

SECTION 14

REGIONAL WATER QUALITY PROTECTION PLAN

14.1 General

Regional water quality measures are necessary for Caldwell County to ensure the remediation of Plum Creek and prevent further degradation of the impaired stream. Research has demonstrated that polluted streams are reaching our drinking water and that new chemicals are being detected. Current measures to control point source and nonpoint source pollution in the Caldwell County political subdivisions are limited. Development of additional and new strategies to improve water quality is needed.

14.2 Water Quality Ordinances and Policy

Several water quality strategies can be implemented at the local level to effectively control non-point source pollution and point source pollution. Local governments have a responsibility to the community to develop sound and practical policies that will improve the quality of life. The uneducated, uninformed, and unwilling require nudges to comply. Growing and developing cities have an opportunity to guide, plan, and manage growth. Policies and procedures recommended to provide water quality protection and are not limited to:

- Buffer Ordinances
- Development Ordinances
- Zoning Ordinances
- Stringent OSSF Ordinance
- BMP Ordinances
- Tree Ordinance

14.3 Stormwater Management

Stormwater management consists of implementing requirements of stormwater quality controls for new developments and redevelopments. It also necessitates determining pollution sources and that currently have no controls and finding ways to clean water runoff before it enters the streams. Stormwater management also oversees O&M programs that routinely clean and inspect drainage and water quality. Stormwater management requires adoption of ordinances to have enforcement authority. Development and constructions permits offer opportunities to ensure compliance.

14.4 Pollution Prevention and Good Housekeeping

Activities and efforts by municipalities to participate in contributing to pollution prevention and good housekeeping are:

- Municipal Training and Education
- Parking lot and Street Cleaning
- Municipal Landscaping
- Roadway Maintenance
- Spill Response and Prevention

The proactive efforts in establishing good housekeeping policies contribute to maintaining healthy streams and rivers by preventing pollution that would otherwise reach our waters.

14.5 Land Use

Land use ordinances and zoning needs to be managed to prevent undesired growth near streams. Greenspace requirements and impervious cover need to be evaluated to reduce and minimize run-off contributions from developments. Engaging in smart growth developments that consider the existing eco-system and

environment should be encouraged by providing incentives such as reduced fees in portions of the permitting process.

14.6 Riparian Buffers

Riparian forest buffers combine trees, shrubs, and native grasses to remove sediment and chemicals from runoff before they reach a waterway. The width of the buffer strips can vary from 35-100 feet depending on slope, soil type, adjacent land use, floodplain, and type of vegetation. The buffers, once established need to be maintained and monitored yearly to remain effective.

14.7 Grassy Swales

Grassy swales are vegetated channels that convey stormwater and remove pollutants by sediment and infiltration through soil. They require shallow slopes and soils that drain well and are limited to light and moderate flows. The swales can be easily integrated into landscaping plans.

14.8 Rain Gardens

Rain gardens are man-made depression in the ground that form a small bioretention area. The landscaping of the area improves the water quality by filtering the water that is slowly absorbed by the soil. These gardens are functional when placed strategically to intercept water runoff.

14.9 Agricultural Best Management Practices

Recommendations for livestock operations to improve their contribution to water quality include:

- Rotational grazing – reduces soil erosion
- Off-stream water sources – helps develop healthy riparian vegetation that filters nutrients and sediment

- Composting of solids – ensure proper methods are used
- Appropriate manure storage – away from ditches and streams; kept covered to prevent leaching of bacteria and nutrients
- Well protection - locate wells upgradient from confinement areas
- Buffer zone vegetation - use buffer areas around manure storage
- Establish heavy use areas - use material to support erosion of sediment
- Fence livestock – prevents overgrazing and protects riparian buffers
- Anaerobic digestion with energy recovery
- Constructed wetland
- Bio-filtration – controls odor, gas, and dust emissions from facilities
- Sequencing batch reactor for nitrogen management – nitrogen removal
- Groundwater protection - install liners to protect groundwater and allow water to evaporate

Recommendations for crop operations to improve water quality include:

- Crop rotation operations – reduces soil loss
- Sediment control - straw mulch to reduce erosion and nutrient loss
- Planting of streamside buffers – reduces nutrient pollution into streams
- Manure and nutrient applications – apply evenly and as needed by crop type to reduces runoff and chemical application
- Manure testing – perform to guide fertilizer applications
- Soil test – frequent testing prevents over application of nutrients
- Irrigation schedule – irrigating based on crop needs, of soil type, climate, topography, and infiltration rates reduce run-off caused by over-watering

14.10 Wastewater Facilities Best Management Practices

Wastewater facilities can do their part by ensuring operators are trained and licensed. Developing routine maintenance and inspection programs that are part of a checklist will facilitate this measure in being successful. Scheduling monthly

audits on the systems by qualified staff will ensure proper system function. Employee training of staff and requiring or providing certification programs for staff is necessary.

14.11 Public Involvement

Public involvement facilitates interest and education while spreading the word. As citizens become informed and educated about the community initiatives they are more likely to participate and volunteer in programs. Public involvement programs could include:

TV Commercials	Newspaper prints
Flyers	Poster Contest
Brochures	Photo Contest
Essay Contest	Billboard Announcements
Workshops	HOA Newsletters
Adopt-a-Stream	Stream Plantings

Additionally, and similar water quality measures have been suggested by the Plum Creek Watershed Protection Plan are included in **Appendix I**.