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To: CWAwaters@EPA
cc: Russ.cohen@state.ma.us
Subject: Attention Docket ID No. OW-2002-0050

February 28, 2003
Ms. Donna Downing
Water Docket, Environmental Protection Agency
Attention Docket ID No. OWß2002ß0050.
Mail Code: 4101T
1200 Pennsylvania Ave. NW
Washington, DC 20460
Dear Ms. Downing:
I am writing you to present sound scientific reasons why, if we are to maintain and/or restore high water quality in navigable and other larger water bodies, it is necessary to safeguard the water quality of (and maintain federal Clean Water Act jurisdiction over) the smaller tributaries, wetlands and other surface and groundwaters discharging into those larger waterbodies. I will also present a number of other reasons why intermittent and other smaller brooks and streams are especially needful and deserving of environmental protection.
In the state where I˜m from, Massachusetts, surface and groundwater are for the most part hydrologically connected. That means the discharge of pollutants onto the ground and reaching the groundwater often pollutes adjacent surface waters. Likewise, the discharge of pollutants into intermittent and other smaller streams flows into and pollutes the larger waterbodies, and is sometimes carries into the adjacent groundwater as well (when, for instance, water supply withdrawals from streamside wells pull water out if the adjacent stream and up into the well). The concept that wetlands or surface waters could be isolated and therefore could be polluted without that pollution eventually being carries into and adversely affecting a navigable or other larger water body does not reflect hydrological and scientific reality in Massachusetts.
In other words, it is simply impossible to keep navigable and other larger water bodies free of pollution if nothing is done to prevent pollutants from getting into the smaller tributaries feeding into those larger water bodies. That is why it is essential for the Clean Water Act to apply to all waters in the nation, not just the bigger ones. The strictest water quality protections in the world, if applied only to the navigable and other larger water bodies, would fail to keep them clean if pollutants are permitted to be discharged into the smaller tributaries feeding into the larger streams.
Even if it were to be determined that the federal Clean Water Act only applies to navigable waterways (which I think would be erroneous), those waterways could not be kept clean unless federal Clean Water Act jurisdiction applies to prevent pollutant discharges into the storm drains, streamside wetlands and other tributaries to the larger water bodies.
Attached to this letter is a fact sheet I recently prepared on the value of smaller brooks and streams and why they are even more needful and deserving of protection than the larger water bodies.
Thanks for considering my views.
Sincerely yours,

Russell A. Cohen
Rivers Advocate
Mass. Riverways Program

Mass. Dept. of Fisheries, Wildlife and Environmental Law Enforcement
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http://www.massriverways.org
---------- Attached document: ----------
Fact Sheet : The Importance of Protecting Water Quality in Intermittent and other Smaller Brooks and Streams.
[This fact sheet was prepared by Russell Cohen, Rivers Advocate, Riverways Program, Massachusetts Department of Fisheries, Wildlife and Environmental Law Enforcement. Date: January 8, 2003.

Why do intermittent and smaller streams need and deserve at least as much water quality protection as larger rivers?

It is equally, if not more, important from a scientific perspective to protect the water quality of intermittent and other smaller brooks and streams as it is for larger rivers. The water quality and quantity in mainstem rivers is largely determined by what they receive from their many smaller tributaries. The adverse impact of activities that degrade water quality in these smaller tributaries is carried downstream and is often amplified once they drain into the larger mainstem rivers. On the other hand, tributaries protected from water quality degradation by maintaining relatively undisturbed riparian vegetation and other means contribute steady amounts of clean, cool water to the mainstems thereby serving a critical role by diluting pollutant concentrations in the larger rivers. In addition, the fragility of riparian areas is often accentuated in small headwater stream reaches. These small streams are the most vulnerable to human disturbance because they respond dramatically and rapidly to alterations on adjacent lands and have little assimilative capacity for absorbing pollutants.

Even though they may not be tributaries to larger rivers, it is critical to maintain and/or restore high water quality in small coastal rivers and streams as well, as they play an equally important function for supporting anadromous fish runs and breeding or nursery habitat for marine animals, help provide clean fresh water and organic detritus needed to maintain healthy shellfish populations, help moderate coastal flooding and storm damage and help prevent pollution of sensitive coastal embayments.

Here are more reasons why protecting intermittent and other smaller brooks and streams is especially important:

Flood Control and Storm Damage Prevention:

A large proportion of the water in the state's rivers is contributed by the smaller tributaries. If riparian areas along these brooks and streams is altered in a manner (e.g., the removal of forest cover and/or the placement of buildings) that impairs their ability to detain and absorb floodwater and stormwater, the cumulative impact of streams discharging flood and storm flows into rivers at a greater volume and velocity will result in worsening flooding and storm damage to existing structures and mainstem river communities downstream, even if mainstem floodplains are safeguarded against further development. In addition, the smaller headwater tributaries tend to be located on some of the steepest-sloping and erosion-prone lands within a watershed. Furthermore, all other things being equal, the same development is likely to have a relatively greater negative impact on flooding conditions in an adjacent small stream than the same project along a larger river (e.g., the runoff from one large parking lot can itself be enough to overwhelm a small stream channel).

Wildlife Habitat:

Wildlife use of riparian areas along smaller brooks and streams, although somewhat different in character from the major rivers, is still quite extensive. Many species utilize vegetated riparian areas during all or part of their life cycle regardless of the size of the adjacent watercourse. In fact, several sensitive species in Massachusetts (e.g., the spring salamander) thrive only in cold, unpolluted springs and small streams. Last but not least, as most of the major river corridors in

Massachusetts have already been extensively developed, the areas which remain in a relatively pristine condition (and as such are likely to have the best quality wildlife habitat) tend to be located on the smaller tributaries.

Fisheries:

It is particularly important from a fisheries protection perspective to preserve corridors of natural vegetation along the smaller brooks and streams. Most of the annual flow in the smaller headwater streams is provided by groundwater that, in turn, is replenished by rainwater falling onto and infiltrating the soil under vegetated areas. Since water seeps slowly through the soil, the surface water flowing in streams can represent rainwater that fell days, weeks or even months ago. This regular, continuous seepage of groundwater that keeps streams flowing is called "baseflow".

Baseflow is critical to stream life and water quality. Low flow periods are typically the most stressful periods for aquatic organisms, resulting in crowding due to less available habitat, elevated water temperatures in the summer and greater freezing in the winter. Sportfish, fish food animals, and water plants require a stable, continuous flow of water, particularly during dry periods. Groundwater discharge is a major source of streamflow for smaller streams, especially during hot and dry summers, where the discharge both augments the streamflow and mitigates harmful temperature increases. This groundwater discharge is key to maintaining adequate water levels and temperatures in streams to support aquatic life.

Because of their small ratio of stream bottom width to shoreline, small headwater streams are especially vulnerable to harmful increases in temperature due to removal of shading from streamside forests. This removal of shading will also increase evaporation rates, making the streams lose water at the very time that groundwater replenishment is diminished due to the removal of these same forests. As a result, the failure to maintain vegetative cover on or keep impervious surfaces out of riparian areas adjacent to smaller brooks and streams is likely to increase the frequency, duration and severity of low flow conditions. In smaller streams, where flows are already modest in size, a reduction in baseflow is especially harmful. Small streams deprived of groundwater flow may even dry up completely, a condition that is obviously extremely stressful if not fatal to fish and other aquatic organisms.

Optimum spawning sites for important game fish frequently exist in headwater streams, even though these same fish may spend the remaining time in the larger rivers. Fish often retreat to these cooler tributaries when the mainstems get too warm for them. An increase in water temperature in headwater streams may result in a decrease in fish reproduction and useable habitat. Fortunately, the effectiveness of streamside forest buffers at controlling water temperature increases as stream size decreases. And if water temperatures are kept cool by streamside forests in the upper portion of the watershed, the tributaries will provide a significant beneficial cooling effect on the main watercourses during the summer, when flows are lowest and temperatures are highest.

Even where inaccessible to fish, the small headwater brooks and streams and adjacent riparian areas remaining in a relatively pristine condition provide high levels of water quality and quantity, sediment control, nutrients and woody debris for downstream reaches of the watershed. Thus, especially in the highly degraded systems, headwater streams serve as critical ecological anchors for riverine systems and important refuges for biodiversity. As many of the fisheries in Massachusetts mainstem rivers have already suffered serious degradation, it is the smaller tributary streams, especially the "coldwater" streams capable of supporting naturally reproducing wild trout, where preventing further encroachments into riparian areas is arguably of greatest value from a fisheries perspective.

Groundwater and Public Water Supply Protection:

As mentioned previously, groundwater can and often does reemerge as surface water, and groundwater discharge into rivers and streams has a beneficial effect on both the quantity and quality of water in the recipient watercourse. This is particularly true for the smaller headwater streams, where most of their annual flow is attributable to groundwater reentering the surface as natural spring seeps that, in turn, are replenished by rainwater falling onto and infiltrating the soil under vegetated areas. Groundwater discharge is a major source of streamflow for smaller streams, and is key to maintaining adequate water levels and cooler temperatures in streams to prevent sediment-bound pollutants from breaking free and to dilute pollutant concentrations below harmful levels.

The failure to maintain vegetative cover on or keep impervious surfaces out of riparian areas adjacent to smaller brooks and streams is likely to result in a significant loss of groundwater recharge and increase the frequency, duration and severity of low flow conditions. Small streams deprived of groundwater flow may even dry up completely, a condition that obviously limits their value for public and private water supplies. Last but not least, as most of the major rivers in Massachusetts continue to have degraded water quality, due in part to their role in assimilating municipal wastewater and other point source discharges, it is the smaller headwater streams and watersheds that remain in a relatively pristine and uncontaminated condition that are likely to have the greatest value for public water supplies.

Pollution Prevention:

Due to their modest size, small streams and brooks are especially vulnerable to degradation by excessive sediment, nutrients and other pollutants, simply because there is a smaller volume of water available to flush out and/or and assimilate these pollutants. All other things being equal, the same development is likely to have a relatively greater negative impact on a small stream's water quality than the same project along a larger river (the lower water volume in the smaller watercourse will result in higher nonpoint source pollution concentrations). In addition, smaller, shallower rivers and streams are also especially susceptible to stream heating, and excessive algae growth, dissolved oxygen depletion, and pathogenic organism activity are all triggered by higher stream temperatures.

Maintaining a living filter of natural vegetation along smaller brooks and streams is key to intercepting pollutants before they reach and degrade the sensitive smaller streams as well as enabling groundwater recharge and low flow augmentation to help maintain cooler temperatures and dilute pollutant concentrations. In addition, studies have found that streamside wetlands along smaller streams are more efficient at absorbing nutrients and sediments from adjacent waterways than along the larger rivers because a greater proportion of the water in smaller watercourses comes into direct contact with the cleansing action of streamside wetland plants and microorganisms.