

BEST PRACTICE AREA 13: SURFACE AND GROUNDWATER PROTECTION

Vision

The land use and land management practices of the Joint Planning District support healthy lakes, streams, and rivers. The groundwater resources of the Joint Planning District are protected from contamination and are used for potable water at a sustainable rate.

Background

Rivers, streams, lakes and wetlands are a fundamental part of the Minnesota landscape and are often a point of pride and a focus for recreation in a community. Groundwater is an equally fundamental, but less visible part of the Minnesota landscape. Groundwater and river water are common sources of water for drinking, irrigation, and industrial use in communities.

These surface water and groundwater resources are natural systems that operate within the context of the local and regional environment including human-dominated areas like cities and agricultural areas. Thus the water quality in a river, for example, is influenced by the river itself, by the living organisms in the river, and by all the land uses and land practices in the area of land that contributes drainage to the river. Similarly, the quantity and quality of groundwater depends on the geology of the area as well as on the land uses and land practices in the area overlying the aquifer. Impervious surfaces like roads and buildings limit the amount of water that can enter the soil to sustain an aquifer and lead to increases in the amount of water that is transported to rivers, streams, lakes and wetlands. Materials and chemicals applied to soils and impervious surfaces can wash off, filtering into the groundwater or entering rivers, streams, lakes and wetlands. Depending on the rate of aquifer recharge, the use of groundwater can decrease the amount of water available in the aquifer. Sustainable management of surface and groundwater resources recognizes the importance of these resources to the community and establishes policies and programs to ensure that land use, land management, and water use allow the continuing benefits and use of these resources into the future.

Of course, land use isn't the only area of sustainability that is related to water. Energy issues, natural resources, and agricultural systems are also interrelated to water issues. Energy is required for water treatment and distribution as well as the manufacture and installation of water treatment and distribution infrastructure. Natural resources often depend on water for sustenance and agriculture requires water to raise crops and livestock and to process raw goods into the products sold at grocery stores.





The following goals address the areas identified as the key concerns of stakeholders in the Joint Planning District as related to surface and groundwater resources.

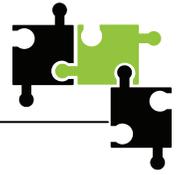
Goals

- A. Dramatically reduce the use of potable groundwater for residential and commercial irrigation with the long-term goal of eliminating its use for irrigation.
- B. Work with state agencies to update plumbing codes to allow and encourage the use of greywater and rainwater (see also BPA 3: Greenhouse Gas Reductions).
- C. Reduce disposal of potentially harmful substances (e.g. pharmaceuticals) into surface and groundwater resources in order to protect water quality, sustain human health, and sustain healthy fish and wildlife populations by enhancing or expanding existing programs and by providing education on these programs.
- D. Adopt consistent ordinances throughout the Joint Planning District that require low-impact development (see also right-sizing parking in Best Practice Area 5).
- E. Increase the number of stormwater Best Management Practices in existing developed areas.
- F. Educate consumers, designers, contractors, government officials, etc. on the design, construction and implementation of best management practices.
- G. Increase the extent of multi-functional landscapes in the Joint Planning District (e.g. trail corridors providing integrated stormwater treatment) (see also BPA 4: Land Use).
- H. Increase the use and extent of agricultural best management practices (including erosion control, buffers along water bodies, organic production, composting, etc.).

Initiatives and Action Steps

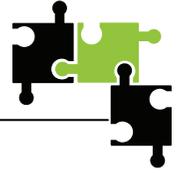
The following three initiatives for initial action were identified through public input and reflect local stakeholders' views of which goals would have the most profound effect on moving the Joint Planning District toward sustainability. The three identified initiatives address education, limiting the input of toxins into waters, and the establishment of consistent ordinances to support sustainability in the area of surface water and groundwater protection. These three areas are expected to have a large impact on the sustainability of surface water and groundwater resources in the Joint Planning District because they will ensure that the Joint Planning District is managing its water resources from a consistent baseline of understanding of the construction, operation, and maintenance of stormwater management systems and a consistent baseline of ordinances, policies and programs protecting surface water and groundwater resources.





1. **Stormwater Wise:** Educate consumers, designers, contractors, government officials, etc. on the design, construction and implementation of best management practices.
 - a. Develop a regional education program that addresses MS4 program requirements for all participants in the program. The program could be expanded to all communities based on one community's current successful education program, could be modeled on the East Metro Water Resource Education Program, or could build on University Extension Stormwater Education programs or other available programs. A regional staff person will be needed to implement and manage the developed program. The program would be expected to meet MS4 requirements and build on those requirements through efforts such as:
 - i. Training sessions on design, construction, and maintenance of best management practices targeted to designers and contractors.
 - ii. Training sessions on best management practice maintenance targeted to municipal maintenance staff.
 - iii. Promoting the use of best management practices through a variety of media (web, newspaper, newsletter, radio, magazines, conferences, etc.) targeted to specific audiences: designers, contractors, government officials, residents.
 - iv. Interactive sessions leading residents in the design, construction, plant selection, and maintenance of raingardens and rain barrels for their property.
 - v. Tours of public and private best management practices to demonstrate benefits and aesthetics of the systems.
 - b. Identify three public facilities or roadway corridors as demonstration sites for stormwater best management practices in the Joint Planning District and design and install practices to address stormwater management onsite. Utilize the demonstration sites for education of the public as well as for specific training and recommendations on construction and maintenance of stormwater best management practices for design, construction and maintenance professionals.
2. **Healthy Waters, Healthy People:** Dramatically reduce the input of toxins, including pharmaceuticals, agricultural pesticides and herbicides, into surface and ground waters in order to protect water quality, sustain human health, and sustain healthy fish and wildlife populations.
 - a. Promote existing programs for safe disposal (e.g. pharmaceuticals, hazardous materials) using a variety of media (web, newspaper, newsletter, radio, etc.).
 - b. Expand disposal programs to ensure all residents and businesses in the Joint Planning District have access to safe disposal options and ensure that programs address all



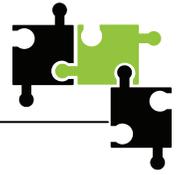


- toxins of concern including pharmaceuticals and agricultural pesticides and herbicides.
- c. Hold publicized safe disposal events at locations throughout the Joint Planning District.
 - d. Conduct monitoring of the health of the aquatic organism population and measure the concentration of toxins, including pharmaceuticals, agricultural pesticides and herbicides in sites upstream and downstream of the wastewater treatment plants in the Joint Planning District to evaluate the impact of safe disposal programs.
 - e. Work with companies that make pharmaceuticals, agricultural pesticides & herbicides to ensure that they take their products back for disposal.
3. **Sustainable Ordinances for a Sustainable Joint Planning District:** Adopt consistent ordinances and incentives throughout the St. Cloud Area Joint Planning District that require Low Impact Development.
- a. Establish local ordinances in each municipality using the [Updated Model Ordinances for Sustainable Development](#) (CR Planning, 2008) as the baseline to ensure consistent ordinances supporting sustainability throughout the Joint Planning District. The Stormwater and Erosion and Sediment Control Ordinance and Landscaping and Maintenance of Vegetation Ordinance are directly relevant to surface and groundwater protection, but are only successful as part of a sustainable system when aspects such as minimizing road widths and reducing sprawl are addressed as well. The available model ordinances address protection of agricultural areas, support of local foods, village districts, downtown and commercial districts, transit-oriented and pedestrian-oriented design, natural resource protection, solar and wind energy, and other relevant issues to sustainability.

To support regional sustainability efforts, the full set of ordinances should be implemented in all communities in the Joint Planning District as applicable to the land use of the area. For example, a community with no areas of food production or forestry may not need to establish an agriculture and forest protection district, but each community should evaluate each model ordinance and district and adopt all that are relevant to the current land use as well as those needed to allow for sustainability into the future. It is recommended that the St. Cloud Area Joint Planning District act as the forum for coordinating the ordinance and zoning district updates throughout the Joint Planning District and ensuring that ordinances and zoning are cohesive between communities.

- b. Utilize County Water Management Plans to establish and promote consistent programs and ordinances throughout each county and between counties. County





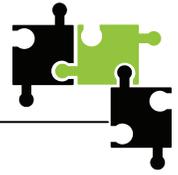
plans should also establish and promote policies and ordinances that require Low Impact Development. Counties with land use authority should update ordinances as discussed above (a).

General Actions

The following general actions have been identified as measures that will allow the St. Cloud Joint Planning District to move toward the goals for this Best Practice Area that were not selected as “initiatives” above. While a number of these actions are currently in use and/or required within the Joint Planning District by local or state government, input from local stakeholders have suggested that greater utilization of these practices should be considered

- I. Encourage the use of low water needs landscaping and “self-watering” landscaping such as raingardens. Revise any ordinance that would disallow the use of natives or the installation of small scale stormwater management facilities.
- II. Establish local ordinances requiring all new irrigation system installations to include water conserving measures such as drip irrigation systems and weather sensing equipment for sprinkler systems.
- III. Establish local ordinances requiring all new irrigation system installations to use collected stormwater runoff, rainwater harvesting systems, or greywater for irrigation to the maximum extent practicable.
- IV. Establish assistance programs to help pay for the retrofitting of existing irrigation systems to utilize water conserving measures and non-potable water sources.
- V. Ensure that municipal and campus landscaping focus on low water needs plants and that any needed irrigation systems include water conserving measures and utilize surface water and non-potable water sources.
- VI. Track use of municipal water supplies to evaluate progress toward the goal with the Joint Planning District acting as a central location for tracking and evaluation of progress in the Joint Planning District.
- VII. Utilize the Sustainability Committee to facilitate discussion on changes needed to plumbing codes to allow and encourage the use of greywater and rainwater and bring and promote the recommendations to state agencies.
- VIII. Establish programs to provide technical support and potentially cost support for the design and installation of stormwater BMPs on residential and commercial sites.
- IX. Establish a consistent policy by road authorities to include stormwater management retrofits into all road construction and reconstruction projects (excluding mill and overlay).





- X. Establish policies and ordinances that encourage and allow boulevard trees where they won't interfere with utilities.
- XI. Establish a consistent policy by municipalities, educational institutions, and park, trail and road authorities that all green spaces and landscapes will provide stormwater management benefits to the maximum extent possible in addition to the other benefits.
- XII. Actively promote and encourage participation in existing BMP implementation and technical support programs provided through organizations such as Soil and Water Conservation Districts and the National Resource Conservation Service.
- XIII. Establish ordinances that allow and encourage the production of local foods using sustainable methods (see Updated Model Ordinances for Sustainable Development (CR Planning, 2008)).
- XIV. Hold learning tours of sites using agricultural best management practices and organic practices.

