to complete
an application, DOW may bypass the scheduled project to fund lower priority
projects. This should occur during the fourth year of the watershed management
cycle. See diagram (flow chart) in previous planning section to depict activities
related to State Revolving Loan Funding activities.

Nonpoint Source 319(h) grants are also available on a competitive basis for
implementing onsite sewage solutions. These grants are federally funded at a
sixty-percent reimbursement rate. The grants are applied for on a yearly basis and
the project duration can be no more than seven years.
Part One: Management Plans

Wastewater Planning Schedule
Within the Watershed Management Cycle
Division of Water, Field Operations and Enforcement Branches

Goal

The Field Operations Branch is responsible for responding to emergencies and complaints and for performing regular inspections of permitted facilities. The Enforcement’s Branch is responsible for the timely and appropriate resolution of violations through consent agreements, emergency and judicial orders and other appropriate vehicles.

Objectives

It is the Field Operations Branch’s job to detect violations of, and return violators to compliance with, applicable laws related to public water systems, wastewater collection and treatment, dam safety, clean-up and remediation of spills, water withdrawal, Wild Rivers, water quality and flood plain construction. Both branches operate under memoranda of agreement with the U.S. Environmental Protection Agency (EPA) as part of the primacy agency for the Clean Water Act and Safe Drinking Water Act in Kentucky.

How will activities be targeted?

All increased or targeted surveillance, compliance, and enforcement actions mentioned in this plan will be targeted in the second year of the rotating basin management cycle for the Kentucky River Basin, unless otherwise stated.

- Surveillance or sampling will be increased and targeted based upon water quality standards violations for fecal coliform from past sampling data or existing swimming advisories.
- To the extent possible, a comprehensive inspection of all permitted facilities within the basin will be conducted.
- Cases are to be referred for enforcement action based upon inspection of facilities found to be in non-compliance.
- The Enforcement’s Branch will systematically reviewing compliance records for all permitted facilities in the basin.
- Targeted enforcement actions will be initiated in targeted watersheds with stream listed on the 303(d) list of impaired streams.
- Enforcement and Field Operations Branches will review records and compliance histories of permitted facilities to identify patterns in sector performance for potential targeted enforcement.

What activities will be targeted?

Because of historical water quality standards violation and an existing swimming advisory on the North Fork of the Kentucky River, Field Operations staff
will increase surveillance in advisory areas by performing the following actions: (1) monthly fecal coliform sampling during recreational season at selected ambient sites, and (2) sampling and inspections at all permitted outfalls.

Field Operations staff will inspect all KPDES permits in the basin at least one time in the second year of the rotating basin schedule. Additionally, all major KPDES dischargers in the basin will be subject to a compliance evaluation inspection (CEI) in the second year of the basin schedule. If violations are found, the permitted facility will be referred to the Enforcement Branch, where appropriate enforcement action may occur. The Enforcement’s Branch will perform a systematic review of all permit compliance records for non- or late submittals of discharge monitoring reports (DMRs); significant non-compliers will be targeted for enforcement.

In the three targeted watersheds in the Kentucky River Basin (South Elkhorn, Red River, and Eagle Creek), Field Operations will increase surveillance and inspections to all facilities in the watershed. Specifically, this means all KPDES permittees will be subject to two inspections; all municipal permittees will be subject to one CSI (Compliance Surveillance Inspection). Additionally, there will be a general increase in surveillance related to stormwater runoff, whether at permitted sites, construction sites, or other sites where nonpoint source runoff may be a problem.

Sector-targeted initiatives can be determined by DOW in consultation with local stakeholders. For example, a problematic group of industries in a geographic area or in one industry sector may be a concern to folks in that watershed, and DOW may agree to pursue surveillance and enforcement in that area.
Division Of Conservation

Mission

To assist Kentucky’s 121 local conservation districts in the development and implementation of sound soil and water conservation programs to manage, enhance, and promote the wise use of the Commonwealth’s natural resources. To responsively administer the conservation programs of the Division of Conservation to ensure, through the conservation districts, the availability of technical and financial assistance to the landowners and land users of Kentucky.

Programs

The following programs are ongoing and are implemented through conservation districts at the local level. Water quality has been determined to be the number one resource concern with conservation districts, and their support for the framework is another opportunity to carry out their mission.

Kentucky Soil Erosion and Water Quality Cost Share Program

Provide financial assistance to individuals to implement Best Management Practices (BMP) in agriculture or silviculture operations to protect and improve water quality (KRS 146.115). This program will be helpful in assisting agriculture operations with BMP implementation by providing financial assistance as well as technical assistance. Every county has annual sign-ups. The program’s purposes are to provide cleaner water through the reduction in the loading of sediment, nutrients, and pesticides in Kentucky streams, rivers, and lakes and to reduce the loss of topsoil and prevent surface water and groundwater pollution. Criteria for participation in the program focus on animal waste. Money is also available for correcting identified water quality problems that have been traced to specific farms. This program also assists agriculture and silviculture operations in Kentucky with the implementation of the Agriculture Water Quality Act.

Kentucky Agriculture Water Quality Act Of 1994

Provide support to the Agriculture Water Quality Authority in their efforts to carry out KRS 224.71-100 to 140 and assist conservation districts in carrying out their duties under this act. This act requires that all agriculture and silviculture operations in Kentucky (greater than 10 acres) develop and implement an agricultural water quality (AWQ) plan for their individual operations. The goal of the act to is prevent pollution to both surface water and groundwater that could be the result of agriculture activities. It identifies activities with the potential to cause pollution and matches them up with BMPs that will prevent the pollution. The conservation districts and the Division of Conservation play a major role in implementing the Agriculture Water Quality Act. They provide technical and financial assistance for operators both in developing water quality plans and implementing
the plans. All operations are to have plans developed and implemented as of October 23, 2001.

Corrective Measures. As a result of the Agriculture Water Quality Act, a protocol was established among the Division of Water, the conservation districts, and the Division of Conservation as to how to deal with pollution problems that have been identified by the Division of Water. Technical and financial assistance will be made available through the conservation districts to develop plans for correcting these problems, and assistance will be provided in implementing the plans. After problems are corrected, an agricultural water quality plan will be developed and implemented to prevent further problems.

Priority Protection Areas. The Division of Water, working with the Agriculture Water Quality Authority, can designate water priority protection regions where it is documented that agriculture is contributing to water quality pollution problems. They will re-evaluate the effectiveness of the BMPs and the applicable requirements of the AWQ plan and may develop regional water quality plans and will assist agriculture operations in the identified region in taking appropriate steps to modify their AWQ plans.

Division Of Conservation Equipment Revolving Loan Fund Program

Administer a low-interest loan to conservation districts for the purchase of heavy or specialized machinery or equipment to do conservation work and install BMPs (KRS 262.620-262.660). Can provide low-interest loans for specialized equipment for no-till planting and reduced till and other soil-saving planting techniques, as well as animal waste handling and application equipment and precision spray equipment. This equipment is essential to properly apply animal waste and chemicals with reduced possibilities of pollution.

Kentucky Nonpoint Source Pollution Control Program

Provide administrative, technical, and financial assistance to eligible participants for the purpose of development and implementation of agriculture and silviculture BMPs as they relate to the Kentucky Nonpoint Source Pollution Control Program.

TMDL Implementation

Continue to review with Division of Water all TMDL Implementation Plans and provide comments and offer assistance in implementing agriculture’s contribution to the process.
Division of Forestry

Goal
To protect and enhance the forest resources of the commonwealth through a public informed of the environmental and economic importance of these resources.

Objective
- Technical and planning forestry assistance
- Forest fire protection
- Water quality management
- Ensuring and protecting forest health

How will activities be targeted?
Program services are delivered upon request.

Where will activities occur?
All of the activities described below are on-going and either occur in response to requests for assistance or an already on-going activity. As such, none of the Division of Forestry’s programs described in this plan may be targeted, per se, as they are all customer-driven.

What activities will be targeted?
Programs available from the Division of Forestry for support of watershed and basin management include the following.

Forest Stewardship Program. Professional Foresters provide one-on-one technical forestry assistance to private forestland owners within the basin. This includes planning assistance relative to timber sales, tree planting, woodland improvement, forest fire protection, watershed management, wildlife habitat, and recreation. This is specific to a landowner’s interests and woodland conditions and may also include technical assistance to implement recommended practices. Representatives of the Department of Fish and Wildlife Resources and/or USDA Natural Resources Conservation Service may also be involved or participate. This assistance is provided on a request only basis.

Forest Fire Prevention/Suppression. The Division of Forestry actively promotes protection of forests from wildland fires and works cooperatively with local Fire Departments to suppress them when they occur. The Division also enforces the burning laws of KRS Chapter 149 that sets the state’s fire hazard seasons.

Kentucky Forest Conservation Act: Logging Compliance. Beginning July 15, 2000, it became mandatory that all logging operations have a graduate Master Logger on site at all times and that best management practices (BMPs) must be
followed in all logging operations. Horse logging and a landowner, himself, doing the logging are exempt from the Master Logger requirement. The Division of Forestry, under authority of KRS Chapter 149, inspects all logging operations and enforces these provisions.

**Forest Health: Southern Pine Beetle.** Kentucky is in the third year of the worst outbreak of Southern Pine Beetle on record. The last infestation in Kentucky occurred in 1974 but was not near this extensive or severe. The current infestation began in 1999 in Southeast Kentucky and began to spread into the Kentucky River Basin in 2000. Historically infestations peak after three years then drop off. The Division of Forestry’s role is to monitor the infestation and to make recommendations for control when appropriate or requested.
Division of Waste Management

Goal

The goal of the Division of Waste Management is to protect human health and the environment by minimizing adverse impacts on all citizens of the commonwealth through development and implementation of fair, equitable, and effective waste management programs.

Objectives

The Enforcement Branch (http://www.nr.state.ky.us/nrepc/dep/waste/org/orgenfor.htm) conducts enforcement activities against violators of waste management statutes and regulations using 401 KAR 40 and KRS 224.10-100, 105, 110, 250, 410, 420, 430, 440, and 470.

The Field Operations Branch (http://www.nr.state.ky.us/nrepc/dep/waste/programs/fo/fohome.htm) identifies and abates imminent threats to human health and the environment through fair and equitable inspections, technical assistance, and education using the applicable program and enforcement regulations. The branch also implements the polychlorinated biphenyls (PCB) control program of 40 CFR 761 and the waste oil program of 401 KAR 44 and KRS 224.50-545.

The Hazardous Waste Branch (http://www.nr.state.ky.us/nrepc/dep/waste/programs/hw/hwhome.htm) oversees the handling of hazardous waste “from cradle to grave.” This involves the promotion of hazardous waste minimization, hazardous waste management, and remediation of hazardous waste releases through permitting, corrective action, registration, and reporting requirements found at 401 KAR 31 to 39 and 43 and KRS 224, subchapter 40 and 46.

The Program Planning and Administration Branch (http://www.nr.state.ky.us/nrepc/dep/waste/programs/ppa/ppahome.htm) coordinates the development of waste management regulations (http://www.nr.state.ky.us/nrepc/dep/waste/regs/regulati.htm), maintains waste management records, and coordinates grants, budget, and personnel actions for the division.

The Resource Conservation and Local Assistance Branch (http://www.nr.state.ky.us/nrepc/dep/waste/programs/rcla/rclahome.htm) provides local assistance and promotes proper management of solid waste programs in Kentucky pursuant to the planning regulations of 401 KAR 49, the solid waste planning provisions of KRS 224, subchapter 43, and the waste tire clean-up program under KRS 224.50-868 to 880.

The Solid Waste Branch (http://www.nr.state.ky.us/nrepc/dep/waste/programs/sw/swhome.htm) ensures proper solid and special waste management practices through the implementation of comprehensive permitting, monitoring, and training using the permitting provisions of 401 KAR 45, 47, and 45; and KRS 224, subchapter 40 and 50.
The Superfund Branch (http://www.nr.state.ky.us/nrepc/dep/waste/programs/sf/sfhome.htm) evaluates and oversees the cleanup of unpermitted waste sites using 40 CFR 300-309 and KRS 224.01-400 and 405.

The Underground Storage Tank Branch (http://www.nr.state.ky.us/nrepc/dep/waste/programs/ust/usthome.htm) provides for the prevention, abatement, and control of contaminants from underground storage tanks under 401 KAR Chapter 42, 40 CFR 280 and KRS 224 Chapter 60.

Where will activities occur?

Activities will be targeted in the Kentucky River Basin Management Unit.

How will activities be targeted?

- Field Operations Branch staff may conduct inspections of facilities within the selected watershed unit, when requested by the Division of Water. Facilities that will be inspected for watershed purposes will be those facilities identified as potential contaminant sources in the applicable watershed management plan. A public notice is also printed in the most local paper, and announcements are made on the radio, if possible, concerning watershed and subwatershed public meetings. Plans arising from these meetings and the planning process may identify potential sources of contamination.

- The program staff works with computer personnel, EMPOWER staff, and cabinet staff to load the location of each waste site onto a map overlay to be superimposed onto the watershed map.

- Staff will provide technical and compliance assistance in the Kentucky River watershed where groundwater or surface water pollution has been identified or is suspected to play a role in overall degradation, as identified by the basin planning team, monitoring data, or other program staff working in an area, and where Division of Waste Management action could improve water quality.

- The program staff opens permits, when justified by watershed studies, to impose special conditions to correct ongoing contamination or to protect groundwater or surface water.

What activities will be targeted?

The Division of Waste Management works with individuals, businesses, and communities to ensure that human health and the environment are being protected. This is done by developing and implementing permits, orders, certifications, plan approvals, registrations, and other conditions to protect the groundwater and surface water. The program staff works with regulated entities by providing guidance and technical assistance in the development and implementation of these conditions.
The program staff works with the other governmental agencies and cabinet subunits on identified contamination problems. For example, many landfills and hazardous waste activities also have a KPDES permit that may be checked for compliance. The Division of Waste Management shares its groundwater data with the Division of Water and other interested parties. The Resource Conservation and Local Assistance Branch works with local governments to assure compliance with area solid waste management plans and oversees the counties’ cleanup schedules for all dumps where no responsible party can be determined. Since GPS technology can help pinpoint open dumps with respect to watersheds, the Resource Conservation and Local Assistance Branch and Field Operations Branch can help counties prioritize cleanups of those dumps without responsible parties (or orphan landfills), with respect to their location and impact on watersheds. Division of Waste Management staff members attend public meetings on subwatersheds and discuss the potential impacts of waste sites and existing controls.
Kentucky State Nature Preserves Commission

Goal

The mission of the Kentucky State Nature Preserves Commission (KSNPC) is to protect Kentucky’s natural heritage by identifying, acquiring, and managing natural areas that represent the best known natural occurrences of rare native species, natural communities, and significant natural features in a statewide nature preserves system.

Objective

KSNPC accomplishes this goal by purchasing land, working with others to protect biological diversity, and educating the public as to the value and purpose of nature preserves and biodiversity conservation.

How will activities be targeted?

KSNPC and other organizations and agencies have worked since 1976 to inventory the biological resources of Kentucky. Information from these inventories is stored in the Biological Conservation Database. Important conservation sites are identified on maps as concentrations of rare native plants and animals and native plant communities. We seek to protect these sites through purchase from willing sellers, by working with private and public landowners, and by sharing information with other agencies and entities.

Where will activities be targeted?

In addition to existing KSNPC nature preserves (e.g., Bad Branch, Blanton Forest, Flora Cliff, Lower Howard Creek, Tom Dorman), conservation targets include megasites, such as the Kentucky River Palisades, Pine Mountain, South Fork Kentucky River, and smaller (standard) sites scattered throughout the basin.

What activities will be targeted?

- Conservation of rare native species, natural communities, and significant natural features through fee title purchase of land, through education of private and public landowners, and through restoration by working with private and public landowners.
- Educational activities through newsletters, presentations, field trips, and informational booths, etc.
- Data sharing and review of applications for resource development permits.
Department of Fish and Wildlife Resources, Private Lands Program

Goal

To provide technical and financial assistance to private landowners for wildlife habitat improvement and stream restoration projects.

Objective

Biologists will work with interested individuals, businesses, or groups on properties of five acres or more. A management plan will be developed to guide the creation of suitable habitat that benefits local wildlife populations and the ecosystem.

The Habitat Improvement Program (HIP) is available through the Department of Fish and Wildlife Resources to furnish reimbursement funding for targeted and approvable projects. Equally important, HIP can provide a link to available funds and assistance offered by other state, federal, and private agencies.

A streams biologist will offer technical assistance for localized stream restoration projects.

How will activities be targeted?

This program has the flexibility to target other specific management practices that directly relate to the goals of the Watershed Management Initiative. These include:

- Development of streamside riparian zones.
- Protection of streamside riparian zones, e.g., fencing.
- Development of filter strips and grassed waterways.

The Kentucky Department of Fish and Wildlife Resources will focus on 11-digit HUC watersheds that have impaired water quality that fail to support aquatic life.

Where will activities occur?

This is a statewide program that is guided by landowner requests. Targeted areas for HIP have been established in the past for specific management practices, i.e., development of native grasslands in a localized, target zone.

What activities will be targeted?

Cooperating landowners will be contacted and individual farm plans will be developed in the HIP program. Financial assistance can be targeted for appropriate management practices that will ultimately improve water quality. Technical assistance relating to other beneficial wildlife management practices will also be provided. Other funding opportunities for individual farms, specifically Farm Bill
Part One: Management Plans

programs, will be explored. There are opportunities to leverage funding as a match with Farm Bill programs to create better economic incentives for the landowner.

A streams biologist will provide on-site technical assistance for localized in-stream habitat improvement or restoration. Possible funding mechanisms for this work will be explored.
Department of Agriculture,
Division of Pesticide Regulation

Goal

Prevent the contamination of water resources by pesticide runoff.

Objectives

Ensure that agricultural pesticides are properly applied according to the label. Ensure that required and recommended best management practices (BMPs) are installed as specified on the labels.

How will activities be targeted?

When pesticide contamination is demonstrated to exceed trigger levels in groundwater or surface water, then actions will be initiated that will result in a cooperative educational outreach program, either creating or modifying pesticide use and/or application information and the BMPs that are associated with the pesticide of concern.

Since there are no water quality standards for many pesticides, drinking water supplies in karst regions or for surface water intakes will be targeted to places where pesticide monitoring data indicates that levels exceed one half of the maximum contaminant levels (MCLs) or health advisory levels (HALs). In other aquifers, any detection of pesticides, with confirmation samples, should trigger action. Data from all available sources will be used to evaluate levels of pesticides statewide and detect exceedance of the trigger levels. Since pesticide use is seasonal, levels of pesticides will probably vary and decrease into the growing season. In most cases, all the data will be studied and cooperating agencies will arrive at a consensus as to the specific actions needed to reduce the levels of pesticides to less than the trigger level. Sources of monitoring data include the Division of Water and local monitoring efforts. The Division of Water has ambient and surface water data that effectively alert the Division of Pesticide Regulations that pesticide levels are above trigger levels. Data from other sources (such as universities or USGS) could be used if the originating agency agrees to the use of the information as described in this plan.

What will be done?

The Department of Agriculture will initiate an educational program to reinforce proper use and application of the pesticide of concern through the existing Pesticides Workgroup. Under a compliance assistance effort, a watershed may be reviewed by agricultural field staff when data provided by the Division of Water or an appropriate agency indicates high levels of pesticides in a watershed. Using the appropriate data and water quality expertise, staff will study the watershed with a
nonpoint source contamination problem and identify appropriate actions. In most cases, depending on the how widespread a problem is, a compliance assistance effort can be initiated on the producers’ farms to determine if they are deficient in proper use and application of a pesticide or have improperly installed BMPs. If it is determined that pesticide use and application is the problem, the producer will be provided a chance to resolve the problem under a compliance assistance mode.

If the level of pesticides is widespread, then a cooperative state educational outreach effort will be implemented with the University of Kentucky Cooperative Extension Service, conservation districts, NRCS, universities, and Division of Conservation. A classroom and/or other educational program will be initiated. The cooperative training programs can be generated only on the basis of monitoring data indicating improper use and application or lack of proper BMP installation. In most cases, it is expected that the cooperative education program will resolve the problem, resulting in acceptable pesticide levels.

In the event that a producer fails to comply with the educational effort, the activities of the producer may be addressed under appropriate regulations and the Agriculture Water Quality Act. In addition, the producer may be subject to regulations of the Department of Agriculture that will allow for enforcement actions, rate reductions, or the discontinuation of a pesticide registration for the use and application of that pesticide.

Since residential areas (which include golf courses, parks, etc.), also must follow pesticide labels and the label is the law, they too should participate in a watershed or local training program pertaining to the proper use and application of pesticides and proper BMP installation. Residential pesticide contamination may be more difficult to pinpoint as a nonpoint source. Therefore, a local government, working as a cooperative partner, may want to support the organization of training programs for residents in specific neighborhoods. In an urban setting where educational efforts are unsuccessful, the applicator may be subject to regulations of the Department of Agriculture that will allow for enforcement actions, rate reductions, or discontinuation of any pesticide registration for the use and application of that pesticide.
U.S. Army Corps of Engineers

Goal

The U.S. Army Corps of Engineers, Louisville District, has a significant presence in the Kentucky River Basin with regards to water resource management and water resource development. These activities include operation of two active multipurpose projects in the headwaters of the basin, the historical operation of locks and dams on the Kentucky River, and a number of potential and existing local flood protection projects. The Corps of Engineers also has involvement as a regulatory agency for Section 404 dredge and fill permits.

The goal of the Louisville District is to incorporate and leverage resources, as appropriate, with other agencies and groups in a manner that is cost effective and is beneficial with regards to water resources of the Kentucky River basin.

Objectives

The Corps of Engineers has a number of authorities that are available for water resource development. Identifying needs and opportunities is an integral part of our business process. By being an integral part of the framework process we hope to add additional access to Corps programs that may be available for protection of resources or for solutions to problems. We will be in a position to identify local interest that may wish to partner with the Corps to address solutions to priority situations and be in a better position to convey these opportunities to the correct people within our own organization. Programs and authorities available to the Corps of Engineers include a number of environmental, flood protection, and construction alternatives. Several of these authorities require local sponsorship through cost sharing.

Additionally, through involvement watershed management in the Kentucky River basin, the Corps of Engineers is able to contribute materially in sharing data that is collected at Carr Creek and Buckhorn Lakes in the headwaters of the basin. The Corps has tailored its data collection program to coincide with and in support of the data collection year of the framework’s five-year rotational program. Our data collection program is now tailored in each of the basin management units to complement data being collected by other agencies in each data collection year. During the designated data collection year in each basin, we now focus resources in and around our multi-purpose lake projects to include additional monthly sampling at inflow stations throughout the year.

What activities will be targeted?

As stated above, the Corps hopes to be able to form partnerships through existing programs to provide solutions wherever possible. Existing Corps programs and authorities include the following.
Navigation: Harbors; Disposal Partnerships; Inland Waterways Locks and Dams; Section 107 of the River and Harbors Act; Clearing and Snagging; Mitigation of Damages (Section 111); and Recreation.

Flood Control: Structural; Nonstructural; Section 205 (small flood control projects); Clearing and Snagging; and the Emergency Flood Plain Management Services Program.

Hurricane And Storm Damage Reduction: Shore Protection
Emergency Streamband And Shore Protection: Section 14 Authority.

Water Supply Storage: Surplus Water; and Minor Emergency Withdrawals.

Recreation: Reservoir Projects; and Non-reservoir Projects.

Ecosystem Restoration and Protection: Specifically Authorized Projects; Consideration of Project Modifications for Improvement of the Environment Within the Civil Works Project; Beneficial Use of Dredge Material; Aquatic Ecosystem Restoration; Fish and Wildlife Mitigation; Flow Regulation for Water Quality Control; and Flow regulation for other than Water Quality Control.

Aquatic Plant Control.

Review Of Completed Projects Program (Section 216).

Dam Safety Assurance Program.

Planning Assistance To The States (Section 22).

Regulatory Program: Navigation Safety and Improvements, Permits for Work in Waters of the United States (Section 9 and 10 of the Rivers and Harbors Act), Permits for Dredged or Fill Materials (Section 404 of the Clean Water Act), Nationwide General Permits, Programmatic General Permits, and Individual Permits (standard permit and letter permit).

How will activities be targeted?

The Corps will attempt to identify problems and opportunities as they interface with our authorities and seek proper partnerships to achieve solutions to water resources needs. We also hope that the Commonwealth of Kentucky, local government, and private interests will seek cooperation through the authorities available. This can be accomplished both within and outside the framework of the Basin Management Unit. We encourage anyone to contact us regarding any of the programs noted above so we can give further information and seek partnering opportunities within the authorities that are currently available.
U.S. Fish and Wildlife Service

Goal
The U.S. Fish and Wildlife Service is the only agency of the U.S. Government whose primary responsibility is fish, wildlife, and plant conservation. The mission of the U.S. Fish and Wildlife Service is working with others to conserve, protect, and enhance fish, wildlife, plants, and their habitats for the continuing benefit of the American people. In May 2001, the U.S. Fish and Wildlife Service established a Field Office in Frankfort, Kentucky.

Objective
The Kentucky Field Office provides assistance to Federal and State agencies, local governments, businesses, and the general public relative to conserving, protecting, and restoring habitat for migratory birds and federally threatened and endangered species.

Assistance is typically provided via six programs in the Basin Management Unit:

- To assist an applicant in determining if wetlands or federally endangered or threatened species could be impacted by a proposed activity
- To protect the overall public interest, including the natural environment during permitting and project review
- The 1973 Endangered Species Act is intended to provide a means by which the ecosystems upon which endangered and threatened species depend may be conserved and to provide a program for the conservation of those species
- The Environmental Contaminants Program is intended to focused on identifying harmful contaminant effects on fish and wildlife and restoring resources degraded by contamination
- The Partners for Fish and Wildlife Program works to restore historic habitat types that benefit native fishes and wildlife
- Education and outreach is performed to help legislators understand the need to protect our wildlife resources; educational material are also developed to better enhance learning opportunities for all.

How will activities be targeted?

- Where various entities have applied for federal funds or will have to obtain a federal license or permit for projects
- Pursuant to the Fish and Wildlife Coordination Act of 1958, the administrators of Federal regulatory programs delegated to state agencies are required to consult with the Service and appropriate state fish and wildlife agency whenever and where ever a development project may affect aquatic resources in the Basin Management Unit.
- Wherever threatened and endangered species are documented to exist
Contaminant surveys will be conducted where there are known or suspected contaminant impacts where federal lands, threatened and endangered species, migratory birds, and anadromous fish occur within the basin.

Fish and Wildlife Programs are initiated where federal trust species occur (threatened and endangered species and migratory birds) and where partnerships develop.

Educational materials and outreach activities are targeted where ever opportunities present themselves.

Where will activities occur?

The activities outlined below will be targeted to the basin management unit in the implementation phase.

What activities will be targeted?

Pre-development Consultation Program. This program provides early technical assistance to various entities who have applied for federal funds or will have to obtain a federal license or permit for projects in the Basin Management Unit. The purpose of the early coordination is to assist an applicant in determining if wetlands or federally endangered or threatened species could be impacted by the proposed activity. The intent is to provide early notification of potential issues before an applicant commits significant resources toward specific plans or designs.

Federal Permits and Projects Program. To protect the overall public interest, including the natural environment, Congress has mandated that certain public and private development activities require formal authorization and approval by the Federal Government or state agencies with delegated regulatory authority. Specific regulatory procedures and requirements are identified in various Federal statutes and associated regulations. The general intent of Congress remains to ensure that development and operation of structures and facilities do not result in unnecessary or unacceptable adverse impacts to important public trust resources.

The majority of regulated activities are specific to the manipulations of aquatic resources, including wetlands, and are addressed pursuant to the Federal Water Pollution Control Act of 1972, as amended, or the Rivers and Harbors Act of 1899. The U.S. Army Corps of Engineers and state water pollution control agencies administer the most pertinent sections of the Water Pollution Control Act with oversight by the Environmental Protection Agency. Other regulated activities involve primarily upland habitats, and are addressed pursuant to development-specific statutes such as the Surface Mining Control and Reclamation Act of 1977, the Federal Power Act, as amended, and other statutes and their implementing regulations.

Although the U.S. Fish and Wildlife Service administers none of the Federal regulatory programs, Congress has mandated an important role for both the Service and its partner state fish and wildlife agencies within the permitting...
Kentucky River Basin Management Plan

processes. Pursuant to the Fish and Wildlife Coordination Act of 1958, the administrators of Federal regulatory programs delegated to state agencies are required to consult with the Service and appropriate state fish and wildlife agency whenever a development project may affect aquatic resources in Basin Management Unit.

**Endangered Species Program.** In 1973, Congress passed the Endangered Species Act, recognizing that: (1) various species of fish, wildlife, and plants in the United States have been rendered extinct as a consequence of economic growth and development unfettered by adequate concern and conservation, (2) other species of fish, wildlife and plants have been so depleted in numbers that they are in danger of or threatened with extinction, and (3) these species of fish, wildlife, and plants are of esthetic, ecological, educational, historical, recreational, and scientific value to the United States and its people. The intended purpose of the Act is to provide a means by which the ecosystems upon which endangered and threatened species depend may be conserved and to provide a program for the conservation of those species.

Important components of the Endangered Species Act include: (1) listing/recovery [Section 4], (2) cooperation with states [Section 6], (3) consultation [Section 7], (4) enforcement [Section 9], and (5) incidental take permits [Section 10]. Section 4 provides the process by which species in the Basin/Management Unit are added to or removed from the official list of endangered or threatened species, and by which recovery plans are developed; Section 6 allows the Service to enter into cooperative agreements with the Commonwealth of Kentucky to implement recovery activities in the Basin/Management Unit. Section 7 requires all Federal agencies to consult with the Service for all actions they authorize, fund, or carry out in Basin Management Unit; Section 9 prohibits the taking of listed species in Basin Management Unit and provides penalties for violations; and Section 10 allows the Service to issue permits for incidental taking of listed species for scientific purposes, or through the development of habitat conservation plans (HCPs) in Basin Management Unit by non-Federal entities.

**Environmental Contaminants Program.** The Mission of the Environmental Contaminants Program is focused on identifying harmful contaminant effects on fish and wildlife and restoring resources in the Basin Management Unit degraded by contamination. Technical assistance is provided to Federal and State agencies, local governments, businesses, and the general public on pesticide use, waste disposal, wastewater discharges, and habitat modification. Surveys of National Wildlife Refuges and other Federal lands are performed to determine the presence of contaminants and the potential effects of these contaminants on Federal trust resources. Surveys are also performed in a variety of other habitats, including those of endangered and threatened species, which could be impacted by environmental contaminants. The U.S. Fish and Wildlife Service is actively involved with developing response plans for potential oil spills or hazardous substance releases
and assists with cleanup, wildlife rehabilitation, and habitat restoration activities at numerous hazardous waste sites throughout Basin Management Unit.

**Partners for Fish and Wildlife Program.** The U.S. Fish and Wildlife Service established the Partners for Fish and Wildlife Program to restore historic habitat types that benefit native fishes and wildlife. The program adheres to the concept that restoring or enhancing habitats such as wetlands or other unique habitat types will substantially benefit federal trust species on private lands by providing food and cover or other essential needs. Federal trust species include threatened and endangered species, as well as migratory birds (e.g., waterfowl, wading birds, shorebirds, neotropical migratory songbirds).

Restoration and/or enhancement activities in Basin Management Unit involve close interaction with Service personnel and private landowners, development of a detailed technical proposal and a Wildlife Extension Agreement, and reimbursement by the Service to the landowner for associated costs of the project.

**Education/Outreach Program.** The Kentucky Field Office of the U.S. Fish and Wildlife Service provides information to the public concerning threatened and endangered species as well as other resource-oriented issues in Basin Management Unit. Presentations, informational booths, and outdoor exercises are some of the activities provided to school groups, civic organizations, college classes, etc., related to threatened and endangered species, neotropical migratory bird species (mostly songbirds), raptors (eagles, hawks, owls), law enforcement issues related to the Endangered Species Act and other legislation used to protect our wildlife resources. Educational material (brochures, fliers, fact sheets, etc.) related to these issues is also provided to better enhance learning opportunities for all. Representatives of the Kentucky Field Office serve as active members on state outreach groups concerning natural resource issues and how they relate to the public interest. These activities allow us an opportunity to better inform the citizens of Basin Management Unit of the wildlife around us.
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U.S. Forest Service

Goals, objectives, and principles

The Daniel Boone National Forest (DBNF) manages land in twenty-one 11-digit HUCs in the Kentucky River basin. The U.S. Forest Service manages no more than approximately 45 percent of any given watershed, and usually the percentage is much lower.

One of the main missions of the Forest Service is watershed protection. This mission is met through monitoring, through watershed restoration activities, and through the implementation of best management practices (BMPs). The Forest Service also works cooperatively with private landowners and other agencies to improve water quality.

Where will activities occur?

Over the next five years, the DBNF will target watersheds within the river basin where resource damage has occurred or where protection is considered an important issue. This may include watersheds with sensitive aquatic species or valuable recreation resources. See below for a current list of watersheds.

How will activities be targeted?

Recently, several different techniques have been used to evaluate each of the 11-digit HUCs across the Forest. First, the DBNF has been a part of the Kentucky Watershed Framework from its inception and plans to target restoration in watersheds that ranked high on the Framework priority list. In addition, the DBNF will use an internal “watershed analysis” process that identifies watersheds that are either in relatively poor condition or are very vulnerable to adverse impacts. The Forest will also try to address concerns that come up unexpectedly during this five-year time frame.

What activities will be targeted?

The following is a list of actions that are currently being planned in several of the Kentucky basin watersheds. This a dynamic list and will most likely change as more information becomes available.

Red River Gorge watershed (051002-04-120). This watershed has been identified as a priority in the Kentucky Watershed Framework and in the DBNF watershed analysis process. During 2001, the Forest Service conducted an in-depth analysis to identify future restoration projects. Restoration will be conducted over the next several years. These projects will most likely focus on reducing erosion from recreational activities in the Red River Gorge.

Middle & South Forks of Red River watershed (051002-04-140). The DBNF manages very little land in this watershed. However, over the last several
years, the Forest Service has been trying to reduce impacts from old roads and trails. This effort will continue for the next several years. There are also several hazardous dams that will most likely be removed from this watershed in the next few years.

**Red Bird River watershed (051002-03-010) and Bullskin Creek watershed (051002-03-030).** Off-road vehicle use is high in these watersheds. The DBNF has been closing illegal trails and improving routes that are eroding. This will continue for the next several years.
U.S. Geological Survey

Mission

The U.S. Geological Survey (USGS) Strategic Plan 2000-2005 states that our mission is to serve the nation by providing reliable scientific information to describe and understand the Earth; minimize loss of life and property from natural disasters; manage water, biological, energy, and mineral resources; and enhance and protect our quality of life. This is accomplished through programs, activities, and initiatives mandated by Congress to the Biology, Geology, Mapping, and Water Disciplines that comprise the bureau.

The USGS Water Resources Discipline has a district office in Louisville and field offices in Paducah and Williamsburg. A member of the National Mapping Discipline is collocated in the district office and a Biological Resources Discipline staff member is collocated at Mammoth Cave National Park.

Objective

The USGS collects data and information, analyzes and interprets data, and disseminates findings to the public through published reports and real-time web-based access. The USGS partners with federal, state, and local agencies and universities. Programs and activities are funded through (1) the Cooperative Water Program (federal matching funds); (2) direct or matched funds from city, county, and state government and/or universities; (3) other federal agencies such as the U.S. Department of Defense, U.S. Army Corps of Engineers, U.S. Environmental Protection Agency; and (4) federal funding (direct congressional appropriations).

What activities are targeted to the Kentucky basin?

The USGS will target activities in the Kentucky River basin as part of its cooperative monitoring network and ongoing basin-wide programs and partnerships. Currently (2002), discharge or stage is collected at 38 sites in the Kentucky River basin. Real-time surface-water discharge or stage data are collected at 35 sites, water-quality data are collected at 2 sites, and precipitation is collected at 22 sites. Planned or ongoing projects in the basin other than data collection are described below.

Water Use Compilation. Water-use data are compiled in cooperation with the Kentucky Division of Water to determine the quantity of surface water and groundwater that is withdrawn and its intended use, the quantity of water consumed during use, and the quantity of water returned to streams and aquifers after use. Data and information are entered into a computerized database and combined with statewide water-use data to document trends. Results of this data compilation are published by the USGS for a five-year period as part of the National Water Use Summary Report.
Digitizing Geologic Maps. Geologic quadrangle maps are being digitized in cooperation with the Kentucky Geological Survey to build an electronic library of the 707 geologic maps available for Kentucky. Geologic formation contacts, map symbols, and other information are included in the metadata.

Kentucky River Navigation Chart Update. All Kentucky River navigation charts will be updated and compiled into an electronic format. Charts were previously only available in a printed format, and updating of the charts was difficult and expensive. By converting each chart to an electronic graphic file, updates will be much easier and efficient to complete, and the information may be available on the web.

Flood Frequency Determination of Kentucky Streams. The frequency, duration, and occurrence interval of floods in Kentucky streams is calculated using regression correlation techniques and regression equations and other principal factors such as basin size, geology, and land use. These equations are being updated for various basins and regions in the state and will be released in a published report.

National Map Program. The National Map will provide the nation, including Kentucky, with access to current, accurate, and nationally consistent digital data and topographic maps derived from those data. The National Map will be developed and implemented through partnerships and will be a seamless, continuously maintained set of geographic base information that will serve as a foundation for integrating, sharing, and using other data easily and consistently for the entire nation.

Statewide Base Map. The USGS and the Commonwealth of Kentucky cooperated to build a statewide coverage of Geographic Information System (GIS) data themes including imagery, digital orthophotoquads, digital raster graphic (scanned images of the topographic quadrangles), digital elevation models, and the National Hydrography Dataset.
Natural Resources Conservation Service

Mission

The Natural Resources Conservation Service provides leadership in a partnership effort to help people conserve, maintain, and improve our natural resources and environment. Some of the programs through which this mission is achieved are described below as they relate to activities in the Kentucky River basin.

Conservation Reserve Program (CRP)

CRP reduces soil erosion, protects the nation’s ability to produce food and fiber, reduces sedimentation in streams and lakes, improves water quality, establishes wildlife habitat, and enhances forest and wetland resources. It encourages farmers to convert highly erodible cropland or other environmentally sensitive acreage to vegetative cover, such as tame or native grasses, wildlife plantings, trees, filter strips, or riparian buffers. Farmers receive an annual rental payment for the term of the multi-year contract. Cost sharing is provided to establish the vegetative cover practices. The Farm Service Agency administers this program, and NRCS provides technical assistance.

Environmental Quality Incentives Program (EQIP)

EQIP provides financial incentives and technical and educational assistance. It assists farmers and ranchers (1) in mitigating or resolving soil, water, and related natural resource problems and (2) in complying with environmental laws. These ends are achieved through implementation of a conservation plan which includes structural, vegetative, and land management practices. Five- to ten-year contracts are made with eligible producers. Cost-share payments may be made to implement eligible structural or vegetative practices, such as animal waste management facilities, terraces, filter strips, tree planting, and permanent wildlife habitat. Incentive payments can be made to implement one or more land management practices, such as nutrient management, pest management, and grazing land management.

EQIP works primarily in priority areas identified by local communities and where significant natural resource concerns exist. These priority areas are identified in a locally led conservation process through work groups that gather community input to ensure that the program reflects local needs and priorities. For 2002, the Benson Creek watershed (051002-05-260; see page 340) is the only priority area in the Kentucky River basin.

Wetlands Reserve Program (WRP)

The Wetlands Reserve Program is a voluntary program to restore wetlands. Participating landowners can establish conservation easements of either permanent or 30-year duration, or can enter into restoration cost-share agreements where no easement is involved. In exchange for establishing a permanent easement, the
landowner receives payment up to the agricultural value of the land and 100 percent of the restoration costs for restoring the wetlands. The 30-year easement payment is 75 percent of what would be provided for a permanent easement on the same site and 75 percent of the restoration cost. The voluntary agreements are for a minimum 10-year duration and provide for 75 percent of the cost of restoring the involved wetlands. Easements and restoration cost-share agreements establish wetland protection and restoration as the primary land use for the duration of the easement or agreement. In all instances, landowners continue to control access to their land.

This program uses designated priority areas, but at present there are no WRP priority areas in the Kentucky River basin.

**Wildlife Habitat Incentives Program (WHIP)**

The Wildlife Habitat Incentives Program provides financial incentives to develop habitat for fish and wildlife on private lands. The participants agree to implement a wildlife habitat development plan, and USDA agrees to provide cost-share assistance for the initial implementation of wildlife habitat development practices. USDA and program participants enter into a cost-share agreement for wildlife habitat development. This agreement generally lasts a minimum of five years from the date that the contract is signed.

Kentucky’s WHIP has focused primarily on the restoration and creation of diverse early successional habitats through native grass plantings, shrub plantings, field border establishment, buffer practices, fescue eradication, strip mowing outside the nesting seasons, and other practices. There are no WHIP priority areas.

**Resource Conservation & Development Program (RC&D)**

The purpose of the Resource Conservation and Development (RC&D) program is to accelerate the conservation, development and utilization of natural resources, improve the general level of economic activity, and to enhance the environment and standard of living in authorized RC&D areas. It improves the capability of state, tribal and local units of government and local nonprofit organizations in rural areas to plan, develop and carry out programs for resource conservation and development. The program also establishes or improves coordination systems in rural areas. Current program objectives focus on improvement of quality of life achieved through natural resources conservation and community development which leads to sustainable communities, prudent use (development), and the management and conservation of natural resources.

Authorized RC&D areas are locally sponsored areas designated by the Secretary of Agriculture for RC&D technical and financial assistance program funds. RC&D Councils accept project proposals and seek grant funds for land conservation, water management, community development, and environmental needs in the RC&D areas. See page 145 for a map of RC&D areas in the Kentucky River basin.
The Nature Conservancy

Goal

The Nature Conservancy’s mission is to preserve the plants, animals, and natural communities that represent the diversity of life on Earth by protecting the lands and waters they need to survive.

Objective

The Nature Conservancy will work to accomplish its mission by forming partnerships with other conservation organizations and agencies to develop long-range conservation plans and strategies for landscape-level project areas. Conservancy or other conservation partner organization employees will be assigned as project coordinators for each of the identified project areas. These project coordinators will then work to formulate and implement conservation strategies designed to protect resources through a coordinated team approach within the project areas.

How will activities be targeted?

The Nature Conservancy and other conservation partners have been working for a number of years to inventory the natural resources of Kentucky. These inventories are culminating in “ecoregional plans” which identify areas having the best remnants of native plant communities and populations of native plants and animals. These sites become known as “portfolio sites” in the ecoregional plans and are targeted as areas where Conservancy conservation efforts should be focused.

Where will activities occur?

The figure below shows the ecoregions of Kentucky and the identified landscapes where Conservancy conservation efforts will be focused.

In particular, efforts in the Kentucky River basin will be focused on the Lower Kentucky River and Eagle Creek, special communities in the Bluegrass Army Depot, Upper Kentucky River/Redbird River, and the Red River Bottomland Flatwoods.

What activities will be targeted?

- Conservation of plants, animals, and natural communities through fee title purchase of lands.
- Conservation of plants, animals, and natural communities through purchase of perpetual conservation easements on properties.
- Conservation of plants, animals, and natural communities through restoration of habitats on Conservancy or conservation partners lands (e.g., native grassland restoration, wetland restoration, riparian/bottomland forest restoration).
- Restoration of ecological processes to altered systems (e.g., prescribed fire in grasslands or fire-dependent woodlands, hydrology in wetlands).
- Educational activities through school programs, farm field days, etc.
- Technical guidance to landowners regarding improved farming practices and financial assistance programs available to farmland owners for conservation practices.
Kentucky River Watershed Watch, Citizen Action Plans

Goal

The Kentucky River Watershed Watch (KRWW) begins its sixth year of citizen water quality with a new tool to turn water quality data into action. Volunteer monitors have been trained to research and write Citizen Action Plans or CAPs for their watershed. As of March 2002, we have ten groups of volunteer samplers who are at various stages of developing CAPs. The KRWW Steering Committee has begun reviewing the first five submitted CAPs, and we are working with the volunteer monitoring teams in the other five watersheds to help them complete their CAPs.

The CAPs are intended to provide a standard format for organizing the available data about a particular watershed in a way that helps volunteers “assess” the needs of that watershed. After making an assessment of the needs of that watershed, these volunteer monitors identify action that they will take to address the watershed needs.

The volunteers who have agreed to take on the additional work of developing CAPs for their watershed are the KRWW “Acorns” because we are expecting big things to grow out of small beginnings. We want our CAPs to help our Acorn volunteers become more effective citizen participants in the framework process in the Kentucky River basin. We believe that our Acorn volunteers will recruit new volunteers to help implement our Citizen Action Plans, and help the framework process to develop action plans that will have strong citizen support.

Objectives and approaches

KRWW is a tax-exempt nonprofit organization formed in 1997 through the cooperation of the Sierra Club, the Kentucky Waterways Alliance, and the Division of Water’s Water Watch program. KRWW is part of a network of eight local basin Watershed Watch programs that cover the state of Kentucky. These eight local basins coordinate activities statewide through the Inter-basin Coordinating Committee.

The KRWW objectives in the first years were generally related to training volunteers to gather data about water quality in specific stream segments of the Kentucky River Basin. These objectives included developing a scientific study plan to guide our volunteers, providing water sampling equipment and funding for lab analysis, and publishing our data on the Watershed Watch web site maintained by the Water Watch program.

As the KRWW project began to accomplish these early objectives, we recognized that our volunteer samplers would begin to lose interest in the program.
Part One: Management Plans

unless we were able to demonstrate that the data gathering was actually making a difference. We recognized that we must succeed in turning our data into action.

Our first attempts involved letter writing to bring our fecal coliform data to the attention of the Kentucky Division of Water in 1999, and the volunteer training concerning the TMDL requirements of the Clean Water Act in 1999 and 2000. We invited volunteers to become a part of our Acorn committee, with the expectation that these volunteers would focus their work on the TMDLs in the Kentucky River Basin. Our effort to turn data into action received a significant boost when the Kentucky Water Resources Research Institute began to publish our data in an annual report, which included conclusions and recommendations. In addition, KRWW data from 1999 was included in the Kentucky River Basin Assessment Report (http://www.uky.edu/WaterResources/Watershed/).

However, last spring, the framework process proposed the selection of three Kentucky River Basin Priority Watersheds as watersheds where an effort would be made to write action plans. KRWW made the decision to support this process by developing a Citizen Action Plan program. After spending the summer experimenting with various approaches, the KRWW Steering Committee adopted a format to be presented at the 2002 Kentucky River Watershed Protection Conference on November 10, 2001. Our Acorn volunteers were asked to help write CAPs for their watershed. At that conference, fifty participants were trained to write CAPs, first by selecting the watershed they wanted to work on, and then by following the directions provided at the conference.

The KRWW CAP has four parts.

- Part 1, Environmental and Cultural History, consists of a description of the selected watershed, identified by name and by 11-digit HUC, as described in the Kentucky River Basin Assessment Report.

- Part 2, Citizen/Scientific Examination, assembles the data that the KRWW project has gathered about that watershed for the years 2000 and 2001. This data, together with the 1999 data included in the Kentucky River Basin Assessment Report, assembles three years of KRWW data about a particular watershed, with the framework watershed assessment.

- Part 3, Assessment, asks the Acorn volunteers to reach conclusions based on the data. They are asked the question, Is our watershed healthy or does it have problems?

- Part 4, Action Items, assists these volunteers to turn the data into action, by providing nine suggested action items, ranging from meeting with local officials to review the data, to recruiting more volunteers, to doing more sampling. Acorn volunteers are asked to pick and choose and to edit as they wish to identify the actions they intend to take for their watershed. These CAPs are then signed and submitted to the KRWW steering committee for review and approval.
Kentucky River Basin Management Plan

KRWW awards tee-shirts to our volunteers who are trained to become water samplers. This year we will award KRWW caps to our Acorn volunteers who have completed Citizen Action Plans. So be looking for folks proudly wearing KRWW caps with a prominent acorn. These people have turned water quality data into action.

What activities will be targeted?

In general, our first year of CAP action involves bringing the data we have gathered, along with the framework watershed assessment, to the attention of people—elected officials, schools, media, operators of public sewage treatment plants and of package plants, and concerned citizens. As we present the data, we will ask questions. What is being done? What can be done but is not being done? Why not?

Where will activities occur?

The KRWW steering committee has received five proposed CAPs to date.

- The Millers Creek CAP (051002-04-040) has been approved on condition that some additional information is provided, and some text clarified.
- The South Elkhorn CAP (051002-05-270) has been under review since December 2001. Because this CAP represents such a large area and population, it is getting extra attention. However, this CAP may be ready for approval in March 2002. Volunteers in the South Elkhorn have already obtained the permits and discharge monitoring reports for two point sources in the Midway area and are in discussion with plant operators regarding wastewater treatment issues, even though their plan has not been approved. It has received an “exemplary” rating from one steering committee member.
- The Clarks Run CAP (051002-05-190) was reviewed at the February 2002 meeting, and comments will be submitted to the Acorn volunteers this month.
- The West Hickman Creek CAP (051002-05-120) is very well prepared and thorough, complete with a CD and extensive documentation of fecal coliform problems and past efforts to address these problems.
- The Greasy Creek CAP (051002-02-010) is a little too brief at present, but we are confident that it will be completed shortly.

We also expect to develop CAPs this year for five more watersheds.

- Jessamine Creek (051002-05-130).
- Glens Creek (051002-05-240).
- Clear Creek (051002-05-220).
- Town Branch/Wolf Run (051002-05-270).
- Muddy Creek (051002-05-020).
Kentucky River Watershed Watch
Citizen Action Plan Watersheds as of March 2002