



FACT SHEET

Nonpoint Sources of Pollution Assessment Project Drinking Water Source Protection Program

Background and Project Overview

The McKenzie River is the sole source of drinking water for more than 200,000 people in Eugene and surrounding communities. In October 2000, EWEB developed a drinking water source protection plan, which included a risk assessment of all potential threats to this valuable source of drinking water. The high-risk threat categories included stormwater outfalls, urban runoff, hazardous materials spills, agricultural activities and forest management activities.

In June 2004, EWEB received Oregon Department of Environmental Quality Section 319 grant funds to implement the nonpoint sources of pollution (NPS) assessment project. Nonpoint sources of pollution (as opposed to point sources like industrial discharges) are diffuse sources that include fields, parking lots, roads, and other landscape features that do not correspond to a single point of origin. Specifically, the NPS assessment project will inventory, map and assess the potential risk associated with forestry activities, septic systems, agricultural activities, and building or construction activities in the McKenzie River watershed upstream of EWEB's intake at Hayden Bridge. Stormwater and urban runoff is not included in this effort because EWEB is already working with partner agencies to assess the potential impacts from this nonpoint source of pollution.

The purpose of this assessment is to collect baseline information about NPS activities in the McKenzie watershed and, through geographic information system (GIS) analysis and water quality monitoring, evaluate those areas that may impact the McKenzie River. This baseline data will be used to evaluate trends over time and identify opportunities for collaboration to mitigate potential impacts before they become a drinking water problem. The McKenzie River has excellent drinking water quality. The goal of EWEB's drinking water source protection program is to maintain this level of quality for future generations of customers.

Agriculture

In the McKenzie watershed most agricultural land (or about 5% of the watershed) is located along the valley floor in close proximity to the river and EWEB's intake. From 1996 to 2001, a number of US Geological Survey studies have been conducted in the Willamette River Basin that looked at impacts of agricultural activities on streams, rivers and drinking water supplies. These studies show that pesticides and nutrients occurred

more frequently and at higher concentrations at monitoring sites located in agricultural areas.

The objective of EWEB's Healthy Farms Clean Water project is to develop long-term relationships with growers, local and regional markets, local agricultural agencies, watershed stakeholders, universities, and others to reduce chemical use while increasing the economic vitality of McKenzie farms as valuable stewards of the watershed. The following tasks have been implemented to begin to make progress toward this long-term vision.

- Crop types in the McKenzie have been mapped using aerial photography and ground truthing.
- An Agricultural Activities Assessment and Evaluation Plan was completed in February 2005.
- EWEB held an April 2005 meeting with growers to discuss the project and talk about identifying emerging markets and providing assistance for growers to reduce chemical use, implement conservation measures, develop whole farm plans, and/or obtain organic certification.
- EWEB is partnering with East Lane SWCD, USDA Natural Resources Conservation Service, and OSU Extension to assist with the potential rollout of the USDA Conservation Security Program (CSP) in the McKenzie watershed in 2006. The CSP is a voluntary conservation program that supports ongoing stewardship of private agricultural lands by providing financial payments for maintaining and enhancing natural resources. EWEB is offering to help growers collect and analyze soil samples from active croplands to meet one of the requirements of this program.
- EWEB is working with Springfield Utility Board, Oregon Health Division, Oregon DEQ, Lane County Solid Waste, OSU Extension, and others to develop a program that will remove old and/or no longer used agricultural chemicals from the watershed and properly dispose of these chemicals free of charge to the grower.
- EWEB continues to meet with individual growers to discuss specific projects and opportunities relating to their land and/or assist with finding local markets that pay more for crops.
- An initial analysis of crop types, potential chemical use based on crop type, soil type, and proximity to surface water bodies was completed to highlight agricultural areas that have a higher potential for storm runoff to contain chemicals.
- A sampling and analysis plan for agricultural activities that describes sampling methods, sample numbers, types, and locations and other details relating to this monitoring effort was completed in April 2005.
- Conduct water quality storm event monitoring in agricultural areas that have a higher risk of chemical runoff from the land based on crop type, soils, proximity to water, and other factors.

Forestry

Over 90% of the McKenzie watershed is comprised forested land, with a mixture of private, state, and federally owned lands. Forested watersheds, like the McKenzie, produce the best water quality than any other surface water source. However, forest management activities that may adversely impact downstream water quality include: the use of chemical applications for stand treatment; road building; and various timber harvest techniques.

Over a two-year period (2002 to 2004) approximately 3.5 million pounds of chemicals were aerially applied to almost 10% of the McKenzie Watershed as part of forest management activities. This activity was focused in the lower portions of the watershed closer to EWEB's drinking water intake. The majority of the aerial chemical applications, or 3.1 million pounds, involved fertilizer treatments using urea nitrogen with the remaining 400,000 pounds being pesticide or herbicide applications. Pesticides, herbicides and other organic chemicals pose the highest threat to Eugene's drinking water since EWEB's treatment plant is not designed to continuously treat for these types of pollutants.

One approach to maintaining the quality of Eugene's drinking water source while maintaining timber harvests is through a watershed approach to stand management that incorporates the building of long-term relationships between watershed stakeholders, timber corporations, forestry agencies, and researchers. It is EWEB's hope that long-term cooperation and partnerships between these entities can be strengthened to not only minimize potential impacts from high risk forest management activities (i.e., aerial applications of pesticides and herbicides), but to also promote forest products to local markets and provide technical and financial assistance to timber landowners interested in pursuing sustainable forest management. The following tasks have been implemented to begin to make progress toward this long-term vision.

- Timber harvests and chemical spray treatments have been mapped in the watershed since 2002.
- A Commercial Forest Assessment and Evaluation Plan was completed in February 2005.
- In an effort to better protect forests from wildfire, EWEB is working with Oregon Department of Forestry, Lane County, US Forest Service, BLM, rural fire departments, and commercial timber companies to develop and implement a watershed GIS-based wildfire assessment and response tool similar to the McKenzie Watershed Emergency Response System (which addresses hazmat spills).
- Start meeting with private timberland owners, timber companies, US Forest Service, watershed stakeholders, and others to share information and engage in meaningful discussions on current forest activities in the watershed and ways to assist foresters while maintaining the exceptional water quality of the McKenzie River.
- An initial analysis of creek basins that received aerial applications of pesticides or herbicides was completed to highlight those basins that had higher amounts of chemicals applied.

- A sampling and analysis plan for commercial forestry that describes sampling methods, sample numbers, types, and locations and other details relating to this monitoring effort was completed in April 2005.
- Conduct water quality storm event monitoring in creek basins (and the McKenzie River near these basins) that have a higher risk of chemical runoff due to recent stand treatment and harvest activities.

Septic Systems

In the McKenzie watershed upriver of EWEB's drinking water intake approximately 4,000 households rely on septic systems to dispose of their wastewater and sewage. Approximately 10 to 25% of septic systems fail often releasing untreated wastewater into the underlying groundwater and/or nearby surface water. On-site septic systems can release high concentrations of organic matter, ammonia nitrogen, phosphates, bacteria, viruses, nitrates, synthetic organics, toxic metals, and pharmaceuticals to the groundwater.

Septic systems that pose the highest risk to drinking water sources are systems that are older than 20 years, clustered with other septic systems on smaller lots, located adjacent to ditches, lakes, streams or rivers, and are on thin or excessively permeable soils. Approximately 2,250 of the total 4,000 septic systems in the McKenzie watershed are in clusters and located adjacent to streams or the McKenzie River. About 330 of the 2,250 are also located in highly permeable soils. These 330 septic systems are found in six cluster areas in the McKenzie.

There is a need for a program that provides homeowners with educational and financial support to upgrade, maintain, and/or replace old on-site systems that are impacting or threatening to impact groundwater and/or surface water in the McKenzie watershed. It is important to develop long-term relationships with watershed residents, developers, septic system installation contractors, and regulatory agencies to maintain the inventory of septic systems, insure proper placement and construction of new systems and work to replace old systems. Homeowners would benefit from this program by obtaining assistance to protect their investment while maintaining the excellent water quality of the McKenzie River. The following tasks have been implemented to begin to make progress toward this long-term vision.

- Septic systems have been mapped in the watershed and a GIS analysis of these systems completed to highlight areas more likely to have septic impacts on shallow groundwater and/or the river.
- A Septic System Assessment and Evaluation Plan was completed in February 2005.
- Septic system maintenance brochures have been produced by LCOG and will be mailed to these six higher risk areas. The packet of information will provide homeowners with additional information on how to care for their systems and inform them of EWEB's project.
- A sampling and analysis plan for septic systems that describes sampling methods, sample numbers, types, and locations and other details relating to this monitoring effort will be completed in August 2005.

- EWEB will conduct water quality monitoring in these six cluster areas in September 2005 to assess potential impacts to nearby creeks and the McKenzie River.
- EWEB will focus on areas with water quality impacts to interview homeowners and pursue funding to assist homeowners with maintenance, repair, or replacement of failing systems.
- EWEB will partner with Lane County, Oregon DEQ, septic system contractors, and developers to conduct additional education and outreach and setup an assistance program to homeowners that want to do the right thing and minimize impacts from on-site septic systems.

Construction/Development

It is well known that construction activities rank as one of the main sources of sediment pollution to stormwater conveyance systems and receiving water bodies. The effects of excessive sediment loading on receiving streams and rivers includes deterioration or destruction of aquatic habitat, destruction of spawning areas, deterioration of aesthetic value, loss of storage capacity in reservoirs, increased wear and tear on hydroelectric and water intake equipment, increased water treatment costs, and transport of pollutants such as metals, nutrients, organochlorine pesticides, PCBs and other organic compounds.

The McKenzie River typically has low levels of suspended sediment even during storm events. However, recent events in the Santiam watershed (1996 floods) and McKenzie watershed (2002 Cougar Dam release) show how increased sediment in drinking watersheds can lead to extensive problems with downstream water treatment plants. For EWEB, increased sediment and nutrient loads in the raw water results in higher treatment costs and increased potential of producing disinfection by-products. Also, for drinking water systems, an increase in turbidity may cause interference with chlorination.

This project will focus on monitoring specific areas in the watershed where there are large amounts of land under development. If potential problems exist, EWEB and partner organizations would work with construction companies, local regulatory agencies, and other partners to implement actions that would reduce run off to nearby water ways while helping developers comply with construction erosion control requirements. The following tasks have been implemented to begin to make progress toward this goal.

- New construction activities in the McKenzie watershed and Springfield have been mapped and evaluated with regard to slope and soil type to highlight areas that pose a higher threat to nearby water bodies.
- A Construction Activity Assessment and Evaluation Plan was completed in February 2005.
- EWEB will work with partner agencies and local businesses to develop or use existing education and outreach materials for developers and contractors. New erosion control products like compost berms and eco blankets (developed by Rexius) have great potential for use in the watershed.

- A sampling and analysis plan for construction activities that describes sampling methods, sample numbers, types, and locations and other details relating to this monitoring effort was completed in September 2005.
- EWEB will conduct storm event water quality monitoring upstream and downstream of construction areas that pose a higher threat (based on project size, soils, slope, and proximity to surface water bodies) in October 2005 to assess potential impacts to nearby creeks and/or the McKenzie River.
- EWEB will focus on project areas with documented impacts to conduct follow-up education and outreach to those contractors in partnership with local government and other partners.

Final Thoughts

EWEB has been involved in the McKenzie watershed since 1911 and will continue its reliance on the McKenzie for drinking water and hydroelectric power generation for the foreseeable future. This project provides an opportunity to develop long-term relationships with growers, foresters, watershed residents, developers, local businesses, and local communities/institutions to explore collaborative approaches to watershed management that would be beneficial to all parties involved.

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