

W-8.b.



Memo Date: March 3, 2008
Work Session Date: March 19, 2008

TO: Board of County Commissioners
DEPARTMENT: Public Works
PRESENTED BY: Bill Morgan, County Engineer
AGENDA ITEM TITLE: IN THE MATTER OF APPROVING THE LANE COUNTY WILLAMETTE BASIN TOTAL MAXIMUM DAILY LOAD (TMDL) IMPLEMENTATION PLAN FOR SUBMITTAL TO THE OREGON DEPARTMENT OF ENVIRONMENTAL QUALITY (DEQ)

I. MOTION:

Discussion item. Should the Board decide to approve implementation plan for submittal, an order is attached to this memo.

II. ISSUE/PROBLEM:

This item presents a resolution for the Board to adopt for submitting the County's Willamette Basin TMDL Implementation Plan developed through an interdisciplinary approach in the Public Works Department. This Plan is Lane County's response to the Oregon DEQ and the Clean Water Act environmental regulations for enhancing water quality standards in the Willamette Basin region. The Plan applies within Lane County's jurisdiction area in the Willamette Basin as a Designated Management Agency (DMA). Within the Willamette Basin portions of Lane County, there are five Federal agency DMAs, six State of Oregon DMAs, and eleven Local government DMAs including Lane County and ten cities. Lane County's responsibility as a DMA for the Willamette Basin TMDL totals approximately 149 square miles, which is less than 4 percent of the Willamette Basin within Lane County. Included in the County's DMA jurisdiction is approximately 1446 miles of roadway maintained by the Public Works Road Maintenance Division. Excluded from Lane County's jurisdiction as a DMA are local municipalities, Federal and State owned lands, and privately owned forest and agricultural lands that are managed by other State and Federal DMAs.

The federal Clean Water Act of 1977 "authorizes the U.S. Environmental Protection Agency (EPA) to 'restore and maintain the physical, chemical, and biological integrity of all waters of the nation'" (DEQ, 2004). In response to the Clean Water Act, the EPA designated state agencies (Oregon DEQ) to develop water quality standards, perform water quality monitoring to understand current conditions, determine sources of pollution, and develop TMDLs as a tool to improve water quality. As a component of the overall effort to protect and restore the beneficial uses of Oregon's waterbodies, the DEQ issued TMDLs for the entire Willamette Basin in 2006.

III. DISCUSSION

A. Background

The term Total Maximum Daily Load (TMDL) means identification of the loading capacity, or the maximum daily amount of each specific pollutant that can be present in a water body without violating water quality standards. TMDLs on each water body establish the difference between the loading capacity and the current pollutant load. A percent reduction in the pollutant load is identified and the reduction threshold established that needs to be met to bring water bodies into compliance with water quality standards. The difference between the current load and the loading capacity is known as excess load (DEQ, 2004).

The sources of excess load can be defined specifically in some cases and less specifically in other cases, so the entire load reduction goal is split up between the different sources of pollution regionally, according to their contribution to the overall pollution load as identified by the DEQ and summarized for the region in the *Willamette Headwaters: Water Quality Assets, Gaps, and Opportunities Study* developed and published by LCOG. Any difference between the waterway's loading capacity and the current pollutant load must be mitigated by pollution reduction activities.

The pollutants identified in this region for TMDL designation are temperature, mercury, and bacteria. Other pollutants of concern are present in the Willamette basin are turbidity, dissolved oxygen, arsenic and other toxins. The Overall category of TMDL strategies in the Matrix are expected to address reductions in these other pollutants as well, which is broadly beneficial.

Region wide, all DMA's, including Lane County, which is generally a non-point source entity, are developing these TMDL implementation plans to address the reduction of pollutants in the watershed in a coordinated manner, appropriately distributing the shared load allocation between all watershed jurisdictions.

B. Ordinance Updates

No ordinances are proposed for adoption or update with this item, but future Lane Code changes may be necessary.

C. Policy Issues

The TMDL Plan is developed in response to environmental protections put in place by state and federal law, and addresses the following policy issue: As one of the local designated management agencies (DMA's), at what level does the County respond, given time and resources available to address these complex issues? Lane County is one of many DMA's coordinating efforts in the basin that are responding to the DEQ in developing these plans. The Plan is in compliance with Statewide Land Use Law as addressed in Chapter 5.11.

D. Board Goals and Core Strategy

Adoption of the Implementation Plan supports the following Lane County Strategic Goals with an overall emphasis on ensuring the safety and well-being of the people in Lane County:

- Contribute to appropriate community development in the areas of transportation and telecommunications infrastructure, housing, growth management and land development.
- Maintain a healthy environment with regard to air quality, water quality, waste management, land use and parks.
- Protect the public's assets by maintaining, replacing or upgrading the County's investments in systems and capital infrastructure.

E. Financial and/or Resource Considerations

Implementation of the management strategies identified in the Plan depends upon funding and resources. A wide variety of strategies are presented that address TMDL pollutant parameters. Most of these are educational, awareness, and information sharing strategies that are currently integrated into the workloads of existing staff funded under the Land Management, Waste Management, Parks Department, Engineering and Construction Services, and Road Maintenance funds. These strategies are presented in the Matrix and the Plan as continuing programs and activities funded into future years.

Some strategies are larger in scope, entail analysis for work planning and would likely require prioritization into current or future work priorities and securing additional funding before full implementation can be achieved. These management strategies are shown on the Matrix in

italics, and would be integrated into future staffing priorities as budgets allow or as other sources of funding are achieved. Opportunities exist for regional partnerships, through grants, special funds, or other entities funds and additional funding is sought as the Board directs.

F. Analysis

OAR 340-082-00080(3) *Designated Management Agencies other than Oregon Department of Forestry and Oregon Department of Agriculture, identified in a Water Quality Management Plan (WQMP) are responsible for developing and revising sector-specific or source-specific implementation plans must:*

(a) Prepare an implementation plan and submit the plan to the DEQ for review and approval according to the schedule specified in the WQMP. The implementation plan must:

(A) Identify the management strategies the DMA will use to achieve load allocations and reduce pollutant loading;

The Matrix shown in Table 6. summarizes the management strategies that are described in detail in the Plan that Lane County will use in response to the identified TMDL's. Achievement of load allocations and reductions in pollutant loading is expected to occur. Because Lane County is generally a non-point source entity, achievement of identified goals is coordinated among all regional DMA's for the basin.

(B) Provide a timeline for implementing management strategies and a schedule for completing measurable milestones;

In most cases, due to the non-point nature of the Lane County DMA area, measurable milestones are described in achievable concepts. Many of the educational and training strategies are ongoing and embedded in the Best Management Practices conducted on a daily basis by Lane County staff and crews, and achievement of performance levels is expected.

(C) Provide for performance monitoring with a plan for periodic review and revision of the implementation plan;

The last two columns on the Matrix, taken together, are the summary of the performance monitoring plan proposed for periodic reporting to the DEQ that could lead to revisions of the Implementation Plan. The DEQ expects submittal of a monitoring plan presented annually and a more substantial report provided every five years.

(D) To the extent required by ORS 197.180 and OAR Chapter 340, division 18, provide evidence of compliance with statewide land use requirements; and

Evidence of compliance with statewide land use requirements, including applicable policies in the Rural Comprehensive Plan, is found in Section 5.11 of the TMDL Implementation Plan.

(E) Provide any other analyses or information specified in the WQMP.

Lane County participated with other area DMA's to develop the *Willamette Headwaters: Water Quality Assets, Gaps, and Opportunities Study* published by LCOG. This is a companion document with other analysis and basin information that is referenced in the TMDL Plan.

Other County Responses

Development of the Lane County TMDL Plan included review and analysis of what other counties in the Willamette Basin are doing in response to the DEQ. Staff contacted Marion, Linn, Benton, Washington, Clackamas and Polk Counties to discuss and compare TMDL responses. Marion County is in the process of developing a draft Sediment and Erosion Control Ordinance and a draft Obstruction of Road Drainage Ordinance in response to the Willamette Basin TMDL. Benton County is also considering the development of an erosion control ordinance to address the Willamette Basin TMDL. Washington County, Polk County, and Clackamas County already have erosion control ordinances in place. Linn County currently does not have a County-wide erosion control ordinance and it has not determined if one will be pursued.

IV. Timing

Oregon Department of Environmental Quality (DEQ) has established that Implementation Plans be submitted within 18 months of EPA's September 29, 2006 approval of Oregon DEQ's Willamette Basin TMDL (April 1, 2008). It is anticipated that DEQ will allow flexibility with the submittal timeframe if Designated Management Agencies (DMA) like Lane County are actively investigating TMDL strategies and pursuing Plan development.

V. ACTION:

A. Options

Option 1. Move approval of the attached Board Order for submittal of the Willamette Basin TMDL Plan to the DEQ as presented to the Board.

Option 2. Direct staff to revise the Willamette Basin TMDL Plan and return on a date certain set by the Board to consider a revised copy of the TMDL Plan for submittal to the DEQ.

Option 3. Do not approve the submittal of the plan and direct staff to prepare a letter to the DEQ stating the reasons why the Lane County Board rejects the TMDL Order and declines to submit a TMDL Implementation Plan.

B. Recommendation

Staff recommends Option 1.

C. Timing/Implementation

Implementation of management strategies in the plan will be ongoing or as funding and resources are achieved. A schedule for completing measurable milestones would be considered during monitoring reporting parameters.

VI. FOLLOW-UP:

Submittal of the TMDL Plan to the DEQ will follow the Board's order.

Should the Board choose Option 2, revisions to the TMDL Plan would be completed as directed and brought back to the Board for an order directing submittal the TMDL Plan to the DEQ.

Should the Board choose option 3, a letter setting forth the Board's reasons for denying the submittal of the plan would be brought back on a date certain set by the Board and submitted to the DEQ instead of the TMDL Plan.

VII. ATTACHMENT:

Board Order

Exhibit A: Willamette Basin TMDL Implementation Plan

IN THE BOARD OF COUNTY COMMISSIONERS, LANE COUNTY, OREGON

ORDER NO. _____)IN THE MATTER OF APPROVING THE LANE COUNTY
)WILLAMETTE BASIN TOTAL MAXIMUM DAILY LOAD
)TMDL IMPLEMENTATION PLAN FOR SUBMITTAL TO
)THE OREGON DEPARTMENT OF ENVIRONMENTAL
)QUALITY (DEQ).

WHEREAS, The federal Clean Water Act (33 USC §§1251-1387) (CWA) governs water quality for national water bodies defined as “navigable” by the CWA and authorizes the US Environmental Protection Agency (EPA) to restore and maintain the physical, chemical, and biological integrity of all waters of the nation, and

WHEREAS, The Willamette River and tributary waters are important Oregon resources essential to protecting the future health and prosperity of the Willamette Valley, and provide recreational, commercial, cultural, ecological and aesthetic assets to visitors and the citizens of Lane County, and

WHEREAS, In implementing and administering the Clean Water Act, the EPA delegated to the states the responsibility to develop water quality standards, perform water quality monitoring to understand current conditions, determine sources of pollution, and develop Total Maximum Daily Loads (TMDLs) as a tool to improve water quality, and

WHEREAS, To address water quality standards in the Willamette River and its tributaries, the Oregon Department of Environmental Quality (DEQ) issued the Willamette Basin TMDL and a Water Quality Management Plan (WQMP) that identified responsible Designated Management Agencies (DMA) required to develop sector specific implementation plans, and

WHEREAS, Lane County is a DMA with jurisdiction in the Willamette Basin over county owned lands, county managed roads in the basin, rural non resource lands, riparian areas and waste management activities within Lane County, and

WHEREAS, in accordance with OAR 340-042-0080 and the WQMP, Lane County is required to submit its TMDL Implementation Plan to DEQ within 18 months of EPA's September 29, 2006 approval of the Willamette Basin TMDL (April 1, 2008) or within such additional time as DEQ may permit, and

WHEREAS, the Lane County Public Works Division interdisciplinary team has developed the Lane County Willamette Basin TMDL Implementation Plan in response to the WQMP for the Willamette Basin,

NOW, THEREFORE, IT IS HEREBY ORDERED that the Board of County Commissioners of Lane County approves the submission of the Willamette Basin TMDL Implementation Plan to the DEQ for approval; and it is further

ORDERED that following approval of the TMDL Implementation Plan by the DEQ, the County will undertake those actions specified by the Plan as resources and funding permit, including

submitting an annual status report and a five year status report to the DEQ, and developing work programs to explore adoption of Ordinances to aid in the protection of water resources.

DATED this _____ day of _____ 2008.

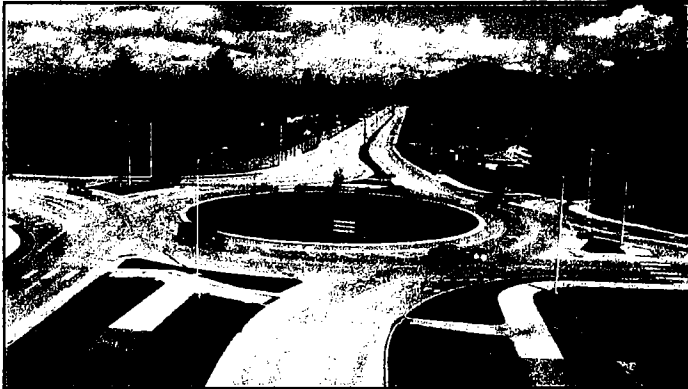
Approved as to Form
Date 3/12/08 Lane County



Office of Legal Counsel

Fay Stewart, Chair
Lane County Board of Commissioners

Lane County Willamette Basin Total Maximum Daily Load (TMDL) Implementation Plan



Lane County Department of
Public Works
3040 N Delta Hwy
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Contact: Bill Morgan

Draft March 4, 2008
April 2008



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Executive Summary

Every two years, Oregon Department of Environmental Quality (DEQ) assesses water quality and reports to the US Environmental Protection Agency (EPA) on the condition of Oregon waterways. DEQ prepares an integrated report that meets the requirements of the Federal Clean Water Act (33USC 1251). Specifically, Section 303(d) of the Clean Water Act requires identifying waters that do not meet water quality standards where a "Total Maximum Daily Load" (TMDL) needs to be developed. TMDLs can be established to meet a variety of pollutant levels. DEQ focuses on those pollutants that specifically impact what are determined to be beneficial uses including 1) drinking water, 2) aquatic life, 3) recreation, 4) industry, and 5) agriculture. Federal law requires that streams, rivers, lakes, and estuaries that appear on the 303(d) list be managed to meet State water quality standards. Oregon DEQ has approached this by taking a watershed approach for protecting water quality that includes developing specific allowable pollutant loadings (TMDLs) for both point sources and nonpoint sources. Point source pollutants are discharged at a specific location from pipes, outfalls, and conveyance channels from either municipal wastewater treatment plants or industrial waste treatment facilities. Nonpoint Source pollutants originate from multiple sources over a relatively large area. Nonpoint sources can be divided into source activities related to either land or water use including failing septic tanks, improper animal-keeping practices, forestry practices, and urban / rural stormwater runoff.

In late 2004, Lane County became involved in DEQ's process of establishing TMDL limits for the Willamette River and its tributaries. On September 29, 2006, EPA approved Oregon DEQ's Willamette Basin TMDL, which initially addresses three pollutants: 1) Temperature, 2) Bacteria, and 3) Mercury. Oregon State law requires that upon EPA approval, Designated Management Agencies (DMAs) have 18 months to submit TMDL Implementation Plans that outline pollution reduction strategies. Within the Willamette Basin portions of Lane County, there are five Federal agency DMAs, six State of Oregon DMAs, and eleven Local government DMAs including Lane County and ten cities. This document outlines the total maximum daily load (TMDL) Implementation Plan for the Lane County Designated Management Agency (DMA) portion of the Willamette Basin (See Maps 1-6, Appendix 1). Lane County's responsibility as a DMA for the Willamette Basin TMDL totals approximately 149 square miles, which is less than 4 percent of the Willamette Basin within Lane County (See Map 1, Appendix 1). Excluded from Lane County's jurisdiction as a DMA are local municipalities, Federal and State owned lands, and privately owned forest and agricultural lands that are managed by other State and Federal DMAs.

Lane County Public Works staff have reviewed current policies and activities related to addressing pollutant loading contributions to the Upper Willamette Basin area. A summary of Lane County's Willamette Basin TMDL Implementation Plan activities is encapsulated in Table 6 on Pages 23-25. Lane County first emphasized what was already being completed, realizing pending County budget concerns. However, County staff found that reasonable enhancements to existing programs could be accomplished.

DEQ will conduct an evaluation of the success of the Plan including an assessment of progress made by Lane County, a review of regional existing water quality data, and other information to assess the effectiveness of the Plan relative to the overall TMDL pollution reduction goals. DEQ does not expect DMAs to know all the answers when they submit their TMDL Implementation Plans. Many of the water pollution problems being addressed through TMDLs will take several years or decades to be resolved, and it is not always possible to determine exactly what the on-the-ground efforts it will take to get there. For that reason, DEQ does not expect that TMDL Implementation Plans will describe in great detail how the management strategies will achieve the load allocation for each pollutant. However, DEQ does expect TMDL Implementation Plans to: 1) Identify known or suspected sources of each pollutant under the DMA's jurisdiction, 2) Identify the actions the DMA is taking, or plans to take, to address each of those sources, and 3) Describe how the DMA is going to gauge effectiveness of control efforts over time.

The overarching goal of the Willamette Basin TMDL Implementation Plan is to minimize or, wherever possible, eliminate heat, bacteria, and mercury contributions to surface waters within the jurisdictional control of Lane County. Through a multi-faceted approach of incentives, land use mechanisms, public operations, partnerships, and education, this plan targets specific sources of contamination within the county's jurisdiction. Implementation of the strategies identified in this Plan depends upon funding and resources, which will affect the overall success of the Plan and the eventual reduction of pollutants in the Willamette Basin from areas under jurisdictional responsibility of Lane County. Lane County has a wide variety of strategies that address TMDL pollutant parameters. Some are small in nature and are easy to implement, such as enhancing stormwater information presented on County websites. Most of these educational and information dissemination types of strategies are currently integrated into the workloads of existing staff that work under Lane County general fund and the road fund and are expected to continue to be allocated in future years. Some strategies are larger in scope and will likely require prioritization into current work priorities and securing additional funding. As such, some strategies are relatively easy to integrate into existing staffing and budgets or future Lane County budgets, whereas others are dependent on finding grants and/or allocating larger amounts from future special fund or general fund budgets.

Lane County will implement those strategies that can be reasonably done and that meet the local needs and resources of the County. Many of the strategies outlined in the Plan are funded and have momentum to be completed within the next year or two. Lane County is also committed to including strategies that are ambitious and expansive, and can be implemented once funding sources are identified and become available. One such strategy is the investigation of the creation of a County-wide stormwater ordinance. The development of this strategy, however, needs further research. A component of this strategy could be the revision of the current Lane Code regarding erosion and sediment control to include plan reviews, development standards, and enforcement activities. This may require additional staff, fees, and budget considerations that have to be authorized by the Lane County Board of Commissioners through additional processes. Like other jurisdictions in the region, the County budget has many competing department priorities with important issues that are necessary to meet the needs of citizens, and this Implementation Plan will be subject to annual budgetary authorization.

1.0 Introduction

This Plan describes the strategies that Lane County will implement to reduce temperature, bacteria, and mercury pollution within the following four Willamette subbasin watersheds: Middle Fork Willamette River, Coast Fork Willamette River, McKenzie River, and Upper Willamette River (including the Long Tom River). Implementation Plans from DMAs, such as Lane County, are required to comply with the Oregon Department of Environmental Quality (DEQ) Willamette Basin TMDL order and to meet pollutant load allocations for the Willamette River subbasins as approved by the US Environmental Protection Agency (EPA) in September 2006. The size of the TMDL management area administered by Lane County as a DMA totals approximately 149 square miles, which is less than 4 percent of the Willamette Basin within Lane County.

This plan is organized into six sections. The first section introduces the Plan and the second section gives a brief overview of the TMDL program, describes each of the three major pollutants addressed in the Willamette Basin TMDL (Temperature, Bacteria, and Mercury), and explains the region's water resources, land use, and important issues related to water quality. Sections three and four provide an overview of Lane County within the Willamette River Basin, describe the current condition of the Willamette Basin watersheds, explain what Lane County is currently doing to address water quality issues, and point out where gaps exist in addressing TMDL parameters. Section five is the "core" of this Implementation Plan and portrays details for each TMDL and what Lane County plans to do to address TMDL issues. The Implementation Matrix included in section five displays when and how strategies will be implemented. This section also identifies the monitoring plan that will summarize effective implementation strategies and parameters that will be measured. The final section identifies and outlines regional partnership opportunities to join efforts with other jurisdictions in working to reach water quality goals.

The overarching goal of the Willamette Basin TMDL Implementation Plan is to minimize or, wherever possible, eliminate heat, bacteria, and mercury contributions to surface waters within the jurisdictional control of Lane County. Through a multi-faceted approach of incentives, land use mechanisms, public operations, partnerships, and education this plan targets specific sources of contamination within the county's jurisdiction.

2.0 Background

The Willamette River is a very important commercial, municipal, cultural, recreational, ecological, and aesthetic asset. Working to preserve and maintain water quality will ensure prosperity, productivity, and quality of life for the entire Willamette region now and in the future. Water quality in the headwaters region is especially vital in maintaining the functionality of this versatile river system.

The Willamette River originates in the southernmost part of the Willamette Basin, where upland forest streams begin as spring-fed rivulets, snowmelt drainages, or small mountain lakes. These watercourses join with other small streams and flow into major tributaries; the Mohawk, McKenzie, Middle Fork Willamette, Row, Coast Fork Willamette, and Long Tom Rivers. These rivers comprise the headwaters of the Willamette River as it proceeds to flow northward 186 miles to the Columbia River and then to the Pacific Ocean. The Headwaters region of the Willamette River are located within Lane County.

On its way to the Columbia River, the Willamette passes the state's three largest cities and through a valley population totaling nearly 2 million people (DEQ, 2004). In the next 45 years, an additional 1.7 million people are expected to be living on the land adjacent to the Willamette River and its tributaries (Sinclair, 2005). Current and future generations of Oregonians depend and will depend on the Willamette and its tributaries to provide water for drinking, industrial uses, sanitary functions, recreation, aesthetic enjoyment, fish and wildlife habitat, and many other purposes.

Functional water resources are essential to protecting the future health and prosperity of the Willamette Valley. The Oregon Department of Environmental Quality (DEQ) has set water quality standards for the waterways in the region to protect beneficial uses such as drinking, fishing, swimming, fish spawning, and irrigation. Streams, lakes, and rivers that do not meet these standards are included on the statewide 303(d) list of impaired waterbodies. 303(d) refers to a section of the Clean Water Act of 1972 that requires states to identify and list water bodies that do not meet the State's water quality standards.

2.1 Overview of TMDL Requirements

The Clean Water Act of 1972 "authorizes the U.S. Environmental Protection Agency (EPA) to 'restore and maintain the physical, chemical, and biological integrity of all waters of the nation'" (DEQ, 2004). In response to the Clean Water Act, the EPA designated state agencies to develop water quality standards, perform water quality monitoring to understand current conditions, determine sources of pollution, and develop TMDLs as a tool to improve water quality. As a component of the overall effort to protect and restore the beneficial uses of Oregon's waterbodies, DEQ issued TMDLs for the entire Willamette Basin.

The TMDL process begins when a stream, lake, or river does not meet water quality standards and is classified as water quality-limited on the state's 303(d) list. TMDLs identify the maximum amount of a specific pollutant that can be present in a water body without violating water quality standards. This is known as the loading capacity. After extensive water quality monitoring and modeling efforts, TMDLs establish the difference between the loading capacity and the current pollutant load. TMDLs are expressed as numeric standards or percent pollutant reductions that need to be met to bring water bodies into compliance with water quality standards. The difference between the current load and the loading capacity is known as excess load (DEQ, 2004).

The excess load is split up between the different sources of pollution according to their contribution to the overall pollution load. Any difference between the waterway's loading capacity and the current pollutant load must be mitigated by pollution reduction activities. DEQ develops wasteload allocations for point sources such as wastewater treatment plants and industrial discharges. They develop load allocations for non-point pollution from agricultural, urban, and forestry lands such as erosion, animal wastes, and stormwater.

The Oregon Administrative Rule (OAR 340-042-0080) that addresses TMDLs requires local governments and other agencies to develop TMDL Implementation Plans. Responsible parties that are able to implement pollution reduction strategies are classified as Designated Management Agencies (DMAs). In the Willamette Basin, DMAs include federal agencies such as the Bureau of Land Management, state agencies such as the Department of Forestry and the Department of Agriculture, counties, cities, and others. According to OAR 340-042-0080, TMDL Implementation Plans must include the following five elements:

1. Management strategies that will be used to achieve load allocations
2. A timeline and schedule to achieve measurable milestones
3. A plan for periodic review and revision of the implementation plan
4. Evidence of compliance with applicable statewide land use requirements
5. Any other analyses or information as specified in the Water Quality Management Plan

The Oregon Department of Agriculture (ODA) is working with farmers to address contributions from farmland, the Oregon Department of Forestry (ODF) is addressing contributions from forestland, and federal land management agencies including the Bureau of Land Management (BLM) and US Forest Service (USFS) are implementing TMDLs according to their internal procedures. Point sources, such as wastewater treatment facilities will be addressed through their individual permitting processes. Cities and counties must address contributions through the development of Implementation Plans.

2.2 TMDL Parameters

Temperature, bacteria, and mercury are the three parameters identified by DEQ as a major concern that are included in all of the Willamette Basin TMDLs. Although other parameters, including dissolved oxygen and toxics such as arsenic and lead are described in the subbasin TMDLs, the three major pollutants identified above are the ones addressed directly throughout the entire Willamette Basin and are the pollutants that must be addressed by this Implementation Plan.

A brief summary of these three TMDL parameters is provided in Appendix 2, but more in-depth information on these parameters and the processes used to develop the TMDLs can be found in Chapters 2, 3, and 4 of the Willamette Basin TMDL (DEQ, 2006). The summaries below include basic information about the characteristics of the parameter, the potential sources of each pollutant, waterways in the region that do not meet water quality standards for each pollutant, and a brief list of potential strategies to address each parameter.

3.0 **Geographic and Landscape Setting**

3.1 Lane County

Lane County extends from the Pacific Ocean to the Cascade Mountains. Lane County's population continues to grow at a steady rate. The county's population grew at an average of 1.4 percent per year over the 30 years period from 1970 to 2000, and at approximately .7 percent per year from 2000 through 2006, to 337,870 persons.¹ At a 1.1 percent rate of growth, by 2030 the population is projected to increase by 22.9 percent or 430,454 people in Lane County.² While Lane County's population as a whole is growing, its unincorporated areas are shrinking both in size and number of people, as cities annex more land that is inside their Urban Growth Boundaries and as more people move to cities. This trend has been happening since the mid 1980's. In 1960 there were roughly equal numbers of people living in Lane County's unincorporated areas as in its cities, and population growth continued in both rural and urban areas for the next 20 years. From 1980 to 2000 the unincorporated area population decreased by .2 percent. In addition, due to local economic prosperity during the 1990's, and to a lesser extent during this decade, more people began moving here from outside the state and from other counties. From 2000 to 2006 there was a 3 percent decrease in the County's unincorporated area population, with all of the 5.2 percent net increase occurring within cities.³

Adverse impacts to water quality as a result of population increases and continuing urban development may include increased impervious surface areas that may contribute more pollutants through the associated increase in runoff and loss of infiltration capacity. Development within the floodplain may also impact wetlands that provide critical ecological functions by filtering pollutants out of surface water prior to discharging into water bodies and providing riparian shading along temperature-impaired waters as described above. By implementing the strategies contained in this

¹ U.S. Census Bureau, American Fact Finder

² Oregon Office of Economic Analysis, Department of Administrative Services, April 2004

³ U.S. Census

plan, Lane County expects to reduce adverse impacts to water quality within its jurisdiction. This plan will be reviewed periodically to ensure that the protective mechanisms suggested are indeed addressing the water quality concerns in Lane County.

Please refer to the maps of the Willamette Basin TMDL areas within Lane County provided in Appendix 1. The mapping highlights streams/water resources within the County area. Publicly owned lands shown on the map may provide “opportunity areas” for working with other DMA’s and applying demonstration projects and/or conducting restoration activities.

3.2 Headwaters Region of the Willamette Basin

The majority of the Lane County portion of the Willamette Basin can be considered the Headwaters region of the entire Basin because it forms the southernmost, furthest upstream area of the Basin. There are four subbasins within the Headwaters region. A small percentage of northern Lane County is located downstream from the Headwaters region, and is considered to be within the Upper Willamette River subbasin. Understanding the characteristics and unique issues in each subbasin assists in coordinating efforts among DMA’s and identifying opportunities for the region as a whole.

The Headwaters region encompasses 3,769 square miles and is home to approximately 300,000 people. There are eight incorporated cities outside the Eugene-Springfield metropolitan area in the Lane County Headwaters region. There are approximately 224,306 people living in the Eugene-Springfield Metro area, approximately 27,660 people living in the other eight urban incorporated areas ((Lane Council of Governments & PSU Population Research Center, 2004), and 56,733 rural residents living in unincorporated areas outside Urban Growth Boundaries (Lane Council of Governments, 2000).

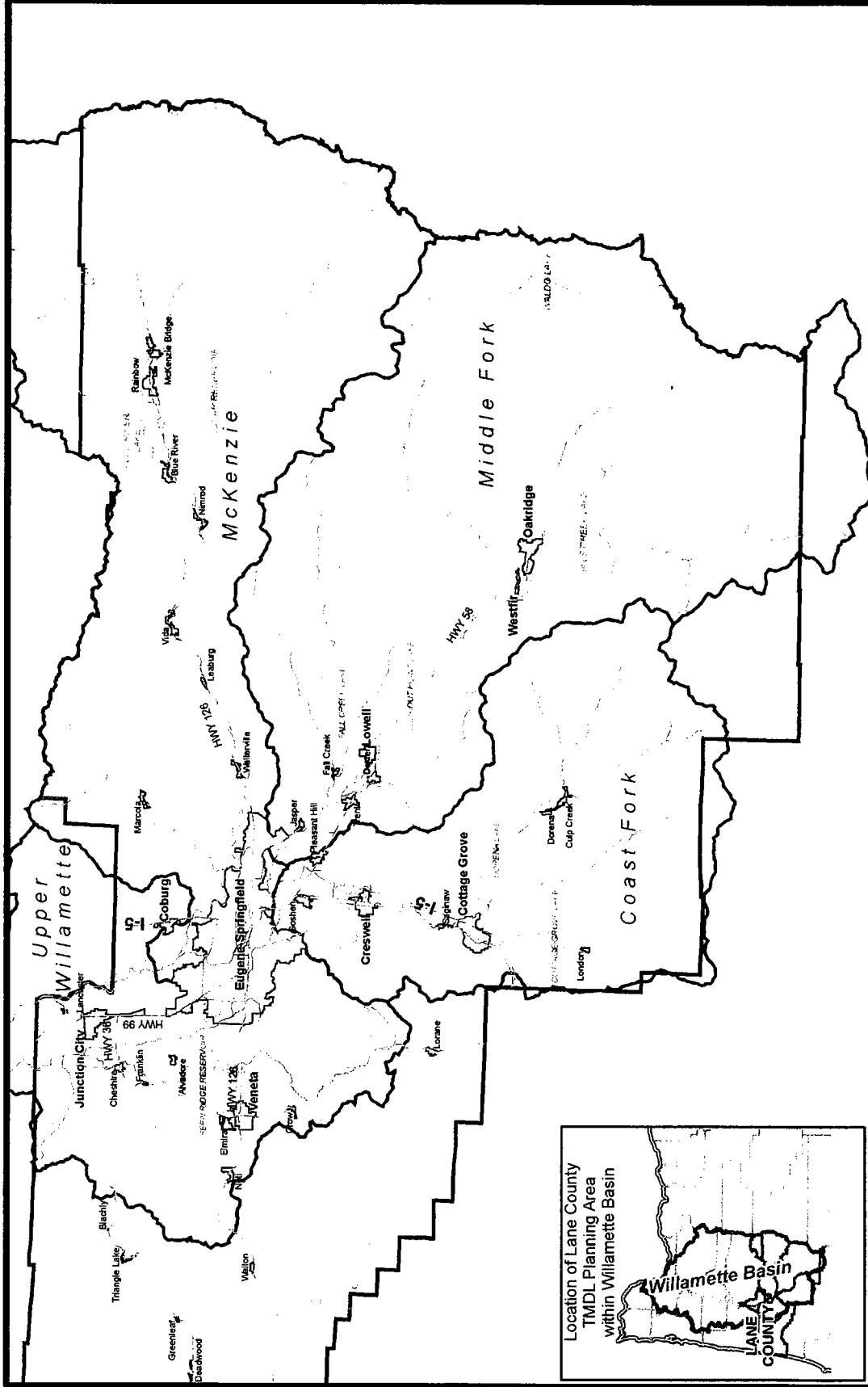
The McKenzie, Middle Fork Willamette, Coast Fork Willamette, and the Long Tom River subbasins contain thousands of waterways that are impacted by adjacent land uses. There are many different types of waterways in this region including a network of higher elevation rushing forest streams, channelized urban stormwater conduits, agricultural irrigation ditches, rural roadside ditches, mid-sized tributary rivers, and the beginnings of the broad, meandering Willamette River. The surrounding land uses are also very diverse. Table 3 shows the land area for each of the subbasins.

Table 3: Subbasin Land Area in Lane County & Lane County Willamette Basin TMDL Management Area

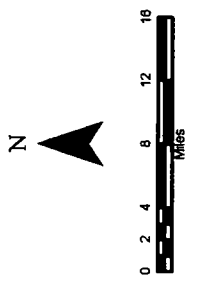
Subbasin	Area (square miles)	Lane County Willamette Basin TMDL Management Area (square miles)
Coast Fork	666	39
Middle Fork	1,355	17
McKenzie	1,338	26
Long Tom portion of the Upper Willamette	410 (includes some land outside Lane County)	66
<i>Total</i>	<i>3,769</i>	<i>148</i>

Sources: Willamette Basin TMDL Chapters 10,11,12,13, Long Tom Watershed Council, & Lane County GIS Department.

These four subbasins are a patchwork of ownership and land use. The higher elevations on the western slopes of the Cascades are mostly federally managed forestland. Rural residential settlement has followed the river valleys of the Mohawk, McKenzie, Middle Fork, Coast Fork, Long Tom, and other smaller valleys. Near the Middle Fork and Coast Fork confluence and the Willamette and McKenzie confluence, the Eugene-Springfield Metro Area urban settlement dominates the landscape.



MAP PRODUCED BY:
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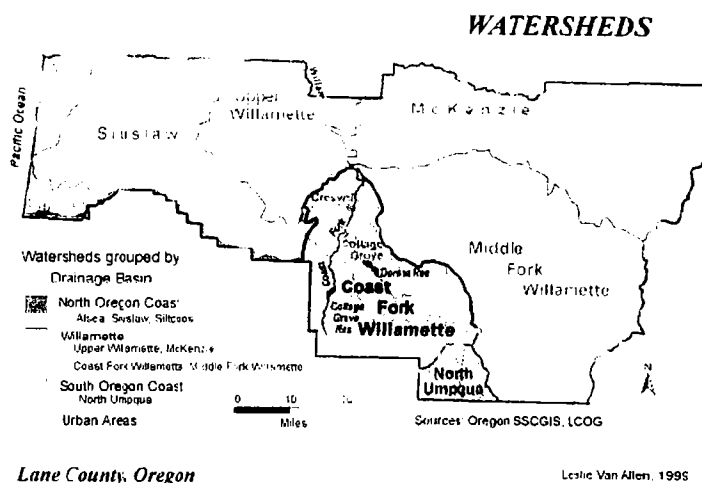


- Stream
- 303(d)-Listed Stream (2002 Data)
- Highway
- Subbasin
- Lane County
- Urban Growth Boundary
- Unincorporated
- Community

Lane County TMDL Planning Area

3.3 Coast Fork Willamette River Subbasin

The Coast Fork subbasin is the southernmost portion of the Willamette Basin located within portions of Lane and Douglas counties, and includes the cities of Creswell and Cottage Grove. BLM and USFS administer much of the upland area within the 666 square miles of the subbasin, although a majority of the land in the subbasin is privately owned. The land use is primarily forestry, with agriculture and urban land uses near the mainstem Coast Fork Willamette River. The Coast Fork Willamette River is a source of drinking water for the City of Cottage Grove.



The Coast Fork subbasin contains eight waterbodies that have been listed on DEQ's 303(d) list because the quality of the water does not meet temperature standards. These waterbodies include Brice Creek, King Creek, Layng Creek, Martin Creek, Mosby Creek, Row River, Sharps Creek, and the Coast Fork Willamette River. The Row River and Coast Fork segments below Cottage Grove and Dorena Reservoirs exceed temperature criteria year round and are dealt with as sections of the Mainstem Willamette River system.

Heat loads in waterways come from natural background sources, point sources, and non-point sources. Causes of elevated summer stream temperatures include increased solar radiation due to lack 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; lack of side channel and wetland habitat, which sustain summer streamflows and provide cool water inputs; and changes in natural sediment loads contributes to bank erosion and stream channel widening. Currently, the following percentages of the thermal load in these rivers are from non-point sources (DEQ, 2006).

- Coast Fork: 25 percent
- Mosby Creek: 28 percent
- Row River: 37 percent

DEQ will measure temperature reductions by the amount of streamside vegetation restored to system potential levels. Although the Coast Fork Willamette is likely to be removed from the 303 (d) list for bacteria, jurisdictions within the subbasin still intend to meet planning targets for the reduction of bacteria and mercury contributions.

Watershed Descriptions

Row River Watershed

The Row River Watershed is located approximately 20 miles southeast of Eugene and is the principal tributary of the Coast Fork Willamette River. The Row River watershed drains a 375 square mile (239,999 acres) area. The Dorena Dam impounds the river at river mile (RM) 7.5, forming Dorena Reservoir. Several major tributaries flow directly into Row River and include Layng, Brice, Sharps, and Mosby Creeks. Mosby Creek is the only major tributary to flow into Row River below the Dorena Reservoir spillway. Three small unincorporated communities exist within the watershed boundaries: Disston, Culp Creek, and Dorena with part of the City of Cottage Grove stretching into the western portion of the watershed.

Coast Fork Watershed

The Coast Fork Watershed is located in portions of Lane and Douglas counties. Most of the city of Cottage Grove is also located within this watershed. The watershed covers 152 square miles (97,420 acres), of which approximately one-third is managed by BLM. Cottage Grove Dam is operated by the U.S. Army Corps of Engineers (USACE) and is located on the Coast Fork Willamette River at RM 28. Elevations in the watershed vary from a low of 720 feet above sea level in the city of Cottage Grove to a high of 4,347 feet at Burnt Mountain.

3.4 Middle Fork Willamette River Subbasin

The Middle Fork Willamette Subbasin is located in the south eastern portion of the Willamette Basin, spanning Lane and Douglas Counties.

Approximately 1312 square miles of the 1,355 square mile (867,110 acres) subbasin are located within Lane County, and includes the cities of Lowell, Westfir, Oakridge, and a portion of Springfield, Map 12.2. The Subbasin includes 10 watersheds that contribute to the Middle Fork Willamette River, which has a confluence with the Willamette River at its mouth at RM 186.

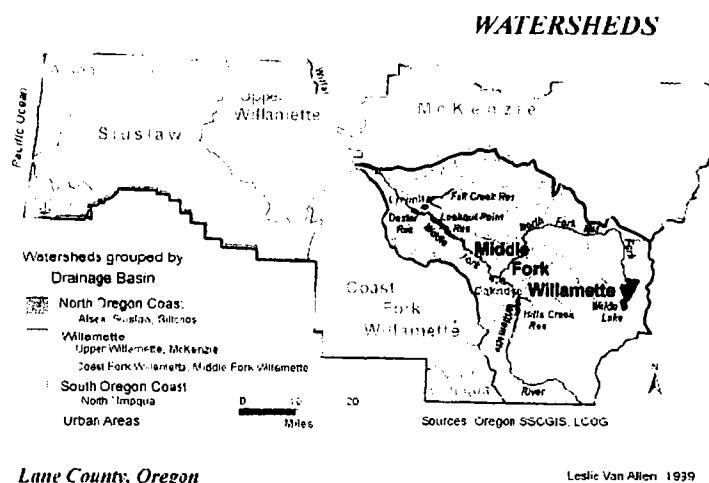
The subbasin is dominated by forested land use with some agriculture and residential land use near the mouth of the subbasin. Ownership is about 85% Federal, most of that managed by the Willamette National Forest (USFS) and the Eugene Bureau of Land Management (BLM). Small, private landholders and industrial timber companies operate throughout the remainder of the subbasin.

The Middle Fork Willamette Subbasin stream segments listed under section 303(d) exceed water quality criteria for temperature and dissolved oxygen. The Middle Fork Willamette River Subbasin contains 17 waterbodies that have been listed on DEQ's 303(d) list for temperature. These waterbodies include Anthony Creek, Bohemia Creek, Coal Creek, Fall Creek, Hills Creek, Little Fall Creek, Lost Creek, Middle Fork Willamette River, Mike Creek, North Fork Middle Fork Willamette River, Packard Creek, Portland Creek, Salt Creek, South Fork Winberry Creek, two Unnamed Waterbodies, and Winberry Creek. Additionally, segments of Anthony Creek and Lost Creek are listed as water quality limited for dissolved oxygen, a water quality parameter identified as a pollutant, but not fully addressed within the current Willamette Basin TMDL.

This description of the Middle Fork Willamette River Subbasin only includes TMDLs for rivers and streams upstream of Dexter Reservoir and Fall Creek Reservoir. For the portion of the Middle Fork Willamette River from the mouth to river mile (RM) 15.6 (Dexter Reservoir) and Fall Creek from the mouth to RM 7.0 (Fall Creek Reservoir), the temperature analysis is included in the mainstem Willamette River TMDLs, see Chapter 4 of the Willamette Basin study.

The Middle Fork Willamette Subbasin has four USACE reservoirs, Fall Creek Reservoir, Dexter Reservoir, Lookout Point Lake, and Hills Creek Lake. Waldo Lake, located in the North Fork of the Middle Fork Willamette watershed, is the only large natural lake in the Lane County portion of the subbasin. The subbasin provides habitat for these species of interest, bull trout, spring Chinook, summer steelhead and winter steelhead. There are two real-time USGS flow monitoring stations on the Middle Fork Willamette River, one near Dexter and one at Jasper.

In March 2003, the Oregon Department of Agriculture (ODA) reported that there were no confined animal feeding operations (CAFO's) in the Middle Fork Willamette Subbasin. In April 2003, the Oregon DEQ NPDES database

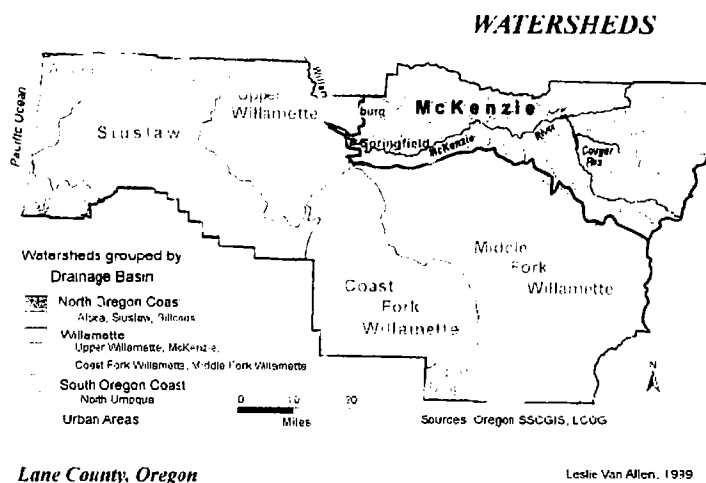


identified a total of 19 NPDES permits in the subbasin, 14 are general NPDES permits and five are individual NPDES permits. Three NPDES permitted point sources have the potential to affect temperature and discharge to the Middle Fork Willamette subbasin streams addressed in this chapter. These are the NPDES domestic permits for Oakridge and Westfir WWTP and one industrial NPDES permit for the CRS Corporation. Eight NPDES point sources discharge to the lower Middle Fork and are within the geographic scope of the Willamette mainstem temperature TMDL, see Chapter 4 of the Willamette Headwater Water Quality Assets, Gaps, and Opportunities Study. The remaining eight point sources were determined to not have the potential to affect stream temperature. This conclusion was based on rationale presented in the “Waste Load Allocations in Small Streams” section on page 12-21 of the Study.

Both Fall Creek and the North Fork Middle Fork Willamette River show signs of low riparian density that could be having a negative impact on temperature. These subbasin streams provide opportunities for riparian vegetation restoration with Lane County partners and willing land owners, and as stand alone projects on County-owned lands, such as tax foreclosed properties, parks, and surplus road right-of-way.

3.5 McKenzie River Subbasin

The McKenzie Subbasin is located in the southeast portion of the Willamette Basin with tributaries that flow to the Willamette River at river mile (RM) 171.8. The subbasin’s 1,338 square miles (856,466 acres) extend from the Cascade Mountains on the east to the Willamette River. The subbasin includes the following seven watersheds: Blue River Watershed, Horse Creek Watershed, Lower McKenzie River Watershed, McKenzie River / Quartz Creek Watershed, Mohawk River Watershed, South Fork McKenzie River Watershed, and Upper McKenzie River Watershed.



The McKenzie River Subbasin pollutants reported in stream segments listed under section 303(d) of the federal Clean Water Act (CWA) that are exceeding water quality criteria are temperature and dissolved oxygen. The McKenzie River Subbasin contains 9 waterbodies that have been listed on DEQ’s 303(d) list because of temperature standards. These waterbodies include Blue River, Deer Creek, French Pete Creek, Horse Creek, McKenzie River, Mill Creek, Mohawk River, Shotgun Creek, and an Unnamed Tributary to Rebel Creek. Additionally, a segment of the Mohawk River (RM 0 to RM 25.4) is listed as water quality limited for dissolved oxygen, which is not yet covered under the Willamette TMDL.

TMDLs for the McKenzie River downstream of the South Fork McKenzie, lower Blue River and lower South Fork McKenzie are found in Chapter 4 of the Willamette Basin TMDL document.

The subbasin’s political jurisdiction includes portions of Lane and Linn counties. The city of Springfield is the largest city in the subbasin, however there are many smaller unincorporated communities within the McKenzie Subbasin: Thurston, Walterville, Deerhorn, Nimrod, Leaburg, Rainbow, Marcola, Vida, and McKenzie Bridge. The subbasin is owned by numerous private land owners, however the Bureau of Land Management (BLM) manages land downstream of Cougar and Blue River reservoirs, and the United States Forest Service (USFS) primarily manages the land upstream of Cougar Reservoir and Blue River Reservoir. The land use at the higher elevation is primarily forestry. The lower watershed valley floodplain is owned by private landowners, and agricultural, commercial and residential development is dominant.

Currently, the following percentages of the thermal load in these rivers are from non-point sources (DEQ, 2004).

- Blue River: 40 percent
- McKenzie River 15 percent
- Mohawk River: 40 percent
- South Fork McKenzie: 36 percent
- Upper McKenzie: 19 percent

DEQ will measure reductions by the amount of streamside vegetation restored to system potential levels.

McKenzie River Subbasin Watershed Descriptions

Mohawk Watershed

The Mohawk Watershed drains 165 square miles (106,135 acres) on the west slope of the Cascade Mountain Range and encompasses mostly rural areas of Lane County. The unincorporated communities of Donna, Marcola, Wendling, and Mable are located within the watershed. Forested areas within the uplands of the watershed are owned primarily by industrial timber companies. The Mohawk Watershed Partnership (2000), BLM and Weyerhaeuser Company (1994) have completed Watershed Analyses specific to the Mohawk Watershed. The Lower Mohawk is identified in the McKenzie River Subbasin Assessment (McKenzie Watershed Council, 2001) as a key sub-watershed for aquatic habitat restoration priorities. Rural development and agricultural areas consisting of pasture, hay, and small woodlot operations dominate the lower watershed.

Blue River Watershed

The Blue River Watershed drains a total of 87 square miles (55,851 acres) of land. Most of the area is administered by the U.S. Forest Service; and 3% of the watershed is within private ownership (Willamette Headwaters: Water Quality Assets, Gaps, and Opportunities Study, *Working Draft, October 2007, LCOG*). Blue River Dam and Reservoir are on Blue River. Riparian conditions on Blue River have been degraded due to road related failures, timber harvest within riparian areas, and yarding logs down channels. Management related debris slides are documented in the Blue River and South Fork McKenzie Watershed Analyses prepared by the Blue River Ranger District. For many streams, this translates to less shade and more large woody debris available in this watershed compared to historic times. In some sub-watersheds, riparian areas that were once dominated by conifers are now extensive hardwood stands.

South Fork McKenzie Watershed

The South Fork McKenzie River drains 213 square miles (136,523 acres). Ninety seven percent (97%) of the land base is managed by the federal government, the USFS manages 94% of the land, and 3% is managed by USACE. Cougar Dam and Reservoir are on the South Fork McKenzie. Riparian vegetation and channel morphology have been degraded on the South Fork McKenzie much like Blue River.

Upper McKenzie Watershed

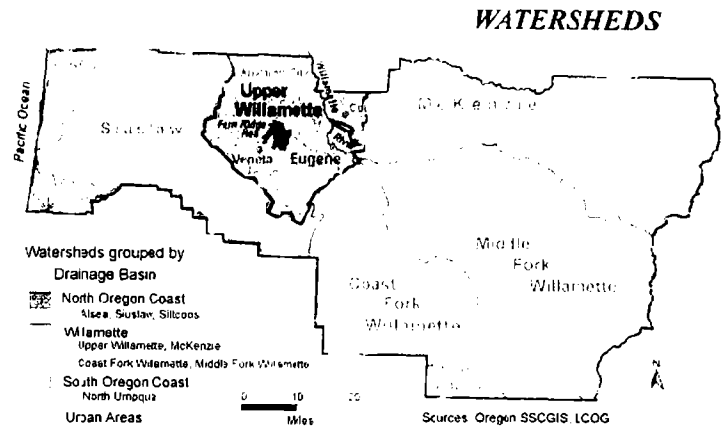
The Upper McKenzie Watershed encompasses 348 square miles (222,728 acres). McKenzie Bridge is the largest unincorporated community in the Upper McKenzie Watershed.

Horse Creek Watershed

The Horse Creek Watershed encompasses 156 square miles (100,357 acres). Horse Creek's headwaters are in the wilderness area. Much of the watershed is managed by the USFS but the lower portion is rural residential.

3.6 Upper Willamette River Subbasin

The Upper Willamette Subbasin has stream segments listed under section 303(d)1 of the federal Clean Water Act (CWA) that are exceeding water quality criteria for temperature, bacteria, dissolved oxygen, turbidity and toxics. Total Maximum Daily Loads (TMDLs) for the applicable TMDLs, temperature and bacteria are developed based on information for these parameters. Dissolved oxygen, turbidity and toxics levels and concentrations could be benefited by implementation measures for the applicable TMDLs.



Lane County, Oregon

Leslie Van Allen 1999

The Upper Willamette Subbasin (Hydrologic Unit Code 17090003) is located in the southwest portion of the Willamette Basin with tributaries that flow to the Willamette River. The subbasin's 1,861 square miles (1,190,770 acres) extend from the Coburg foothills of the Cascade Mountains on the east to the Coast Range foothills on the west. The subbasin includes the following six watersheds that cross four counties, Calapooia River Watershed, Long Tom River Watershed, Luckiamute River Watershed, Marys River Watershed, Muddy Creek Watershed, and Oak Creek Watershed. Land use within the Basin is primarily agriculture in the low-land valley, scattered urban developments in the valley, and forestry in the upper subbasin.

The Upper Willamette subbasin crosses many political boundaries and contains a number of different land uses. The Lane County boundary covers the southernmost third of the subbasin with the rest of the land extending northward into Linn, Benton, and Polk counties. The majority of the land in the Lane County portion of the Upper Willamette subbasin is within the Long Tom watershed, and the eastern edge of the subbasin contains the urban fringe of west Eugene. Amazon Creek and its associated channels drain this urban area into Fern Ridge Reservoir and the Long Tom River. Veneta, Coburg, and Junction City are the other cities in the Lane County portion of this subbasin. Forested land is predominant from the foothills to the crest of the Coast Range along the western edge of the subbasin. A number of small farms exist in the areas where foothills give way to the valley floor.

Key Watershed Descriptions

Long Tom Watershed

The Long Tom Watershed accounts for 410 square miles (262,000 acres) originating on the eastern side of the Coast Range at the southwestern end of the Willamette Valley (Thieman, 2000). Land use in the watershed includes a mixture of forest land, small farms and small incorporated communities. The upper and lower Long Tom watersheds are divided by Fern Ridge Reservoir. Coyote and Amazon Creek drain the southern and eastern portions of the upper basin, and also flow into Fern Ridge Reservoir. The lower Long Tom River is approximately 25 miles long with flows regulated by Fern Ridge Reservoir. It joins the Willamette River at two locations outside Lane County, the original northern confluence and the channelized southern confluence at Norwood Island. Upper Amazon Creek is diverted to Fern Ridge Reservoir via Amazon Creek Diversion channel. The Lower Amazon Creek does not enter the lake.

Coyote Creek Watershed

Coyote Creek Watershed drains 104 square miles (66,600 acres) of land. Land use in this area is a mixture of forestry, agriculture, and rural residential land, although land zoned for forestry still covers the majority of the drainage (Thieman, 2000). The watershed also has many impoundments, which aside from Fern Ridge Reservoir, appear to be small agricultural impoundments used for livestock watering, fishponds or unspecified domestic use. Coyote Creek

Watershed has been degraded primarily due to a removal of trees in riparian areas that once were densely forested. This activity has resulted in reduced shade and large woody debris (LWD) available in this watershed compared to historic times. Remnants of forests still exist along the streams in the Coyote Creek Watershed, but they have been greatly reduced.

Muddy Creek Watershed

Muddy Creek is a 125-square mile watershed located within western Oregon's Willamette River Basin in between Corvallis and Eugene, Oregon. Forestry and agriculture are the dominant uses of land in the area. Upland areas are primarily forested; the midlands largely Christmas tree farms, and the lowlands contain a mix of grass seed farming and urban development.

Marys River Watershed

A very small portion of the Marys River Watershed extends into northern Lane County. The Marys River Watershed is located along the east side of the Coast Range in western Oregon. The watershed encompasses 310 square miles (198,000 acres) with land uses consisting of upland forest area, a valley agriculture area, and a downstream urban area. The headwaters of the watershed drain the highest point in the Coast Range, Marys Peak at 4,200 feet elevation, and flows into the Willamette River in the city of Corvallis at 250 feet elevation.

4.0 Water Resource Assets and Gaps

The Headwaters region of the Willamette River is critical to the maintenance and restoration of clean water throughout the Willamette Basin because it is located in the upper portions of the Basin. Lane County is already doing many things to protect and restore water quality. Additional actions are identified in this Implementation Plan that will continue to protect waterways and prevent further water quality degradation.

Along with other jurisdictions, Lane County completed a Gaps Analysis Worksheet (see Appendix 3) that was used to initiate the information gathering and planning process necessary to meet the Willamette Basin TMDL requirements. LCOG worked with DEQ and regional partners to complete the data gathering and conduct the analysis required to complete a comprehensive inventory of water quality related programs and policies in the County. The gaps analysis is described in the companion report, *Willamette Headwaters: Water Quality Assets, Gaps, and Opportunities Study (Working Draft, October 2007, LCOG)*, which helped identify where both assets and gaps exist throughout the County. The worksheet provides a mechanism for the DMA's to:

1. Develop a record of all water quality-related activities currently underway in the jurisdictions of Lane County
2. Utilize this record of activities to identify water quality protection assets and gaps
3. Prioritize efforts of the DMA's, individually and collectively, to fill gaps for Lane County
4. Identify opportunities and commonalities between DMA jurisdictions in Lane County

4.1 Assets

Many existing water quality efforts within Lane County are integrated into a wide variety of established programs and ordinances. Table 4 displays an inventory of water quality related measures and documents that are currently integrated Lane County's Best Management Practices, policies and procedures, and educational programs provided to both staff and people who use Lane County facilities and programs

Table 4: Lane County Existing Water Quality Related Program and Policy Inventory

Existing Programs, Ordinances, and Practices
Pet waste pick-up guidance & ordinances (Lane Code 6.585 & 7.140)
Illicit discharge standards (Lane Code 5.747)
Illegal dumping standards (Lane Code 5.740-5.745, 6.535, & 9.030)
Roadside vegetation management and last resort herbicide use policy (Lane Code 15.500 to 15.530)
Riparian modification standards (Lane Code 16.253)
Public Road and Right of Way Drainage Policy (Lane Code 15.515)
Erosion standards within Metro boundary (Lane Code 9.945)
Tree conservation and protection standards (Lane Code 9.90)
Floodplain modification standards (Lane Code 16.244 & 10.271-05-45)
Willamette River greenway modification standards (Lane Code 16.254 & 10.322-01-95)
Natural resource district (Lane Code 16.213 & 10.250-05-75)
Grading, excavation and clearing (Lane Code 16.005)
County employee training programs ("Short School", etc.)
Lane County Waste Management hazardous waste collection and education program (annual hazardous waste rural round-up events)
Routine Road Maintenance BMP's, including use of stormwater oil/water separator filters
Public notified of high bacteria overflow events
Stormwater Map
Septic system setback requirements
New or extended septic system inspection and approval
Integrated Vegetation Management Program and Vegetation Management Advisory Committee
Leaf pickup program
Stormwater maintenance program
Culvert replacement program with watershed councils
Existing Documents
Lane County Comprehensive Plan Rural Areas [Comprehensive Plan] (1983 & adopted in 1984)
Eugene-Springfield Metro Area General Plan (1982, Updated in 1991 & 2004)
Lane County Stormwater Management Plan (2004)
Lane County Wildlife Habitat Assessment (1980)
McKenzie River Septic System Assistance Project Implementation Plan (EWEB, 2007) (Partner Involvement)
ESA Limit 10 Routine Road Maintenance BMPs
Lane County Routine Road Maintenance BMP Manual
NPDES Phase II permit
Stormwater System Map
Lane County Land Use and Development Code
Parks and Open Space Master plan Update

4.2 Gaps

As a result of existing water quality programs and activities, many water quality protection improvements have been made and are identified as assets. Specific water quality gaps have been identified through the gaps analysis and a review of related water quality materials including the Willamette Basin TMDLs. Analysis of existing policies and programs suggests that Lane County should emphasize non point sources and focus on stormwater planning and

management, education and training, riparian area management, and septic system management. Some aspects of these efforts can be integrated into other existing plans and programs.

LCOG's analysis of the level of priority for actions shown on the following table was determined by comparing the inventory of existing water quality-related programs and policies to the strategies identified in DEQ's Water Quality Management Plan. Priority rating also considers the fact that temperature is the most prevalent pollutant within the County subbasins. The table below outlines the focus areas that are of special concern for Lane County. The table assigns a high, medium, or lower priority to seven major focus areas using the methodology described above.

Table 5: Pollutant Reduction Focus Areas for Lane County

Strategy Category	Priority Rating
Septic System Management	High
Education/ Training	High
Stormwater Planning and Management	High
Riparian Protection and Restoration	Medium
Erosion Control	Medium
Illegal Discharge	Medium
Animal Waste Management	Medium

5.0 Implementation Strategies

Because of the high number of 303(d) streams listed for temperature that are within the Lane County DMA portion of the Willamette Basin, the County emphasizes strategies to reduce heat loading on all tributaries and major streams. Lane County has selected a package of strategies that will lead to meeting the following objectives:

- reduction of heat loads to less than .05 degrees,
- meeting a planning target of 80-94 percent reduction in bacteria loading, and
- minimization of mercury contributions.

Lane County compared the results of the gaps analysis with potential actions to undertake that will minimize pollutants of concern. The lists of potential actions in the current conduct of business and enhanced measures that are under consideration to include as funding and resources are realized, are shown on the summary table in Appendix 4. This matrix shows the entire range of potential water quality protection actions that Lane County will pursue to reduce contributions of heat, bacteria, and mercury to Willamette Basin waterways. Following is an overview of the water quality protection actions categorized by focus areas.

5.1 Riparian Protection and Restoration

When the Willamette Basin TMDL process was initiated, Lane County already had a riparian protection mechanism in place. Section 16.253, Riparian Regulations of Lane Code stipulates that a minimum of seventy-five percent (75%) of the total area within the riparian setback area of any legal lot shall remain in an unaltered, indigenous state except as provided in LC 16.253(2)(b)(i) and LC 16.253(5)(b) below; and that removal of existing vegetation from within the riparian setback area of any legal lot shall not exceed the shoreline linear frontage and square footage limitations, calculated based upon a variety of factors such as parcel size, location, and proposed activity. The Lane County GIS

department has developed stream data layers and tax lot information for use in implementing the riparian components of the development code and to educate users about the location of the protection zone.

Lane County will strive to maintain existing shading vegetation within riparian areas. In addition to continued implementation of Lane Code 16.253: Riparian Setback Requirements, the County could review the permit process periodically to look for ways to improve strategy effectiveness. Code requirements are enforced and the number of violations are tracked.

As opportunities arise, Lane County will strengthen relationships with regional watershed councils to participate in educational opportunities, riparian tree plantings and other projects that benefit non point stormwater management within the Willamette Basin. County staff could participate in meetings, identify mutual priorities, and pursue partnership projects as staffing and budgets allow. County involvement with watershed councils can be tracked and recorded annually through the number of projects, summary of project details, and/or the number of County staff hours dedicated.

A successful example of a County – watershed council partnership is the on-going work with Mohawk Watershed Partnership to restore native riparian vegetation on a County-owned parcel that fronts the Mohawk River within the community of Marcola, Oregon. In addition to riparian planting projects, future partnerships with regional watershed councils may include activities to control highly invasive species, fish friendly culvert replacements, and streambank stabilization projects. Separate from these independent restoration partnerships, the County will continue to partner with regional watershed councils on County restoration projects and associated construction projects that require mitigation for riparian and wetland impacts. A potential future County - watershed council partnership includes restoring riparian habitat within the Mid-fork Willamette River watershed as part of the Bob Straub parkway project, adjacent to the City of Springfield's Urban Growth Boundary (UGB).

Additionally, Lane County will maintain the procedure of including watershed councils on public notice and agency referral lists for development projects within the County, and will continue opportunities for watershed council involvement in project design, implementation, mitigation, and monitoring. Project referrals to watershed councils and watershed council project interactions will be documented annually.

In accordance with Lane County's Routine Road Maintenance Best Management Practices (RRM BMP) Guide, the County will continue the policy of replanting equivalent riparian areas impacted by County public improvement projects with native trees and shrubs. Survival is monitored and if required, replacement plantings will be installed to achieve the desired coverage. Lane County will record number of riparian plantings projects implemented annually and will investigate implementation of a monitoring program that includes a database to track planting survivability and maintenance actions.

Within the Willamette Basin, Lane County has acquired and managed more than 97 acres of wetlands and waterways for mitigation within the last 10 years. Many of the County's wetland and riparian restoration activities associated with construction projects require the implementation of protection instruments (i.e. conservation easements), which outline commitment of restoring and preserving the natural areas in perpetuity. As part of this implementation strategy, Lane County will determine the feasibility of retaining or creating easements for County-owned critical riparian areas proposed for sale as tax foreclosed properties by establishing a framework to review and identify critical riparian areas. Lane County will evaluate the parcels for highly functioning and valued environmental attributes. If County-owned critical lands are identified, the County will develop a protection memorandum and retain the parcel.

5.2 Animal Waste Management

Lane County has existing pet waste pick-up ordinances (Lane Code 6.585 & 7.140) that encourages compliance through regulation and distribution of educational materials. County / Public areas outside the Metro area and within the Willamette Basin that currently have pet waste stations include Armitage Park, Baker Bay Park, Hendricks Bridge Park, Howard Buford Recreation Area (Mount Pisgah), Orchard Point Park, Perkins Peninsula Park, and Richardson Park. Lane County will review opportunities to bolster the existing Ordinance.

Lane County will maintain existing pet waste stations and signs in public areas (Parks), and review for opportunities to install new waste collection stations as funding allows. The County will continue to search out and apply for grant funding opportunities to supplement the existing pet waste program, and will document review of pet and animal waste station and signage program, including efforts to secure funding. As pet use in public areas increase, the County will continue to research opportunities to install additional pet waste pick-up stations. The stations will include signs and be stocked with bags. News releases will accompany the installation of any new stations to encourage citizens to use them.

Lane County will distribute educational materials outlining proper care of domestic & other animal waste at the Lane County Animal Services, Greenhill Humane Society, Lane County Fair booth, and other applicable community events. Distribution of pet and animal waste and water quality impact educational materials and information throughout the Willamette Basin TMDL planning area will be documented and the number of pet and animal waste educational materials developed and printed annually will be recorded.

5.3 Stormwater Planning and Management

Non point source stormwater planning and management is a primary focus of the County's TMDL efforts within the Willamette Basin. Lane County recognizes that actions taken to properly manage stormwater will reduce all pollutants, including those not directly addressed by the current Willamette Basin TMDLs. To highlight this focus, Lane County has implemented a stormwater treatment demonstration project and will determine the feasibility of installing interpretive signage. The County will document events where the demonstration project is discussed or displayed annually.

Lane County will continue implementation of Lane County's Routine Road Maintenance Best Management Practices (RRM BMP) manual and other educational guides that are used to keep staff informed of the most recent practices. Periodic updates to the RRM BMP manual will be published to include new stormwater BMP agency standards. Lane County will continue to train County employees on stormwater BMPs and will continue to sponsor at least one County employee training per year. Annual trainings to update and review BMP effectiveness will be documented annually.

Lane County will investigate the requirement of on-site water quality facilities in new development and research opportunities to develop a Lane County Stormwater Manual. To minimize bacteria and mercury contributions from stormwater discharge, Lane County will determine resources and costs associated with implementing stormwater management and erosion control policies within new and/or existing County ordinances. Code updates and/or the development of a new stormwater management ordinance would potentially require developers to submit stormwater management plans to the County for approval and provide specifications of how applicants must meet stormwater requirements. Any proposed Lane Code updates requiring the submittal of plans would strive to meet the following goals:

1. Protect and enhance water quality;

2. Meet State and Federal water quality standards;
3. Prevent property damage during floods and storms;
4. Reduce pollution and runoff;
5. Protect native plant species, and fish and wildlife habitats;
6. Conserve scenic and recreational values of open areas, including stream enhancement.

Documentation will be developed which outlines the feasibility of the actions. Evaluation of the staff report and subsequent management team recommendations will follow to determine the best course of action.

A formal partnership between The City of Eugene and Lane County, enacted in 2004, exists to address mutual stormwater concerns in the River Road/Santa Clara neighborhood outside Eugene's city limits and within the UGB. The main focus of the partnership is the development of the River Road/Santa Clara Stormwater Basin Master Plan. A stormwater basin master plan is necessary to plan for stormwater system improvements for this urbanizing area. The City of Eugene and Lane County are collaborating on a stormwater management strategy that reflects the complexity of the River Road – Santa Clara stormwater basin, which includes the following discharge points, or drainage systems: A-1 Channel, Flat Creek, Spring Creek, East Santa Clara Waterway, and the Highway 99 waterway. The River Road/Santa Clara Stormwater Basin Master Plan is currently in draft form and available on the Lane County Road Maintenance website. The final plan will include updated descriptions, data and maps describing the characteristics of the basin, a description of the stormwater-related problems and opportunities in the basin, a long term stormwater capital improvement plan for River Road – Santa Clara, and a description of proposed stormwater development standards & waterway protection measures.

5.4 Erosion Control

As identified within Section 5.3 (Stormwater Management and Planning) above, potential storm drainage and erosion control updates to the Lane Code are required to consider provisions for erosion control mechanisms in new developments. Potentially, Stormwater Management Plans, Sediment and Erosion Control Plans, and/or Grading Plans submitted by a developer to Lane County Land Management Division for approval will have to show consistency with the parameters set by DEQ under an enhanced Erosion Control Ordinance in the Code. For development activities that disturb one acre or more, Lane County Land Management Division will refer these developments to DEQ to ensure compliance with 1200-C requirements.

Existing development review procedures require that existing trees are being retained where possible in riparian areas, and other information and methods are used to limit runoff from the site. The County would need to determine resources and costs required to implement any updates to Lane Code, and identify a funding source. A staff report will be produced for the Lane County Board of County Commissioners for consideration. Any updates to Lane Code would be reviewed periodically to ensure consistency with current agency regulations and evolving erosion and sediment control technologies.

Activities to protect and restore riparian areas along with stormwater management strategies described in other sections will lessen the amount of land vulnerable to excessive erosion while also reducing the erosive action of runoff and the amount of sediment being transported. For public construction projects, Lane County will continue to implement erosion and sediment control BMPs. Annual reporting will include review of erosion and sediment BMPs on completed projects and incorporate new BMP measures as they become available. Lane County will track implementation of erosion and sediment control BMPs and document new erosion and sediment control BMPs researched and adopted annually

5.5 Septic System Management

Lane County will continue to apply and enforce Oregon Administrative Rule (OAR) 340-71 and OAR 340-73 as an agent of DEQ, pursuant to a contractual agreement established in 1981. Under the existing complaint based program, potential septic system failures are investigated and failures are resolved. Lane County tracks and records the number of investigations, failures and violations annually.

Lane County will continue to develop septic system management educational brochures to distribute to parties involved with septic system investigations and failures. Updates and revisions to brochure information will occur annually to ensure consistency with current agency regulations. Additionally, to reach a broader community base, the County will develop septic system management educational brochures to distribute with issued Lane County Building Permits. The number Septic System Management brochures distributed with building permits and distributed to parties involved in septic failure investigations will be recorded annually.

The County partners with local utilities, including Eugene Water and Electric Board (EWEB). They work with Lane County to implement the McKenzie River Septic System Assistance Project through participation in meetings and identification of mutual priorities, as budgets allow. County involvement in this activity and other utility partnership projects will be tracked by the number of County staff hours dedicated, meetings attended, and brochures distributed annually.

5.6 Illegal Discharge (including Household and Non-Household Hazardous Waste)

Existing enforcement and administration of illicit discharges within the Urban Growth Boundary (UGB) of the Cities of Eugene and Springfield is managed under Lane County's illicit discharge code (Lane Code 5.747). Illegal discharges for the rest of the County within the Willamette Basin are managed and reported on pursuant to the County's illegal dumping code language (Lane Code 5.740-5.745, 6.535, & 9.030): Technical support from the City of Eugene and City of Springfield is available upon request.

First responders for detection use procedures described by County BMP 497 (Detection of Illicit Discharge). Most often, illicit discharges are identified by routine maintenance activities or public complaints. If illegal dumping occurs, County maintenance employees typically remove the debris or contract out to hazardous waste handlers if the debris is not easily recognizable to be non-hazardous. Lane County will continue to track and record the number of illicit discharge and illegal dumping incidences / violations annually. Additionally, Lane County Waste Management employs a Nuisance Abatement Coordinator who is responsible of investigation, clean-up, and enforcement of Lane County illegal dumping and illicit discharge ordinances.

Lane County will continue implementation of the illicit discharge ordinance for the Eugene-Springfield UGB and the County-wide illegal dumping ordinance, including tracking and recording the number of illicit discharge and illegal dumping incidences / violations annually. Research outlining the benefits and constraints associated with enhancements to the existing illicit discharge and illegal dumping ordinances will be documented during monitoring of the Lane County Willamette Basin TMDL Implementation Plan. The County will continue seeking partnerships with local municipalities to encourage voluntary reporting of hazardous waste violations and to develop drainage system mapping that identifies point source outfalls and names of waterbodies that receive discharges from those outfalls. Drainage mapping efforts will provides flow data that will enhance existing spill response policies and procedures. Current focus of drainage mapping efforts has been within the River Road / Santa Clara of Eugene, where field inventory staff has been collecting GPS data for storm drain mapping. Future mapping efforts will involve a City of

Springfield partnership and their efforts to update their Stormwater Facility Master Plan. These storm system mapping efforts will be used in facilitating illicit discharge detection.

Lane County staff will continue to participate in a variety of trainings on storm water quality and illicit discharge detection, reporting, investigation, and enforcement. Lane County's bi-weekly road maintenance foreman's meetings will continue to be used as a venue to train, discuss and develop strategies for specific illicit discharge instances and educate all maintenance workers on illicit discharge protocols. Illicit discharge information will continue to be presented annually to Road Maintenance staff at the internal "Short School" training events. Additionally, all Lane County Public Works Road Maintenance Division Supervisors and Lead Workers will continue to attend an illicit discharge training each year, which provides certification to an operational response level.

Lane County, in cooperation with various agencies and watershed councils, will continue to host collection events aimed at providing opportunities for residents to safely dispose of household hazardous waste free of charge. Since 1986, Lane County Waste Management has provided Household Toxics Roundups and Business Collections, which are one and two day collection events. The events take place at different times of the year and at various collection locations throughout Lane County. This program is run through the Lane County Waste Management Division and supplements a free appointment-only collection of hazardous waste offered weekly at the Division's permanent household hazardous waste collection facility, located at the Glenwood Central Receiving Station. Customers at the Glenwood permanent facility are predominantly residents within and adjacent to the permit boundary. Lane County Waste Management Division publicizes its Household Toxics Roundups and other household hazardous waste collection programs. The methods include radio advertisements, press releases, printed schedules/brochures, Recycling Guide, 24-hour phone hotline, and the Lane County Waste Management Division website. Lane County will continue to hold annual hazardous waste collection events annually. The County will document the number of collection events held annually, as well as track the approximate amount of hazardous waste gathered at collection events annually.

In addition to the above mentioned collection program, the County will continue to operate recycling centers for recyclable hazardous waste, such as auto batteries, oil and oil filters, at its 16 solid waste transfer sites. Disposal sites also have load-check programs to capture hazardous waste disposed of in the solid waste stream. The load check program includes an extensive screening and educational effort to inform landfill users of the proper disposal options available.

Lane County will research opportunities to expand the Household Hazardous Waste Collection Program. Since the Household Hazardous Waste collection facility opened in 1998, the Waste Management Division has expanded hours of operation and plans to offer further expanded hours during peak seasons in the future. The Division has also expanded the number of rural collection events over the past several years, currently offering six events throughout the year at various locations.

Lane County will continue an existing program to capture products containing mercury before they enter the environment (landfills). The County will continue to offer annual collection events for households to recycle florescent light bulbs or other products containing mercury, continue accepting products containing mercury at Lane County's hazardous waste facilities, and continue the existing program to work within non-household businesses (i.e. labs, dentist offices, etc) to collect and recycle to work with dentists to recycle mercury products. The County will evaluate the existing hazardous waste program to look for opportunities to improve collection of products containing mercury from household and non-household sources, and continue to participate in grant opportunities to assist mercury collection efforts through Lane County Waste Management. Lane County will document collection events (i.e. rural hazardous waste roundup events, etc) carried out annually and track the collection of products containing mercury annually. Training provided to County hazardous waste handlers will be documented annually.

In addition to the collection of fluorescent lamps at County-sponsored hazardous waste events from both households and businesses, Lane County Waste Management has partnered with other agencies and retailers to provide free florescent lamp collection centers for households at 13 different retail facilities throughout the County. Costs associated with household florescent lamp collection and disposal is covered by the County. Additionally, the County provides education to retailers on proper procedures for bulb break clean-up, along with clean up materials and bags for collection.

Lane County Construction and Engineering Services and Waste Management Divisions will continue to distribute educational materials during the course of normal inspection duties, in addition to investigating complaints and responding to releases of hazardous materials.

Lane County Waste Management Division will continue to maintain an **extensive website** that provides information on waste reduction and recycling programs in order to conserve resources and **prevent waste**. Information on special and hazardous waste programs are offered to provide for the **environmentally responsible management** of hazardous wastes and to minimize risks. The website is updated monthly and **provides electronic access to informational brochures and handbooks** that educate the public on appropriate **disposal of household hazardous waste**, including schedules and locations for hazardous waste collections, oil, **filter and antifreeze recycling centers**, **battery recycling**, **paint recycling**, **fluorescent lamp recycling**, and other household **hazardous wastes**.

In addition to the distribution of educational materials during complaint **investigations** and at hazardous waste collection events, Lane County will continue to participate in a booth at the **Lane County Fair** and other public events as they arise. Waste educational materials including the **Lane County Recycling Guide** (offered in English and Spanish language formats) are distributed to the public at **these events**. Additionally, Lane County Waste Management Division will continue as a partner in the Lane Pollution Prevention Coalition (P2C) and participates in public outreach events in conjunction with the P2C, including the **Lane County Home and Garden Shows** in the spring and fall, and other special events as they arise.

Other waste public information services will continue to be provided by Lane County, including the operation of the Waste Management 24-hour recorded message system that provides general waste management information. County staff will be available to answer questions on recycling and disposal of hazardous wastes Monday through Saturday 8 am to 4:30 pm. During off-hours, there is an **extensive answering machine system** that provides callers the opportunity to leave messages and **receive a return call** for information they cannot obtain from the telephone tree.

5.7 Education/ Training

Lane County has identified education and outreach opportunities as a primary way to engage people in behaviors that will lead to reduced stormwater pollution. There are a number of education and outreach strategies that the County will continue to pursue that promote proper understanding of water quality issues and encourage human behavior that benefits water quality. Lane County will prepare education information describing stormwater requirements and pollutant reduction strategies. Lane County will publish and distribute educational materials on stormwater management best management practices (BMPs), erosion and sediment control BMPs, pet waste, septic system management, illicit discharge, and household hazardous waste. Potential distribution locations will include information kiosks at division lobbies, capital improvement project information meetings, project preconstruction conferences, special community events, the County's website, and County employee training sessions. Building on existing regional watershed council partnerships will also ensure that information reaches a broad audience. As funding allows, outreach and education will additionally be incorporated into planned County mitigation and restoration activities.

Lane County will develop and enhance existing educational materials that can be attached to development applications or incorporated into existing stormwater related education efforts in the Willamette Basin. Activities carried out will be documented and the number of printed stormwater education materials developed for public distribution will be recorded. The County will additionally investigate opportunities to provide stormwater related trainings and workshops for landowners and developers through the Lane County Land Management Division. If practicable and budgets allow, trainings will be offered biannually. The County will document any trainings completed, including the number attended and stormwater materials presented.

Lane County will review existing maintenance employee training materials to look for opportunities to incorporate stormwater and pollution prevention educational materials and conduct additional trainings for field staff and road crews. The County will monitor effectiveness of the existing RRM BMP Guide, and revised accordingly to include TMDL considerations.

The County will continue to sponsor a bi-annual two day training event titled 'Short School.' Training is provided for the entire Lane County Public Works Maintenance Staff and includes presentations on new and current stormwater BMPs. The County will review the RRM BMP Guide annually to ensure it reflects the most current stormwater information and agency policies. Trainings completed will be documented, including the number attended and TMDL and stormwater materials presented.

5.8 Cost Analysis

Implementation of the strategies identified in this Plan depends upon funding and resources, which are critical to the overall success of the Plan and the eventual reduction of pollutants in the Willamette Basin from areas under jurisdictional responsibility of Lane County. Lane County has a wide variety of strategies that address TMDL pollutant parameters. Some are small in nature and are easy to implement, such as enhancing stormwater information presented on County websites. Most of these educational and information dissemination types of strategies are currently integrated into the workloads of existing staff that work under Lane County general fund and the road fund and are expected to continue to be allocated in future years. Some strategies are larger in scope and will likely require prioritization into current work priorities and securing additional funding. As such, some strategies are relatively easy to integrate into existing staffing and budgets or future Lane County budgets, whereas others are dependent on finding grants and/or allocating larger amounts from future special fund or general fund budgets.

Lane County will implement those strategies that can be reasonably done and that meet the local needs and resources of the County. Many of the strategies outlined in the Plan are funded and have momentum to be completed within the next year or two. Lane County is also committed to including strategies that are ambitious and expansive, and can be implemented once funding sources are identified and become available. One such strategy is the investigation of the creation of a County-wide stormwater ordinance. The development of this strategy is not yet completely scoped out as there are many issues that need further research. A component of this strategy could be the revision of the current Lane Code regarding erosion and sediment control to include plan reviews, development standards, and enforcement activities. This may require additional staff, fees, and budget considerations that have to be authorized by the Lane County Board of Commissioners through additional processes. Like other jurisdictions in the region, the County budget has many competing department priorities with important issues that are necessary to meet the needs of citizens, and this Implementation Plan will be subject to annual budgetary authorization. Moving forward with the implementation of the strategies in this Plan will require a combination of existing funding, future budgeting, and partnerships for grants. Existing and future grant opportunities can assist Lane County with reaching TMDL Implementation targets. Lane County will continue to seek and apply for grant opportunities associated with all

opportunities, including: pet waste disposal, riparian restoration and protection, mercury collection, septic sanitation programs, and education of staff, regional landowners, and developers about stormwater management.

5.9 Implementation Matrix

The following matrix details the strategies that Lane County will be implementing and monitoring for a minimum of the next five years. Strategies will be pursued as resources, staffing, and funding allows. The matrix displays all pollutants being addressed, the implementation strategy that will lead to success, proposed timeframes for strategy implementation, and monitoring parameters and reporting methodology that will ensure progress and successful implementation by Lane County. This matrix will also serve as an executive summary and tracking tool for the required annual and five year reporting to DEQ.

Table 6. Lane County Willamette Basin

***Notes:** 1) All implementation strategies and actions are subject to program funding resources and constraints.
 2) Acronyms – ECSD = Engineering & Construction and Services Division; LMD = Land Management Division; WMD = Waste Management Division
 3) Italics identify proposed new activities and/or enhancements to existing activities
 4) Monitoring of the Lane County Willamette Basin TMDL Implementation Plan will be tracked by completion of the 'Monitoring Status' column a

POLLUTANT	SOURCE	STRATEGY What Lane County is doing and will do to reduce pollution from this source	ACTIONS Specific ways to implement strategies	
TEMPERATURE	1. Solar radiation input due to loss of riparian shading	A. Maintain existing shading vegetation within riparian areas (Lane Code 16.253) (Section 5.1)	1. Continue compliance with Lane Code 16.253: Riparian Setback Requirements	•
		B. As staffing allows, strengthen relationships with watershed councils to participate in riparian tree plantings and other projects that benefit stormwater (Section 5.1)	2. Replant equivalent riparian areas impacted by County public improvement projects with native trees and shrubs and monitor survival, in accordance with Lane County's Routine Road Maintenance Best Management Practices (RRM BMP) Guide	•
		C. Determine the feasibility of retaining or creating easements for County-owned critical riparian areas proposed for sale as tax foreclosed properties (Section 5.1)	1. Strengthen working relationship between County staff, regional watershed councils and restoration practitioners	•
			2. Maintain procedure of including watershed councils on public notice and agency referral lists for development projects within the County	•
MERCURY	1. Manufactured products / materials	A. Continue existing program to capture products containing mercury before they enter the environment (landfills) (Section 5.6)	1. Continue to offer annual collection events for households to recycle florescent light bulbs or other products containing mercury 2. Continue accepting products containing mercury at Lane County's hazardous waste facilities 3. Continue program to work within non-household businesses (i.e. labs, dentist offices, etc) collect and recycle to work with dentists to recycle mercury products	• • •
	2. Erosion & sedimentation	A. Reduction in erosion and sedimentation of soils known to contain elevated levels of Mercury (Section 5.4)	1. Continue to implement erosion and sediment control BMPs for public construction projects 2. Review erosion and sediment BMPs annually and incorporate new BMP measures as they become available 3. For development activities that disturb one acre or more, Lane County Land Management Division will refer these developments to DEQ to ensure compliance with 1200-C requirements 4. See Strategy A in "All Pollutants" Category	• • • • •

TMDL Implementation Plan Matrix

Legend: PD = Parks Division; RMD = Road Maintenance Division; BMP = Best Management Practices

Annually

GOALS mediate indicators of progress	MEASURE Implementation and progress toward completion	PROGRAM*(1,2,3) Implementation Resources	MONITORING STATUS*(4)
Review permit process periodically Look for ways to improve strategy effectiveness	<ul style="list-style-type: none"> Track number of Riparian Setback Permits applied for and issued annually Enforce code requirements & track the number of violations 	<ul style="list-style-type: none"> Existing LMD administration of Riparian Ordinance 	
Prevent loss of riparian areas due to unnecessary public improvement projects	<ul style="list-style-type: none"> Record number of projects implemented annually Investigate implementation of a monitoring program that includes a database to track planting survivability and maintenance actions 	<ul style="list-style-type: none"> Existing ESCD, WMD, PD, & RMD in-house projects & BMP implementation 	
Participate in meetings, identify high priority projects, and pursue partnership projects such as riparian plantings as County staffing and funding allow	<ul style="list-style-type: none"> Document staff involvement with watershed councils annually 	<ul style="list-style-type: none"> Existing ESCD, WMD, LMD, PD & RMD staff coordination efforts 	
Continue opportunities for watershed council involvement in project planning, implementation, mitigation, and monitoring	<ul style="list-style-type: none"> Document referrals to watershed councils and watershed council project interactions annually 	<ul style="list-style-type: none"> Existing LMD staff coordination efforts 	
Encourage participation in watershed council sponsored projects as County staffing and funding allow	<ul style="list-style-type: none"> Track County involvement through the number of projects, summary of project details, and/or the number of County staff hours dedicated annually 	<ul style="list-style-type: none"> Existing ESCD, WMD, PD & RMD staff coordination efforts 	
Successful review of all County properties offered for sale to evaluate highly functioning and valued environmental attributes	<ul style="list-style-type: none"> Record number of parcels reviewed and retained due to the presence of highly functioning environmental attributes that benefit water quality Development of a County protection memorandum to be flagged for the parcel 	<ul style="list-style-type: none"> ECSD and LMD environmental review of tax foreclosed properties to be sold annually. (In cooperation with County Administration Staff) 	
Identify existing hazardous waste sites and look for opportunities to improve collection of products containing mercury from household and non-household sources Encourage participation in grant opportunities to assist mercury cleanup efforts through Lane County Waste Management	<ul style="list-style-type: none"> Document collection events (i.e. rural hazardous waste roundup events, etc) carried out annually and track the collection of products containing mercury annually 	<ul style="list-style-type: none"> Existing WMD programs 	
Update and revise County adopted erosion and sediment BMPs to ensure consistency with current state regulations and evolving erosion and sediment control technologies Develop a permit process to establish tracking of 1200-C permit referrals	<ul style="list-style-type: none"> Track implementation of erosion and sediment control BMPs for County projects Document new erosion and sediment control BMPs researched and adopted annually Track number of 1200-C referrals to DEQ 	<ul style="list-style-type: none"> Existing ESCD, WMD, PD, & RMD programs, and Existing LMD Planning Review Process 	

Table 6 (continued). Lane County Willame

***Notes:** 1) All implementation strategies and actions are subject to program funding resources and constraints.
 2) Acronyms – ECSD = Engineering & Construction and Services Division; LMD = Land Management Division; WMD = Waste Manager
 3) Italics identify proposed new activities and/or enhancements to existing activities
 4) Monitoring of the Lane County Willamette Basin TMDL Implementation Plan will be tracked by completion of the 'Monitoring Status' colu

POLLUTANT	SOURCE	STRATEGY What Lane County is doing and will do to reduce pollution from this source	ACTIONS Specific ways to implement strategies
BACTERIA	1. Pet and animal waste	A. Reduce the amount of pet waste that is not properly disposed (Lane Code 6.585 & 7.140) (Section 5.2)	1. Maintain existing pet waste stations and signs in areas (Parks), and review for opportunities to in: new waste collection stations as funding allows 2. <i>Distribute educational materials outlining proper domestic & other animal waste at Lane County Services, Greenhill Humane Society, Lane Cour booth, and other applicable community events</i>
	2. Stormwater discharges	A. Continue implementation of Lane County's Routine Road Maintenance Best Management Practices (RRM BMP) Guide (Section 5.3 & 5.4)	1. Publish RRM BMP Guide updates to include new current stormwater BMP agency standards 2. Train County employees on stormwater BMPs
		B. Investigate the requirement of on-site water quality facilities in new development (Section 5.3 & 5.4)	1. <i>Research opportunities to develop a Lane Count Stormwater Manual</i> 2. <i>Determine resource and cost of implementing po within new and/or existing County ordinances (S Strategy A in "All Pollutants")</i>
	3. Septic system management	A. Continue subsurface sanitation program through contract with DEQ OAR 340-71 and OAR 340-73 (Section 5.5)	1. Investigate and resolve septic system failures
		B. Develop and distribute septic maintenance educational materials (Section 5.5)	1. <i>Develop septic system management educational brochures to distribute with issued Lane County Building Permits</i> 2. Continue to develop septic system management educational brochures to distribute and to parties involved with septic system investigation failures
		C. Investigate strengthening partnership with Eugene Water and Electric Board (EWEB) on the McKenzie River Septic System Assistance Project (Section 5.5)	1. <i>Strengthen working relationship and coordination between County staff and EWEB with respect to implementation of the McKenzie River Septic Sys Assistance Project</i>
	4. Illicit discharges illegal dumping	A. Continue implementation of illicit discharge for the Eugene-Springfield UGB (Lane Code 5.747) and County wide illegal dumping ordinance (Lane Code 5.740-5.745, 6.535, & 9.030) (Section 5.6)	1. Respond to complaints: reports of illegal dumping, discharges 2. <i>Develop research outlining the benefits and consi associated with the creation of a County-wide illic discharge ordinance and or expanding the existin County-wide illegal dumping ordinance</i>

Basin TMDL Implementation Plan Matrix

Legend: PD = Parks Division; RMD = Road Maintenance Division; BMP = Best Management Practices

Annually

	GOALS Intermediate indicators of progress	MEASURE Implementation and progress toward completion	PROGRAM *(1,2,3) Implementation Resources	MONITORING STATUS *(4)
c	<ul style="list-style-type: none"> Continue to search out and apply for grant funding opportunities to maintain program 	<ul style="list-style-type: none"> Document review of pet and animal waste station and signage program, including efforts to secure funding 	<ul style="list-style-type: none"> Existing PD program 	
of il ir	<ul style="list-style-type: none"> Distribution of pet and animal water educational materials and information throughout the Willamette Basin TMDL planning area 	<ul style="list-style-type: none"> Document events where pet and animal waste education materials are distributed annually Record the number of pet and animal waste educational materials developed and printed annually 	<ul style="list-style-type: none"> Enhancement to existing PD program 	
	<ul style="list-style-type: none"> Continue sponsoring County employee training program 	<ul style="list-style-type: none"> Document trainings and annually review BMP effectiveness 	<ul style="list-style-type: none"> (1) Existing RMD program (2) RMD, WMD, ESCD, & PD programs and activities 	
	<ul style="list-style-type: none"> Develop documentation that outlines the feasibility of the actions 	<ul style="list-style-type: none"> Evaluation of staff report and subsequent management team recommendations on course of action 	<ul style="list-style-type: none"> LMD & ECSD (technical support) programs 	
	<ul style="list-style-type: none"> Track and monitor the number of violations and failures resolved 	<ul style="list-style-type: none"> Record information on the number of septic system failures and investigations annually 	<ul style="list-style-type: none"> Existing Subsurface sanitation program activities 	
	<ul style="list-style-type: none"> Update and revise brochure information as necessary to ensure consistency with current agency regulations 	<ul style="list-style-type: none"> Record the number Septic System Management brochures distributed with building permits annually 	<ul style="list-style-type: none"> LMD & Subsurface Sanitation Manager (Enhancement to existing septic system education program) 	
	<ul style="list-style-type: none"> Update and revise brochure information as necessary to ensure consistency with current agency regulations 	<ul style="list-style-type: none"> Record the number Septic System Management brochures distributed to parties involved in septic failure investigations annually 	<ul style="list-style-type: none"> Existing Subsurface Sanitation program activities 	
	<ul style="list-style-type: none"> Participate in meetings and identify mutual priorities, as staffing and budgets allow 	<ul style="list-style-type: none"> Track County involvement through the number of County staff hours dedicated annually 	<ul style="list-style-type: none"> Enhancement to Subsurface Sanitation program activities 	
	<ul style="list-style-type: none"> Enforce existing Illicit discharge and illegal dumping code requirements 	<ul style="list-style-type: none"> Track and record the number of illicit discharge and illegal dumping incidences / violations annually 	<ul style="list-style-type: none"> Existing WMD, ECSD, & RMD program activities 	
ts	<ul style="list-style-type: none"> Report on research findings associated with creation of a County-wide illicit discharge Report on research findings associated with expansion of the County-wide illegal dumping ordinance 	<ul style="list-style-type: none"> Document review of illicit discharge and illegal dumping ordinances 	<ul style="list-style-type: none"> LMD, WMD (technical support), & ECSD (technical support) 	

Table 6 (continued). Lane County Willamet

***Notes:** 1) All implementation strategies and actions are subject to program funding resources and constraints.
 2) Acronyms – ECSD = Engineering & Construction and Services Division; LMD = Land Management Division; WMD = Waste Management Div
 3) Italics identify proposed new activities and/or enhancements to existing activities
 4) Monitoring of the Lane County Willamette Basin TMDL Implementation Plan will be tracked by completion of the 'Monitoring Status' column a

POLLUTANT	SOURCE	STRATEGY What Lane County is doing and will do to reduce pollution from this source	ACTIONS Specific ways to implement strategies	
ALL POLLUTANTS (Temperature, Bacteria & Mercury)		A. Investigate the creation of a County stormwater management ordinance (Section 5.3 & 5.4)	1. <i>Determine resource and cost to implement such a policy and identify a funding source</i>	•
		B. Education and training for landowners/developers (Section 5.7)	1. <i>Develop educational materials that can be attached to development applications or incorporated into existing stormwater related education efforts</i>	•
			2. <i>Investigate opportunities to provide stormwater related training for landowners and developers through Lane County Land Management Division</i>	•
		C. Develop employee training materials and conduct trainings on pollution prevention (Section 5.7)	1. Monitor effectiveness of existing RRM BMP Guide to include TMDL considerations, then incorporate into existing training program 2. Continue County-sponsored annual two day training event titled 'Short School.' Training is provided for entire County Maintenance Staff and includes presentations on new and current stormwater BMPs	•
		D. Stormwater demonstration project (Section 5.3)	1. Implement stormwater treatment demonstration project 2. Determine feasibility of installing interpretive signage	•
E. Reduce the amount of hazardous waste that is not properly disposed (Section 5.6)	1. Continue to hold an annual hazardous waste collection events	•		
	2. Provide hazardous waste disposal education materials at collection events and other activities	•		

Basin TMDL Implementation Plan Matrix

Legend: PD = Parks Division; RMD = Road Maintenance Division; BMP = Best Management Practices

Priority

GOALS Intermediate indicators of progress	MEASURE Implementation and progress toward completion	PROGRAM*(1,2,3) Implementation Resources	MONITORING STATUS*(4)
Produce a staff report for Board of County Commissioners for consideration	<ul style="list-style-type: none"> Staff report and subsequent Board action 	<ul style="list-style-type: none"> LMD & ECSD (technical support) programs 	
Distribution of materials and information within the Willamette Basin	<ul style="list-style-type: none"> Document activities carried out and record the number of printed stormwater education materials developed for public distribution 	<ul style="list-style-type: none"> LMD, ECSD & RMD programs in addition to potential joint efforts with DEQ and other regional municipalities 	
Provide trainings biannually as staffing and budgets allow	<ul style="list-style-type: none"> Document trainings completed, number attended and stormwater materials presented 	<ul style="list-style-type: none"> LMD, ECSD & RMD programs in addition to potential joint efforts with DEQ and other regional municipalities 	
Review RRM BMP Guide annually to ensure it reflects the most current stormwater information and agency policies	<ul style="list-style-type: none"> Document training completed, number attended and TMDL and stormwater materials presented 	<ul style="list-style-type: none"> Existing RMD program activity 	
Establish one site	<ul style="list-style-type: none"> Document events where the demonstration project is discussed or displayed annually 	<ul style="list-style-type: none"> Existing ECSD program activity 	
Sponsor collection events annually	<ul style="list-style-type: none"> Track and record the number of collection events annually 	<ul style="list-style-type: none"> Existing WMD program activity 	
Publish and distribute hazardous waste disposal education materials within the Willamette Basin	<ul style="list-style-type: none"> Track estimated amount of hazardous waste collected annually 	<ul style="list-style-type: none"> Existing WMD program activity 	

5.10 Measuring and Monitoring Program for Compliance with DEQ

The ultimate success of the entire Lane County Willamette Basin TMDL implementation activities will be measured by the de-listing of 303(d) listed streams throughout the Willamette Basin. Located in the headwaters region of the Basin, Lane County has the opportunity to positively influence water quality and the de-listing of waterways throughout the downstream portion of the Basin. Those de-listings will only occur if supported by water quality monitoring data taken at key intervals and key points throughout the Basin. Those sampling activities are best conducted by entities with broad oversight and/or involvement such as DEQ. When a sampling site lies within Lane County's jurisdiction, and is important to an overall sampling program, the County will support the establishment and sampling at that location.

For some strategies, such as planting trees along waterways, it may take years to reap the heat load reduction benefits sought that will address temperature concerns. For others, such as strengthening the erosion and sediment control ordinance, the County would see fairly immediate benefits in preventing further water quality degradation. Lane County recognizes that progress towards lowering pollutant loads will be best measured by tracking accomplishments towards implementing the strategies identified in this Implementation Plan.

Lane County and DEQ will periodically review the Implementation Plan and implementation progress. The Plan will be adapted as necessary. At Lane County's or DEQ request, the DEQ will meet with the County annually to review implementation progress and any barriers to implementation success. Every five years, a more comprehensive review will take place and the Plan will be adapted if necessary.

Lane County will meet reporting expectations and requirements from Oregon DEQ by submitting TMDL monitoring reports at two intervals, annually and every five years. The annual progress report will track activities and opportunities of implementation of each management strategy. Results of implementation, performance, and effectiveness monitoring will be included in the annual monitoring reports. A more robust TMDL Implementation Plan Review monitoring report will be submitted to DEQ every five years that further captures impacts of Lane County on water quality in the Willamette Basin and outlines, if necessary, revisions to the Implementation Plan to be developed in partnership with DEQ.

The 5-year report will contain a summary of accomplishments and any changes within the County that may influence how water quality management should be addressed. The report will contain a copy of the Implementation Matrix with summary results reported under the monitoring status column, indicating which strategies in the matrix were successfully implemented and which need improvement. If there are strategies in the matrix that have not been completed within the targeted time frame, Lane County will provide an rationale and an estimation of when the strategy will be completed, revised, or removed from the list of implementation measures.

DEQ will conduct an evaluation of the success of the Plan including an assessment of progress made by Lane County, a review of regional existing water quality data, and other information to assess the effectiveness of the Plan relative to the overall TMDL pollution reduction goals. DEQ does not expect DMAs to know all the answers when they submit their TMDL Implementation Plans. Many of the water pollution problems being addressed through TMDLs will take several years or decades to be resolved, and it is not always possible to determine exactly what the on-the-ground efforts it will take to get there. For that reason, DEQ does not expect that TMDL Implementation Plans will describe in great detail how the management strategies will achieve the load allocation for each pollutant. However, DEQ does expect TMDL Implementation Plans to: 1) Identify known or suspected sources of each pollutant under the DMA's jurisdiction, 2) Identify the actions the DMA is taking, or plans to take, to address each of those sources, and 3) Describe how the DMA is going to gauge effectiveness of control efforts over time.

DEQ will provide Lane County with a report describing what information was used in the evaluation, the findings of the evaluation, and the basis of decisions related to the evaluation. If the evaluation indicates that the Plan is not likely to

be adequate to meet pollution reduction targets, DEQ and Lane County will work in partnership to adapt the Plan to meet these targets and establish reasonable timelines for accomplishing new actions.

5.11 Compliance with Statewide Planning Goals

All of the strategies outlined in this Plan are consistent with applicable Lane County Rural Comprehensive Plan (RCP) policies and Statewide Planning Goals as discussed in this section. The County will also comply with local planning policies and statewide land use laws in any future actions related to TMDL project implementation.

The Lane County RCP consists of all adopted general and detailed plans that make up the planning framework of the Lane County area, and it applies to all unincorporated lands within Lane County beyond the Urban Growth Boundaries (UGB's) of incorporated cities and beyond the boundary of the Eugene-Springfield Metropolitan Area General Plan (*Metro Plan*). Where these lands are beyond County jurisdiction (such as National Forest Lands), the Plan applies, but its application is regulated by federal law. In addition, RCP provisions and representations of County positions on various issues are presented for consideration by other jurisdictions in their own management actions and in regional partnerships.

RCP General Policy A-1: *For Each Oregon Department of Land Conservation and Development (LCDC) Goal, there are one or more RCP Policies to be applied by the County toward land use and other planning and resource-management issues, in the interest of compliance with sound planning principles and statewide planning law. Policies are binding commitments, but will be carried out within established work programs and over-all County priorities. The application of policies which call for any programs or studies will occur as County resources in terms of both staff and budgetary allocations permit.⁴*

Goal 1: Citizen Involvement: *To develop a citizen involvement program that ensures the opportunity for citizens to be involved in all phases of the planning process.*

RCP Policy 1-3: *Firmly identified public needs and desires shall be responded to by the County planning process, within the parameters of state and local planning requirements.*

RCP Policy 1-5: *The program of communicating with chartered community organizations shall be continued.*

Lane County is committed to public participation processes as part of the ongoing management activities, including the stormwater management program. This process provides opportunities for members of the public to participate during the development and implementation phases of project activities. Citizens are notified of upcoming changes in County codes and any County efforts to collaborate with other municipalities and agencies in activities conducted under this plan. Public participation and involvement associated with the County's Stormwater Management Program utilizes the Roads Advisory Committee (RAC) and public Open House forums for review and input to Lane County's Stormwater Management Program. The RAC is comprised of volunteer, private citizens that have input on various implementation plans throughout Lane County's Public Works Department. At Open House forums, citizens are informed of County partnerships with other local municipalities and are provided the opportunity to voice concerns and provide input on TMDL activities, including the Stormwater Management Program.

The chartered Watershed Councils in each subbasin shall be a key forum for continuing communication of TMDL activities and monitoring through project lifecycles and to meet DEQ monitoring expectations. In addition, land use

⁴ Note: The *Metro Plan* and all associated refinement plans, special area plans, and functional plans apply in the central urban area of Lane County that is within the *Metro Plan* boundary. The *Metro Plan* jurisdictional area of responsibility is coordinated and shared between Lane County DMA and the two cities, Eugene and Springfield.

strategies identified in this plan are instituted through ordinances that are subject to public review and comments through public hearings processes. Therefore, the Lane County TMDL Implementation Plan complies with Statewide Planning Goal 1 and the applicable Goal 1 policies in the Lane County Rural Comprehensive Plan.

Goal 2: Land Use Planning: *To establish a land use planning process and policy framework as a basis for all decisions and actions related to use of land and to assure an adequate factual base for such decisions and actions.*

RCP Policy 2-6: *The revised General Plan shall have primary jurisdiction in all areas of the County outside the incorporated City Urban Growth Boundaries and the Plan Boundary shown on the Eugene-Springfield Metro Plan Diagram which includes the land outside the UGB out to the Metro Plan Boundary.*

The Lane County Willamette Basin TMDL Implementation Plan is a single purpose plan that includes the factual and analytical basis for management strategies to improve water quality included in the Plan. Proposed strategies identified within the County's Willamette Basin TMDL Implementation Plan do not conflict with Lane County's Comprehensive Plan and other planning documents that set the policy framework for the County. Therefore, the Lane County TMDL Implementation Plan complies with Statewide Planning Goal 2 and the applicable Goal 2 policy in the Lane County Rural Comprehensive Plan.

Goal 3: Agricultural Lands: *To preserve and maintain agricultural lands.*

The agency responsible for developing and implementing management strategies to control non-point source pollution arising from agricultural activities is the Oregon Department of Agriculture (ODA). ODA is identified as the designated management agency (DMA) responsible for regulation of water quality improvements related to agricultural practices (i.e., erosion control, siltation control, animal waste management, and riparian area management on farm land). Agricultural practices are regulated by Oregon Senate Bill 1010, and plans developed for farm lands are under oversight by ODA. Therefore, Goal 3 does not apply to Lane County's Willamette Basin TMDL Implementation Plan.

Goal 4: Forest Lands: *To conserve forest lands by maintaining the forest land base and to protect the state's forest economy by making possible economically efficient forest practices that assure the continuous growing and harvesting of forest trees species as the leading use on forestland consistent with sound management of soil, air, water, and fish and wildlife resources and to provide for recreational opportunities and agriculture.*

The Oregon Departments of Forestry (ODF) is identified as the designated management agency (DMA) responsible for developing and implementing management strategies for control of non-point source pollution arising from timber management practices on forest zoned lands and lands under their jurisdiction. Although, ODF is exempt from submitting a TMDL implementation plan because their activities are regulated under the State Forest Practices Act. Timber harvest activities are regulated for sound management of soil, air, water, and fish and wildlife resources on private commercial operations, under state forest management plans for state forests. Federal forest lands under jurisdiction of the USFS and BLM have resource management plans, and water quality restoration plans for guidance on federal forests. Therefore, Statewide Planning Goal 4 does not apply to Lane County's Willamette Basin TMDL Implementation Plan.

Goal 5: Open Spaces, Scenic and Historic Areas, and Natural Resources: *To protect natural resources and conserve scenic and historic areas and open spaces.*

RCP Flora and Fauna Policy 5-2: *Recognize existing federal and state programs protecting threatened or endangered fish and wildlife species.*

RCP Flora and Fauna Policy 5-3: *Through the use of County regulations including zoning, seek to minimize the adverse impacts of land use changes on sensitive species (those susceptible to significant population declines resulting from habitat modification).*

RCP Flora and Fauna Policy 5-4: *Public agencies are encouraged to work with landowners to conserve wildlife habitats.*

RCP Flora and Fauna Policy 5-6: *Riparian vegetation along Class 1 streams in the County is recognized as being of high value for many purposes, notably wildlife habitat and streambank stabilization. Riparian lands shall be defined as the lands within 100 feet of ordinary high water on Class I streams, and shall be considered "significant" "1C" areas under OAR 660-16-000/025; "3C" protection of the riparian resource shall be achieved through development setbacks and vegetation management regulations within the riparian strip...*

RCP Flora and Fauna Policy 5-13: *In its program of protecting "1C" resources, the County shall make maximum practical use of existing land use regulations (e.g. Willamette Greenway Permit...) to achieve such protection.*

RCP Water Resources Policy 5-1: *State policy normally promotes multiple uses of surface waters throughout Lane County. Under such policy, use conflicts do occur. As the first step in addressing this problem, the County urges the Oregon Water Quality Review Board and DEQ to update the existing water basin plans and establish priorities among the various beneficial uses for specific water areas. The ESEE consequences of each use should be considered in establishing priorities and resolving any identified conflicts. Lane County will cooperate to the maximum extent practicable in such a program.*

Significant open space, scenic and historic areas or natural resource areas under Lane County jurisdiction that will be impacted by activities summarized within the County's Willamette Basin TMDL Implementation Plan are most likely to be found in Lane County Parks, within the Willamette Greenway, and in roadside areas crossing or adjacent to waterways. The Implementation Plan identifies future County involvement in riparian planting projects, research projects, and other activities that will eventually lead to a net increase in enhancement, restoration and protection of Goal 5 resources. Compliance with RCP policies will include working with landowners and the State (DEQ) to address TMDLs, considering multiple objectives and striving to increase the health of the waterways. In addition, establishing priorities among the various beneficial uses will minimize adverse impacts on other species.

The Plan provides a broad range of activities and educational projects that Lane County will continue to provide. Goal 5 resources are addressed in the Plan, primarily through programs and activities managed under the Parks Department. Education programs and on the ground projects will lead to the future protection of existing County-owned riparian and wetland resources that exhibit high environmental function and values known to improve water quality. Therefore, the Lane County TMDL Implementation Plan complies with Statewide Planning Goal 5 and the applicable Goal 5 policies in the Lane County Rural Comprehensive Plan.

Goal 6: Air, Water and Land Resources Quality: *To maintain and improve the quality of the air, water, and land resources of the state.*

RCP Water Quality Policy 6-1: *Avoidance and/or control of soil erosion shall be a major criterion to be addressed in all applicable review procedures and County construction activity.*

RCP Water Quality Policy 6-2: *The re-establishment of vegetative cover by standard erosion control practices shall be required as part of the land development process.*

RCP Water Quality Policy 6-3: *Lane County shall cooperate with DEQ and other state and federal agencies in maintaining domestic water supplies to the existing standards of the appropriate governing body.*

RCP Water Quality Policy 6-4: *Lane County shall promote watershed practices which protect and enhance water quality and quantity through land use planning, Public Works projects and management of County facilities.*

RCP Water Quality Policy 6-5: *Lane County shall cooperate with LCOG and DEQ in identifying sources of water pollution and controlling or abating them. The County's primary emphasis will be the possible degradation of ground and surface water quality by onsite sewage disposal systems.*

RCP Water Quality Policy 6-6: *Lane County shall cooperate with the Oregon Water Policy Review Board to evaluate flow requirements necessary to maintain water quality in critical streams and support the establishment of minimum flow designations for those streams.*

The County's Willamette Basin TMDL Implementation Plan addresses water quality by describing actions that will be carried out to reduce surface water inputs of heat, bacteria, and mercury. All federal and state wetland requirements within the Plan boundary will continue to be satisfied under State/Federal wetland permits, as required by safe harbor under OAR 660-023 provisions applicable for Lane County. The Plan identifies the County's actions for compliance with: Riparian Modification and Setback Requirements, which establishes protection for riparian areas. The Plan describes continued compliance with Willamette River Greenway Modification Standards (Lane and Erosion Standards within the Eugene-Springfield Urban Growth Boundary (UGB), and also identifies consideration for developing a new County-enforced Stormwater Discharge ordinance that would include new erosion and sediment control standards for new developments. Lane County's Willamette Basin TMDL Implementation Plan includes elements to better manage stormwater through considerations for stormwater detention and treatment requirements to reduce the erosive forces of stormwater and resulting sedimentation. Potential improvements to County ordinances considered as part of the County's Willamette Basin TMDL Implementation Plan will include review of development setbacks from riparian areas and surface water, minimization of impervious surfaces, planning for and managing stormwater, and appropriate location review for development in areas consistent with the proposed use. Therefore, the Lane County TMDL Implementation Plan complies with Statewide Planning Goal 6 and the applicable Goal 6 policies in the Lane County Rural Comprehensive Plan.

Goal 7 - Areas Subject to Natural Disasters and Hazards: *To protect life and property from natural disasters and hazards.*

Lane County's Willamette Basin TMDL Implementation Plan identifies continued compliance with Floodplain Modification Standards and Floodplain Development Standards, which ensures conformance with FEMA floodplain requirements as a key response to areas subject to natural disasters and hazards. Through this permit process any development within the floodway must demonstrate that activities will not detrimentally impact the mapped base flood elevation for the project area. Additionally, Chapter 16.005 of Lane Code implements the County's Comprehensive Plan policies and outlines development restrictions for grading, excavation and clearing activities. The code regulations regarding grading and clearing by mechanical equipment may be restricted or regulated by the Approval Authority either at the time of approval of a development permit or of an application if there is a finding that such grading or clearing presents a real threat of pollution, contamination, silting of water bodies or water supplies, erosion and slide damage, or alteration of natural drainage patterns in the area. In all cases, excessive grading, excavation and clearing shall be avoided when detrimental to soil stability and erosion control. The character of soils for fills and the characteristics of parcels or lots made usable by means of fill shall be suitable for the intended purpose. Adherence to these standards will ensure that the Lane County TMDL Implementation Plan complies with Statewide Planning Goal 7 and the applicable Goal 7 policies in the Lane County Rural Comprehensive Plan.

Goal 8 - Recreational Needs: *To satisfy the recreational needs of the citizens of the state and visitors and, where appropriate, to provide for the siting of necessary recreational facilities including destination resorts.*

RCP Policy 8-7: *Encourage the development of environmentally compatible tourist and recreational facilities which enhance the economic prospects of rural areas while serving the recreational needs of tourist and County residents.*

RCP Policy 8-10: *Encourage public and private participation to increase access to waterways, where needed, without infringement upon private property rights.*

The Lane County Willamette Basin TMDL Implementation Plan will ensure improvements to the water quality in our rivers, lakes, and streams, which will in turn, ensure highest and best multiple uses of those waterways. The importance of high quality waterways on desired recreational activities that occur in waterways of Oregon is well documented. Improved water quality and environmentally compatible restoration, as well as access to waterways in Lane County are enhanced by activities outlined in the TMDL Plan. The County TMDL implementation plan is consistent with Statewide Planning Goal 8 and the applicable Goal 8 policies in the Lane County Rural Comprehensive Plan.

Goal 9 - Economic Development: *To provide adequate opportunities throughout the state for a variety of economic activities vital to the health, welfare and prosperity of Oregon's citizens.*

RCP Policy 9-9: *Tourism shall be considered as a base industry having high potential for growth throughout the County. Development of facilities oriented towards tourists shall be given maximum support within the framework of these policies.*

RCP Policy 9-10: *As a stimulus to the tourist industry, the County shall maintain and when possible, improve public recreational facilities such as parks, boat ramps, etc.*

Lane County's Willamette Basin TMDL Implementation Plan will provide for improvements to water quality that ensure Lane County continues to provide tourist industry stimulus, and amenities that assist in attracting high wage jobs and employees. Lane County's waterways have been determined to be an important factor in quality of life considerations in the region. This impacts economic development opportunities within the County. The regulations under Lane Code for riparian habitat and floodplain standards ensures appropriate development, if any, occurs within the riparian corridor, which can allow for some development of property to still occur on subject parcel areas outside of the riparian corridor. Therefore, the Lane County TMDL Implementation Plan complies with Statewide Planning Goal 9 and the applicable Goal 9 policies in the Lane County Rural Comprehensive Plan.

Goal 10 - Housing: *To provide for the housing needs of citizens of the state.*

The County's Willamette Basin TMDL Implementation Plan will not affect availability, types, or distribution of housing nor influence other housing needs available in unincorporated Lane County. Therefore, Statewide Planning Goal 10 is not applicable to the Lane County TMDL Implementation Plan.

Goal 11 - Public Facilities and Services: *To plan and develop a timely, orderly and efficient arrangement of public facilities and services to serve as a framework for urban and rural development.*

RCP Policy 11-3: *Lane County shall actively support and assist progressive solid waste management efforts. The Lane County Solid Waste Management Plan (SWMP) shall be the primary instrument to affect this policy.*

The SWMP is a companion single purpose plan with activities designed to remove solid waste from the County waste stream, which is integrated with the County's Willamette Basin TMDL Implementation Plan in the framework of waste managements key role in coordination of all waste reduction and reduction of pollutants in Lane County. The TMDL Plan is consistent with Goal 11 where applicable in rural unincorporated zones in the Willamette Basin through activities shown on the Implementation Matrix in Table 6. A public service that Lane County will conduct is consideration of the development of a Lane County Stormwater Management Manual for application in rural Lane County modeled after the partnership document developed with *Metro Plan* partner Eugene. Also, the matrix lists consideration of new code language that would enhance development of private and public stormwater facilities and standards required for new subdivision development. Septic System management strategies are also noted in this Plan. Therefore, the Lane County TMDL Implementation Plan complies with the framework for rural development under Statewide Planning Goal 11 and the applicable Goal 11 policy in the Lane County Rural Comprehensive Plan.

Goal 12 – Transportation: *To provide and encourage a safe, convenient and economic transportation system.*

RCP Policy 12-1: *Lane County shall strive for a coordinated and balanced transportation system which complies with LCDC Goal 12 and is responsive to the economic, social, and environmental considerations, and which will work toward the following objectives:*

- c. A transportation system responsive to changing needs and conditions.*
- d. Consideration of direct and indirect impacts of proposed transportation projects on the environment, energy resources, economy and general livability.*

Lane County is responsible for providing safe and economic infrastructure for approximately 2892 miles of County Roads. The Willamette Basin TMDL Implementation Plan contains numerous implementation and educational activities under direct responsibility of the Road Maintenance Division. Many of the County Best Management Practices affect culverts and other facilities where rivers and roads intersect. Implementation activities are coupled with classes regularly taught in 'Short School' and at public educational opportunities that highlight appropriate stormwater BMPs for roadways. Therefore, the Lane County TMDL Implementation Plan complies with Statewide Planning Goal 12 and the applicable Goal 12 policy in the Lane County Rural Comprehensive Plan.

Goal 13 - Energy Conservation: *To conserve energy.*

The County's Willamette Basin TMDL Implementation Plan does not influence energy consumption. Therefore, Statewide Planning Goal 13 and the RCP Chapter 13 policies are not applicable to the Lane County TMDL Implementation Plan.

Goal 14: Urbanization: *To provide for an orderly and efficient transition from rural to urban use.*

RCP Policy 14-11: *Use of utility easements and natural drainage ways within the urban growth area shall be consistent with applicable plans, will have multiple use where practicable and will be based on County-city agreement.*

Lane County's Willamette Basin TMDL Implementation Plan applies to the unincorporated areas of Lane County's jurisdiction. The County continues to partner with other municipalities on coordinated plans for stormwater management, for example in partnership with Eugene, that are applicable to urban transition areas within the Metro Plan. Educational and training components of the Plan are provided to all interested parties, regardless of rural or urban residence. Therefore, the Lane County TMDL Implementation Plan indirectly complies with Statewide Planning Goal 14 and the Goal 14-11 policy in the Lane County Rural Comprehensive Plan.

Goal 15 - Willamette River Greenway: *To protect, conserve, enhance and maintain the natural, scenic, historical, agricultural, economic and recreational qualities of lands along the Willamette River as the Willamette River Greenway.*

RCP Policy 15-6: Prioritize water quality management controls along the Coast Fork and the Main Stem, especially in the Metro area.

The Lane County TMDL Implementation Plan is designed to improve water quality of the Willamette River by reducing pollution loads, and as a result, enhance the quality of lands within the Willamette River Greenway. As outlined within Lane Code 16.254, Greenway Development Permit, the County has an existing review and permitting procedure for certain land use activities within the Willamette River Greenway boundary, as required by the Statewide Willamette River Greenway Goal and the Lane County Willamette River Greenway Plan. The Greenway Development Permit code includes specific design criteria and a 100-foot setback from ordinary high waterline of the river for new intensifications, developments and changes of use (except for a water related or water dependent use). These specific activities, plus continuing educational strategies to increase understanding of the importance to water quality in the Willamette Greenway, will ensure the Lane County TMDL Implementation Plan complies with Statewide Planning Goal 15 and the applicable Goal 15 policies in the Lane County Rural Comprehensive Plan.

Goal 16: Estuarine Resources; Goal 17: Coastal Shorelands; Goal 18: Beaches and Dunes; and Goal 19: Ocean Resources

The Willamette Basin is within the Inland Region of the Lane County RCP, not the Coastal Region. Therefore, Goals 16, 17, 18, and 19 are not geographically applicable to the Lane County Willamette Basin TMDL Implementation Plan.

6.0 Partnership Opportunities

A companion document to this Plan "*The Willamette Headwaters Water Quality Assets, Gaps, and Opportunities Study*" (Working Draft, October 2007, LCOG), identifies and analyzes opportunities to partner with other jurisdictions in the Lane County area of the Willamette Basin. That study was published by LCOG and findings are summarized below.

DMAs throughout Lane County vary in aspects such as size, geography, proximity to waterways, level and quality of existing infrastructure, level of services provided, and resources available. Populations range from 300 to 8,500 and land under the authority of DMAs can be as little as 216 acres or as much as 670,000 acres. The jurisdictional DMA responsibility for Lane County as described in this Plan extends to unincorporated land outside the Eugene-Springfield Metro Plan boundary and the city limits of the other cities in the Willamette Basin. The urban center of the County is under coordinated responsibility of the County and the two cities, Eugene and Springfield. In spite of the differences, all jurisdictions in Lane County have similar opportunities to improve water quality conditions, challenges, and mandates due to their location within the context of the larger Willamette Basin.

Jurisdictions in the region are already taking steps to preserve and restore water quality in the region. Some jurisdictions have been able to do more than others, but all seem to recognize that water quality is a fundamental component of a healthy, appealing community. There are many opportunities to augment existing initiatives, to arrange agreements with other jurisdictions for mutual benefit, and to work with other jurisdictions that are implementing the same measures.

Based on the Water Quality Management Plan in the Willamette Basin TMDLs, materials from DEQ, EPA, and other organizations and the Lane County Water Quality Gaps Analysis there are seven major focus areas in this region of the Willamette Basin. These represent the areas that may be considered gaps in how the region as a whole is protecting

and restoring water quality. The level of priority for actions is specific to each jurisdiction. The seven major water quality focus areas are:

- Animal Waste Management
- Septic System Management
- Erosion Prevention and Sediment Control
- Illegal Discharge
- Riparian Protection and Restoration
- Stormwater Planning and Management
- Education/Training

Table 8 outlines the focus areas of special concern identified by DEQ as an outcome of the Willamette Basin Gaps Analysis Study for this region. The table assigns a high, medium, or lower priority to each of the eight major focus areas for each jurisdiction. Lane County has many commonalities with other local jurisdictions. For example stormwater planning and management is a high priority for Lane County as well as education and training.

Table 8: TMDL Prioritization Matrix for Designated Management Agencies Outside of the Eugene/Springfield Metropolitan Area in Lane County

DMA s	Animal Waste Management	Stormwater Planning & Management	Septic System Management	Erosion Control	Illegal Discharge	Riparian Protection & Restoration	Education & Training
Coburg	Medium	High	High	High	Medium	High	High
Creswell	Medium	High	Lower	Medium	Medium	High	High
Cottage Grove	Medium	High	Lower	High	Medium	Medium	High
Junction City	High	High	Lower	High	High	Medium	High
Lane County (outside Metro)	Medium	High	High	Medium	Medium	Medium	High
Lowell	Medium	High	Lower	High	High	Medium	High
Oakridge	Medium	High	Lower	Medium	Medium	High	High
Veneta	High	High	Lower	High	High	Medium	High
Westfir	Lower	High	Medium	High	Medium	High	High

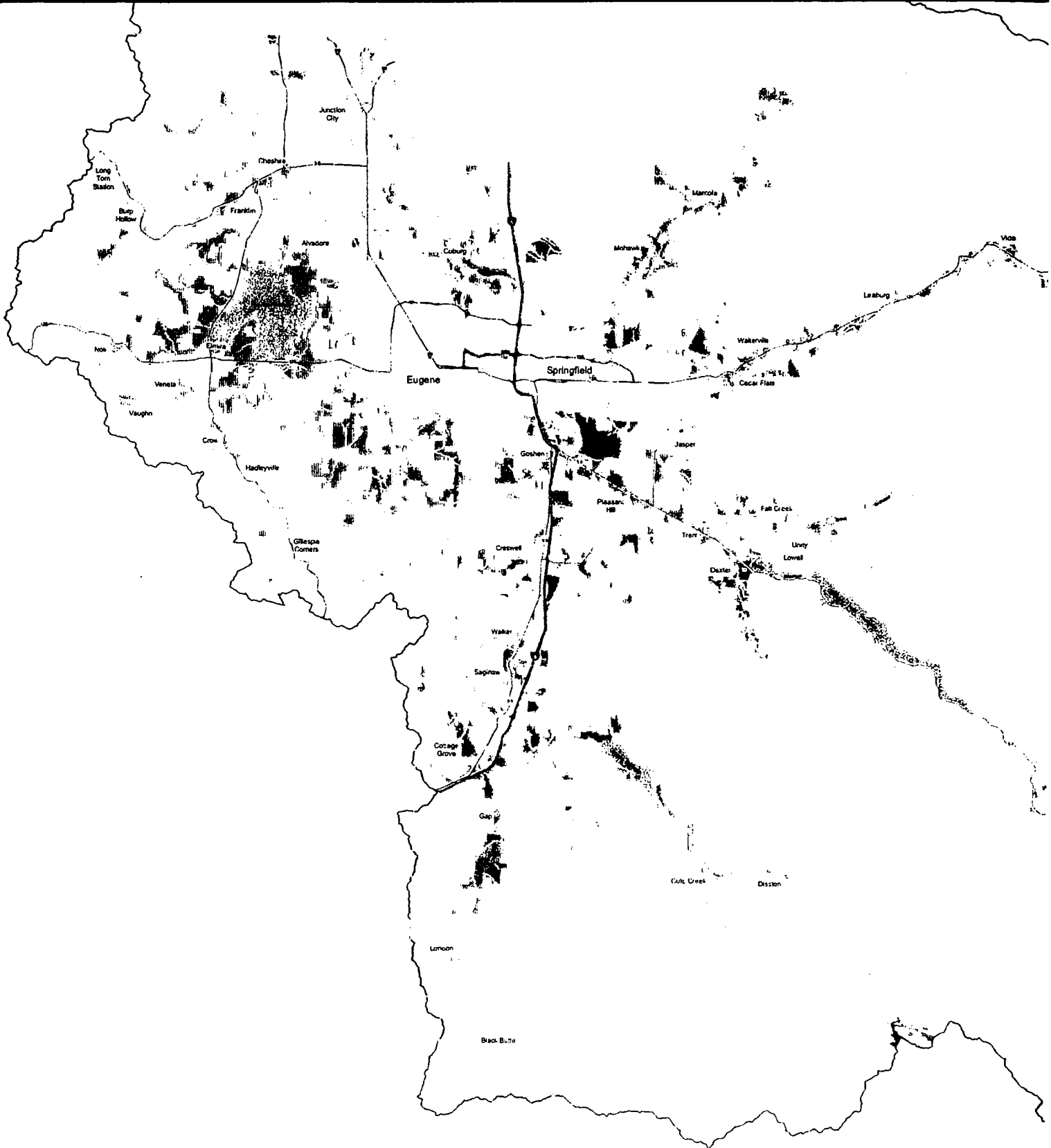
Source: Willamette Headwaters Water Quality Assets, Gaps, and Opportunities Study (Working Draft, October 2007, LCOG)

Lane County provides training for Public Works staff to ensure the likelihood that staff performs public operations in the best way possible. Other agency and private landowners could also benefit from incorporating water quality-related trainings. Riparian Protection and Restoration is an important step that Lane County is taking to reduce temperature loads. There is potential to initiate joint efforts that are coordinated across jurisdictional boundaries to increase effectiveness and reduce costs of TMDL Implementation.

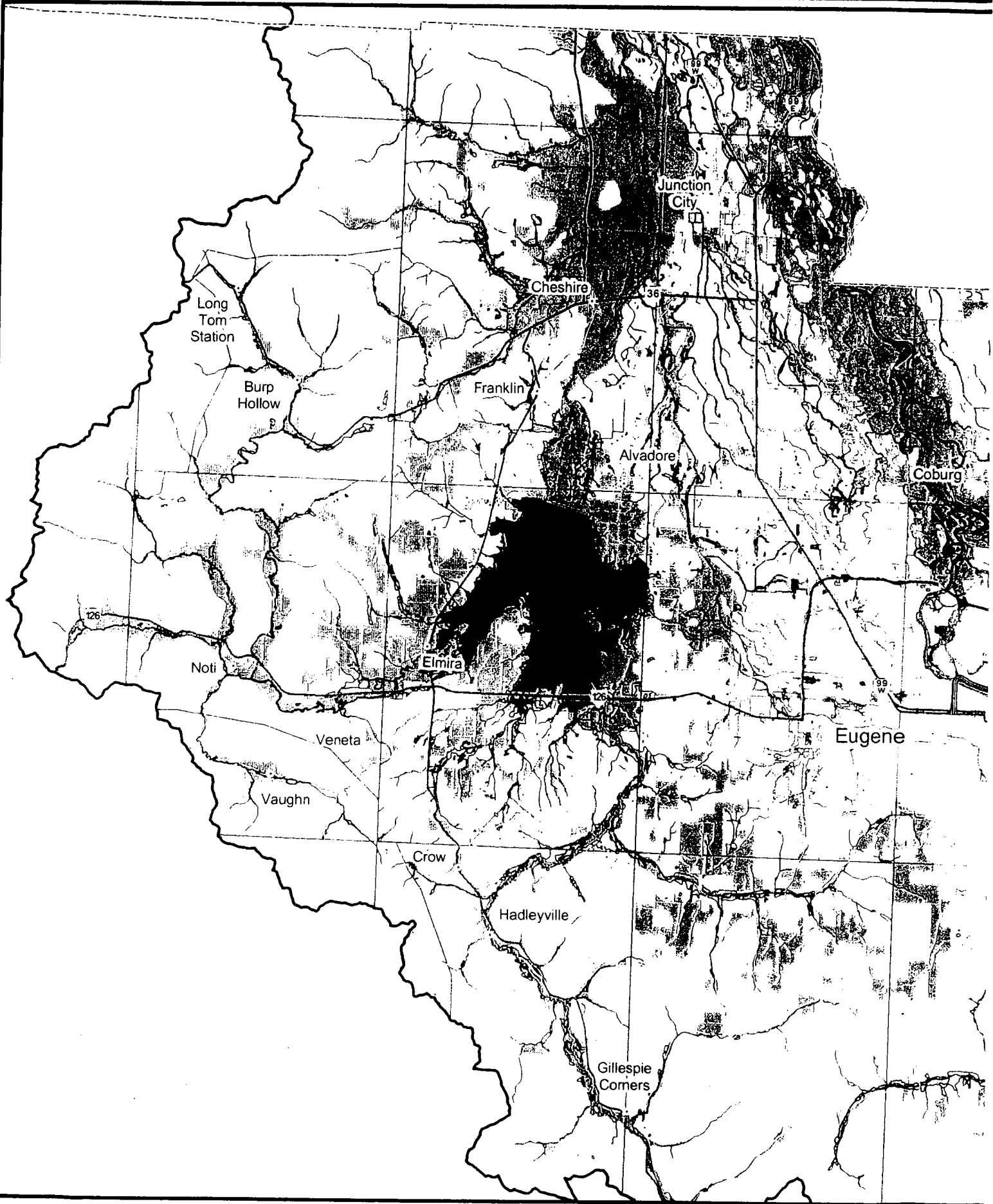
7.0 Appendices

7.1 Appendix 1: Lane County Willamette Basin TMDL Area Maps 1-6

Lane County Willamette Basin TMDL A



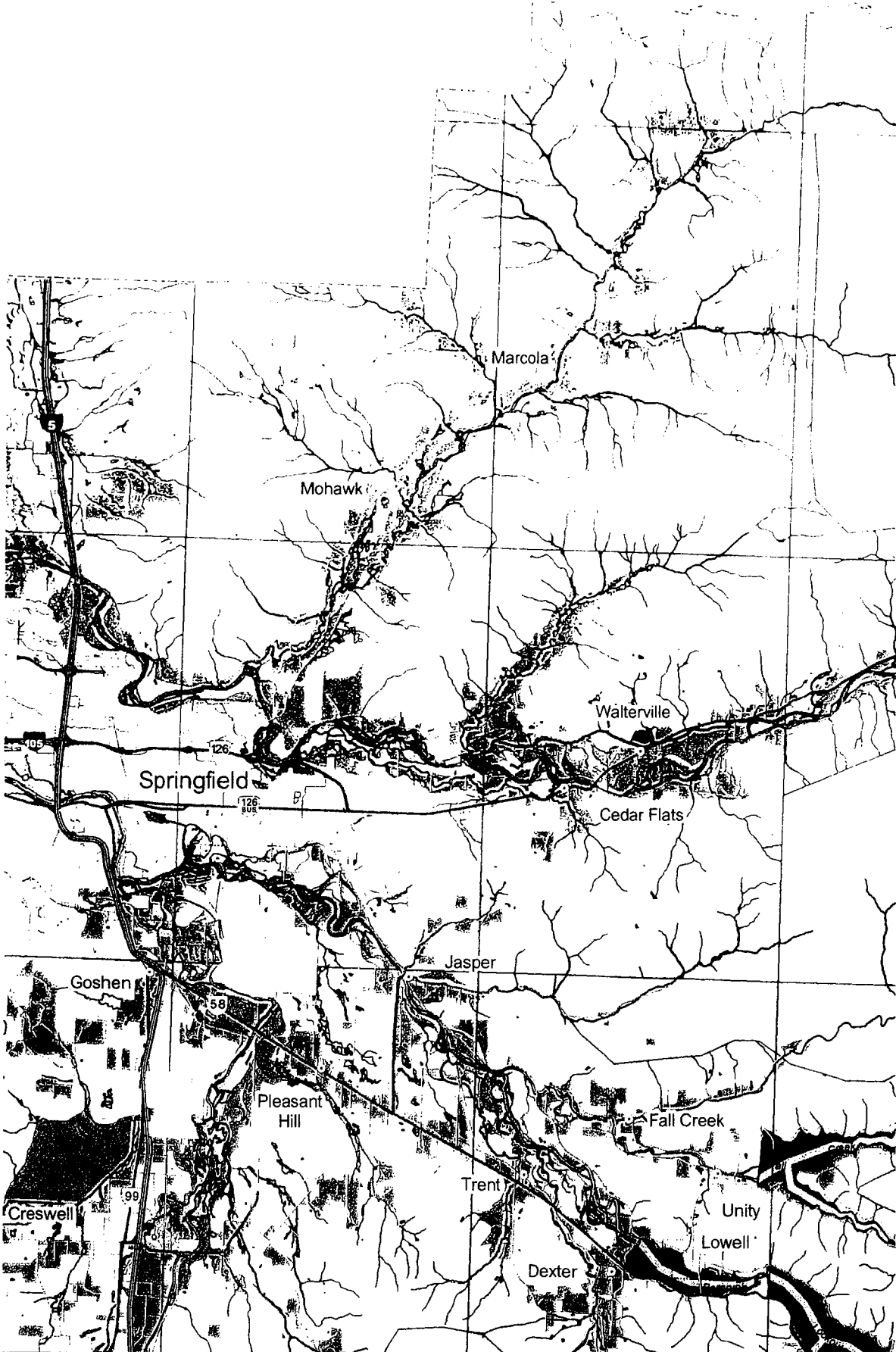
Lane County Willamette Basin TMDL A





Map 2

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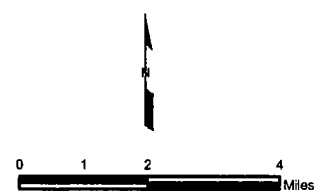


- Lane County Boundary
- Subbasin
- County Owned Land (included in TMDL Coverage)
- UGB
- Lane County TMDL Coverage (94,656 acres, 147.9 mi²)
- 303(d) Listed Stream
- Class 1 Stream* & National Wetlands Index
- Fish Bearing Stream**
- 100-year Flood Zone
- Floodway
- Water Features
- Interstate Freeway
- State Highway
- Other Roads

* These Lane County Land Management data describe perennial fish bearing streams regulated for development under Lane Code 16.253.

** These ODFW data describe areas of suitable habitat believed to be used (currently and historically) by wild, natural, and/or hatchery fish populations. The term "currently" is defined as within the past five reproductive cycles. This information is based the judgment of ODFW staff, extensive surveys, biologists and where possible, the professional opinions of staff from other natural resource agencies.

April 2008



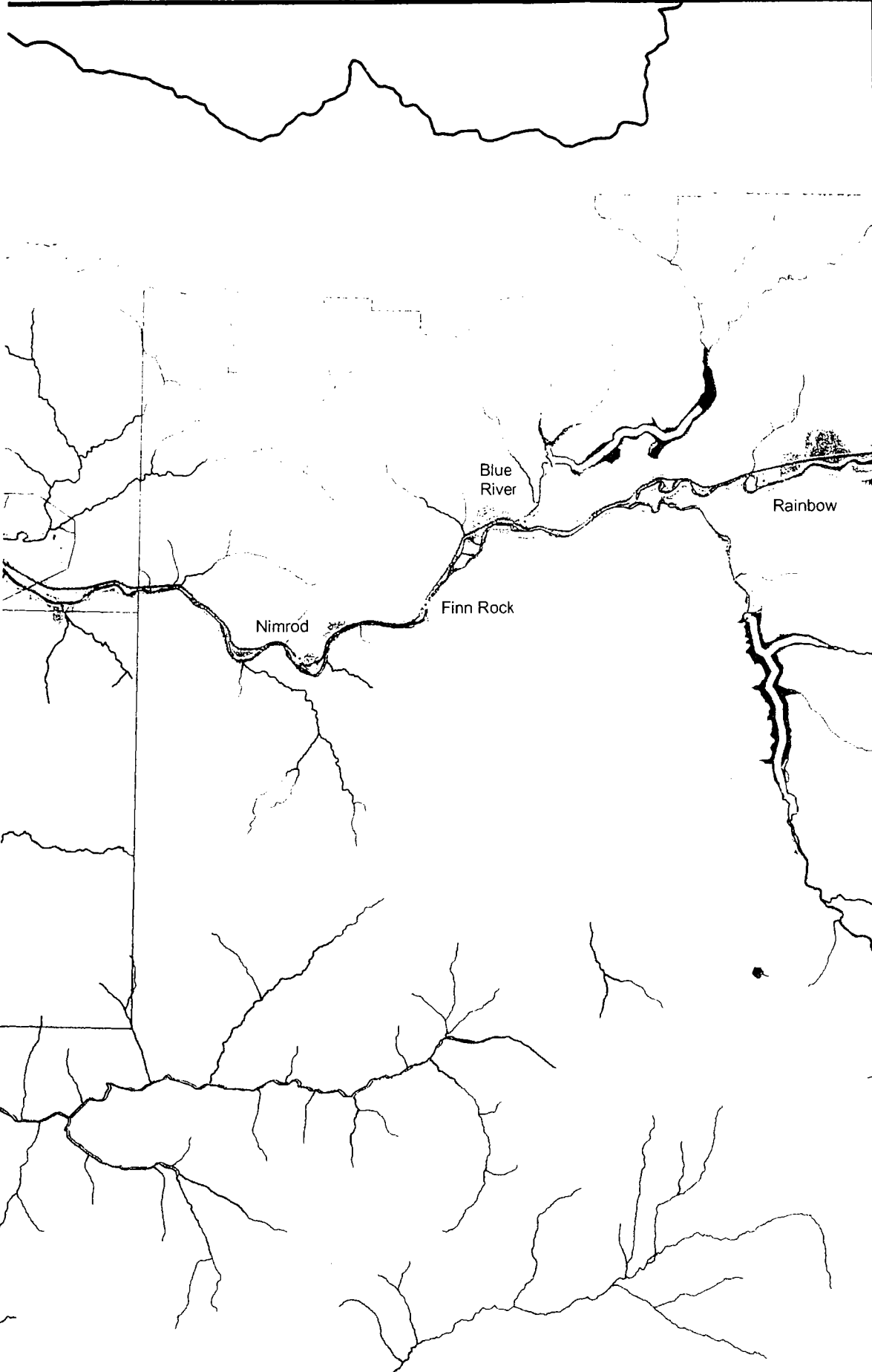
The information on this map was derived from digital databases on the Lane County regional geographic information system. Care was taken in the creation of this map, but is provided "as is". Lane County cannot accept any responsibility or errors, omissions or positional accuracy in the digital data or the underlying records. Current plan designation, zoning, etc. for specific parcels should be confirmed with the appropriate agency. There are no warranties, expressed or implied, accompanying this product. However, notification of any errors will be appreciated.





Map 3

2 3 4
5 6



- Lane County Boundary
- Subbasin
- County Owned Land
- UGB
- Lane County TMDL Coverage (94,656 acres, 147.9 mi²)
- 303(d) Listed Stream
- Class 1 Stream* & National Wetlands Index
- Fish Bearing Stream**
- 100-year Flood Zone
- Floodway
- Water Features
- Interstate Freeway
- State Highway
- Other Roads

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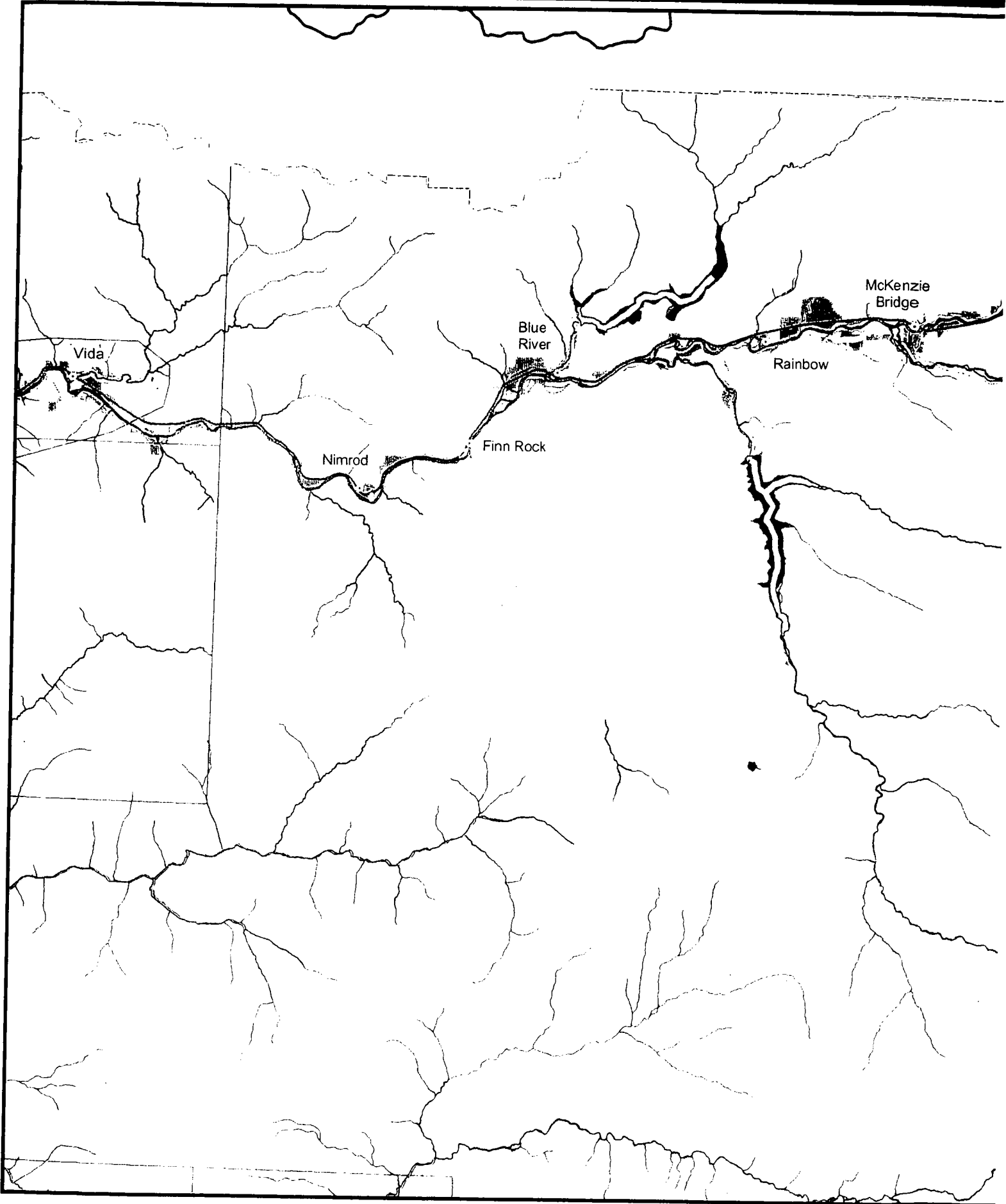
April 2008



The information on this map was derived from digital databases on the Lane County regional geographic information system. Care was taken in the creation of this map, but it is provided "as is". Lane County cannot accept any responsibility or errors, omissions or position of accuracy on the digital data or the underlying records. Current plan designations, zoning, etc. for specific parcels should be confirmed with the appropriate agency. There are no warranties, expressed or implied, accompanying this product. However, notification of any errors will be appreciated.



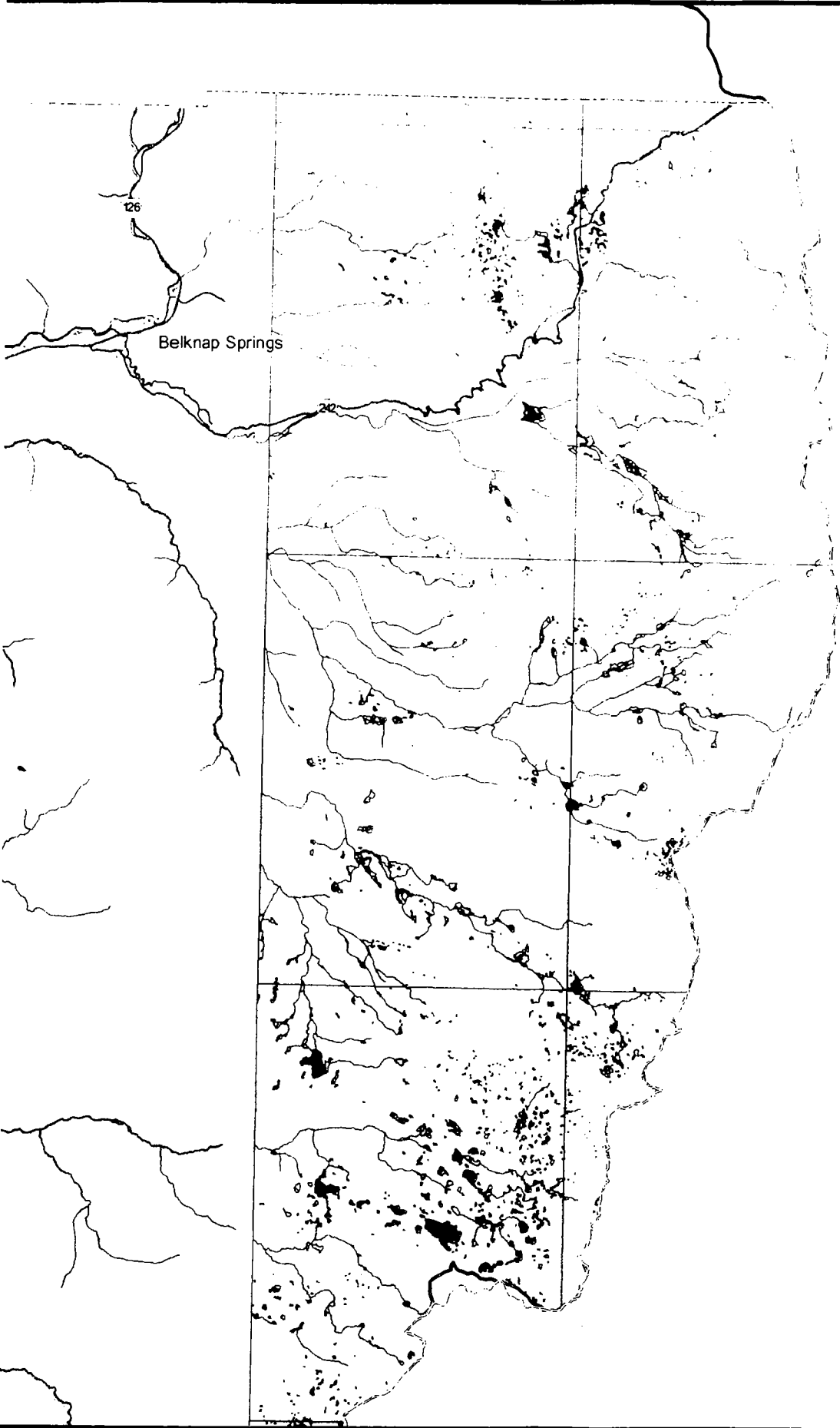
Lane County Willamette Basin TMDL A





Map 4

2 3 4
5 6



- Lane County Boundary
- Subbasin
- County Owned Land
- UGB
- Lane County TMDL Coverage (94,656 acres, 147.9 mi²)
- 303(d) Listed Stream
- Class 1 Stream* & National Wetlands Index
- Fish Bearing Stream**
- 100-year Flood Zone
- Floodway
- Water Features
- Interstate Freeway
- State Highway
- Other Roads

* These Lane County Land Management data describe perennial fish bearing streams regulated for development under Lane Code 16.253.

** These ODFW data describe areas of suitable habitat believed to be used (currently and historically) by wild, natural, and/or hatchery fish populations. The term "currently" is defined as within the past five reproductive cycles. This information is based the judgment of ODFW staff, extensive surveys, biologists and where possible, the professional opinions of staff from other natural resource agencies.

April 2008

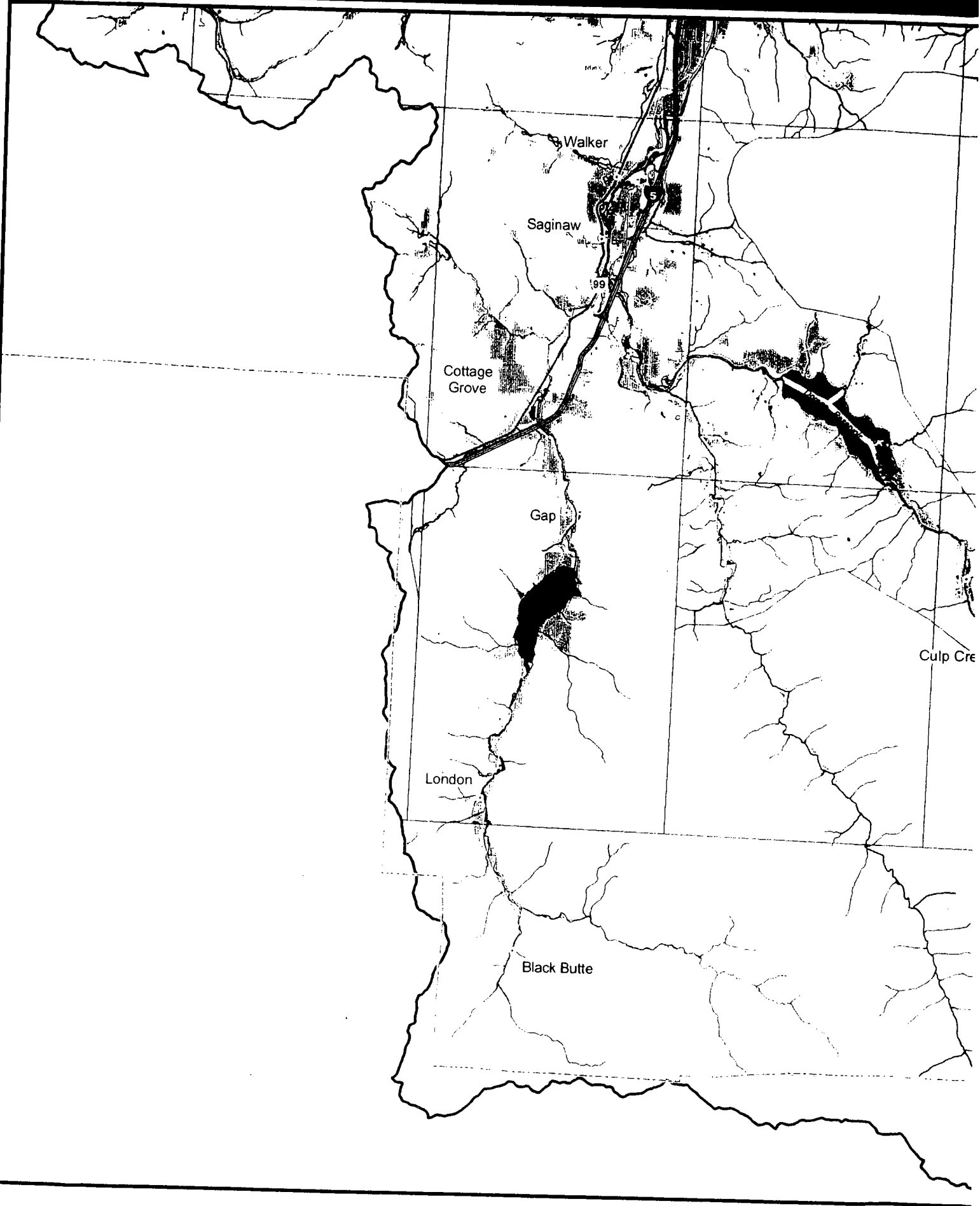


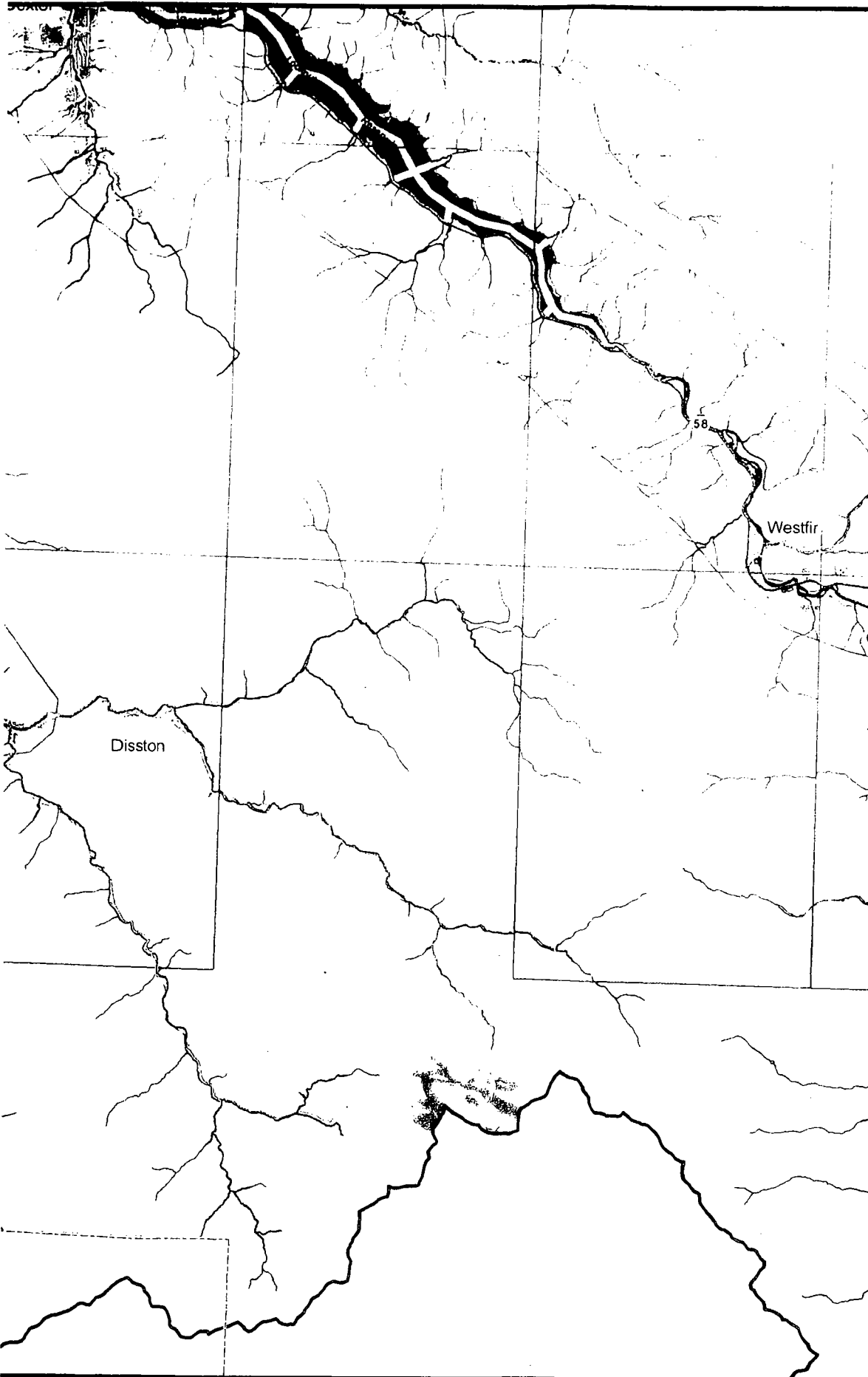
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The information on this map was derived from digital databases on the Lane County regional geographic information system. Care was taken in the creation of this map, but is provided "as is". Lane County cannot accept any responsibility or errors, omissions or positional accuracy in the digital data or the underlying records. Current plan designation, zoning, etc. for specific parcels should be confirmed with the appropriate agency. There are no warranties, expressed or implied, accompanying this product. However, no notification of any errors will be appreciated.



Lane County Willamette Basin TMDL A





Map 5

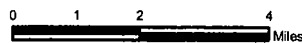
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- Lane County Boundary
- Subbasin
- County Owned Land
- UGB
- Lane County TMDL Coverage (94,656 acres, 147.9 mi²)
- 303(d) Listed Stream
- Class 1 Stream* & National Wetlands Index
- Fish Bearing Stream**
- 100-year Flood Zone
- Floodway
- Water Features
- Interstate Freeway
- State Highway
- Other Roads

* These Lane County Land Management data describe perennial fish bearing streams regulated for development under Lane Code 16.253.

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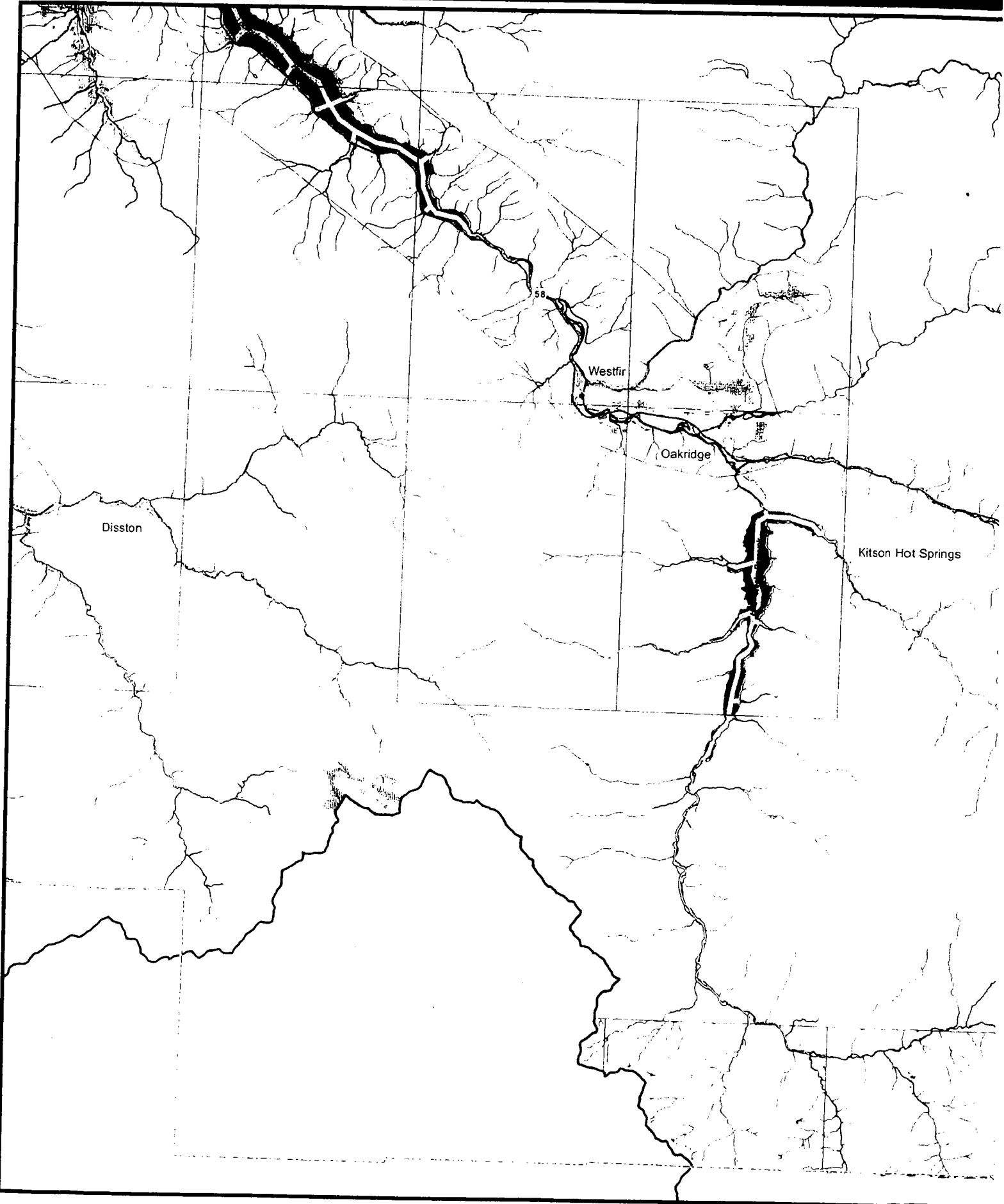
April 2008

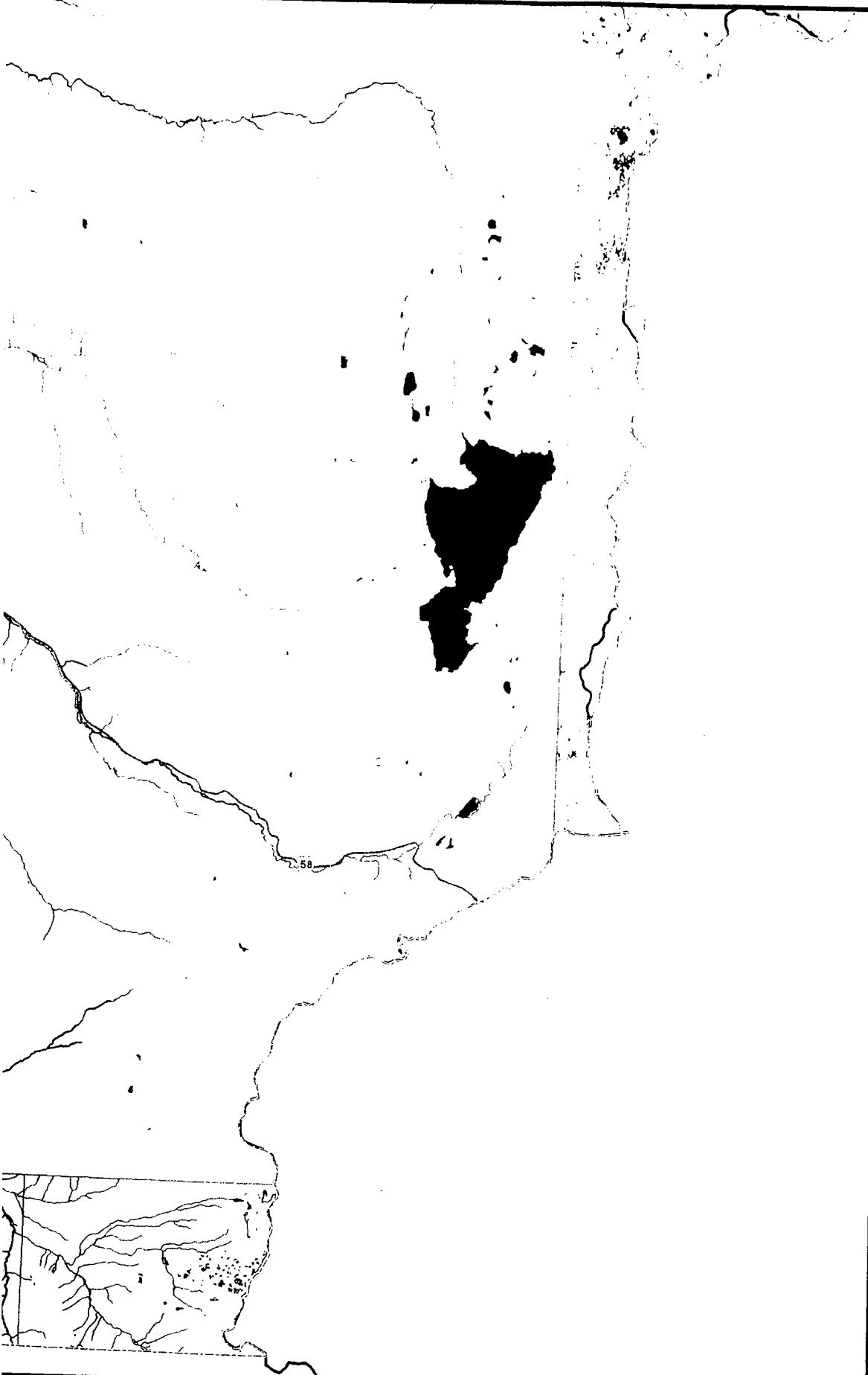


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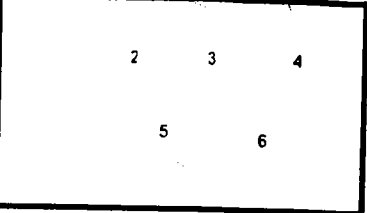


Lane County Willamette Basin TMDL A





Map 6

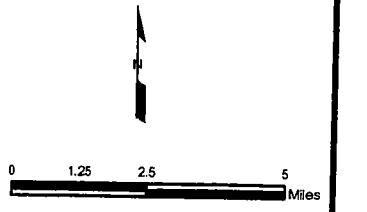


- Lane County Boundary
- Subbasin
- County Owned Land
- UGB
- Lane County TMDL Coverage (94,656 acres, 147.9 mi²)
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April 2008



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7.2 Appendix 2: Willamette Basin TMDL Parameter (Temperature, Bacteria, & Mercury) Summary

A. Temperature

The problem with temperature in the Willamette Basin is that the water is too warm at certain times of the year and this poses a threat to cold water fish species such as salmon. This excess temperature is known as thermal pollution. Removal or disturbance of streamside vegetation is the primary activity that negatively impacts stream temperature due to the loss of shade cover, but water temperature is also affected by erosion, loss of channel complexity, low streamflows, the operation of dams, and heated discharges from industrial or municipal operations.

The major sources of thermal pollution that DEQ evaluated for the Willamette Basin temperature TMDLs are wastewater treatment facilities, dam and reservoir operations, and the loss of streamside vegetation. Point sources will continue to be regulated through the existing National Pollution Discharge Elimination System (NPDES) permit methods. Sewage treatment plants, as well as large industrial permitted dischargers, will be allocated heat loads during the next renewal of their NPDES permits.

The focus of the Lane County's non-point source temperature TMDL response is to reduce or eliminate the removal or disturbance of streamside vegetation, or to mitigate for losses that have already occurred. The most effective way to minimize thermal pollution is to manage the amount of solar radiation that reaches the water. This is accomplished by protecting and reestablishing vegetation along waterways to provide shade cover. Temperature benefits can also be realized through stream restoration projects including streambank stabilization, increasing stream flows, decreasing channel width, and restoring channel complexity.

Temperature TMDLs have been developed for the Willamette subbasins and mainstem Willamette River within Lane County. DEQ used two different criteria assessment methods in developing the temperature TMDLs. One TMDL focused on the mainstem Willamette River and its major tributaries up to the location of the first dam on the tributary. The other one developed TMDLs on a more localized scale for stream segments upriver from dams.

There are 46 stream segments and nearly 380 miles of waterways (DEQ, 2002) that listed as impaired for temperature in the Willamette Basin areas of Lane County. Stream segments considered as a part of the Mainstem Willamette temperature TMDL in Lane County are the McKenzie River, Middle Fork, Fall Creek, Row River, Blue River, Coast Fork, and the Long Tom River up to the lowest reservoir on each river. All other 303(d) listed stream segments are assessed through sub-basin TMDLs.

Subbasin TMDLs for waterways above dams express temperature load allocations as effective shade targets. Effective shade targets are related to the amount of potential vegetation in the system, which is a simulation of the natural stream system and the amount of riparian vegetation that would be present under natural conditions. Excess heat in waterways is expressed as the difference between system potential shade and current effective shade levels. Effective shade targets translate TMDL load allocations into site specific vegetation targets for landowners and land managers. Using geomorphic data and shade curves, DEQ provides DMAs, land managers, and landowners with the information to approximate the amount of shade needed at a specific site to attain effective shade targets.

The maximum temperature increase in the waters of the state from all human activities can be no more than 0.3 degrees C. This was designated by the State of Oregon in Oregon Administrative Rule 340-041-0028. In the TMDLs, this allowance is known as the Human Use Allowance and is split up between various sources of human-caused thermal pollution. Models indicate that restoring shade cover to natural levels could reduce temperatures in the mainstem Willamette River by 0.5 degrees Celsius (DEQ, 2004).

The amount allocated to each source of thermal pollution varies by location, but, generally, non-point sources are allowed to contribute no more than 0.05 degrees C, point sources can contribute up to .25 degrees C, and the TMDL allocates 0.0 degrees C to the U.S. Army Corps of Engineers Willamette Project reservoirs. DEQ factors in .05 degrees as a reserve capacity that will be set aside now to accommodate future growth by meeting the increased demand for industrial and municipal wastewater discharges. On average, waterways in the Willamette Basin need to receive 23 percent less thermal input than is currently being received (DEQ, 2004).

The major implication of the temperature TMDLs is the need for protection and restoration of streamside vegetation. Examples of options to address thermal pollution include mechanisms such as:

- Developing educational materials that explain why landowners should **preserve** natural streamside vegetation
- Implementing demonstration projects on public land to illustrate potential riparian management techniques
- Instituting a riparian ordinance that prohibits the removal of native streamside vegetation
- Acquiring critical streamside property
- Becoming involved in a water quality trading program

B. Bacteria

The major contributors of bacteria to the upper reach of the mainstem Willamette River are tributaries located in the Upper Willamette subbasin. According to the results of DEQ's monitoring, the Long Tom River increases bacterial concentrations in the mainstem Willamette River by approximately 77percent (DEQ, 2004). Other waterbodies in Lane County on the 2002 303(d) list for bacteria include Coyote Creek, Fern Ridge Reservoir, Amazon Diversion Canal, the A3 Drain, and Amazon Creek along with the Long Tom River.

Seventy percent of the flow in the upper reach of the Willamette is from the Coast Fork, Middle Fork, McKenzie, and North and South Santiam Rivers (DEQ, 2004). These rivers effectively dilute bacterial concentrations from other tributaries in the mainstem of the Willamette River. It is important to maintain low bacteria levels in the headwaters region within Lane County to preserve the ability of the Willamette River to meet water quality standards.

According to the Willamette Basin TMDL, point sources in the upper reaches of the Willamette Basin cause less than a one percent increase in the bacteria concentrations over natural conditions (DEQ, 2006), so the focus of the TMDL implementation efforts should be on non-point sources. Models indicate that if these allocations are met within each subbasin, the entire upper reach of the mainstem Willamette River will be in compliance with water quality standards with respect to bacteria.

The major sources of bacteria in the urban and rural residential areas in the region are stormwater runoff, erosion, domestic and wild animal waste, failing septic systems, and municipal sewer overflows. Non-point sources of bacteria include livestock, irrigation runoff, and streambank erosion.

The Coast Fork has shown significant reduction in bacteria concentrations since it was listed on the 1996, 1998, and 2002 303(d) list. This does not mean that the jurisdictions operating in the Coast Fork subbasin should stop planning to prevent bacteria pollution.

DEQ planning targets for DMAs are designed to prevent the degradation of water quality. Chapter Two of the Willamette Basin TMDL, states that, "In subbasins with no listings, generalized reductions will be used as planning targets by designated management agencies" (DEQ, 2006). The bacteria targets are generalized into percent reduction ranges that are applied in all the subbasins of the Willamette Basin. These planning targets have been allocated

among the two major land uses that contribute bacteria to waterways; agricultural and urban. The Willamette Basin Bacteria TMDL states that urban areas must reduce their bacteria contributions by 80-94% to meet water quality standards.

Potential bacteria management strategies addressed by Lane County focus on code implementation and education. Other strategy options to address bacteria within Lane County's TMDL jurisdiction include:

- Preventing erosion and controlling sediment from new construction
- Detaining and treating stormwater prior to discharge into waterways
- Keeping stormwater conveyance channels clear of organic matter
- Controlling animal waste
- Maintaining and restoring riparian buffers
- Encouraging better site design to decrease runoff
- Preventing non-stormwater and illegal discharges
- Developing stewardship and educational programs to prevent pollution
- Street sweeping

C. Mercury

Mercury is a very complex pollutant. The way it acts in nature and the different forms it takes make it difficult to understand and accurately monitor. With no regard to local, state, or even international boundaries, mercury can be transported in the air after soil disturbance, from automobile and industrial emissions, and these emissions can travel across many miles to be later deposited by rainfall. Air deposition from emissions is only one of many ways that mercury moves through the environment. Some point sources, including timber mills and processing plants, discharge low levels of mercury in their wastewater effluent. Stormwater runoff suspends mercury molecules and carries them to waterways. Mercury is naturally occurring at low levels, but when native soil erodes at an accelerated rate those molecules are released in abnormal amounts. Mercury is also set in motion when mercury laden sediment that has been deposited long ago is re-suspended due to high flows or a significant erosion disturbance.

High mercury levels in the Willamette Basin have resulted in fish consumption advisories. To protect public health, especially that of pregnant women and young children, the Department of Human Services (DHS) has issued advisories recommending that people limit the amount of fish they consume from certain waterways. The DHS specifically advises against consuming large amounts of fish from the Willamette River, Coast Fork Willamette River, Dorena Reservoir, and Cottage Grove Reservoir due to the high levels of mercury.

In the upper reaches of the Coast Fork subbasin, legacy mines were thought to be a large contributor of mercury pollution. Monitoring shows that mines are a significant source in the Cottage Grove area, but results from the Dorena Lake area show that there are many other sources of mercury. According to the TMDL, mines contribute 0.0% of the mercury load in the Dorena area and runoff from air deposition contributes 79.4% of total mercury loads. In the Cottage Grove area, however, mines contribute 75.2% and runoff from air deposition contributes 19%. These findings not only indicate that the Coast Fork subbasin is facing a unique challenge with the legacy mines in the Cottage Grove area, but also that the rest of the Lane County portion of the Willamette Basin needs to address mercury-laden runoff and erosion of native soils. The table below outlines the sources of mercury and percent reductions needed to achieve water quality standards for the Willamette Basin, Dorena Lake, and Cottage Grove Lake.

Table 1: Willamette Basin Mercury TMDL Sources and Reductions Needed

Pollutant	Sources	Reductions
Mercury	Willamette Basin* <ul style="list-style-type: none"> ▪ Erosion of native soil (47.8%) ▪ Atmospheric deposition and runoff, including stormwater (47.7%) ▪ Point sources (3.9%) ▪ Legacy mines (0.6%) ▪ Low levels are naturally occurring 	Willamette Basin: 26.4% (128.5 kg/year)
	Dorena Lake <ul style="list-style-type: none"> ▪ Atmospheric deposition and runoff (31.1%) ▪ Erosion from disturbed forest land (68.9%) 	Dorena Lake: 29.8% (2.08 kg/year)
	Cottage Grove Lake <ul style="list-style-type: none"> ▪ Mines (74.4%) ▪ Atmospheric deposition and runoff (8.0%) ▪ Erosion from disturbed forest land (17.6%) 	Cottage Grove: 67.8% (3.13 kg/year)

* Annual mean estimate. Mercury load contributions change significantly during winter high flows. During high winter flows, 69.2% of the load is from sediment re-suspension, 0.2% from mines, 1.2% from point sources, 14.7% from erosion, and 14.7% from air deposition. Source: Department of Environmental Quality, Willamette Basin TMDLs, 2006

Despite the uncertainty and complex nature of mercury, there are steps that can be taken to minimize the amount of mercury that is deposited in waterways and accumulated in the tissues of fish, wildlife, and humans. Steps DMAs can implement include mercury recycling and education programs as well as erosion prevention and sediment control regulations for new construction. The goal of the mercury TMDL is “to reduce mercury levels in the basin to a point where fish are no longer unsafe to eat” (DEQ, 2006).

To begin addressing the mercury problem in the Willamette Basin, DEQ has developed interim allocations for point sources and non-point sources while they conduct more in-depth research. Instead of specific allocations, DEQ calculates the interim mercury TMDLs based on two categories: non-point and point sectors. DEQ expects all non-point sources to begin implementing mercury reduction management strategies and policies. The Willamette Basin TMDL will be revised in the future to be more specific according to the results of annual and 5-year monitoring reports, and further research.

Implementation plans must include a mercury reduction strategy “that includes feasible measures to minimize mercury runoff” (DEQ, 2006). DMAs have an array of options to reduce mercury pollution. Many of the management strategies that address mercury pollution also address bacteria and temperature, and are shown under the “All Pollutants” category on the Lane County Willamette Basin TMDL Implementation Matrix (Table 6). Potential management strategies include:

- Working with dentist offices to properly dispose of mercury wastes
- Establishing a stormwater plan
- Stormwater detention and treatment prior to discharge into waterways
- Establishing an erosion prevention and sediment control program
- Regular street sweeping and stormwater system maintenance
- Minimizing land disturbance during construction and other activities whenever possible

D. Summary

The table below summarizes the parameters addressed in the Willamette Basin TMDL, the major sources of that pollutant, and reductions needed to meet water quality standards. Lane County is implementing reduction strategies on jurisdictional lands as discussed in the table and shown on Maps 1-6 located in Appendix 1.

Table 2: Willamette Basin TMDL Parameters, Sources and Reductions Needed

Parameters	Sources	Reductions
Temperature	<ul style="list-style-type: none"> ▪ Streamside vegetation removal ▪ Wastewater discharge ▪ Industrial point sources ▪ Channel modification ▪ Water extraction ▪ Disruption of seasonal cooling and warming patterns ▪ Dam and reservoir operations 	Willamette Basin: Varies
		All Subbasins: Average of 23%
Bacteria	<ul style="list-style-type: none"> ▪ Stormwater discharge ▪ Construction site erosion and runoff ▪ Failing septic systems ▪ Illegal discharges ▪ Wastewater treatment plants and other point source treatment failures ▪ Sewer overflows during wet weather ▪ Surface runoff ▪ Animal wastes 	Urban: 80 - 94%
		Agricultural: 66 – 83%
Mercury	<ul style="list-style-type: none"> ▪ Erosion from urban, farm, and forest land ▪ Construction site erosion and runoff ▪ Atmospheric deposition and runoff, including stormwater ▪ Other (dentist offices, fluorescent light bulbs, etc.) ▪ Point sources ▪ Legacy mines ▪ Naturally occurring ▪ Mines 	Willamette Basin: 26.4%
		Dorena Lake: 29.8%
		Cottage Grove: 67.8%

Source: Department of Environmental Quality, Willamette Basin TMDLs, 2006

The following questions are intended to bring to light the work you are already doing that can be included in the Implementation Plan with no new or additional efforts. Some questions will be relevant to planning and others to public works. Please attach any relevant documents.

1. Indicate the programs your jurisdiction has participated in or documents your jurisdiction has prepared that can be drawn from in the process of developing a TMDL Implementation Plan. (*Planning and Public Works*)

- EPA NPDES Stormwater Phase I and II Permit Stormwater Management Plans
- 401 Water Quality Certification Program
- DEQ Underground Injection Control Program
- Source Water Assessment
- Clean Water State Revolving Fund
- 319 NPS and NOAA NPS Grants
- A Watershed Council's OWEB-funded Watershed Management Plan
- Other--Please Specify: ESA Limit 10 Routine Road Maintenance BMP's

2. What zoning ordinances and/or overlays has your jurisdiction enacted that relate to water quality? (Example: Riparian Buffer) (*Planning*)

Riparian Buffer: Lane Code 16.253.

Floodplain Ordinance: Lane Code 16.244 (limits development in floodplain and floodway)

Clear Lake Watershed protections zone: LC 16.258

Conservation zones: LC 16.234, 235, 236, 237, 238, 239 & 240. Some of the purposes of the conservation zones are to protect water quality, preserve and enhance riparian vegetation, and assure the continued biological productivity of the Siuslaw estuary.

3. Identify which part(s) of your Comprehensive Plan address water quality, non-point source pollution, stormwater, riparian zones, or water pollution control. (*Planning*)

Part II, Goal 6. Water and Air Quality.

Part II, Goal 5. Flora and Fauna Policy #6. Protection of riparian vegetation.

4. Has your jurisdiction completed a Stormwater Management Plan? (*Planning and Public Works*)

Yes – Public Works

5. Has your jurisdiction completed a Drinking Water Protection Plan? (*Planning and Public Works*)

Not that I know of.

The Clear Lake Watershed Protection Zone is not a plan, but was created to protect the water quality in Clear Lake, which is the water source for the Heceta Water District. The district supplies

drinking water to the City of Florence and the area surrounding Clear Lake. I am not aware of a county-wide drinking water protection plan.

6. What steps has your jurisdiction taken to enact and/or comply with Statewide Land Use Planning Goals 5 and 6? (*Planning*)

LC 16.253 Riparian regulations

LC 16.260 Cluster subdivisions: for open space preservation

LC 16.213 Natural Resource zone: To protect unique natural resources

7. Has your jurisdiction received any awards or recognition due to your efforts to protect water quality and/or manage lands? If yes, please specify. (*Planning and Public Works*)

Not that I know of.

8. Does your jurisdiction have any stormwater treatment facilities? If yes, what kind and how many? (*Public Works*)

2 – Oil/Water separators (Stromceptor-type) on Irvington and Beacon. Other than that our Stormwater system is characterized by open roadside ditches in rural areas and piped systems in urban areas such as Santa Clara. There are no specific systems, other than those mentioned, for stormwater quality.

9. What resources does your jurisdiction provide that encourages pet owners to “pick up” after their pets (waste bags, educational materials, dog parks in environmentally-friendly areas)? (*Public Works*)

Educational materials distributed in relation to our NPDES permit.

10. Does your jurisdiction have a process to notify the public when heavy bacteria levels may be present in waterways due to heavy rainfalls, wastewater system backup, and/or equipment failures? (*Public Works*)

Other than through press releases or direct media contact, no.

11. Does your jurisdiction purchase instream flow water rights to maintain adequate water flows? (*Public Works*)

No.

12. What employee training programs, if any, address pollution prevention in regards to municipal sources, i.e. fleet and building maintenance, park and open space maintenance, or storm water system maintenance? (*Public Works*)

Lane County PW holds an annual maintenance short school for employees that cover a variety of topics including the ones mentioned. Specifically, effort is made to review the Best Management Practices established through our Limit 10 qualification.

13. Has your jurisdiction's public works or parks department constructed any swales, detention ponds/basins, or artificial wetlands? If yes, please specify. (*Public Works*)

Lane County has constructed several wetland mitigation sites related to past road projects, however none were constructed with a stormwater treatment component.

14. Does your jurisdiction encourage private developers to construct swales, detention ponds/basins, or artificial wetlands? (*Planning*)

No.

15. Does your jurisdiction offer yard waste collection services and/or recycling programs? (*Planning and Public Works*)

Yes. Lane County Waste Management has many programs. Most are ongoing on a continual basis.

Lane County Public Works also performs leaf pick-up services for the Santa Clara area in the fall.

16. Does your jurisdiction have a program to detect illegal discharges into waterways? (*Public Works*)

As a condition of our NPDES Phase 2 permit we are required to perform this function. We have partnered with the City's of Eugene and Springfield to cover the entire area within the urban growth boundary of the metro area.

17. Does your jurisdiction have a storm water system map? (*Public Works*)

Yes.

18. Does your jurisdiction have ordinances that (*Planning*):

- require erosion and/or sediment control at construction sites? **no**
- require retention of vegetation and/or re-planting at construction sites? **Only in the Beaches and Dunes Overlay in the coastal areas.**
- limit impervious surfaces in new development? **no**
- limit development in floodplains? **yes**
- require septic system inspection and maintenance? **yes**
- protect riparian areas? **yes**

If any were answered 'yes', please specify:

In floodplain, structures must be elevated.

New and expanded septic systems must be inspected and approved.

Riparian regulations limit removal of native vegetation and require replanting.

The Beaches and Dunes overlay is intended to protect and conserve the coastal beach and dune resources by preventing soil erosion.

19. Does your jurisdiction perform routine maintenance of your stormwater system? If yes, briefly explain the procedures. *(Public Works)*

Annually we make efforts to clean ditches and “Vactor” catch basins and pipes on a routine basis. This includes scraping ditchlines with a backhoe, vacuuming debris from catch basins and water jet cleaning storm drain pipes.

20. List any cooperative efforts between the watershed council and your jurisdiction, such as restoration projects. *(Planning and Public Works)*

Lane County PW has active culvert replacement programs with the McKenzie and Siuslaw Watershed Council’s. Funds, labor and equipment are contributed to replace priority culvert crossings to enhance fish passage.

The following questions are to give LCOG a better idea of where we can be of assistance.

1. Please list the people from your jurisdiction that will be most involved in your TMDL Implementation planning process.

Name	Position	Phone	E-mail
Mike Russell	Assistant Maintenance Planner	682-6968	mike.Russell@co.lane.or.us
Steve Hopkins	Land Use Planner	682-3159	Steve.HOPKINS@co.lane.or.us
Sonny Chickering	County Engineer	682-6990	Sonny.Chickering@co.lane.or.us
Ollie Snowden	Public Works Director	682-6910	Oliver.Snowden@co.lane.or.us

2. Please specify groups in your jurisdiction that would be especially interested in the TMDL proceedings or in volunteering.

3. What information does your jurisdiction already have that would be helpful during the TMDL Implementation planning process?

- NPDES material
- ESA Limit 10 material
- GIS expertise (county-wide coverages)

4. What information is lacking about water quality in your community or potential protection strategies that would be helpful during the TMDL Implementation planning process?

5. Please indicate where you would like to receive assistance from LCOG by rating the following components of TMDL planning on a scale of 1 (Highest priority) to 5 (Lowest priority).

- 2 Public outreach
- 1 **Identifying potential management strategies**
- 2 Public official and staff workshops
- 3 Developing educational and outreach materials
- 3 Conducting public workshops and stakeholder meetings
- 4 Drafting potential policies
- 1 **Developing a performance monitoring plan**
- 4 Assuring compliance with applicable administrative rules and federal regulations
- 5 GIS data integration

Additional Comments: _____

Thank you for taking the time to complete this worksheet. This information will help to streamline the rest of the TMDL Implementation planning process.

If you have any questions or comments please contact Denise Kalakay at the Lane Council of Governments.
Phone: (541) 682-6434
E-mail: dkalakay@lcoog.org

7.4 Appendix 4: Potential TMDL Implementation Strategies

Gaps in Existing Water Quality Efforts for Temperature

Temperature Gaps	Potential Solutions
Streamside vegetation unprotected	<ul style="list-style-type: none"> ▪ Provide technical assistance to landowners along waterways ▪ Demonstrate riparian area, wetland, and floodplain BMPs on publicly managed land ▪ Adopt a riparian buffer ordinance or overlay zone ▪ Educate landowners about the value of riparian areas ▪ Initiate a tree planting program along waterways
High priority riparian areas unidentified	<ul style="list-style-type: none"> ▪ Determine areas that will yield a large benefit if protected or restored ▪ Establish framework to identify critical riparian areas ▪ Determine the feasibility of acquiring critical lands

Gaps in Existing Water Quality Efforts for Bacteria

Bacteria Gaps	Potential Solutions
Proper animal waste management	<ul style="list-style-type: none"> ▪ Provide bags for pet owners to pick-up after pets ▪ Partnerships with watershed councils and others ▪ Erect signs to inform pet owners of the problems related to pet waste ▪ Develop educational materials about proper manure management ▪ Implement programs to better manage waste in areas with high concentrations of wildlife
Erosion prevention and sediment control at new construction sites	<ul style="list-style-type: none"> ▪ Adopt erosion prevention and sediment control regulations for new construction ▪ Provide incentives to developers who meet certain erosion control qualifications ▪ Implement site plan review procedures that includes requirements for erosion control mechanisms ▪ Establish site inspection and monitoring procedures
Lack of a process to inventory, monitor, and correct failing septic systems	<ul style="list-style-type: none"> ▪ Offer assistance for homeowners to replace a failing or outdated system ▪ Use building records to identify systems that may be outdated and more likely to fail ▪ Educate homeowners on proper septic maintenance and inspection
Programs to detect and eliminate illegal discharges into waterways	<ul style="list-style-type: none"> ▪ Promote proper waste management through education ▪ Develop a stormwater system map ▪ Increase fines for illegal dumping ▪ Establish a illegal dumping control program ▪ Educate citizens about waste disposal opportunities and the hazards of improper waste disposal ▪ Develop a process to respond to and document complaints of illegal discharge
Lack of multi-objective stormwater plans	<ul style="list-style-type: none"> ▪ Develop a stormwater system map and plan ▪ Regional stormwater map and/or plan ▪ Develop and implement operations and maintenance procedures using best management practices ▪ Integrate water quality protection and natural resource considerations in existing plans
Lack of stormwater detention facilities and incentives to encourage their construction	<ul style="list-style-type: none"> ▪ Use an ordinance or other regulatory mechanism to address runoff from new construction projects ▪ Establish maintenance program for all stormwater features ▪ Adopt water quality standards for public works projects ▪ Provide incentives to landowners that construct on-site stormwater detention/treatment facilities ▪ Encourage stormwater features on existing open space or landscaped areas through a retrofit incentive program
Lack of process to notify public of high bacteria levels	<ul style="list-style-type: none"> ▪ Distribute educational materials ▪ Establish a program to notify residents when high bacteria levels are present

Gaps in Existing Water Quality Efforts for Mercury

Mercury Gaps	Potential Solutions
Erosion prevention and sediment control regulations for new construction	<ul style="list-style-type: none"> ▪ Adopt erosion prevention and sediment control guidelines for new construction ▪ Provide incentives to developers who meet certain erosion control qualifications ▪ Implement site plan review procedures that includes requirements for erosion control mechanisms ▪ Establish site inspection and monitoring procedures
Programs to work with dentists and recycle fluorescent light bulbs	<ul style="list-style-type: none"> ▪ Contact jurisdictions with established mercury reduction programs ▪ Implement programs modeled after existing programs
Process to notify citizens of fish consumption advisories	<ul style="list-style-type: none"> ▪ Distribute educational materials on fish consumption advisories ▪ Put up signs when fish consumption advisories are issued
Lack of stormwater detention facilities and incentives to encourage their construction	<ul style="list-style-type: none"> ▪ Use an ordinance or other regulatory mechanism to address runoff from new construction projects ▪ Establish maintenance program for all stormwater features ▪ Adopt water quality standards for public works projects ▪ Provide incentives to landowners that construct on-site stormwater detention facilities ▪ Encourage stormwater features on existing open space or landscaped areas through a retrofit incentive program

Gaps in Existing Water Quality Efforts for All Pollutants

Gaps for All Pollutants	Potential Solutions
Monitoring capacity	<ul style="list-style-type: none"> ▪ Partner with watershed councils to establish a region-wide monitoring program
Enforcement capacity	<ul style="list-style-type: none"> ▪ Encourage a 'Neighborhood Watch'-type program for water quality violations
Taking advantage of non-point source grant opportunities	<ul style="list-style-type: none"> ▪ Establish an inventory of non-point source grant opportunities ▪ Apply collectively for funding for region-wide projects and protection mechanism implementation
Regional water quality coordination	<ul style="list-style-type: none"> ▪ Use Source Water Assessments to target contaminant sources ▪ Partnerships with watershed councils and others ▪ Region-wide stormwater map and/or plan ▪ Regional drinking water protection effort ▪ Regional pollution prevention team ▪ Regional Mercury Reduction Strategy ▪ Provide free hazardous waste disposal and advertise existing programs
Public employee pollution prevention training programs	<ul style="list-style-type: none"> ▪ Regional public works BMP-sharing network ▪ Use training materials from EPA and DEQ in existing training programs ▪ Regional training sessions
Promotion of water quality efforts	<ul style="list-style-type: none"> ▪ Advertise successes in local media ▪ Build interpretive displays near water quality projects
Incentives/regulations for stormwater features in new development	<ul style="list-style-type: none"> ▪ Adopt an ordinance requiring stormwater detention and treatment in new developments ▪ Encourage stormwater features on existing open space or landscaped areas through a retrofit incentive program

7.5 Appendix 5: Glossary

303(d) List - A section of the Clean Water Act of 1972 requiring states to identify and list water bodies that do not meet the State's water quality standards. DEQ compiles a list of impaired and threatened waterbodies in need of water quality restoration which is submitted to EPA for approval. This list is commonly referred to as the "303(d) List" because it is prepared in accordance with the requirements of section 303(d) of the federal Clean Water Act of 1972. The term is often used in a narrow sense to refer only to the specific list of impaired and threatened waters within the jurisdiction of a State, Territory, or authorized Tribe.

Anthropogenic - When used to describe "sources" or "warming", means that which results from human activity.

Background - All non-anthropogenic sources of pollutants. In cases DEQ is unable to distinguish background and anthropogenic sources of pollutants, the pollutants are considered as **background** in the analysis.

Background Sources - Includes all sources of pollution or pollutants not originating from human activities. In the context of a TMDL, background sources may also include anthropogenic sources of a pollutant that the Department of another Oregon state agency does not have authority to regulate, such as pollutants emanating from another state, tribal lands or sources otherwise beyond the jurisdiction of the state.

Basin - A third field hydrologic unit as identified by the U.S. Geological Survey.

Best Management Practices (BMPs) - Methods, measures, or practices that are determined to be reasonable and cost-effective means for a landowner to meet certain, generally nonpoint source, pollution control needs. BMPs include structural and nonstructural controls and operation and maintenance procedures.

Channel Morphology - The structure, form and evolution of stream channels.

Clean Water Act (CWA) - The Clean Water Act (formerly referred to as the Federal Water Pollution Control Act or Federal Water Pollution Control Act Amendments of 1972), Public Law 92-500, as amended by Public Law 96-483 and Public Law 97-117, 33 U.S.C. 1251 et seq. The Clean Water Act (CWA) contains a number of provisions to restore and maintain the quality of the nation's water resources. One of these provisions is section 303(d), which establishes the TMDL program.

Critical Habitat - Those areas that support rare, threatened or endangered species, or serve as sensitive spawning and rearing areas for aquatic life as designated by the U.S. Fish and Wildlife Service or NOAA Fisheries pursuant to the Endangered Species Act (16 USC 1531).

Designated Management Agency (DMA) - Means a federal, state or local governmental agency that has legal authority over a sector or source contributing pollutants, and is identified as such by the Department of Environmental Quality in a TMDL.

Discharge - Flow of surface water in a stream or canal or the outflow of groundwater from a flowing artesian well, ditch, or spring. Can also apply to discharge of liquid effluent from a facility or to chemical emissions into the air through designated venting mechanisms.

Effluent - A discharge of liquid waste.

Geographic Information Systems (GIS) - A computer system designed to view, sample and create spatial data sets.

Hydrologic Unit - A USGS classification of drainage areas: watershed (5th Field), subbasin (4th Field) and basin (3rd Field).

Hydrology - The scientific study of the water of the earth, its occurrence, circulation and distribution, its chemical and physical properties, and its interaction with its environment, including its relationship to living things.

Impaired Segments - Waterbodies (i.e., stream reaches or lakes) that have been placed on the Section 303(d) list because they exceed water quality standards for one or more pollutant(s).

Load Allocation (LA) - The portion of a receiving water's loading capacity that is attributed either to one of its existing or future nonpoint sources of pollution or to natural background sources. Load allocations are best estimates of the loading, which can range from reasonably accurate estimates to gross allotments, depending on the availability of data and appropriate techniques for predicting the loading. Wherever possible, natural and nonpoint source loads should be distinguished.

NPDES - National Pollutant Discharge Elimination System established by the Clean Water Act. The national program for issuing, modifying, revoking and reissuing, terminating, monitoring, and enforcing permits, and imposing and enforcing pretreatment requirements, under Sections 307, 402, 318, and 405 of the Clean Water Act. Facilities subjected to NPDES permitting regulations include operations such as municipal wastewater treatment plants and industrial waste treatment facilities.

Natural background levels - Natural background levels represent the chemical, physical, and biological conditions that result from natural changes to the earth's surface, such as weathering or decay.

Nonpoint Sources - Pollution that is not released through pipes but rather originates from multiple sources over a relatively large area. Nonpoint sources can be divided into source activities related to either land or water use including failing septic tanks, improper animal-keeping practices, forestry practices, and urban and rural runoff.

Point Sources - Pollutant loads discharged at a specific location from pipes, outfalls, and conveyance channels from either municipal wastewater treatment plants or industrial waste treatment facilities. Point sources can also include pollutant loads contributed by tributaries to the main receiving water stream or river.

Pollutant - A contaminant that is discharged to a waterbody, resulting in the impairment of that waterbody. Types of pollutants include dredged spoil, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal, and agricultural waste discharged into water (CWA Section 502(6)).

Pollution - Contamination or other alteration of the physical, chemical, or biological properties of any waters of the State, including change in temperature, taste, color, turbidity, silt, or odor of the waters, or such radioactive or other substance into any waters of the State which by itself or in connection with any other substance present, will or can reasonably be expected to create a public nuisance or render such waters harmful, detrimental, or injurious to public health, safety, or welfare, or to domestic, commercial, industrial, agricultural, recreational, or other legitimate beneficial uses or to livestock, wildlife, fish or other aquatic life, or the habitat thereof.

Runoff - That part of precipitation, snowmelt, or irrigation water that runs off the land into streams or other surface water. It can carry pollutants from the air and land into receiving waters.

Salmon - Means Chinook, chum, coho, sockeye and pink salmon.

Salmon and Steelhead Spawning - Biologically based numeric criteria for streams in which seven-day-average maximum temperatures may not exceed 13.0 degrees Celsius (55.4 degrees Fahrenheit).

Salmon and Trout Rearing and Migration - Biologically based numeric criteria for streams in which seven-day-average maximum temperatures may not exceed 18.0 degrees Celsius (64.4 degrees Fahrenheit).

Salmonid or Salmonids - Means native salmon, trout, mountain whitefish and char (including bull trout). For purposes of Oregon water quality standards, salmonid does not include brook or brown trout since they are introduced species.

Sewage treatment plant - A system that uses the process of purifying mixtures of human and other wastes by aerobic and/or anaerobic means in the treatment of municipal sewage or industrial wastes of a liquid nature.

Subbasin - A region drained by a forth field hydrologic unit (river system) as identified by the U.S. Geological Survey.

Total Maximum Daily Load - A written quantitative plan and analysis for attaining and maintaining water quality standards and includes the elements described in OAR 340-042-0040. These elements include a calculation of the maximum amount of a pollutant that a waterbody can receive and still meet state water quality standards, allocations of portions of that amount to the pollutant sources or sectors, and a Water Quality Management Plan to achieve water quality standards.

Waste Load Allocation - The portion of pollutants allowed in a total maximum daily loads for a point source.

Waterbody -Any surface waters of the state.

Watershed - A drainage area or basin in which all land and water areas drain or flow toward a central collector such as a stream, river, or lake at a lower elevation.