

The Minnesota Pollution Control Agency's Framework for Action to Address the Environmental Impacts of Growth and Development

Introduction

The MPCA's effort to develop a framework for action stems from asking a fairly straightforward question: How could the Agency better align key programs and day-to-day activities with broader policy directions that support more environmentally, socially, and economically sustainable growth and development choices and patterns in the state of Minnesota? While a simple question to ask, the answers are many and complex, and require in-depth analysis in several "high-leverage" program areas: wastewater, storm water management, brownfield redevelopment, and air quality. The work presented here reflects many hours of research and in-depth discussions among environmental professionals. It distills the assembled knowledge and collective experiences of these people into an integrated, innovative, and workable framework for action by the Agency and identifies the critical interfaces with numerous key partners (other state agencies, regional and local governments, etc.).

The ultimate purposes of the framework are twofold. First, it provides MPCA staff and managers with tangible, on-the-ground guidance for adapting current work to better support smarter growth and development decisions and patterns. Second, it addresses the GOAL 21 ideal that staff adopt a more holistic quality to the Agency's perspectives and work activities. By focusing on growth and development in Minnesota's communities and regions, we necessarily frame our environmental work in terms of social and economic considerations, in addition to those of the natural systems ("the environment") that MPCA is charged with protecting. This geographic focus will also allow us to better develop a "systems" approach to achieving the desired outcomes. Further, the framework is intended to be implemented in selected "focus areas" of the state where staff activity is already significant, so as to minimize the need for additional resources by the Agency.

Finally, it is helpful to clearly articulate the context within which we developed this framework and its intended usefulness and limitations. The directions laid out herein are simply ones that make sense to us from an environmental standpoint. We describe the big picture of growth and development both to provide the rationale and bases for these agency directions and as a way to communicate our understanding of the problem to others. It is not our place to dictate to people what to do. Rather, we strive through this effort to make known what we believe is a reasoned and enduring approach to these complex issues. We recognize that MPCA's authority is limited in the arenas we examine here. Beyond those limits, partnership with other governmental and non-governmental organizations is necessary to pursue further the directions laid out. It is our hope that, by articulating a reasonable vision and providing leadership toward it, others will join with us to make it reality.

The Problem Being Addressed

Population growth and the related expansion of our built communities is a given in today's world. Among the more positive manifestations of this are economic opportunity, a range of housing and lifestyle choices, an extensive and safe road system, access to recreation, and many other quality-of-life considerations. The "problem" of such growth and development is huge, complex, and vigorously debated. A proper and comprehensive description of it would necessarily include the social, economic, and environmental dimensions of our lifestyle choices and the patterns of human settlement. Rather than take on that daunting task here, we will narrow our focus to a few important issues that tie back to the MPCA's mission and authority to protect the environment. These issues include:

- Minnesota's population is growing, with most of the growth concentrated in the Twin Cities metropolitan area and a small number of population centers in greater Minnesota. Of particular note are the corridors stretching from the Brainerd Lakes region southwest to St. Cloud, and southeast from St. Cloud through the Twin Cities metro area to Rochester.
- Land, much of it previously agricultural, forest, or pasture, is being developed for housing, commercial services, industry, and infrastructure (like roads and wastewater treatment) at an ever-increasing rate.
- The changes in land use result in: displaced wildlife and disruptions in migration patterns; a range of impacts to natural systems like forests, streams, lakes and wetlands; alteration of the pre-settlement flows of runoff from rainstorms and snowmelt; and an expanding area of our state being impacted by air pollution associated with more urban activities and practices.
- Land in urban areas already served by roads and utilities is passed over for redevelopment, in favor of "fresh" land that exists in seeming abundance at the outer edges of populated areas. Upkeep of existing infrastructure investments becomes more difficult as resources flow toward new developments; further, the expanded infrastructure base will cost even more in the future to maintain.
- Roads and highways are becoming more and more congested, lengthening travel times, increasing fuel usage (and associated pollution), and raising dissatisfaction with the perceived decline in "quality of life".
- Surface waters, as well as ground water, are vulnerable to degradation due to the generation and spread of pollution from human activities associated with growth and development, such as construction (e.g., erosion), maintenance of our built systems (e.g., landfill waste and leachate, lawn care chemicals), and habitation of them (e.g., discharges of wastewater to the environment).
- The pace of growth and development is quickening, often moving faster than the abilities of citizens and community officials to think about the consequences of each individual project. More importantly, we know even less about the cumulative effects of projects separated in time and/or location. Further, in the current reality there is little time to deliberate ways to prevent adverse consequences (environmental as well as social and economic) from occurring.

In short, many of the pressing environmental issues we face in Minnesota are the direct or indirect result of population growth and the development to accommodate it. (This fact in no way diminishes the significance of other pollution sources, such as many agricultural practices, nor the importance of the Agency's work in these arenas.) All are linked by complex cause-and-effect relationships that suggest the need to assess societal behaviors (individual, community, and business alike) in terms of the myriad environmental problems they contribute to. While the MPCA is charged with protecting the environment, the choices and human activities that lead to environmental degradation are more-or-less outside of the agency's explicit authority to control. This is true, as well, for a multitude of other state, regional, and local agencies whose missions have traditionally been seen as having little to do with environmental protection.

Clearly, a more collaborative approach is required if we are to deliver on the promise of environmental protection in such a world. The following section examines the complex relationships and the implications for the future work of the MPCA.

The Importance of Working in Concert to Address Water, Land and Air Issues

It is useful for this discussion to view environmental protection in terms of the natural “carrying capacities” of our state’s waters, land, and air. We must also remember that these media support a complex system of life, from microorganisms to macroscopic plants and animals. All of these are integral parts of the natural systems which, taken as a whole, form the basis for the carrying capacity that also supports human populations. The growth and development decisions we make, therefore, must consider nature’s physical, biological, and chemical limits if we are not to diminish Minnesota’s ability to meet the needs of our communities into the future.

MPCA already has many years of experience pertinent to evaluating the carrying capacities of Minnesota’s waters, by virtue of our watershed planning efforts. Beginning in late 1995, the Agency intensified its “basin management” approach to foster better coordination among local watershed planning efforts. Basin management looks at the interconnected waters of a region as a whole system, in which upstream, downstream, point source and nonpoint source issues can be viewed together -- the big picture. But the big picture goes far beyond water, to human activities (and natural processes) that affect land and air, as described in the over-simplified story below.

Population growth and the related development that occurs in a watershed clearly have a variety of environmental impacts. Many of them are the result of general land use choices, transportation facilities (roadway miles, placement and design), development and construction practices (particularly those that increase soil erosion), and community, household and individual lifestyle preferences (such as various wastewater treatment methods or landscape choices with large chemical usage). Contamination from past and current activities at industrial sites introduces still another category of pollutant sources that may spread by surface runoff, groundwater migration, or transport in the air. The use of fossil fuels in automobiles and trucks, as well as for the generation of electric power, creates molecular wastes that degrade ambient air quality. Further “downstream”, these wastes precipitate out of the atmosphere onto land and lakes where they concentrate and become a different environmental problem, such as acid rain and resultant acidification of lakes.

Even though these sources of pollution may individually be small contributors and widely separated geographically, they are ultimately connected through the accumulation of pollutants at downstream points. These accumulations, or concentrations, in part give rise to conditions that impair the affected waters for uses such as drinking water sources, fisheries, habitat for other species, or for various forms of recreation. Another significant contributor to water quality impairment is the amount of sediment carried by surface waters. Sedimentation, for various reasons, seriously impacts the biological and chemical health of aquatic systems in ways that parallel or overlap the impacts of waterborne chemical pollutants and nutrients.

The carrying capacity of a water basin can be assessed by characterizing the types and points of discharges to its water bodies, including aquifers; the levels of sediment being introduced and transported; the resultant water quality impacts; and comparison of these impacts to the conditions necessary to maintain the ecological health of these water bodies. Prudence also tells us that carrying capacity should be assessed in the light of “worst-case conditions”, such as known recurrences of drought and the

conditions associated with them: low stream flows, environmental stresses on acutely sensitive habitats and wildlife populations, increased fire danger, vulnerable groundwater conditions from increased pumping and reduced recharge, or countless other undesirable environmental conditions.

This story suggests that our entire concept of “environmental protection” is evolving toward a more integrated and cooperative approach. We need to more effectively assess the range of complex societal influences, such as growth and development, that can adversely impact the quality of our waters, land and air.

Our Set of Beliefs and Their Programmatic Implications

It became apparent over our months of dialogue and analysis that the conversations and conclusions reflect an underlying “belief system” – some fundamental assumptions, preferences, and ideals that give us a particular worldview. So before proceeding to the recommendations, it is important that the beliefs we are operating from be clear.

First, there are several core environmental beliefs that we wish to emphasize. These are:

- **Carrying Capacity.** Water, land and air have limited “carrying capacities” for pollutants. That is, they have limited ability to assimilate pollutants before degradation affects beneficial uses. The same concept can be applied to Minnesota’s land (soils, groundwater, habitat, etc.) and “airsheds” (localized pollution levels, ambient ground-level ozone, etc.).
- **Complex Interrelationships.** Water, land and air are also interconnected as a complex system. One consequence is that activities carried out with respect to one medium effect changes in the other media. For example, restoring native species in a watershed can reduce soil erosion, improve water quality, recharge groundwater, remove carbon dioxide from the atmosphere, etc.
- **Value of Natural Areas.** Greenspace for habitat, recreation, and for providing natural services such as shade or storm water infiltration or carbon absorption should be valued beyond that which is assigned by traditional economic assessments.
- **Preference for Prevention.** Preventing pollution from occurring in the first place remains preferable to limits, treatments, and other after-the-fact (of its generation) controls whenever and wherever feasible. The case can also be made that it is cost-effective in the long term.

In addition, there are several other themes that emerged from the staff’s analysis that are important planks in our platform of beliefs:

- **Energy and the Environment.** Energy generation and use contribute significantly to overall environmental impacts in Minnesota; promoting alternative energy sources and energy conservation are therefore high-leverage environmental protection strategies.
- **Transportation and the Environment.** Transportation modes and their associated infrastructure (vehicles, fuels, roads, mitigation approaches) are major factors in the generation of pollutants.
- **Private Sector Economics.** While clearly supported by government policies and services, the private sector is the primary driver of development and must therefore be a key player in adopting economic structures that support long-term environmental protection (e.g., investments in green buildings and other environmentally friendly approaches).
- **Effective Design.** The pre-design and design stages of a development project are generally the most effective and least expensive and disruptive times during which to introduce more environmentally protective concepts; interagency communication and cooperation, therefore, is critical at these times.

- **Financial Incentives.** Financial incentives are useful and important instruments to support desired policy directions.
- **Holistic Approach.** A watershed approach affords the MPCA a holistic management framework in which to plan and coordinate with respect to road construction and sewage treatment projects, green corridors, storm water management, natural resource protection, and recreational uses.
- **Sustainability.** Growth and development that degrades the ecological health of a community is ultimately unsustainable; sustainable, cost-effective alternatives should be fostered, evaluated, and shared widely.
- **Related Impacts.** In matters of primary agency jurisdiction, MPCA decisionmakers need to anticipate and consider other related environmental impacts (e.g., storm water impacts related to homes, commercial development, or roads and other infrastructure enabled by new or expanded wastewater facilities permitted by the MPCA).
- **Open to Input.** Agency actions should be open to public view and input and respectful of and strengthened by the introduction of multiple perspectives.
- **Local Solutions Preference.** Environmental concerns should be addressed and, in general, resolved at the most local (geographically) level possible (e.g., promoting onsite storm water management); solutions should encompass and impact broader areas only when more local solutions are infeasible or a greater public good is clearly served, for example, in deciding when a sewer extension is preferable to a smaller, centralized wastewater treatment method.
- **Information.** Local governments can benefit greatly from access to environmental information, education, and site-specific data which the agency could provide.
- **Influence Land Uses.** While recognizing that land use is a matter of local jurisdiction, MPCA's statutory authority to protect the environment provides opportunities to influence local actions through education, planning assistance, or financial incentives for environmentally preferred land use decisions.
- **Community Vision.** Developing and documenting a community's vision for itself is of great value for conducting effective, holistic, citizen-inclusive planning.
- **Environmental Equity.** Agency programs, decisions and actions should not inequitably place economically distressed neighborhoods or communities at relatively greater environmental risk than the state as a whole.

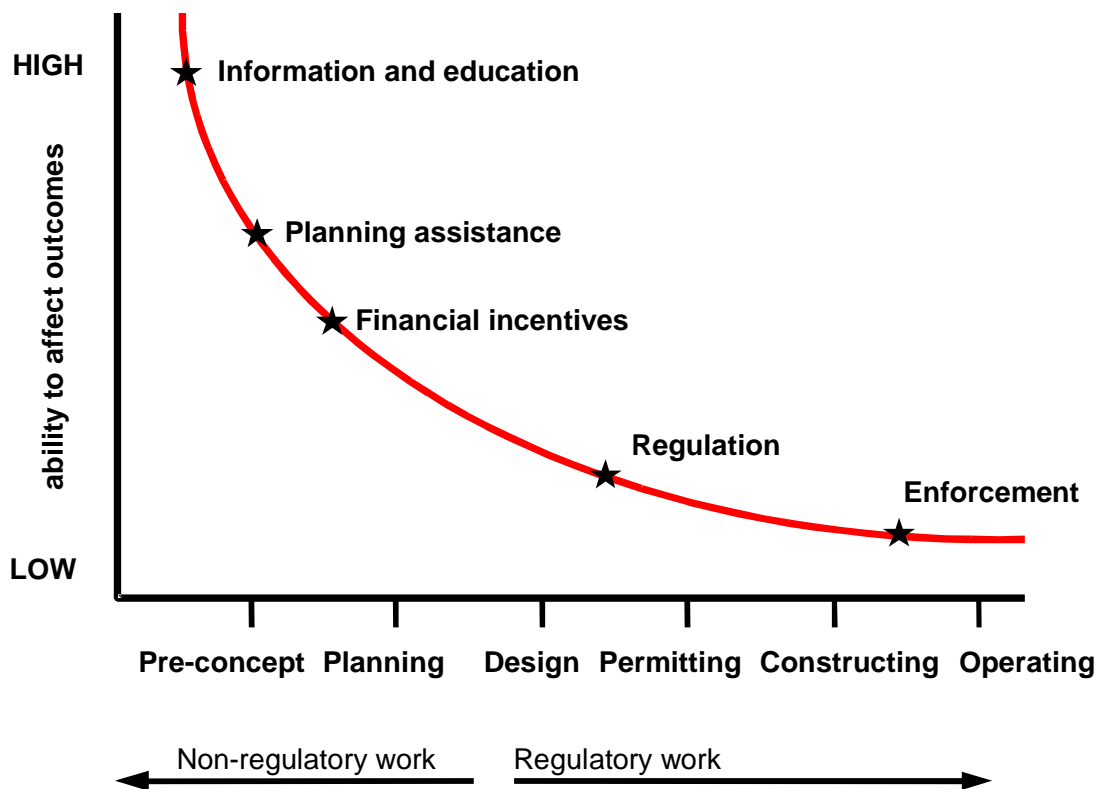
Action Directions

Based on these beliefs, the MPCA has adopted broad, cross-program Action Directions. These five general recommendations are followed by more specific ways for program staff to conduct their day-to-day work in support of these directions. These will be carried out initially in the context of three proposed *focus areas* to test and refine the approaches, with support as necessary by non-service-delivery staff. Later, as the refined approach becomes more familiar and tested, it is believed that staff will see opportunities to apply the ideas in other communities statewide.

The Action Directions clearly reflect the philosophy that the earlier the Agency can be involved in the life cycle of a "project", the more leverage we will have to bring about environmentally favorable outcomes, as illustrated in Figure 1.

Figure 1

Leverage points



Following from this, the five Action Directions form a loosely hierarchical framework that moves the work of the Agency far upstream of traditional end-of-pipe thinking. They are:

AD 1. Data and Information. The MPCA is a data-driven agency. Therefore, one fundamental agency role is to collect, analyze, and share data on environmental impacts of growth and development.

- ◆ Provide information on actual impacts (e.g., from existing MPCA monitoring programs or data imported from non-MPCA sources, as well as identifying further data needs associated with desired performance measures)
- ◆ Participate in the Upper Mississippi environmental data initiative and other data initiatives that dovetail with our data needs for this work.
- ◆ Develop capability to provide hypothetical but technically sound information (e.g., real-time environmental modeling, assessments based on professional experience and judgment)

AD 2. Education and Outreach. Provide education and outreach to local officials, state and regional agencies, and members of the public on the environmental impacts of growth and development.

- ◆ Package and share the foundation of information currently available in each of the program areas we evaluated – wastewater, storm water, brownfields redevelopment, and air quality/transportation – as well as our basin management efforts.
- ◆ Research areas of knowledge gaps or compile and organize existing information into more useable forms by decisionmakers and the public.
- ◆ Gather program staff who are currently working on issues in focus areas into intra-agency working groups that meet cooperatively with local communities to carry out these Action Directions.
- ◆ Participate in the Governor’s Local Solutions Alliance pilot program to develop similar collaborative approaches at an **interagency** level, as well.

AD 3. Planning Assistance. Work proactively and directly with local communities in support of community visioning, integrated planning, decisionmaking, and policy development, using resources identified in AD 1, AD 2 and AD 4.

- ◆ Facilitate or sponsor holistic planning efforts at the local level, through vehicles such as NEMO (Nonpoint Education for Municipal Officials) projects or agency participation in other community planning efforts.
- ◆ Track the status of local (county, watershed, municipality, etc.) planning efforts, offer technical planning assistance (data, trends, educational opportunities), and form partnerships whenever and wherever such assistance is invited. Planning efforts to track include comprehensive plans, local water plans, watershed plans, transportation plans, site redevelopment plans, community development plans, and Alternative Urban Areawide Reviews (AUARs).

AD 4. Financial Assistance and Incentives. Align financial assistance and incentive programs to promote development decisions and projects that are more environmentally protective in the long-term.

- ◆ Ensure that assistance funds administered wholly or in part by the MPCA (e.g., CWP grants, PFA/SRF funds) are awarded based on criteria that consider environmental impacts viewed in the broadest context and the long-term.
- ◆ Take a leadership role in conjunction with other pertinent agencies (MnDOT, DTED and Met Council) to direct funds toward projects and practices that support more environmentally protective development patterns (e.g. transit development, brownfield cleanup, and wastewater infrastructure).
- ◆ Identify and promote changes to Minnesota’s tax and funding systems that establish appropriate incentives and disincentives with regard to statewide, regional and community development choices (e.g., incentives for in-fill development, disincentives for consuming “greenfields”).

AD 5. Regulation. Use traditional regulatory authorities (rules, standards, enforcement, etc.) as appropriate to discourage practices and behaviors for which education, planning assistance, and financial assistance and incentives are insufficient motivators for achieving “smarter” growth and development.

Further, Appendix 4 describes general environmental outcomes for these action directions. It further suggests possible output and activity measures that may be useful in tracking these outcomes. The output and activity measures actually used, however, will depend on the specific focus areas, the key environmental issues, and the strategies the regional staff choose to pursue their work within the focus area.

Program-Specific Action Steps

The specifics of implementing these five action directions vary, of course, depending on the program area being considered. The following sections provide more detailed guidance to program staff in the areas of:

- ◆ Basin management
- ◆ Wastewater
- ◆ Storm water
- ◆ Redevelopment, and
- ◆ Air Quality/Transportation.

Staff will apply the framework for action as members of multi-program working groups. It is presumed, therefore, that cross-program coordination will occur in each of the focus areas as these actions are implemented.

Basin Management. The basin management approach takes a holistic view of surface waters and groundwater, as well as the land (geology, geography, soils, plants and animals) and human activities and practices. A “basin” is simply an assemblage of watersheds that are interrelated within some readily definable boundaries, and in which conditions and activities upstream in the basin affect conditions downstream in the same basin. The concept of basin management is a familiar one to water quality protection organizations and comes with a history of holistic thinking applied to a distinct geographic region, and is therefore a useful framework for approaching growth and development issues. Basin management tools such as water quality assessments, public involvement, and regional planning lend themselves well to problem solving in the growth and development arena. Planned increases in the Agency’s basin management efforts should help greatly in addressing growth and development issues in targeted areas, especially those with known impaired waters and/or outstanding resource value waters.

Action steps:	
AD 1. Data and information	<ol style="list-style-type: none"> 1. Develop basin data and related TMDL assessment data into useable GIS-compatible information, including for trend analysis. 2. Develop or update fact sheets on sedimentation causes and impacts, TMDLs and specific pollutants, Best Management Practices and the basin management approach and tools.
AD 2. Education and outreach	<ol style="list-style-type: none"> 1. Facilitate use of the NEMO model for education of local officials and communities on nonpoint water issues, initially by supporting the Met Council grant to the MN Erosion Control Assoc. for this purpose and the Duluth Township NEMO project. 2. Recognize the value of basin management and planning itself as an educational opportunity, starting with articulating clearly what it is and what it provides to local decisionmakers. 3. Participate in the interagency Local Solutions Alliance as appropriate to advance state agency collaboration at the local level.

AD 3. Planning Assistance	<ol style="list-style-type: none"> 1. Offer MPCA’s assistance and participation in local planning processes, such as local water plans, watershed plans, and related comprehensive planning. 2. Offer fact sheets, training or other assistance as requested by communities engaged in planning efforts within a focus area.
AD 4. Financial assistance and incentives	<ol style="list-style-type: none"> 1. MPCA staff should work with the interagency project coordination team to direct Clean Water Partnership grants and CWA 319 funds toward high-growth areas.
AD 5. Regulatory	<ol style="list-style-type: none"> 1. None recommended at this time, although TMDL work could bring about opportunities in the focus areas.

Wastewater. The current system of wastewater management is, for the most part, limited to treatment approaches employing centralized sewage treatment plants (including pond systems) with extensive collection systems that discharge into surface waters, and “individual septic treatment systems” (ISTS) that discharge into near-surface drainfields onsite. It is imperative that all wastewater treatment systems be well maintained to ensure their proper operation and the designed levels of environmental protection. Inadequate or failing systems, whether large or small, must either be upgraded or replaced.

Many large, centralized sewage collection systems are nearing the end of their useful in-ground lives. Rehabilitation or replacement of these is an important reinvestment in existing infrastructure and helps keep core areas vital and attractive relative to new development in “greenfield” areas. This is particularly true in areas with potential for “in-fill” development or redevelopment, which cost-effectively leverages existing investment in other infrastructure, such as roads and utilities. Unfortunately, self-financing the rehabilitation of existing infrastructure through special assessments is not an option for communities, and Public Facilities Authority (PFA) funds are generally unavailable for that purpose because the environmental protection criteria in the selection process effectively exclude these proposals from scoring highly compared to, for instance, projects that address failing septic systems.

Many areas currently served by failing ISTSs are looking toward building collection systems which either tie into existing centralized treatment facilities or flow to proposed new facilities that discharge to surface waters. Not well known among local decisionmakers or promoted by wastewater engineers are mid-sized systems such as engineered wetlands or a variety of scaled-up in-ground (ISTS-like) systems. These could meet local treatment needs while best fitting the local environmental conditions. Having a wide range of treatment options available would enable the MPCA, local governments and others to better consider the broader growth implications of wastewater treatment choices.

Experience shows that a technically or economically feasible solution may not be the best one for the unique circumstances of a particular community. For instance, a lakeshore with failing septic systems may seem ripe for extending a sewer pipe. In practice, it may only be economically feasible if more connections than the existing number of residences could be permitted. The resultant increase in nonpoint pollution (from new roads, new lawns, new construction, higher lake use, etc.) could negate the benefits of the sewer line. Additionally, the route the sewer extension takes could open up new corridors of development, introducing further stresses to the local environment. In this scenario, a more localized treatment option may be preferable – one that eliminates the failing septic problem without opening the door to unwanted development-induced problems.

There is also the important question of maintenance of these types of facilities, which are by no means “low-tech” solutions that run themselves. Along with the development and promotion of options, there must be institutional support for their effective ongoing operation. The concept of treatment cooperatives, similar to other utility cooperatives, is worth developing as both a sound way of providing needed operation and maintenance infrastructure and as a potentially viable economic development opportunity providing both jobs and environmental protection services.

Finally, the traditional focus on treatment technologies (meeting the demand for treatment capacity) has overshadowed the potential to reduce the need for treatment capacity through water conservation, greywater systems (re-using non-toilet wastewater), or otherwise “closing the loop” on industrial or other processes that use fresh water. These reflect in one form or another the pollution prevention approaches that have been around, but not broadly implemented, for decades. The environmental protection benefits of this prevention approach are clear.

Action steps:	
AD 1. Data and information	<ol style="list-style-type: none"> 1. Identify communities that are considering building or expanding wastewater treatment capacity (using the IUP list and other relevant sources), and the treatment methods being considered. 2. Gather planning information relevant to assessing current and future wastewater needs in candidate areas, such as septic system location and status, locations of area wells, current wastewater treatment infrastructure, proposed future development areas, etc.
AD 2. Education and outreach	<ol style="list-style-type: none"> 1. Maintain fact sheets on the spectrum of treatment system options, in-depth information on proven alternative systems, long-term operation, maintenance and governance related to community wastewater systems, water conservation and re-use, greywater systems, etc.. Existing materials include the training manual <u>Assessing Wastewater Options for Small Communities</u>, and factsheets developed by the U of M extension. 2. Participate as appropriate in the interagency Local Solutions Alliance to bring wastewater treatment expertise and information on secondary impacts of development to local planning and implementation efforts.

AD 3. Planning Assistance	<ol style="list-style-type: none"> 1. Use the materials in AD 2.1 to assist local decision-makers in system selection. 2. Offer MPCA’s assistance and participation in relevant local planning processes, such as county comprehensive plans and local water plans, to bring the issue of secondary environmental impacts of wastewater treatment choices into consideration.
AD 4. Financial assistance and incentives	<ol style="list-style-type: none"> 1. Work with DTED/Public Facilities Authority to ensure that proposed projects are consistent with local comprehensive plans and county water plans. 2. Work with OEA, the Board of Water and Soil Resources, Minnesota Planning, and others to identify possible funding sources to support local planning that results in stronger project proposals. 3. Work with DTED/PFA to modify the point system for awarding wastewater treatment funds in unsewered areas to neutralize the current preference for large centralized collection and treatment projects and place smaller “community systems” on more equal footing. 4. Work with PFA to modify the point system for awarding wastewater treatment funds to allow fair consideration of projects that rehabilitate existing infrastructure, particularly in areas of high infill development potential.
AD 5. Regulatory	<ol style="list-style-type: none"> 1. MPCA’s environmental review documents and permits should ensure that wastewater project service areas are well-defined and consistent with up-to-date comprehensive plans, and that secondary impacts of the wastewater project are identified and considered in related agency actions (such as non-degradation reviews).

Storm water. Using land for new roads, houses, lawns, commercial/industrial structures and parking lots has a common thread: covering “open” land that previously allowed storm water infiltration with impervious surfaces such as pavement, rooftops, and compacted soils with shallow-rooted grasses. Overly efficient lot grading and collection systems eliminate depressional storage and interception, while collecting and channeling pollutants and runoff volumes to receiving waters. More thoughtful design and engineering inspired by insights gleaned from natural systems that routinely “manage” storm water flows could enable development to occur in ways that lessen the severity of these problems. The ripple effects of increased runoff volumes and rates are widespread and reinforce our belief that prevention is the best course – it is very costly to manage once runoff is created.

Our “local solutions preference” belief, among others, leads us to conclude that onsite management of storm water should be the goal. In practice, this means we wish to lower the “effective imperviousness” of development. That is, we would mitigate the runoff volumes from impervious surfaces through onsite

means so that the water does not leave the site to be come a problem for someone downstream (to be managed at considerable cost).

Soil erosion and the resulting sediment in Minnesota’s streams and lakes are avoidable problems which, if solved, would increase the carrying capacities of the state’s waters. This improvement in water quality translates into cleaner, more usable lakes and rivers and greater capacity to assimilate the pollutants generated by current development methods and patterns. This would give society additional time to develop more sustainable long-term growth and development policies and practices, while maintaining a high quality of life while the needed changes are implemented.

Action steps:	
AD 1. Data and info	<ol style="list-style-type: none"> 1. Use basin management planning data and other sources to gather information unimpaired waters, outstanding/extraordinary waters, NPDES discharges, and other relevant water quality data and make it available, as feasible, in a form compatible with GIS. 2. Communicate MPCA’s basin management goals for each basin we are assessing.
AD 2. Education and outreach	<ol style="list-style-type: none"> 1. Use the NEMO model as an outreach approach for education of local officials and communities on storm water issues and best management practices, as a stand-alone effort and in conjunction with impending EPA Phase II storm water requirements. 2. Develop or update fact sheets on on-site infiltration benefits, storm water re-use, rain and roof gardens, lakescaping, “green” parking lot and roadway design, guidance to local planners on impervious surface ratios, run-off quantity and quality and Low Impact Development concepts. Emphasis should be placed on the cost-effectiveness of onsite storm water management 3. Participate on inter-agency Local Solutions Alliance to bring storm water management expertise and information to local communities. 4. Provide progressive storm water management information to private developers as opportunities present themselves.
AD 3. Planning Assistance	<ol style="list-style-type: none"> 1. Develop and provide storm water modeling capacity and stakeholder input tools (i.e., keypad technology) to assist local governments in their planning and decisionmaking processes. 2. Work with BWSR to leverage watershed planning funds to encourage new local development to adhere to BMPs and Low Impact Design concepts. 3. Assist local communities in identifying highest value waters in their comprehensive plans, with specific measures to protect them.
AD 4. Financial assistance and incentives	<ol style="list-style-type: none"> 1. Leverage federal CWA 319 monies and clean water partnership grants to encourage on-site storm water

	<p>management, erosion control and shoreline restoration, and alternative development practices demonstrations.</p> <p>2. Work with watershed districts to develop financial incentives that effectively help underwrite projects that achieve onsite storm water management goals.</p>
AD 5. Regulatory	<p>1. Require local governments to adopt minimum requirements in the form of storm water management model ordinances and BMPs.</p> <p>2. Leverage local regulatory authority to enact storm water BMPs and ordinances by considering secondary runoff from development in MPCA’s nondegradation reviews for proposed wastewater discharge projects that require NPDES permits.</p>

Redevelopment. “Land recycling”, as the Department of Trade and Economic Development terms it, is generally an important and positive element of wise community growth. In particular, redevelopment that brings into productive use urban lands that are already served by community infrastructure makes the most efficient use of existing investments in wastewater treatment, transportation, schools, utilities, etc. The MPCA is involved primarily in recycling brownfields – contaminated lands that must first be cleaned up. The Agency’s progressive Voluntary Investigation and Cleanup (VIC) program is a model for cooperation with land owners to ensure that cleanups take place and that the land can once again serve community needs. VIC and other programs that encourage cleanup and recycling of land should receive ongoing support by the Agency, Metropolitan Council, DTED, and any parties or organizations interested in durable and cost-effective community development.

The analysis done to develop this framework for action led us to conclude that traditional brownfield redevelopment has had a built-in bias toward returning the property to economically productive use. That is, funding supports projects that create jobs and add to the local tax base. The fact that a site was once (and perhaps still is) used for commercial or industrial purposes should not, however, imply that this is the highest and best use of the land now or in the community’s future. The context of the land (location, natural amenities, ...) in which redevelop occurs may suggest a more important purpose to be served – whether it be parkland, recreation, urban habitat (e.g., “conservation connections”), affordable housing sites or connecting corridors for travel within the community. We believe that, in particular, lands located in critical environmental areas such as river frontage, restorative wetlands, designated environmental areas, etc., should be targeted.

Action steps:	
AD 1. Data and information	<p>1. Develop information relevant to assessing the community context of potential redevelopment sites within an area, such as locations and status of contaminated sites, sensitive environmental assets, community infrastructure (transportation systems, utilities, etc.), current and (if available) desired future land uses, etc. Information gathered should be GIS-compatible to the extent feasible. Much of this information can be gleaned from well-crafted local comprehensive plans.</p> <p>2. Identify potentially contaminating industrial processes and assess the frequency and magnitude of</p>

	their use at various facilities in a focus area.
AD 2. Education and outreach	<ol style="list-style-type: none"> 1. Develop or update factsheets on contaminated site cleanup, green building and design concepts, eco-industrial parks, redevelopment in a community context, and brownfields-to-greenspace possibilities. 2. Promote the use by communities and consultants of MPCA's Toolkit for P2 & Sustainable Activities at Remediation Sites. 3. Use intra-agency, area-focused working groups as a vehicle for assisting local communities with innovative redevelopment ideas and in looking at community context in regional development plans. As an extension, participate in the interagency Local Solutions Alliance as appropriate to advance state agency collaboration at the local level. 4. Work to prevent future brownfields by building assistance partnerships with area businesses identified in AD 1.2 as potential contaminated sites. (Similar to the successful Great Printers initiative.)
AD 3. Planning Assistance	<ol style="list-style-type: none"> 1. Introduce a balance between community need and economic growth (as a community vision) within the cleanup plans. 2. Bring the information of AD 1 and AD 2 to the local planning table.
AD 4. Financial assistance and incentives	<ol style="list-style-type: none"> 1. Work with federal and state government and other non-governmental organizations like Trust for Public Land to develop funding sources for brownfield-to-greenspace projects.
AD 5. Regulatory	None noted.

Air Quality/Transportation. Our evaluation of Air Quality in the context of growth and development decisionmaking took us away from the traditional AQ programming. While point source air pollution remains important within a community under growth and development pressures, it is an issue that is largely addressed by the current regulatory framework. Still under-addressed and arguably most critical from a community growth and development perspective are the environmental impacts of our current transportation modes, patterns, and practices.

Mobile source air pollution accounts for more than 50% of the health risk associated with ambient air quality. Technical fixes such as cleaner fuels and more efficient/less polluting technologies, while important in reducing air emissions, do not address the rising number of vehicle miles being traveled each year. This is more a result of the patterns of settlement -- the relative locations of housing, employment, recreation, shopping, etc.-- that are in place.

Therefore, MPCA is not alone in believing that it is critical to curb our societal dependence on the automobile through a variety of means. (For a full discussion of these issues, see the Agency's report to the Legislature entitled "Air Quality in Minnesota; Problems and Approaches". The action steps below were developed more narrowly with the relationships between air quality, transportation and land use specifically in mind.

Action steps:	
AD 1. Data and information	<ol style="list-style-type: none"> 1. Continue to collect and analyze ambient air toxics data for the state and for high-growth areas, in particular, as well as statistics regarding automobile use (such as commute travel times and commute patterns). Provide this information in GIS-compatible form to the extent feasible. 2. Develop in-house capability to use land-use/transportation/AQ modeling (e.g., EPA's Index Model and others now available). 3. Provide environmental analysis of transportation fuel consumption in support of the Department of Commerce's efforts to reduce petroleum consumption by vehicles.
AD 2. Education and outreach	<ol style="list-style-type: none"> 1. Prepare or update fact sheets on commute and other VMT reductions, alternatives to single-occupancy auto use, location-based mortgages, etc. 2. Use intra-agency, area-focused working groups as a vehicle for assisting local communities with information on the effects of land-use and development choices on local air quality. As an extension, participate in the interagency Local Solutions Alliance as appropriate to advance state agency collaboration at the local level.
AD 3. Planning	<ol style="list-style-type: none"> 1. Use land-use/transportation/AQ models to educate citizens and advise local officials who are preparing comprehensive plans, redevelopment plans, transportation plans, etc. 2. Work with Minnesota Planning, MnDOT, and the Metropolitan Council to integrate air-quality issues into land-use and transportation planning.
AD 4. Financial assistance and incentives	<ol style="list-style-type: none"> 1. Work with MnDOT and the Metropolitan Council to increase the availability and use of transit in the metropolitan area. Ongoing support for and Agency participation in the MetroPass bus program is a clear demonstration of agency commitment to providing incentives.
AD 5. Regulatory	<ol style="list-style-type: none"> 1. None recommended at this time.

Proposed Implementation Focus Areas

While we believe the Framework for Action and program specific action steps described above would be applicable in most settings in which the MPCA works, immediate implementation in such a widespread manner is not a realistic expectation. The shift in policy direction suggested by some of the action steps in combination with the increased need for inter-program and intergovernmental cooperation would have more likelihood of success if, to start, a small number of geographic focus areas were selected. This would give staff opportunities to explore how the concepts work under very specific conditions and

within a definable and manageable geographic area (and set of local players). Further, each focus area would bring with it certain primary issues and concerns driving the desired outcomes, such as how best to provide sewer service or how to enhance the local transportation system with acceptable environmental and social impacts. Lessons learned from these focus areas could then be used by other agency staff in their work with locales throughout the state.

The strongest candidates for initial focus areas are (1) the North Shore along Highway 61, (2) a subregion of the Brainerd Lakes area, and (3) a growth area in the 10-county Metro district beyond the MUSA line. The first two areas are both already receiving considerable attention from Duluth and Brainerd subdistrict managers and staff, so would not involve a substantial reallocation of additional resources. Rather, this Framework for Action would provide alignment with a clear agency policy direction and a cross-program understanding of how specific programs can work cooperatively to move in this direction. The third focus area would provide the agency with an opportunity to complement the work of the Metropolitan Council in dealing with sprawl issues.

Appendix1.

The Framework for Action Development Process

The process used to develop this framework for action was designed and guided by the MPCA's Smart Growth Lateral Team, and focuses in large part upon the ten "Smart Growth Principles" crafted by 1000 Friends of Minnesota and endorsed by the Minnesota Smart Growth Network (of which MPCA is a member). Additionally, we include an eleventh overarching principle that each of the smart growth principles be implemented in an environmentally preferred way whenever possible. (The 10 principles, which as a whole may promote more environmentally friendly development patterns, do not explicitly require the individual application of "green" approaches.)

By forming and facilitating four distinct multi-week discussion groups, the planning process harnessed the knowledge and experience of approximately 50 professional staff. Most were from the MPCA, but the groups also including representatives of the Department of Transportation, Department of Trade and Economic Development (including the Public Facilities Authority), Metropolitan Council, Board of Water and Soil Resources, Department of Natural Resources, and the Office of Environmental Assistance. Group members solicited the perspectives of key stakeholders not represented at the discussion table and introduced these into the discussions early on. These included industry groups such as developers and realtors, local planning officials, elected officials, federal officials, other states, etc.

The four groups laid out their visions of what a smart-growth-influenced community would look like, and how MPCA programs could ideally support the vision. The groups then took a critical look at current program realities and discussed ways of changing what is done now so to be better able to achieve the outcomes described by the community vision. The action steps laid out in this framework for action combine the conclusions of those discussions with the broad body of ideas, innovations and initiatives taking place nationwide.

Appendix 2.

The Ten Smart Growth Principles adopted by the Minnesota Smart Growth Network and endorsed by the Ventura Administration:

1. Make efficient and effective use of land resources and existing infrastructure by encouraging development to areas with existing infrastructure or capacity to avoid costly duplication of services and costly land use.
2. Provide a mix of land uses to create a variety of housing choices and opportunities.
3. Make development decisions predictable, fair and cost-effective.
4. Provide a variety of transportation choices including pedestrian friendly neighborhoods.
5. Maintain a unique sense of place by respecting local cultural and natural environmental features.
6. Conserve open space and farmland and preserve critical environmental areas.
7. Encourage stakeholder collaboration and community participation rather than conflict.
8. Provide staged and managed growth in urban transition areas with compact development patterns.
9. Enhance access to equitable public and private resources for everyone.
10. Promote the safety, livability and revitalization of existing urban and rural communities.

Additionally (for this planning effort): Each of the ten smart growth principles should be implemented in an environmentally preferred way whenever possible.

Appendix 3

Ventura Administration's Four Smart Growth Principles (excerpted from *The Big Plan*)

PRINCIPLES FOR SUCCESS

Smart growth offers options for how Minnesota can develop and change while enhancing its quality of life. It is not a one-size-fits-all approach. While there are many options for smart growth, these common-sense principles will guide public decisions and achieve the results Minnesotans expect:

- **Stewardship: Use land and natural resources wisely to sustain them for the future.** Minnesota will protect the environment and conserve agricultural land, open space and other lands that support sustainable outdoor recreation, tourism and natural-resource-based industries. This will allow for growth that is sustainable for the long term.
- **Efficiency: Make more efficient, integrated public investments in transportation, housing, schools, utilities, information infrastructure and other public services.** Minnesota needs to coordinate and link its tax policies with smart growth. It also must coordinate and link public investments in transportation, information infrastructure, land use, housing, schools and utilities so they expand economic opportunity for the entire state. By maintaining and improving existing investments in roads, schools and utilities, rather than needlessly making expensive new investments on the edge of communities, Minnesota will avoid wasteful public spending and support economic growth.
- **Choice: Give communities smart growth options and choices.** Communities can be shaped by choice, or they can be shaped by chance. The state will work with local governments to encourage citizen and business participation in decisions about what smart growth should look like. Minnesota will create choices and incentives for linking transportation, housing, jobs, education and the amenities that make communities desirable places to live.
- **Accountability: Reinforce responsibility and accountability for development decisions.** For smart growth to become a reality, everyone – individuals, businesses and government – must make smart choices and take responsibility for the true costs and consequences of the decisions they make. The marketplace can be an effective force for smart growth, but only if state and local policy sends consistent signals and development decisions are predictable, fair and cost effective. If communities choose to make short-sighted development decisions, it is not up to Minnesota taxpayers to pay the costs of their mistakes.

Appendix 4.

Framework for Action: General Outcomes

(Note: Specific outcomes, outputs and activities that support the outcomes will be developed at the focus area workplan level)

AD 1. Data and Information. Desired Outcome: The MPCA compiles and provides sufficient data in a form useful to local decisionmakers, including:

- ◆ Data compatible with GIS applications, enabling people to glean insights from overlays
- ◆ Data sets that support models (e.g., AQ, WQ) whose predictions aid decisionmaking
- ◆ Raw or minimally processed data that provides some helpful insights (e.g., TMDL impairment numbers and locations, various trends in monitored parameters, etc.)

Possible Output and Activity Measures*: completed data sets provided in GIS-compatible formats; models (supported by sufficient and reliable data) developed and employed for predicting environmental impacts; inventories of agency data that could be made available to local decisionmakers; measures of agency staff effort engaged in providing the above outputs

AD 2. Education and Outreach. Desired Outcome: State, regional, and local governmental entities and key public and private stakeholders understand in a holistic way where and how their responsibilities, authorities, and/or decisions are related to the environmental impacts of growth and development.

Possible Output and Activity Measures*: fact sheets, manuals, model ordinances, training events, etc., made available by MPCA; events, contacts, use of GIS or computer models, or other opportunities initiated by MPCA staff to provide education on these issues; surveys to assess how well the information has been received and what actions have resulted; life-cycle and other economic analyses that demonstrate cost savings in adopting those actions

AD 3. Planning Assistance. Desired Outcome: Local communities adopt policies and make community development decisions that lessen the environmental impacts of growth and development activities.

Possible Output and Activity Measures*: number of local plans where environmental impacts of development are emphasized; numbers of decisions or ordinances shaped by plan outcomes; frequency and hours of involvement of MPCA staff in local planning efforts; surveys to assess how well the information has been received and what planning decisions have resulted; life-cycle and other economic analyses that demonstrate cost savings that result from those decisions

AD 4. Financial Assistance and Incentives. Desired Outcome: State financial assistance is preferentially provided to development-related projects and proposals that reduce general and specific environmental impacts relative to traditional types or patterns of development.

Possible Output and Activity Measures*: changes to selection criteria for MPCA grant/loan/incentive programs adopted; tax/fee structures evaluated and modified in support of desired outcomes; partnerships formed with relevant agencies to achieve policy alignment with desired

AD 5. **Regulation.** Desired Outcome: Laws, rules, and their enforcement are aligned with and reinforce choices and actions that reduce the environmental impacts of development.

Possible Output and Activity Measures*: standards for storm water runoff quality and quantity; BMPs written into permits; planning documents (such as environmental reviews) meet requirements for addressing long-term development impacts; numbers of comprehensive plans, water plans, etc. updated; checks of project proposals against updated local plans.

*Output and Activity measures will depend on the strategies carried out in the focus area workplans to achieve the overall outcomes. Therefore, while a list of possible output and activity measures can be suggested, the actual measures should be developed by the working group for each respective focus area.