

Applegate River Watershed DRAFT Water Quality Implementation Plan

For Jackson County

Introduction

This Water Quality Implementation Plan describes the actions that Jackson County will undertake to reduce pollution in order to help restore and protect water quality in the Applegate Watershed. These efforts are required to meet the pollutant load allocations as defined in the Applegate Subbasin Total Maximum Daily Load (TMDL) approved by the USEPA in February 2004. The WQIP begins by reviewing water quality issues and compiling Jackson County's efforts to maintain and improve water quality in areas where the county has jurisdiction within the Applegate Valley. Additional measures suggested in the WQIP build on the County's existing programs and address documented water quality problems. The adoption of suggested additional measures will depend on feasibility and available funds and resources. The matrix in Appendix I summarizes current actions that the county is taking to protect water quality and additional actions that may be needed.

The overall goal of the WQIP is to reduce, or to eliminate wherever practicable, sources of pollution to the surface waters. This plan specifically addresses the following water quality parameters: Temperature, Sediment, and Bacteria. Water quality monitoring data show high summer stream temperatures, heavy sediment loads, and elevated levels of bacteria exceed State water quality criteria in some stream reaches in the watershed.

This plan will be consistent with the implementation plans provided by other designated management agencies (DMAs) within the Applegate Valley, including the US Forest Service (FS), the Bureau of Land Management (BLM), the Oregon Department of Agriculture (ODA), and the Oregon Department of Forestry (ODF). Both current and possible future management actions are summarized in the attached table. Sources for recommended practices include the USEPA National Management Measures to Control Nonpoint Source Pollution (2005); best management guidelines from the Oregon departments of Forestry, Agriculture, Environmental Quality, and Transportation; and watershed assessments and restoration plans completed by the US Forest Service, the Bureau of Land Management, and the Applegate River Watershed Council (ARWC).

Condition Assessment

Within the Applegate subbasin, monitoring data from 1994 – 2006 have shown that water quality in some streams or stream reaches does not meet state water quality standards at all times of the year (Table 1). High summer stream temperatures exceed water quality standards in some areas. Macroinvertebrate samples led to the Beaver Creek sediment listings (macroinvertebrate community declines were attributed to elevated levels of fine sediment as well as high summer stream temperatures). Bacteria samples have also exceeded standards during certain times of the year in some years. Additional data will be required to determine the extent and severity of increased sediment loads and bacteria populations.

Causes of elevated summer stream temperatures include increased solar radiation due to loss of mature riparian vegetation; water withdrawals, which reduce streamflow volume, increase the rate of warming, and reduce the amount of riparian vegetation the stream can support; loss of functioning side channel and wetland habitat, which sustain summer streamflows and provide cool water inputs; and sediment loading that contributes to bank erosion and stream channel widening. The development of roads, residences, mines, and agricultural fields during the last 150 years has degraded or eliminated much of the riparian vegetation and side channel and wetland habitat in the area. The removal of large wood from stream channels and the logging of large trees in headwater and near stream source areas have contributed to channel degradation and the loss of side channels and wetlands.

Elevated sediment loads result from chronic inputs such as road runoff as well as mass wasting events (such as landslides) that result from natural erosion processes and anthropogenic sources such as plugged culverts and slope failures following logging operations. Any soil disturbing activity near a stream or along a road that drains to a stream has the potential to increase stream sediment. Although only Beaver Creek has been identified as water quality limited due to high sediment loads, field observations and preliminary data collected by the USFS, the BLM, and the ARWC indicate the problem is widespread.

Increased populations of fecal coliform bacteria can result from failing septic systems or discharges of animal waste into streams. Older septic systems, especially those located near perennial streams, pose the highest risk. Similarly, confined animal feeding operations near streams are the most likely to deliver animal waste to streams.

Table 1. Water Quality Impairments in the Applegate Valley, Jackson County, from the Oregon Department of Environmental Quality.

Waterbody Name	River Mile	Water Quality Issue	Season
Applegate River	0 to reservoir	Temperature	Summer
Applegate River	0 to reservoir	Bacteria*	Year Round
Beaver Creek	0 to 8.8	Sedimentation	Year Round
Beaver Creek	0 to 3.5	Temperature	Summer
Humbug Creek	0 to 5	Temperature	Summer
Little Applegate River	0 to 20.9	Temperature	Summer
Palmer Creek	0 to 5.7	Temperature	Summer
Star Gulch	0 to 4.3	Temperature	Summer
Sterling Creek	0 to 2.5	Temperature	Summer
Thompson Creek	Mee Cove - Ninemile	Temperature	Summer
Yale Creek	0 to 1.3	Temperature	Summer

*Category 2: "Attaining" – some pollution standards are met (samples collected sometimes meet water quality standards). All other listings in the table are Category 5: Water quality limiting.

Water Quality Impairments: Causes and Proposed Actions

Temperature

The greatest contributing cause of increased summer stream temperatures in the Applegate River and its tributaries is the elevated level of solar radiation due to the reduction of riparian shade. Jackson County has addressed this problem through the adoption of stream setbacks in the 2004 Land Development Ordinance (LDO). This ordinance established a setback of 50 feet on Class 1 and 2 streams, or any other fish-bearing streams (LDO Chapter 8, p. 11). The ordinance states that new structures will not be allowed in the setback areas. All vegetation and tree cover within the setback will be retained with the following exceptions:

1. Non-native vegetation may be removed and replaced with native plant species, subject to a landscape plan approved by the Oregon Department of Fish and Wildlife (ODFW).
2. Vegetation may be removed if necessary for the development of water-related or water-dependant uses, subject to a landscape development plan approved by ODFW.
3. Vegetation may be removed for forestry activities that have been granted a permit under the Forest Practices Act.

The County may address violations of the ordinance by denying permits, issuing injunctions, requesting remedies or damages, or levying fines (LDO Chapter 1, p. 5). Currently, however, there is no provision for the inspection of riparian setbacks prior to or following the issuance of a permit, and little opportunity for enforcement. The development of a program to inspect riparian setbacks would greatly strengthen the ordinance.

Setbacks can be reduced up to 25% if the full setback renders a property unbuildable or if equal or better protection will be provided through restoration of riparian areas, enhanced buffer treatment, or similar measures. ODFW approval is required for setback reductions. Roadways will not be located within the setback, except at vehicular crossings. The ability to protect riparian vegetation is limited in some areas due to the proximity of county roads within 50 feet of streams.

While the LDO helps protect riparian areas and water quality, it does not address degraded areas in need of restoration. Much of the needed riparian restoration is on private lands under the planning jurisdiction of the county. To address this need, Jackson County staff may cooperate with and support private landowners and restoration organizations, such as watershed councils and other non-profits, to develop and implement restoration projects. Project costs can be funded through restoration grants or other programs.

County permit requirements can raise the cost and delay the implementation of restoration projects. With the goals of encouraging and facilitating restoration activities, planning staff may assist in the development of low-cost, streamlined permitting processes for restoration projects. Staff may work with local agencies and groups to approve protocols for certain types of common restoration projects (stream bank restoration, livestock fencing, etc.).

Temperature Action Summary:

- 1) Implement riparian setback requirements: Jackson County Planning Department staff is currently implementing these requirements through flood plain review and land use permitting activities.
- 2) Strengthen riparian setback ordinance enforcement program by providing a clear explanation of setback requirements and the consequences of setback violations to permit applicants, followed by riparian area inspections.
- 3) In the event that riparian buffers are impacted by new development, mitigation or restoration of impacted areas will be required. See recommended restoration activities below. These requirements will be triggered through review and permit processes in the Planning office.
- 4) Coordinate with private property owners and local organizations to conduct restoration projects. Recommended restoration activities include, but are not limited to:
 - Restoration or establishment of native riparian plant communities.
 - Control competing, introduced species, primarily Himalayan blackberry (*Rubus discolor*) that prevent establishment or inhibit growth of native species. Blackberries can be controlled through repeated mowing, burning, root crown removal, and grazing and the establishment of competitive desirable species.
 - Creation of side channel habitat / wetlands by reconnecting abandoned side channels and existing wetlands or enhancing newly formed channels following high water events.
 - Removal of dikes, berms or other barriers to floodplain function where feasible.
- 5) Develop streamlined process for permitting restoration projects.

Sedimentation

The only stream in the Applegate valley currently listed as sediment impaired is Beaver Creek, though high sediment loads have been observed elsewhere in the watershed. Elevated levels of sediment in Beaver Creek and other Applegate streams have been linked to eroding road surfaces and ditches and culvert failures at road-stream crossings. Soil disturbing activities that cause erosion can increase stream sediment levels when eroded soil is delivered to nearby streams in storm runoff. Soil disturbance in the residential areas that fall under County jurisdiction can result from home site development, access road building, woodland management activities, farming / gardening activities occurring on ¼ acre or less, or livestock management. Jackson County's current riparian ordinance helps prevent soil-stabilizing vegetation next to streams from being removed during land development activities. Vegetation in riparian setbacks also provides a buffer that can filter out sediment eroded from upslope areas before it reaches the stream.

Applegate communities are going through a period of rapid growth. Residential construction, often near streams, can significantly impact water quality. Soil erosion during the development of access roads and home sites can impact the water quality of streams down slope. New construction and development should be designed to minimize potential erosion. Currently, the

Oregon Department of Environmental Quality (ODEQ) requires erosion control plans only for construction activities affecting areas over one acre, through the 1200-C Permit program. Residential construction usually impacts less than an acre; however, due to the steep topography and narrow valleys where much of the development in the Applegate occurs, the potential for erosion and sediment delivery to streams is high. Reducing the threshold for erosion control permits and inspections of construction sites would be effective way to control potential erosion from such areas.

Residential development usually begins with the construction of an access road or driveway, requiring vegetation removal and soil disturbance, both of which can result in water quality impacts. The County can provide developers with guidance regarding road construction in setback areas. Such guidance may include the following recommendations, compiled from state and federal erosion prevention guides for road construction activities. Where access roads or driveways cross streams, install hardened crossings, culverts, or bridges to minimize erosion. Existing road/stream crossings at risk of culvert failure and potential stream diversion may be modified by increasing culvert size (to 100-year flood), changing culvert type (to arch style culvert or other appropriate model), replacing culverts with bridges or hardened crossings (fords) to avoid plugging-related failures where appropriate, and installing flood bypass or failure dips. Low-gradient roads can be outsloped to avoid sediment producing drainage problems. Adequate cross drainage can also be provided through the installation of water bars, rolling dips and/or culverts. Roads should be built or modified to divert runoff onto stable, vegetated slopes or into water harvesting swales or ponds rather than directly into streams. Applying aggregate to eroding road surfaces or mulching infrequently used roads with woodchips or other material can greatly reduce erosion and sediment production. Where possible, decommission old access or logging roads. Such activities should be included in an erosion control plan submitted as part of any expanded permit program.

Where residential lots include wooded areas adjacent to streams, landowners should follow recommendations in Oregon Department of Forestry Forest Practices Act: Measures for Protecting Water Quality. Disturbed soils can be treated to prevent erosion (apply mulch, construct water bars, etc.). Residents may also place large wood and/or rock structures instream to reduce erosive energy of streams, create pool habitat, and facilitate sediment sorting. Increasing or enhancing side channel and off channel habitat will reduce the erosion caused by high flow events.

When residential properties have small areas devoted to livestock or crops, especially near streams, landowners should adopt practices recommended in the Inland Rogue Basin Agricultural Water Quality Management Plan. Maintaining farm roads, using cover crops, and installing riparian fencing and wintering livestock in well drained areas away from streams are important strategies for preventing erosion in such areas. Any area greater than ¼ acre in agricultural use is regulated by the Oregon Department of Agriculture.

On Jackson County-maintained roads, road crews currently follow recommendations contained in the ODOT publication: Routine Road Maintenance: Water Quality and Habitat Guide to Best Management Practices (2004). The guide includes recommendations for ditch and culvert

maintenance, bridge maintenance and repair, vegetation maintenance, snow and ice removal, and other road maintenance operations.

Inventories may be conducted on county roads to identify areas where road drainage systems are experiencing erosion or delivering sediment-laden runoff directly to streams, and road-stream crossings at risk of failure during storm events. Such sites would be candidates for water quality improvement projects in which the County could be the lead organization or a partner.

Sedimentation Action Summary

- 1) Implement and enforce the riparian setback ordinance as described in the temperature section.
- 2) Evaluate the potential for requiring erosion control permits and inspections for construction activities involving < 1 acre of soil disturbance.
- 3) Continue to implement ODOT best management practices for protecting water quality as part of the County's current road maintenance program.
- 4) Seek funding to conduct county road system erosion control and prevention inventory and implement or support the implementation of resulting projects.

Bacteria

Current ODEQ data indicates that bacteria problems may exist at some times of the year in Applegate Valley streams. Bacteria may make some streams unsafe for swimming during certain times of the year. Jackson County's role in protecting the public from bacteria rests primarily in the management of the On-Site program, which regulates the installation of septic systems. All residences in the Applegate valley in Jackson County are on individual, privately owned septic systems. Jackson County maintains the program that ensures that these systems are functioning properly and not releasing unsafe levels of bacteria. However, septic systems pre-dating the On-Site program, especially those near streams, may be contributing to high bacteria levels in streams, especially during wet weather periods. Jackson County may initiate a collaborative, voluntary effort to test septic systems near streams for the potential to deliver bacteria to stream waters.

Bacteria Action Summary

- 1) Continue implementation of the On-Site Program.
- 2) Seek funding to initiate testing of older septic systems near streams and support or serve as partner in resulting septic upgrade projects.

Education and Outreach

An effective education and outreach program will be critical to successfully implementing the WQIP. Educating the public regarding ordinances and recommended water quality improvement measures can take place through a variety of means, including workshops and presentations, information tables at public events, websites, and brochures or fact sheets. Periodic trainings for county staff will cover water quality protection during construction and road maintenance activities, and facilitate the adoption of improved techniques. Presentations or reports to partners and other DMAs will ensure the integration of the Jackson County WQIP with other efforts in the area.

Education and Outreach Action Summary

1) Workshops:

Jackson County will collaborate with agencies such as the Rogue Valley Council of Governments and the Applegate River Watershed Council to conduct workshops promoting voluntary practices that improve water quality. Workshops that will target streamside landowners include:

- Managing and maintaining roads to reduce water quality impacts
- Managing streamside vegetation for water quality and wildlife habitat
- Water conservation
- Stream-friendly home site development
- Landscaping with native plants
- Septic system maintenance

Additional workshop and presentation audiences may include the Home Builders Association, realtors, and environmental groups. Jackson County Planning, Public Works, Parks, and Community Development staff will receive training and presentations regarding WQIP recommendations and annual refresher courses. Jackson County may give presentations regarding Plan activities or share monitoring data with partner agencies and other DMAs.

2) Publications:

Fact Sheets and brochures will provide information to landowners, builders, and real estate agents regarding existing ordinances and permits as well as best management practices. Brochures and fact sheet topics will be similar to workshop and presentation topics, and will be developed by Jackson County and partner agencies. Brochures and Fact Sheets will be posted on-line and placed in libraries, distributed by direct mail to streamside landowners, realtors and home builder groups, and will be available on counters in the County Planning Department and real estate agency offices.

Monitoring, Evaluation, Reporting, and Adaptive Management

Jackson County will need to conduct implementation monitoring to track its efforts to protect and improve water quality in the Applegate Valley. An effectiveness monitoring program, designed to indicate whether activities performed in accordance with the WQIP are effective in

achieving Plan goals, will be implemented as funding becomes available. Such monitoring activities may include photo points; stream shade, flow, and temperature measurements; sediment monitoring; macroinvertebrate monitoring; and stream habitat surveys. Results of effectiveness monitoring will be reviewed in the context of existing, baseline water quality data collected by the Applegate River Watershed Council, the ODEQ, and the BLM. Effectiveness monitoring can be performed in partnership with ARWC, RVCOG, ODA, ODF, USFS, BLM, or others.

A periodic review will allow the County and ODEQ to assess progress and adapt the Plan accordingly. The evaluation, conducted by the ODEQ, will include a review of existing water quality data and other information to assess the effectiveness of the Plan relative to pollution reduction goals. The report will describe what information was used in the evaluation, the findings of the evaluation and the basis for this reasoning. If the evaluation indicates that the Plan is not likely to be adequate to meet the pollution reduction goals, ODEQ will work with the County to describe how the WQIP will be modified to achieve these goals, and the timeline for accomplishing this.

Monitoring Action Summary

1) Implementation Monitoring:

Jackson County staff will record activities to document and measure implementation of plan elements. WQIP implementation activities and accomplishments, outlined in the table in Appendix II, will be documented by Jackson County staff in a similar spreadsheet format (see attached template). County staff will report to DEQ annually on progress and accomplishments.

2) Effectiveness Monitoring:

Jackson County and partner organizations will seek funding to develop and implement a plan to measure Plan effectiveness in meeting TMDL goals.

3) Periodic Review and Adaptive Management:

The ODEQ will evaluate the Implementation Plan every five years following submittal, and will work with County staff to adapt the Plan accordingly.

Costs and Funding

Many of the WQIP goals will be achieved through the existing Land Development Ordinance. Additionally, Jackson County has water quality protection and pollution prevention measures in place through existing programs in the Roads Department and through the On-Site program. However, LDO amendments envisioned as part of the WQIP will result in additional costs. Existing staff members have the responsibility of enforcing current regulations and may be utilized to expand their respective programs as suggested above. Some additional costs may be covered by existing programs and permit fees. Further revenues may be obtained through permit surcharges or development impact fees.

Some of the proposed outreach activities also have additional costs associated with them, costs that can be decreased by partnering with other agencies/organizations. Funding needed to conduct first year workshops and initiate development of brochures and fact sheets has been made available through the 319 grant program supporting the WQIP development. Additional funding may be sought through this program to continue these activities during succeeding implementation years. Annual funding for workshops and publications has been estimated at \$10,000, for workshops and brochures that could serve all TMDL planning areas within Jackson County:

- 2 workshops per year @ \$3,000 per workshop = \$6,000.
- 2 brochures & 2 fact sheets - production, printing costs and distribution = \$4,000 per year

On-the-ground water quality improvement costs will be project specific. Funds supporting water quality improvement / watershed restoration projects or additional pollution prevention measures suggested in the WQIP may be available through grant programs listed in Table 2. Such grants may require matching funds and in-kind contributions. Monitoring costs may be offset by the EPA 319 grant program or other sources. Table 2 lists some of the funding sources for water quality improvement work.

Table 2. Funding Sources for Restoration and Water Quality Improvement Projects

Funding Program	Program Emphasis	Eligible Groups
EPA 319	Non-point source control, riparian & wetland restoration	Non-Profits, Businesses, Local & State governments
Oregon Watershed Enhancement Board	Salmonid and watershed restoration, water quality improvement, both on-the-ground and educational activities.	Any individual, organization, local government, or institute of higher education
NOAA Community Restoration Fund	Non-point source control, riparian & wetland restoration	Non-Profits, Businesses, Local & State governments
National Fish and Wildlife Foundation	Fish and Wildlife habitat restoration and conservation, including riparian restoration and sediment reduction.	Community/Watershed Groups, Nonprofit Groups , Educational Institution , Conservation District , Local Government , State/Territorial Agency , Tribal Agency , Federal Agency
USFWS Private Stewardship Program	Restoring streams that support imperiled species, fencing to exclude animals from sensitive habitats, and planting native vegetation to restore a rare plant community.	Business , Community/Watershed Group , Nonprofit Groups , Educational Institution , Private Landowner , Conservation District, Local Government

Summary

Existing Jackson County programs, including the riparian setback ordinance, the road maintenance protocol, and the On-Site Program, form the core of the WQIP. High priority actions that are likely to result in significant water quality improvement include enforcement of the riparian setback program, support of riparian restoration projects, development of an erosion control permit program for residential construction sites, and an assessment of the county road system and the implementation of identified water quality improvement actions. Education and outreach activities identified in that section of the WQIP will be required to engage community members and partner organizations. Finally, implementation and effectiveness monitoring, together with a periodic review of Plan activities and impacts, will be required to assess program effectiveness and make resulting adjustments in program activities.

Appendix II
Applegate Water Quality Implementation Plan Monitoring Guide

Task	Number	Date Completed	Benchmark	Comments
Implement Riparian Area Setback Requirements: Permits Issued				
Riparian Setback Inspections				
Riparian Mitigation Projects				
Restoration Projects				
Restoration Project Permits				
Evaluation the potential for requiring erosion control permits and inspections for construction activities involving < 1 acre of soil disturbance complete.	N/A			
Implement ODOT MS4 Road Maintenance BMPs: Miles Covered				
Seek funding to conduct county road system erosion control and prevention inventory.	N/A			
Conduct county road system erosion control and prevention inventory.	N/A			
Road system water quality-related improvements				
Continue On-Site Program: Septic Systems Permitted				
Seek funding to conduct assessment of older septic systems near streams or floodplains. Failing systems identified/Improved.				
Conduct older septic system assessment. Failing systems identified/Improved.				
Workshops Completed				
Publications: Number completed/distributed				
Implementation Monitoring	N/A			
Effectiveness Monitoring: Plan Completed	N/A			
Secure money for and implement effectiveness monitoring.	N/A			
Periodic Review and Evaluation	N/A			