LOWER GRANDE RONDE SUBBASINS TMDL
CHAPTER 1: OVERVIEW AND BACKGROUND

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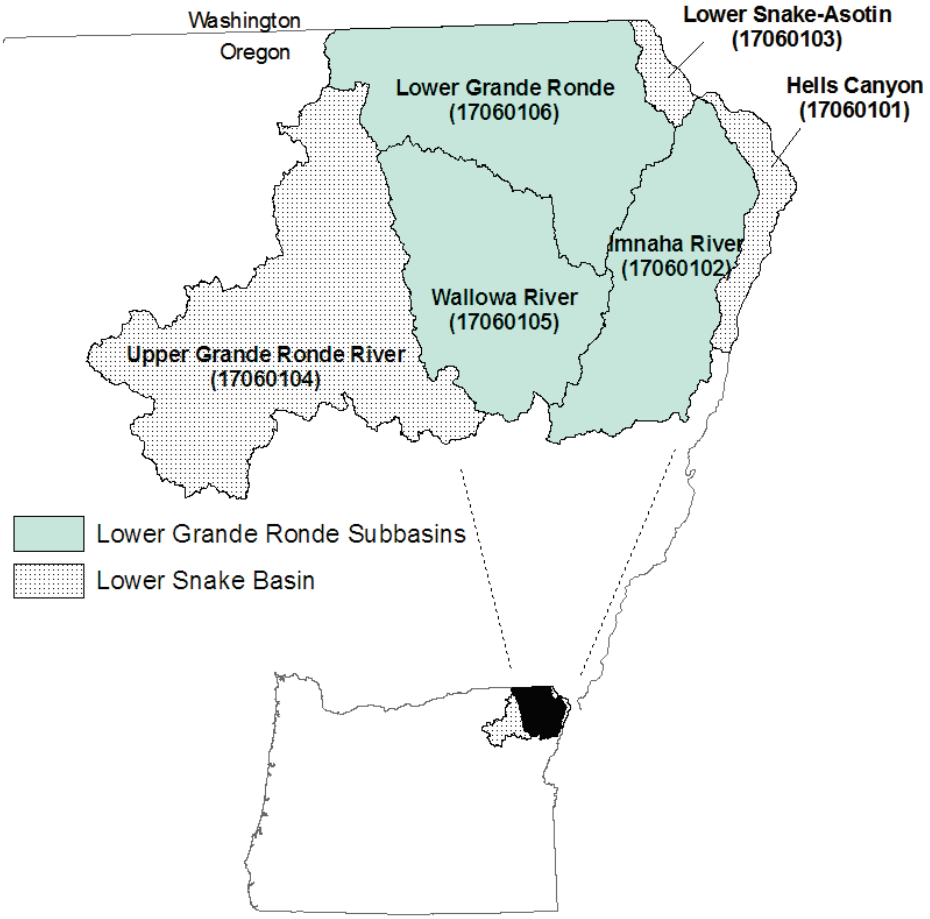
1.1 INTRODUCTION

The Oregon Department of Environmental Quality is proposing pollution limits to protect human health and salmon and trout in the Lower Grande Ronde Subbasins (**Figure 1-1**). The geographic scope of these limits is three fourth-field subbasins in the northeast corner of Oregon: Imnaha River (HUC 17060102), Wallowa River (HUC 17060105) and Lower Grande Ronde (HUC 17060106), which are referred to collectively as "Lower Grande Ronde Subbasins" in this document. These Subbasins have a combined area of approximately 2,982 square miles. The other subbasins in the Lower Snake Basin in Oregon are Upper Grande Ronde River Subbasin (HUC 17060104), Lower Snake-Asotin (HUC 17060103), and Hells Canyon (HUC 17060101). The Upper Grande Ronde River Subbasin has been addressed in another series of Total Maximum Daily Loads (TMDLs) approved in 2000 (DEQ 2000) and will not be discussed further in this document. The Snake River crosses portions of the Lower Snake-Asotin and Hells Canyon Subbasins. TMDLs for temperature, total dissolved gas, DDT, DDD, DDE and Dieldrin were completed for the Snake River/Hells Canyon in 2004, along with revised TMDLs for phosphorus, sediment and dissolved oxygen. The Snake River is still listed as impaired for mercury from river mile 173 to river mile 404. This is the only 303(d) listing in the Lower Snake-Asotin and Hells Canyon subbasins and it is beyond the scope of this document. With the completion of the Lower Grande Ronde Subbasins TMDLs, all current TMDLs needed for the Lower Snake Basin (170601) in Oregon will be completed, with the exception of the Snake River and the three parameters mentioned under **Section 1.2.3** below.

Figure 1-1. Location of the Lower Grande Ronde Subbasins



The **Lower Grande Ronde Subbasins** have several important characteristics:

- The Lower Grande Ronde Subbasin is divided by the Oregon-Washington border. There are no 303(d) listings in the state of Washington for any water bodies which originate in Oregon.
- The Imnaha River Subbasin is adjacent to the Hells Canyon Subbasin which includes a portion of the Lower Snake River and is the border between Oregon and Idaho.
- The water quality concerns are predominantly distributed nonpoint sources of pollution rather than discrete point source pollution.
- These subbasins are home to productive agricultural and forestlands and contain streams with historically viable trout and anadromous salmonid populations.

The Lower Grande Ronde Subbasins TMDLs establish water quality targets for streams in Oregon and fulfill Oregon's commitment to comply with State and Federal water quality laws. DEQ has determined current levels of pollutants and the degree to which these must be reduced to ensure compliance with water quality standards adopted to protect the beneficial uses of waters of the State. The data review and analysis contained in this document summarizes the information currently available in each of these Subbasins. The allocations developed will be used directly in setting limits on point source discharges, and should become elements in other plans that address water quality protection and restoration (e.g., permits and implementation plans). A Water Quality Management Plan (WQMP) that describes existing regulations, programs, and plans is being submitted along with these TMDLs. Results in this document will also be used as a benchmark of water quality, instream physical parameters and landscape conditions that currently exist, as well as for assessing future trends and the effectiveness of planned water quality improvement efforts.

TMDL development was guided by the local Wallowa County TMDL Committee. During TMDL development the TMDLs were called the “Wallowa County TMDLs”. For consistency with the nomenclature of other TMDLs in Oregon, this name was changed to the “Lower Grande Ronde Subbasins TMDLs” for this final document. The TMDL Committee had representation from the following interests: Oregon Departments of Forestry, Fish and Wildlife, Agriculture and Transportation; the U.S. Forest Service; the Cities of Joseph, Wallowa, Enterprise and Lostine; the Grand Ronde Model Watershed; the Nez Perce Tribe; the Wallowa County Soil and Water Conservation District; Wallowa County; The Nature Conservancy; agricultural interests (Local Advisory Committee for the Agricultural Water Quality Management Area Plan); large landowner representation; corporate forestry; irrigation; the weed board/industrial chemical fertilizer industry; and industrial manufacturing.

1.2 OREGON’S TMDL PROGRAM

1.2.1 Background

The quality of Oregon’s streams, lakes, estuaries and groundwater is monitored by the DEQ as well as other state, federal, and local organizations and groups. This information is used to determine whether water quality standards are being attained and, consequently, whether the beneficial uses of the waters are protected. Section 303(d) of the Federal Clean Water Act (CWA) requires the U.S Environmental Protection Agency (EPA), or delegated States such as Oregon, to set water quality standards and to prepare a list of water bodies that do not meet these approved water quality standards. The resulting list (the “303(d) list”) is a catalog of all waterbodies in the state that fail to meet one or more water quality criteria based on available data (see DEQ 2007).

Once a water body has been identified as water quality limited, the CWA requires the establishment of a pollutant total maximum daily load (TMDL) for that water body. TMDLs are assessments that determine the maximum amount of pollutant that can be present in a water body while meeting water quality standards. This *loading capacity* can be allocated to *point*, *nonpoint source* and future sources of

pollution. Uncertainty and natural pollutant sources are accounted for as well. *Point sources* are those associated with discrete human-made conveyances such as pipes from wastewater treatment plants. *Wasteload Allocations* are portions of the total load that are allotted to point sources. *Nonpoint sources* are diffuse sources such as field runoff or excess solar radiation. *Load Allocations* are portions of TMDLs attributed to nonpoint sources, either natural or human. TMDLs are implemented via water quality management plans or administrative rules and procedures and, for point sources, permits issued through the NPDES program.

Elements of a TMDL

DEQ must address the elements of a TMDL as described in OAR 340-042-0040 (4) (a – l) in order to meet the rule as well as to attain approval from EPA. The elements are listed below:

- **Name and location** – describes the geographic area for which the TMDL is developed and includes maps as appropriate.
- **Pollutant identification** – identifies the pollutant(s) causing impairment to water quality being addressed by the TMDL.
- **Water quality standards and beneficial use identification** – identifies the relevant water quality standard and the most sensitive beneficial use(s) affected by the pollutant being addressed in the TMDL.
- **Loading capacity** – specifies the amount of a pollutant that a waterbody can receive and still meet water quality criteria.
- **Excess load** – evaluates, data allowing, the difference between the actual pollutant load in a waterbody and the loading capacity of the waterbody.
- **Sources or source categories** – identifies the pollutant sources and estimates, to the extent that data allow, the amount of actual pollutant loading from these sources.
- **Wasteload allocations** – determines the portions of the receiving water's loading capacity to be allocated to existing point sources of pollution.
- **Load Allocations** – determines the portions of the receiving water's loading capacity to be allocated to existing nonpoint sources of pollution or to background sources.
- **Margin of safety** – accounts for uncertainty related to the TMDL and quantifies uncertainties associated with estimating pollutant loads, monitoring, and modeling water quality.
- **Seasonal variation** – accounts for temporal changes in critical conditions, stream flow, sensitive beneficial uses, pollutant loading and water quality parameters so that water quality criteria will be attained and maintained throughout the year.
- **Reserve capacity** – an allocation for increasing pollutant loads for future growth and new or expanded sources.
- **Water Quality Management Plan (WQMP)** – provides the framework of management strategies to attain and maintain water quality standards, working in conjunction with detailed plans and analyses provided in sector-specific or source-specific implementation plans.

Each of the elements listed above is included in both of the Lower Grande Ronde Subbasins TMDLs, although the elements may not be presented in the order or by the specific heading described above. EPA has the responsibility under the Clean Water Act to approve or disapprove TMDLs that states submit. When a TMDL is officially submitted by a state to EPA, EPA has 30 days to take action on the TMDL. In the case where EPA disapproves a TMDL, EPA must establish the TMDL. EPA is not required to approve WQMPs developed for the TMDLs.

Waterbodies in the Lower Grande Ronde Subbasins have been identified as water quality limited for temperature, pH, bacteria, dissolved oxygen and sedimentation (**Table 1-1**).

Table 1-1. Waterbodies listed as "Water Quality Limited" in the Lower Grande Ronde Subbasins on DEQ's 2004/06 303(d) list

DEQ 2007, http://www.deq.state.or.us/wq/assessment/rpt0406.htm. Parameters listed in italics are not being addressed by TMDLs in this report (see discussion in Section 1.2.3).

Water Body	River Miles	Parameter	Season (Beneficial Use)	Assessment Year	Record ID
Wallowa River Subbasin					
Prairie Creek	*0 to 12.5*	*Dissolved Oxygen*	*Spring/Summer (Spawning)*	*1998*	*938*
Spring Creek	*0 to 4.5*	*Dissolved Oxygen*	*Spring/Summer (Spawning)*	*1998*	*939*
Prairie Creek*	0 to 2.4	E Coli	Summer	2004	9273
Prairie Creek*	0 to 12.5	E Coli	Summer	2004	13659
Wallowa River	0 to 50	E Coli	Summer	2004	13786
Prairie Creek	0 to 12.5	Fecal Coliform	Fall/Winter/Spring	1998	924
Spring Creek	0 to 4.5	Fecal Coliform	Fall/Winter/Spring	1998	925
Wallowa River	0 to 50	Fecal Coliform	Summer	1998	926
Wallowa River	*0 to 50*	*pH*	*Summer*	*2004*	*1151*
Bear Creek	*0 to 7.5*	*Sedimentation*	*Undefined*	*1998*	*1050*
Hurricane Creek	*0 to 7.6*	*Sedimentation*	*Undefined*	*1998*	*1051*
Lostine River	*0 to 9*	*Sedimentation*	*Undefined*	*1998*	*1044*
Minam River	*0 to 10.2*	*Sedimentation*	*Undefined*	*1998*	*1052*
Prairie Creek	*0 to 12.5*	*Sedimentation*	*Undefined*	*1998*	*1054*
Wallowa River	*0 to 50*	*Sedimentation*	*Undefined*	*1998*	*1042*
Bear Creek	2.8 to 9	Temperature	August 15 - June 15 (Spawning)	2004	13350
Bear Creek	0 to 7.5	Temperature	Year Around (Core cold water)	2004	12564
Deer Creek	0 to 10.2	Temperature	Summer (Bull trout)	1998	890
Fisher Creek	0 to 0.5	Temperature	January 1 - June 15 (Spawning)	2004	12575
Fisher Creek	0 to 5.1	Temperature	Year Around (Core cold water)	2004	13351
Howard Creek	0 to 9	Temperature	January 1 - June 15 (Spawning)	2004	12576
Howard Creek	0 to 11.2	Temperature	Year Around (Core cold water)	2004	13352
Little Bear Creek	0 to 8	Temperature	Summer (Bull trout)	1998	889
Minam River	0 to 12.6	Temperature	Year Around (Core cold water)	2004	12570
Wallowa River	0 to 53.7	Temperature	Year Around (Core cold water)	2004	12577
Lower Grande Ronde Subbasin					
Grande Ronde River	*65.9 to 104.9*	*Dissolved Oxygen*	*January 1 - May 15 (Spawning)*	*2004*	*20842*
Chesnimnus Creek	*0 to 26.4*	*Sedimentation*	*Undefined*	*1998*	*1084*
Elk Creek	*0 to 13.7*	*Sedimentation*	*Undefined*	*1998*	*1102*
Grande Ronde River	*36.3 to 80.7*	*Sedimentation*	*Undefined*	*1998*	*1059*
Chesnimnus Creek	0 to 26.4	Temperature	Year Around (Rearing & migration)	2004	12544
Courtney Creek	0 to 14.3	Temperature	Year Around (Rearing & migration)	2004	12555
Crow Creek	0 to 20.2	Temperature	Year Around (Rearing & migration)	2004	12543
Elk Creek	0 to 13.7	Temperature	Year Around (Rearing & migration)	1998	908
Grande Ronde River**	35.6 to 172.4	Temperature	Year Around (Rearing & migration)	2004	12538
Grouse Creek	0 to 1.4	Temperature	Year Around (Core cold water)	2004	12553
Joseph Creek	8.1 to 48.2	Temperature	Year Around (Rearing & migration)	2004	12539
Mud Creek	0 to 23	Temperature	Year Around (Rearing & migration)	2004	12560

Table 1-1 (continued). Waterbodies listed as "Water Quality Limited"

Water Body	River Miles	Parameter	Season (Beneficial Use)	Assessment Year	Record ID
Lower Grande Ronde Subbasin (continued)					
Peavine Creek	0 to 5.3	Temperature	Year Around (Rearing & migration)	1998	911
Salmon Creek	0 to 13.6	Temperature	Year Around (Rearing & migration)	1998	912
Sickfoot Creek	0 to 7.5	Temperature	Year Around (Rearing & migration)	2004	12565
Wallupa Creek	0 to 10.1	Temperature	Year Around (Rearing & migration)	2004	12563
Wenaha River	6.7 to 10.3	Temperature	August 15 - June 15 (Spawning)	2004	13349
Wenaha River	0 to 10.3	Temperature	Year Around (Core cold water)	2004	12558
Wildcat Creek	0 to 16	Temperature	Year Around (Rearing & migration)	2004	12562
Imnaha River Subbasin					
Big Sheep Creek	0 to 10	Temperature	Year Around (Rearing & migration)	2004	12532
Crazyman Creek	0 to 6.8	Temperature	Year Around (Bull trout)	2004	12533
Dry Creek	0 to 4.2	Temperature	Year Around (Bull trout)	2004	12537
Freezeout Creek	0 to 8.5	Temperature	Year Around (Rearing & migration)	2004	12530
Grouse Creek	0 to 17.3	Temperature	January 1 - June 15 (Spawning)	2004	20814
Grouse Creek	0 to 17.3	Temperature	Year Around (Core cold water)	2004	12531
Gumboot Creek	0 to 7.4	Temperature	Year Around (Bull trout)	2004	12536
Imnaha River	35.7 to 42.7	Temperature	August 1 - June 15 (Spawning)	2004	13347
Imnaha River	0 to 35.8	Temperature	Year Around (Rearing & migration)	2004	12529
Imnaha River	35.8 to 42.7	Temperature	Year Around (Core cold water)	2004	12528
Imnaha River	42.7 to 72.2	Temperature	Year Around (Bull trout)	2004	12527
Lightning Creek	0 to 24.8	Temperature	Year Around (Rearing & migration)	1998	827
Little Sheep Creek	0 to 26	Temperature	Year Around (Rearing & migration)	2004	12535

* These two listings for Prairie Creek are for two different stream segments, with different LLID numbers.
**The listing for temperature on the Grande Ronde River extend beyond the Lower Grande Ronde Subbasin (which ends at river mile 80.3) into the Upper Grande Subbasin. The temperature listing on the lower Grande Ronde River is covered by the temperature TMDL included here. The listing on the upper Grande Ronde River is already covered by the existing Upper Grande Ronde TMDL (approved by EPA in 2000).

1.2.2 TMDLs Addressed in this Report

This report contains TMDLs that address temperature and bacteria impairments. DEQ tracks completed TMDLs for reporting measures and the Lower Grande Ronde Subbasins TMDLs represent the completion of 44 TMDLs (**Table 1-2**). The Consent Decree between the U.S. EPA and Northwest Environmental Defense Center, John R. Churchill, and Northwest Environmental Advocates (October 17, 2000) lists the cumulative number of TMDLs to be established through 2010. EPA reports the number of TMDLs completed to the plaintiff using a different counting method than DEQ. According to current EPA policy on counting TMDLs, this TMDL addresses 37 TMDLs (**Table 1-3**). These TMDLs rely on a watershed approach and are applicable throughout the subbasins for which they were developed.

Temperature – based on the 303(d) listing of waterbodies in all three of the Lower Grande Ronde Subbasins. Further assessment demonstrated widespread violations of the biologically based numeric criteria of the temperature standard in each of the Subbasins. Analysis indicates that temperature in many of these waterbodies exceeds natural thermal potential temperatures as well. The widespread nature of temperature violations is indicative of the current condition of streams in the area, as well as the relative ease of data collection for this parameter. The temperature TMDL applies to all perennial and intermittent streams in the Lower Grande Ronde Subbasins. It should be noted that the temperature

listing on the Grande Ronde River (river miles 35.6-172.4) extends upstream above the Lower Grande Ronde Subbasin (which ends at approximately river mile 80.3). The listing of the portion of the Grande Ronde River in the Upper Grande Ronde Subbasin has already been included in the existing Upper Grande Ronde TMDL (approved by EPA in 2000).

Bacteria – based on the 303(d) listing of Prairie Creek, Spring Creek, and the Wallowa River for violations of the recreational contact criterion for *E. coli* and/or fecal coliform bacteria. Prairie Creek and the Wallowa River have violated standards throughout the year, while Spring Creek violated during the fall-winter-spring season. The bacteria TMDL applies to perennial and intermittent waterbodies in the Wallowa River Subbasin.

Table 1-2. Lower Grande Ronde Subbasins streams on the 303(d) List addressed by 2010 TMDLs: DEQ Counting Method

For each parameter, the table shows number of listed miles and (number of listed segments).

Parameter	Criterion	Wallowa River Subbasin	Lower Grande Ronde Subbasin	Imnaha River Subbasin	Total
Temperature	Rearing & Migration		235.3 (12)	105.1 (5)	340.4 (17)
	Spawning	15.7 (3)	3.6 (1)	24.3 (2)	43.6 (6)
	Core Cold Water	90.1 (5)	11.7 (2)	24.2 (2)	126.0 (9)
	Bull Trout	18.2 (2)		47.9 (4)	66.1 (6)
Bacteria	E. coli – Summer	64.9 (3)			64.9 (3)
	Fecal coliform – Fall, Winter, Spring	17.0 (2)			17.0 (2)
	Fecal coliform – Summer	50.0 (1)			50.0 (1)
Total Stream Miles*		129.2	246.6	177.2	
Total TMDLs		16	15	13	44

*Streams with listings for more than one criterion were counted only once in the total stream miles. For example, if a stream was listed from river mile 0 to 10.3 for both spawning and bull trout temperature criteria, this would be represented in the total stream mile count as 10.3 miles rather than 20.6 miles.

Table 1-3. Lower Grande Ronde Subbasins 2010 TMDL Listings addressed: EPA Counting Method

Parameter	Wallowa River Subbasin	Lower Grande Ronde Subbasin	Imnaha River Subbasin	Total
Temperature	8	14	11	33
Bacteria	4			4
Total TMDLs	12	14	11	37

1.2.3 Parameters Not Being Addressed by a TMDL in this Report

Sedimentation. A TMDL has not been developed to address the sedimentation listings on Bear Creek, Hurricane Creek, Lostine River, Minam River, Prairie Creek, Wallowa River, Grande Ronde River, Chesnimnus Creek, and Elk Creek. These listings (1998) were based on professional judgment of regional biologists with concerns about the relative paucity of salmonid redds compared to historic observations, the presence of excess fine sediments, and/or concerns about channel embeddedness

(Citations from the 1998 303(d) list: USFS 1995; Wallowa County and the Nez Perce Tribe 1993). There did not appear to be much measured data to support these listings.

DEQ is reviewing the sedimentation criteria assessment methodology for determination of water quality impairment. Currently, sedimentation lacks quantitative listing criteria. TMDLs for the sedimentation listings will be developed at a future date once criteria are selected and a TMDL approach determined. In the meantime, there is much restoration work that is already taking place in the Subbasins which will reduce sources of sediment to streams. Much of this work is being done under the guidance of the *Wallowa County-Nez Perce Salmon Habitat Recovery Plan with Multi-Species Habitat Strategy* (1999) and will also be addressed through implementation of the temperature TMDL included in this document.

Dissolved Oxygen. (1) Grande Ronde River. The dissolved oxygen listing for the Grande Ronde River (from river mile 65.9 to 104.9) during the spawning time of year is a new listing on the 2004/06 list. This listing encompasses river miles in both the Upper and Lower Grande Ronde Subbasins in Oregon, with the break between the two subbasins occurring at approximately river mile 80.3. There was a previous dissolved oxygen listing in the Upper Grande River during the non-spawning time of year. This listing was addressed in the Upper Grande Ronde TMDL which was approved by EPA in 2000. Because this new listing during the spawning season encompasses both subbasins, it will be considered at a later date when DEQ has the resources to develop new TMDLs in subbasins where TMDLs have already been approved by EPA.

(2) Spring Creek and Prairie Creek. Both of these tributaries to the Wallowa River were listed for dissolved oxygen during the spawning season based on data collected in 1989. There has not been enough data collected since then to adequately evaluate the sources of impairment to dissolved oxygen on these creeks. Once the necessary data has been collected for these creeks, a TMDL will be developed to address dissolved oxygen at a later date. In the meantime, there is much restoration work that is already taking place in the Subbasins which will improve instream dissolved oxygen through reductions in temperature and sources of nutrients. Much of this work is being done under the guidance of the *Wallowa County-Nez Perce Salmon Habitat Recovery Plan with Multi-Species Habitat Strategy* (1999) and will also be addressed through implementation of the temperature and bacteria TMDLs included in this document.

pH. The Wallowa River is listed for pH from the mouth to Wallowa Lake based on data collected between 1986 and 1995. Limited grab and continuous data were collected during 1999-2001 to evaluate pH at several spots along the Wallowa River. Grab data continues to be collected every other month at DEQ's ambient monitoring site upstream of the confluence with the Minam River. Analysis of this more current data suggests that pH may still be a problem at the ambient site at times during the summer season. There has not been enough data collected to adequately evaluate the causes of the pH violations, however, it is likely that nutrient reductions and decrease in stream temperatures will improve the pH condition. Once the necessary data has been collected, a TMDL will be developed to address pH at a later date. It is likely that the data needed for Spring Creek and Prairie Creek and the Wallowa River can all be collected at the same time since similar data will be needed to address both pH and dissolved oxygen listings. In the meantime, there is much restoration work that is already taking place in the Subbasins which will improve instream pH through reductions in temperature and sources of nutrients. Much of this work is being done under the guidance of the *Wallowa County-Nez Perce Salmon Habitat Recovery Plan with Multi-Species Habitat Strategy* (1999) and will also be addressed through implementation of the temperature and bacteria TMDLs included in this document.

1.2.4 TMDL Implementation

A Water Quality Management Plan (WQMP) is developed by DEQ as a broad strategy for implementing TMDL allocations. TMDLs, WQMPs and associated planning work together to protect designated beneficial uses, such as aquatic life, drinking water supplies, and water contact recreation.

Implementation of TMDLs is critical to the attainment of water quality standards. The support of Designated Management Agencies (DMAs) in implementing TMDLs is essential. The DMAs in the Lower

Grande Ronde Subbasins include: DEQ; U.S. Forest Service (USFS); Bureau of Land Management (BLM); Oregon Departments of Agriculture (ODA), Forestry (ODF), Transportation (ODOT), State Lands (DSL), Geology and Mineral Industries (DOGAMI); Wallowa County; and the cities of Enterprise, Joseph, Wallowa and Lostine. These agencies have developed or will be developing Implementation Plans and/or are operating under NPDES permits. There are very small portions of the Wallowa and Lower Grande Ronde Subbasins that are within the boundaries of Union and Baker County. Because the areas in these two counties are so small and mostly under management by the USFS, Union and Baker Counties are not included as DMAs for this WQMP.

DEQ will submit a WQMP to EPA concurrently with submission of TMDLs even though EPA has no approval authority for the WQMP. Both the TMDLs and their associated WQMP will be submitted by DEQ to EPA as updates to the State's Water Quality Management Plan pursuant to 40 CFR 130.6. Such submissions will be a continuing update of the Continuing Planning Process.

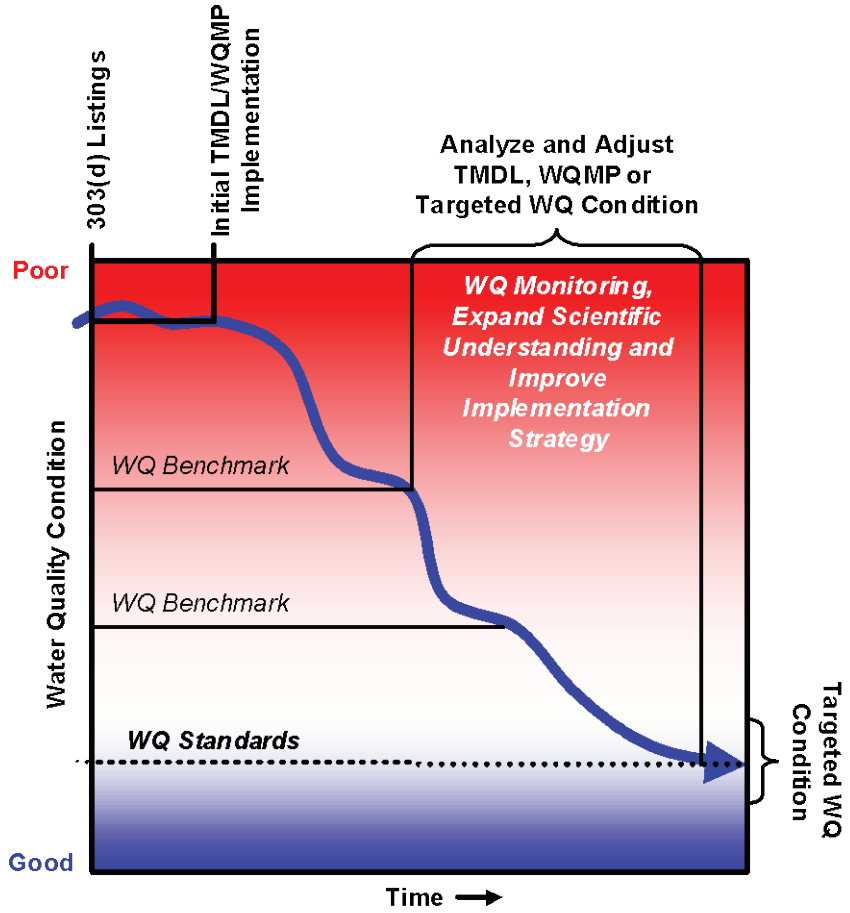
The required elements of WQMPs are defined in OAR 340-42 and are outlined below. The WQMP is included as **Chapter 4** in this report.

WQMP Elements

A. Condition assessment and problem description
B. Goals and objectives
C. Proposed management strategies
D. Timeline for implementing management strategies
E. Relationship of management strategies to attainment of water quality standards
F. Timeline for attainment of water quality standards
G. Identification of responsible participants or DMAs
H. Identification of sector-specific implementation plans
I. Schedule for preparation and submission of implementation plans
J. Reasonable assurance
K. Monitoring and evaluation
L. Public involvement
M. Planned efforts to maintain management strategies over time
N. Costs and funding
O. Citation to legal authorities

Since the relationship between management actions and pollutant load reductions is often not precisely quantifiable, DEQ applies an *adaptive management* policy to implement TMDLs. Adaptive management can be defined as a systematic process for continually improving management policies and practices by learning from the outcomes of operational programs. **Figure 1-2** is a graphical representation of this adaptive management concept. The role of adaptive management in TMDL Implementation is described further in **Chapter 4**.

Figure 1-2. Adaptive management - schematic diagram.



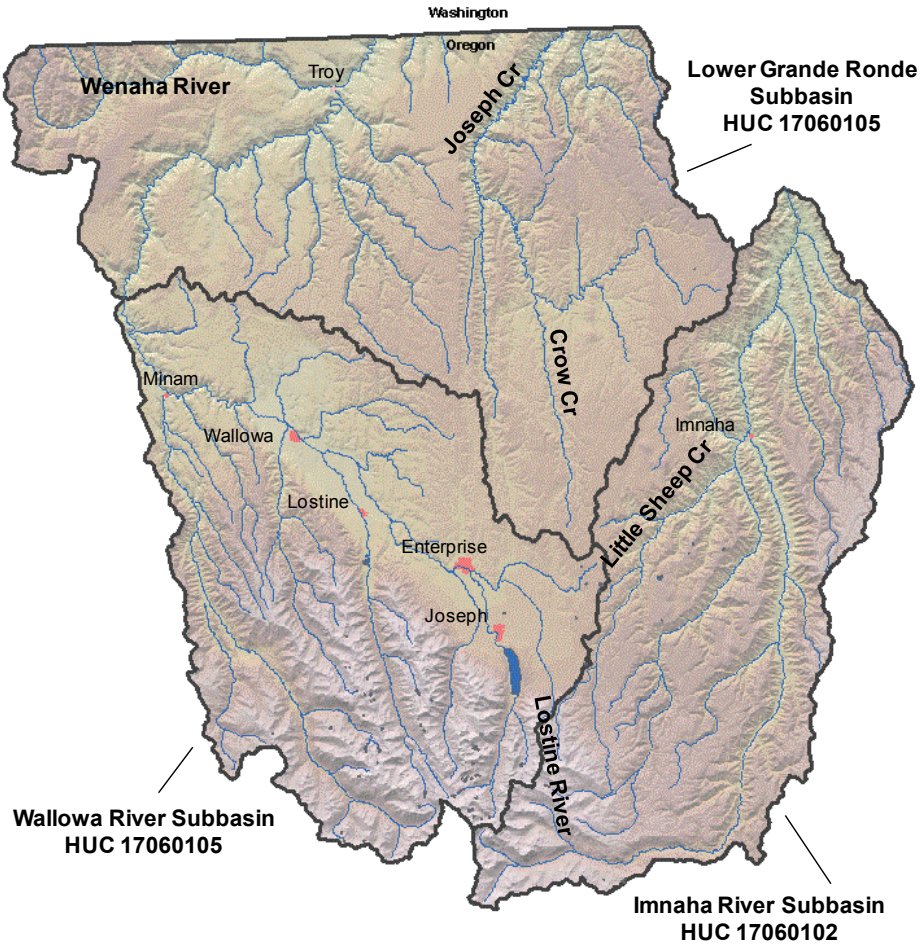
1.3 CHARACTERIZATION OF THE SUBBASINS

1.3.1 Natural Features

The Lower Grande Ronde Subbasins are home to a wide variety of natural landscapes, from arid plateaus typical of Eastern Oregon to alpine lakes and meadows at elevations up to 10,000 feet, a rarity in this part of the Pacific Northwest. The range of landscapes in the area is a result of a complex geologic history. The highest mountains in the region, the Wallowa Mountains, were formed elsewhere and moved tectonically to their current location. Later flows of lava formed the Columbia Plateau around these mountains and uplifting processes increased their elevation. A period of glaciation sculpted the surfaces of the upper elevations, forming high cirques and pan lakes, and scoured deep canyons downslope providing sediments to the valleys below. Wallowa Lake, one of the deepest lakes in Oregon at approximately 300 feet, was formed at the end of this glacial conveyor of material between two large lateral moraines and a terminal moraine near the town of Joseph.

The area is naturally divided into three large watersheds (subbasins): the Wallowa River, Imnaha River, and Lower Grande Ronde River (**Figure 1-3**). The Wallowa River flows to the Lower Grande Ronde River, which along with the Imnaha River, flows into the Snake River.

Figure 1-3. Features of the Lower Grande Ronde Subbasins



Several large rivers flow from the high Lake Basin in the Wallowa Mountains, ultimately feeding the Wallowa and Grande Ronde Rivers. These rivers are steep (high gradient), run through densely forested canyons, and move tremendous amounts of water and sediment through the watershed. The upper Wallowa River, Minam River, Lostine River, and Hurricane Creek flow down the northern slopes of these mountains and join prior to entering the Grand Ronde River. The Imnaha River, fed by several significant tributaries, flows northwest into a separate watershed and ultimately to the Snake River. All of these rivers and creeks have their origins in a relatively small area of the high Lake Basin in the Eagle Cap Wilderness of the Wallowa Mountains. The origin of water in these rivers is snowpack that melts slowly through the spring and summer.

Lands to the south of the Wallowa River are supplied with much more water than those to the north. Groundwater is relatively high in the Wallowa River Valley, with the southern slopes receiving a continual charge from the mountains. The lands to the north are drier and have no high mountains to accumulate snowpack. These hills are largely elevations of Columbia basalts that store some water, but become dry in the early summer. The plateau is dissected by relatively small creeks, some of which flow to the Wallowa River, but most of which flow northward to the lower Grande Ronde River. Average flows are lower than in creeks originating in the Wallowa Mountains, but they generally flow year around. Joseph Creek and its tributaries, Swamp Creek, Chesnimnus Creek, Crow Creek and others, drain a large proportion of this watershed. Mud Creek, Wallupa/Wildcat Creek and Grossman Creek flow to the Lower Grande Ronde River in the western part of the subbasin. To the north and west, the Wenaha River flows out of higher elevations of the Umatilla National Forest into the Lower Grande Ronde River near the town of Troy.

The origins of water in the basin determine the types of habitat they provide to some extent. All sources begin as snowmelt and/or spring flow. These creeks are habitat to a variety of plants and animals, particularly coldwater fish, such as trout and salmon. These fish require cold, clear, oxygen-rich water at all stages of life, especially during spawning. Cold water generally is richer in oxygen, but organic substances and other suspended sediments may cause depletion of oxygen in the water, inhibiting fish respiration, as well as directly covering spawning habitat. Bull trout, which require the coldest water of the salmonid fish, are generally restricted to upper reaches of creeks during warm seasons, but may have had a wider distribution in the past.

Riparian vegetation is a natural barrier to excessive solar radiation (through stream surface shade) and may intercept runoff from surrounding lands that may carry sediments and other wastes. From headwaters downstream, many creeks have sufficiently protective riparian areas to guard against stream surface warming and runoff of sediments into the water. Natural disturbances and various other activities can cause these riparian areas to be less effective than their potential. Much of the upper portions of the Wallowa and Imnaha River Subbasins are managed as wilderness area, and as such are expected to resemble natural conditions. The same is true of the Wenaha River Watershed in the Lower Grande Ronde Subbasin, which is managed as wilderness at part of the Wenaha-Tucannon Wilderness area, and includes more than 21 miles of river designated wild and/or scenic. These areas have been managed as wilderness for many years and are generally in very good condition. However, the thermal potential of riparian areas, after full recovery from earlier human disturbances and with natural processes (including natural disturbance) as the only agent of control, may not currently exist.

Diversion of water from streams for various reasons diminishes the volume of water available for instream uses. Instream uses would generally include fish and wildlife habitat and recreation. The capacity of a stream to protect against pollutants, from heat (sunlight) to sediments and bacteria, is reduced with decreased flow of water. Less water volume instream results in higher concentrations of pollutants that directly or indirectly enter the water. These diversions are most common in the Wallowa River Watershed and include several systems of canals that divert water from the major rivers for irrigation. In one case (Wallowa Valley Improvement Canal) water is diverted in the Imnaha River Watershed and conveyed to the Wallowa River Watershed for irrigation.

1.3.2 Climate

The Lower Grande Ronde Subbasins are under the influence of Pacific winds but are within the rain shadow of the Cascade Mountains to the west. Average annual precipitation in the region varies from about 8 to 80 inches, depending largely on elevation (**Figure 1-4**). Precipitation is moderate but variable in the Wallowa Valley, with precipitation likely to occur in any month. Monthly accumulations are generally greater in the fall and early spring. Significant accumulations of snow rarely last on the valley floor, but accumulation on surrounding mountains is the source of flow during the drier period of the year. Low elevations are characterized by hot, dry summers while higher elevations are characterized by cold, wet winters.

Charts of annual precipitation and temperature for three COOP (Cooperative Observer Program) weather stations are shown in **Figure 1-5** for the period 1971-2000 (Western Regional Climate Center data). Monthly climate summaries for the same three sites are shown in **Table 1-4** for the period of record for each site.

Figure 1-4. Average annual precipitation

(National Resources Conservation Service, data downloaded from NRCS website in March, 2007 http://www.wcc.nrcs.usda.gov/).

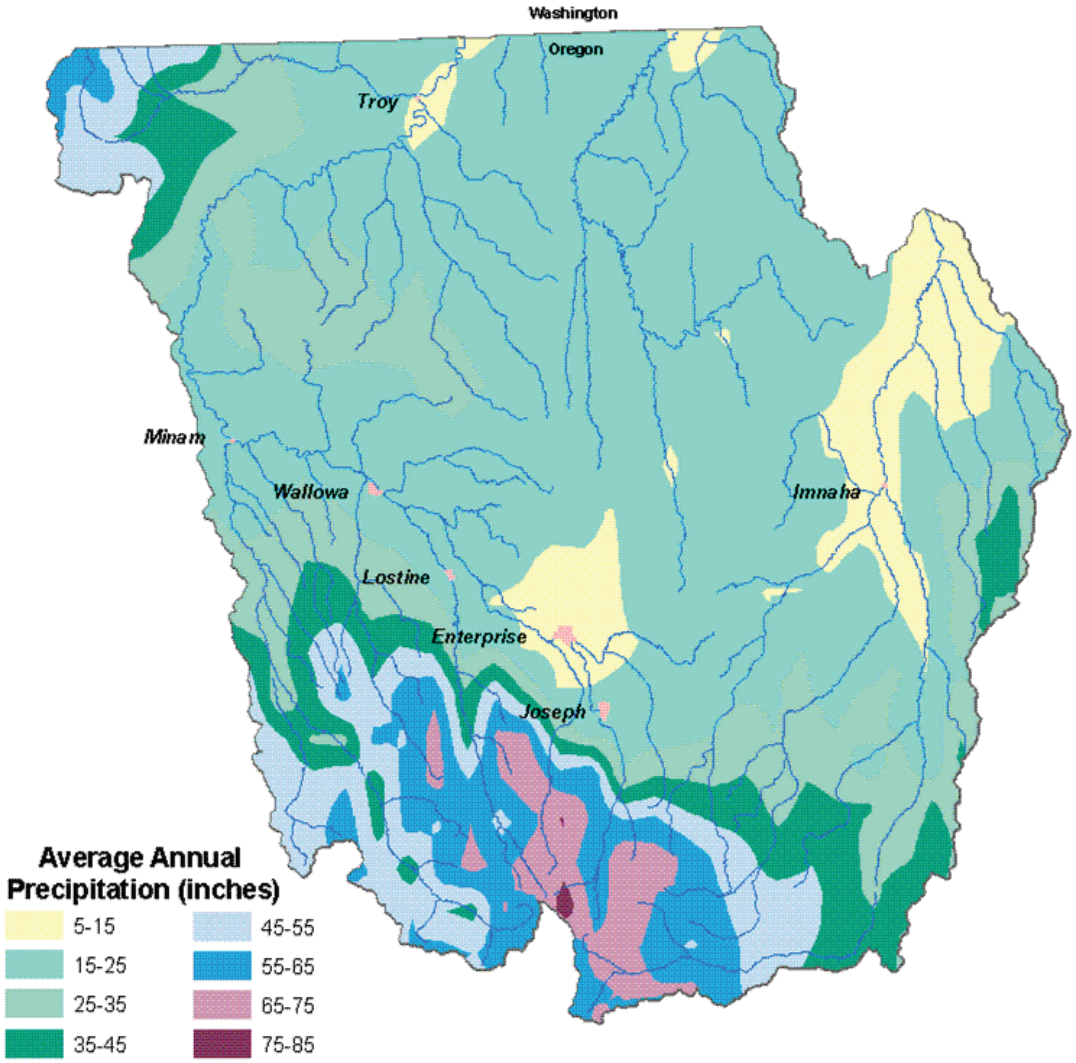


Figure 1-5. 1971-2000 average temperature and precipitation

(Western Regional Climate Center, data downloaded from website in March, 2007, http://www.wrcc.dri.edu/summary/Climsmor.html)

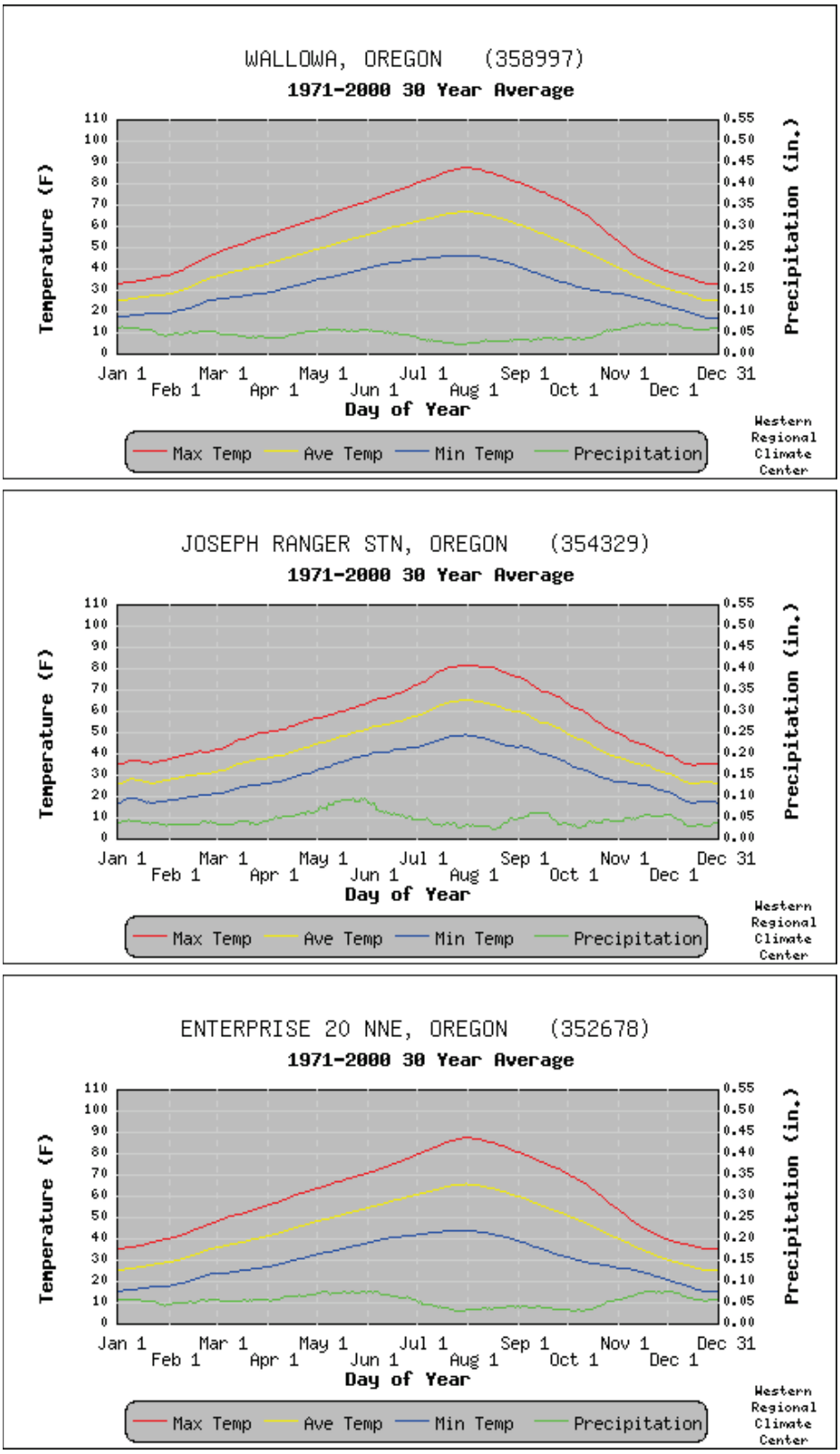


Table 1-4. Monthly climate summaries for the period of record

(Western Regional Climate Center, data downloaded from website in March, 2007 http://www.wrcc.dri.edu/summary/Climsmor.html)

Wallowa (358997)

Period of record : 7/ 1/1948 to 10/31/2006

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)	34.3	41.9	50.5	59.5	67.9	75.7	85.4	84.6	76.3	62.6	45.4	35.9	60
Average Min. Temperature (F)	18	22.1	26.7	31.2	37.5	42.9	45.5	43.9	37.2	30.5	25.6	20.1	31.8
Average Total Precipitation (in.)	1.89	1.37	1.4	1.43	1.86	1.47	0.74	0.87	1.04	1.43	2.01	2.03	17.55
Average Total SnowFall (in.)	12.9	6.4	3.6	0.7	0.1	0	0	0	0	0.2	5.2	10.6	39.7
Average Snow Depth (in.)	4	3	1	0	0	0	0	0	0	0	0	2	1

Percent of possible observations for period of record.

Max. Temp.: 93.6% Min. Temp.: 93.6% Precipitation: 94.3% Snowfall: 93.6% Snow Depth: 91.3%

Joseph Ranger Station (354329)

Period of Record : 7/ 1/1948 to 10/31/2006

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)	33.8	38.8	45.6	54.3	61.9	68.6	80.3	79.9	71.6	58.8	44.8	35.8	56.2
Average Min. Temperature (F)	16.4	18.8	24.1	29.5	37.1	42.1	48.1	47.5	41	32.1	25.3	17.9	31.7
Average Total Precipitation (in.)	1.31	1.11	1.45	1.83	2.46	1.94	0.87	0.96	1.06	1.31	1.38	1.35	17.03
Average Total SnowFall (in.)	11.2	9.3	9.9	4.4	0.7	0.4	0	0	0	1.4	4.4	8.5	50.2
Average Snow Depth (in.)	3	4	1	0	0	0	0	0	0	0	0	2	1

Percent of possible observations for period of record.

Max. Temp.: 20.4% Min. Temp.: 20.3% Precipitation: 19.8% Snowfall: 19.6% Snow Depth: 19%

Enterprise (352678)

Period of Record : 2/13/1969 to 10/31/2006

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)	37.1	43.8	51.8	59.6	67.9	75.5	85.1	85.7	76.1	62.7	45.3	36.6	60.6
Average Min. Temperature (F)	17.2	20.4	25.1	29.6	35.4	41	44	42.3	35.5	28.4	24.3	17.3	30
Average Total Precipitation (in.)	1.77	1.35	1.65	1.89	2.15	1.92	1.26	1.07	1.14	1.18	2.05	1.96	19.38
Average Total SnowFall (in.)	8.4	4.6	2.1	0.2	0	0	0	0	0	0	3.7	6.3	25.4
Average Snow Depth (in.)	4	2	0	0	0	0	0	0	0	0	0	2	1

Percent of possible observations for period of record.

Max. Temp.: 98.8% Min. Temp.: 98.8% Precipitation: 99% Snowfall: 95.9% Snow Depth: 92.9%

1.3.3 Human Population

The majority of the area in the Subbasins is contained within the boundaries of Wallowa County. Small strips of the Wallowa and Lower Grande Ronde Subbasins are within the boundaries of Union or Baker Counties. Conversely, there are small areas of Wallowa County that are not included in the Lower Grande Ronde Subbasins. The human population characterization presented here focuses on Wallowa County. The population of Wallowa County has been stable over recent decades, although there have been minor fluctuations (**Table 1-5**). All of the cities in the county except Enterprise, with slightly less than 2,000 residents, had populations of approximately 1,000 or less in 2005. These urban areas are established at lower elevations in the valley. Though there were modest increases in population in several of these cities, overall population in the county declined slightly between 2000 and 2005. Population statistics indicate that approximately 58% of county residents live in cities and 42% live in the generally rural remainder of the county. Population density is low, with approximately two people per square mile on average, though most reside in the lowlands of the Wallowa River valley.

Table 1-5. Population of cities in Wallowa County from 1970 through 2005

(Portland State University, Population Research Center, data downloaded from website in 2006 http://www.pdx.edu/prc/).

Rank	City/County	Percent Change*	Year				
			2005	2000	1990	1980	1970
106	Enterprise	2.6%	1,945	1,895	1,905	2,003	1,680
133	Joseph	3.3%	1,090	1,054	1,073	999	839
184	Lostine	-4.9%	250	263	231	250	196
145	Wallowa	0.1%	870	869	748	847	811
33	Wallowa County	-1.3%	7,130	7,226	6,911	7,273	6,247

*Percent change from 2000 census to 2005

1.3.3.1 Land Ownership

Land in the Lower Grande Ronde Subbasins is 42% privately owned and 58% publicly owned, with the majority of the latter in federal management (**Figure 1-6).** The federally managed land is largely within the Wallowa-Whitman National Forest, Hell's Canyon National Recreation Area, and Umatilla National Forest. Portions of the Wenaha-Tucannon Wilderness and Eagle Cap Wilderness are included in the Subbasins. There are four incorporated cities (Enterprise, Joseph, Wallowa, and Lostine) in the county and several smaller communities (e.g., Troy, Imnaha, and Minam).

1.3.3.2 Land Use and Economy

Land use in the Subbasins is dominated by forest lands, grasslands and scrub/shrub, with significant acreage of agricultural land and some rural residential development in the Wallowa River Subbasin (**Figure 1-7**). There are also several small urban areas, mostly within the Wallowa Valley. The Wallowa Mountains and Columbia Plateau provide the landscape of this diverse area including extensive grasslands, deeply cut river valleys, and alpine forests with mountain peaks above 10,000 feet in elevation. Much of the high elevation forest lands are managed as wilderness areas and as National Recreation Areas by the Wallowa Whitman National Forest and Umatilla National Forest, under auspices of the USFS.

Agriculture plays an important economic role in the area, grossing approximately 41 million dollars in sales in 2004 (OSU 2005) and providing approximately one-quarter of the jobs and personal income in the county. Agricultural sales were split between crops ($21,477,000) and livestock agriculture ($19,998,000), mostly cattle and calf production.

Forestry is also a significant contributor to the Wallowa County economy. Forest economic output in the county was approximately 30 million dollars in 2000, though the industry provides fewer jobs than agriculture (Sorte and Tanaka 2004).

1.3.3.3 Nez Perce Tribe

Historically, the Nez Perce Tribe had exclusive use and occupancy over an area of almost 17 million acres in the Columbia River Basin in what is presently northeast Oregon, north-central Idaho, southeast Washington and far western Montana. Two federal treaties drafted in 1855 and 1863 reduced the Tribe's land holdings to the current 750,000 acre reservation located in north-central Idaho. The Tribe has increased its holding through land acquisitions across its ceded territory, including significant land holdings in the Joseph Creek watershed.

In the Treaty of 1855, the Nez Perce reserved the exclusive right to fish on the reservation, as well as the right to fish at all "usual and accustomed places" throughout the Columbia River Basin. The Tribe further reserved the right to hunt, gather, and pasture animals on "open and unclaimed" lands, which is generally defined to include public lands.

Figure 1-6. Land ownership in the Lower Grande Ronde Subbasins

(Oregon Geospatial Data Clearinghouse, data downloaded from website in January, 2005 http://www.oregon.gov/DAS/EISPD/GEO/alphalist.shtml#L)

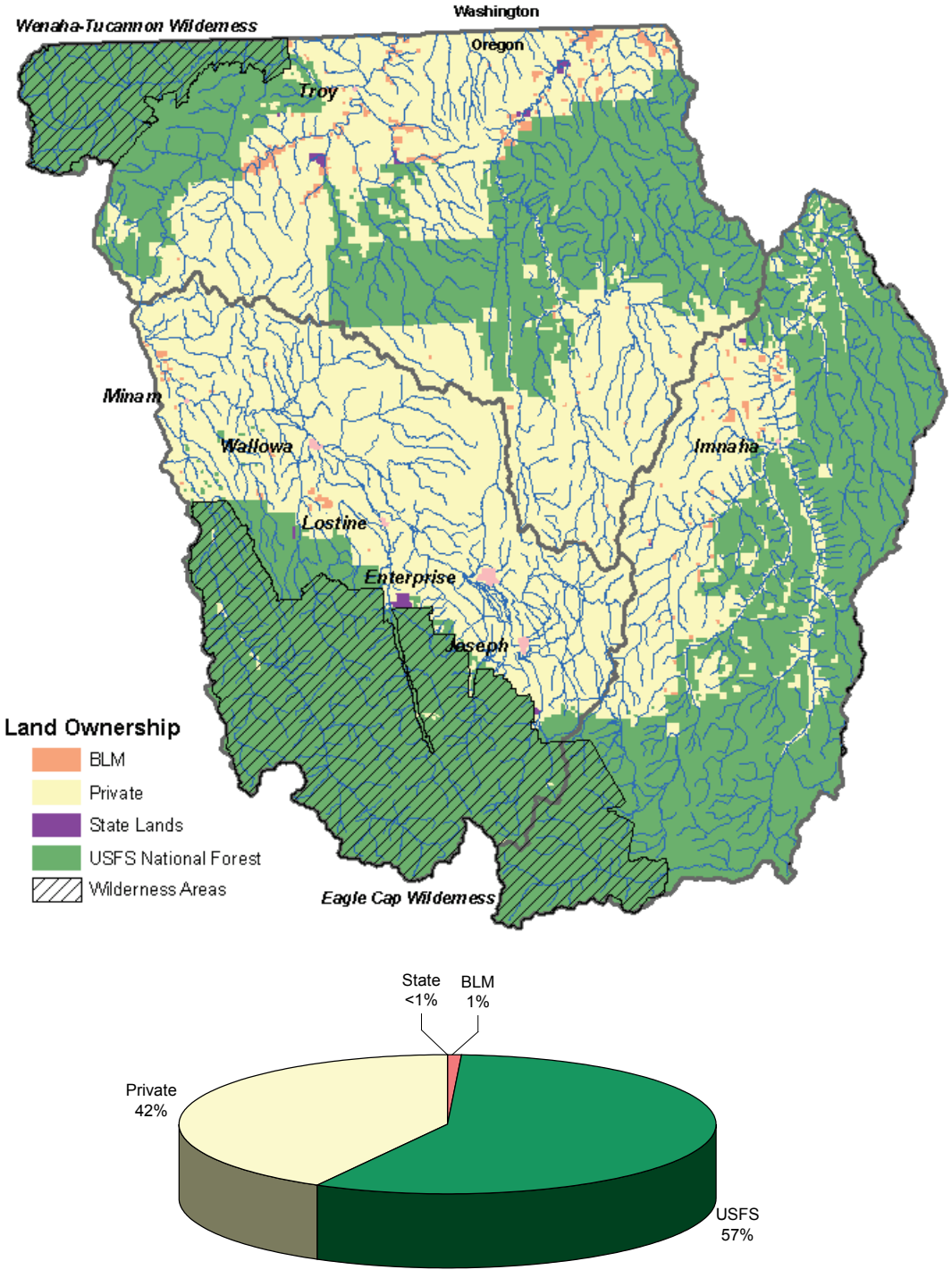
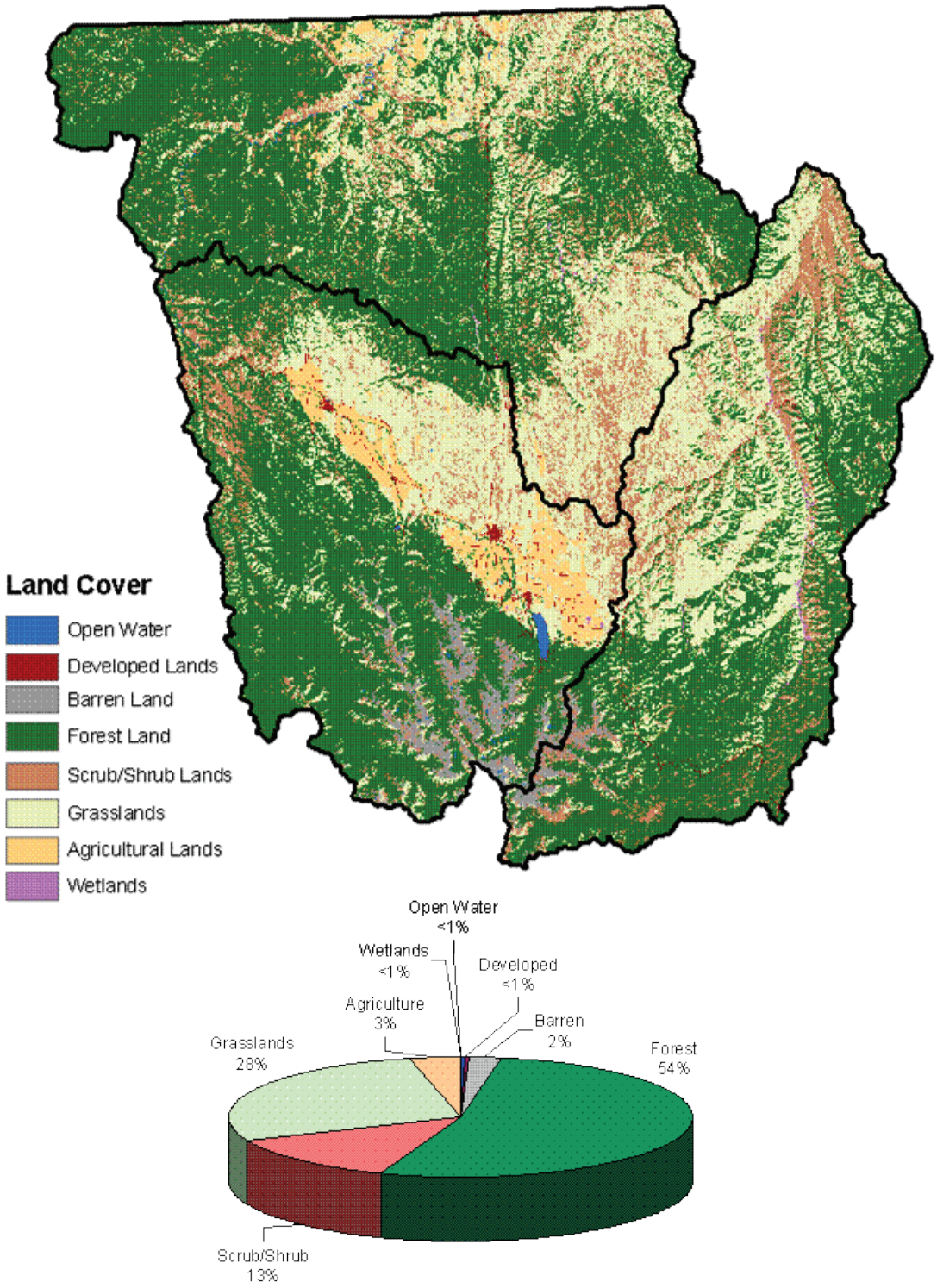


Figure 1-7. Land use distributions in the Lower Grande Ronde Subbasins
(USGS, 2001 NLCD database, data downloaded from website in April 2007 http://www.mrlc.gov/index.php).



Note: For display purposes, NLCD land cover class definitions were grouped as follows: Developed Lands includes all developed lands, including open space, low intensity, medium intensity and high intensity development; Forest Land includes deciduous forest, evergreen forest and mixed forest; Agricultural Lands includes pasture/hay and cultivated crops; Wetlands includes woody wetlands and emergent herbaceous wetlands. Grasslands are areas not subjected to intensive management, such as tilling, but can be utilized for grazing. Refer to the USGS website for more detailed descriptions of land cover categories.

Tribal responsibility on ceded lands throughout the Lower Grande Ronde Subbasins is defined through their role as co-manager of the salmon resource which has been determined through treaty rights and federal court decisions. As a co-manager of these resources, the Tribe plays a central role in development and implementation of plans and projects designed to protect and enhance treaty-reserved resources, including salmon, steelhead, and other aquatic resources. Some of these key plans and their role in TMDL implementation are described further in the WQMP (**Chapter 4**). Staff from the Nez Perce Tribe were members of the Wallowa County TMDL Committee and contributed to the development of the TMDLs included in this report. Consultation and continued coordination with the Nez Perce Tribe will enhance the effective implementation of the TMDL.

1.3.4 Hydrography

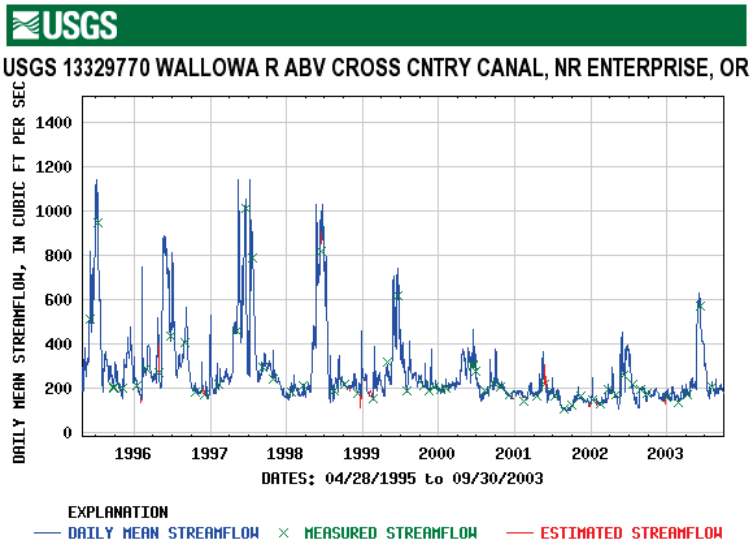
Stream flows are generally lowest in mid-summer due to decreased precipitation and increased water withdrawals (**Figure 1-8**). These patterns reflect the importance of snowmelt on both surface and groundwater volumes. Highest flows occur during late spring and early summer as mountain snows melt and fill tributaries to the major rivers. These high flows are often associated with large scale movement of sediments, resulting in turbid water and large woody debris being distributed downstream.

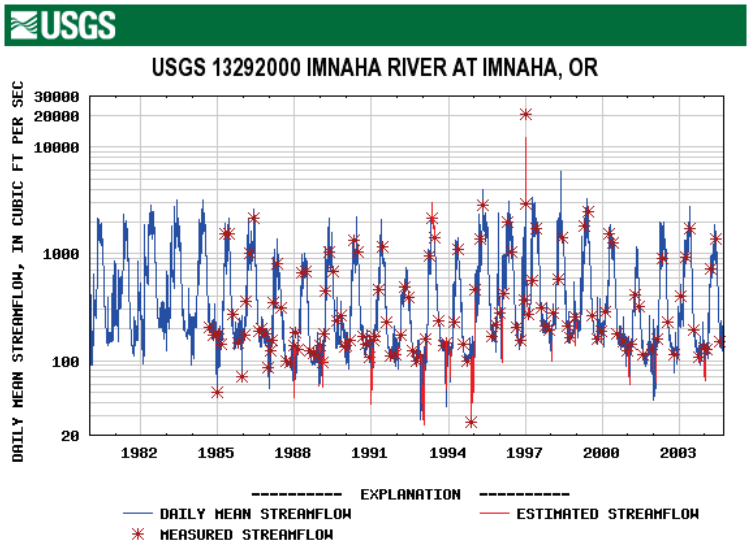
Flows in the Wallowa River are influenced by releases from the Wallowa Lake Dam and diversions to several agricultural ditch systems. Wallowa Lake is a deep (~300 feet), glacially carved lake surrounded by moraine deposits that naturally restrict the northern end where it flows to the Wallowa River. This natural dam was augmented in 1919 to allow increased water storage to allow for diversions to ditch irrigation systems that serve much of the area around Joseph and Enterprise. Other diversions from tributaries to the Wallowa River reduce instream flow in the tributaries and ultimately in the Wallowa and Lower Grande Ronde Rivers.

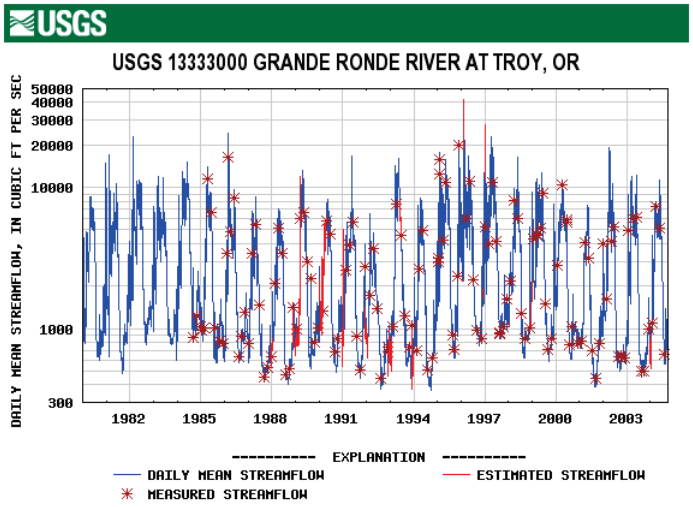
The reduction in stream flows due to agricultural diversions is observed in many of the water bodies in the Lower Grande Ronde Subbasins, with the exception of the Minam River which does not have any known irrigation withdrawals. The Lostine River is severely impacted by water diversions in the lower reach despite storage of some water for irrigation release in Minam Lake at the Lostine River headwaters. These diversions begin at river mile 19. Flows in the lower five miles of the Lostine River are augmented with Wallowa River water via the Cross Country Canal. Flows in Bear Creek are similarly severely impacted by diversions in the lower three miles of the creek. Flows in the Imnaha River Subbasin are also influenced by ditches that divert water from creeks (e.g., Big Sheep Creek to Wallowa Valley Improvement District) and carry it to the Wallowa Valley for irrigation. Additional information about the location of points of diversion is provided in **Appendix A**.

Figure 1-8. Flow profiles for three stations in the Lower Grande Ronde Subbbasin since 1980 or more recently.

USGS, Oregon Water Science Center data downloaded from website in 2004 http://or.water.usgs.gov/). The stations are Wallowa River upstream of Cross-Country Canal (1995-2003); Imnaha River at Imnaha (1980-2003); and Grande Rhonde River at Troy (1980-2003).



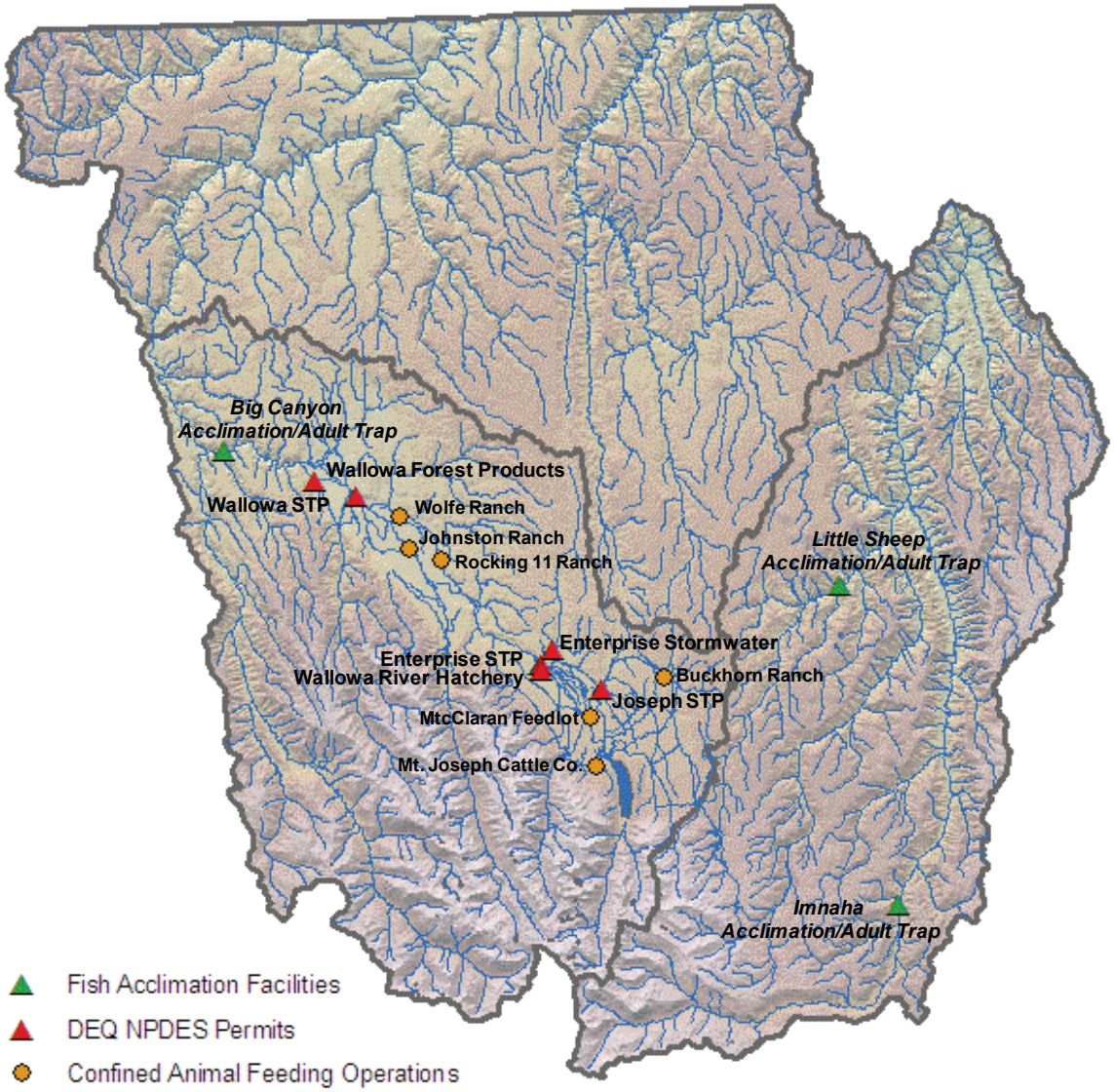




1.3.5 Point Sources

A point source is a stationary location or fixed facility, such as an industry or municipality wastewater treatment plant, that discharges pollutants through a defined conveyance, such as pipes, ditches, lagoons or wells. In the State of Oregon, DEQ administers two different types of permits to protect surface waters from point source discharges: WPCF and NPDES permits (Oregon Revised Statute (ORS 468B.050). Water Pollution Control Facilities (WPCF) permits are for waste disposal operations and do not allow for any discharge to surface waters. Therefore they are not addressed in this TMDL. The second type is the National Pollution Discharge Elimination System (NPDES) permit, a requirement of the Federal Water Pollution Control Act (Clean Water Act) and Oregon law. DEQ is the designated agency for the NPDES permit program, which includes issuing permits and conducting the compliance and monitoring for the permits. Under a Memorandum of Understanding, ODA and DEQ jointly issue NPDES individual and general permits for the Confined Animal Feeding Operation (CAFO) permit program. ODA assigns the permits and conducts the compliance and monitoring under this agreement. There are 16 point source discharges in the Lower Grande Ronde Subbasins (**Figure 1-9**), with the majority of these in the Wallowa River Subbasin. See the subsections below for more information about each of these discharges.

Figure 1-9. Point source discharges in the Lower Grande Ronde Subbasins



1.3.5.1 General and Individual NPDES Permits administered by DEQ

NPDES permits which are administered by DEQ are for any operation that has a water discharge including, but not limited to, wastewater, sewage, processing water, wash water, cooling water, etc. These discharges to surface water may occur directly through a pipe or ditch or indirectly through a storm sewer system. Certain industries and activities may also be required to obtain permits for storm water runoff from their properties. NPDES permits fall into two categories, individual and general.

There are seven permitted NPDES point-source discharges to waters within the Lower Grande Ronde Subbasins (**Table 1-6**) which are administered by DEQ. All of these are in the Wallowa River Subbasin. Three of the NPDES permits are individual permits for domestic sewage for the cities of Enterprise, Joseph and Wallowa. The other four are general permits. The City of Enterprise has a general stormwater construction permit for construction of their new wastewater treatment plant. Wallowa Forest Products has two general NPDES permits – one for stormwater and one for boiler blowdown (industrial wastewater). The Oregon Department of Fish and Wildlife (ODFW) has a general NPDES permit for fish hatchery discharge. Facility locations, identification and characteristics are described below.

In addition to these seven permitted discharges, there are also three fish acclimation facilities located in the Lower Grande Subbasins – one in the Wallowa River Subbasin and two in the Imnaha River Subbasin. These are low-volume fish-holding facilities which are exempt from needing an NPDES permit.

Table 1-6. NPDES discharges in the Lower Grande Ronde Subbasins

File Number	Legal Name	Category	Class	Permit Type	Receiving Stream	River Mile
27514	City of Enterprise	Domestic	Minor	NPDES-DOM-Da	Wallowa River	40.7
116941	City of Enterprise	Stormwater	Minor	GEN12C	Trout Creek	---
44329	City of Joseph	Domestic	Minor	NPDES-DOM-Db	Prairie Creek	4.0
64580	ODFW	Individual	Minor	GEN03	Spring Creek	1.65
108221	Wallowa Forest Prod., LLC	Individual	Minor	GEN05	Wallowa River	20.0
108221	Wallowa Forest Prod., LLC	Stormwater	Minor	GEN12Z	Wallowa River	19.0
93617	City of Wallowa	Domestic	Minor	NPDES-DOM-Db	Wallowa River	23.0

City of Enterprise Sewage Treatment Plant

The City's original sewer system was placed into operation in 1915 using clay pipe, which conveyed the wastewater to a large septic tank and then discharged into Trout Creek. In 1952, an engineering study concluded that high groundwater was infiltrating into the system and increasing the daily flows. As a result, sewer lines in the high groundwater area were replaced. A new trickling filter was built in 1955, but inflow and infiltration were still a problem. Additional improvements were made to the system in 1987, which included replacement of deteriorated sewer lines, installation of a new outfall line and polishing pond, and repair of the final clarifier. High levels of infiltration and inflow (I&I) continued to occur during the spring and summer resulting from the effects of local irrigation. These activities elevated the groundwater which infiltrated the sewer system. Due to the high I&I from the elevated groundwater, this facility exceeded the original design capacity in the spring and summer, causing effluent violations to occur.

The City of Enterprise just completed an upgrade of their wastewater treatment plant to ensure compliance with water quality standards. The plant has been upgraded to an extended aeration activated sludge system, using the Aero-Mod Sequox process. As of August, 2009, the upgrade was complete and the new facility is under operation and meeting their more restrictive permit limits. The facility discharges into the Wallowa River year-around.

As of May 31, 2007, the City of Enterprise received a stormwater construction permit in association with construction of the new facility. This NPDES permit is required for construction activities which disturb more than one acre of ground. Although the construction of the new facility is now complete, the stormwater construction permit is still active.

City of Joseph Sewage Treatment Plant

The treatment facility is located about one mile north of Joseph off of Walker Lane on Valley View Road. The facility was originally placed into operation in 1967 and the last major facility modification was completed in 1997. The facility is allowed to discharge into Prairie Creek from November 1 through May 31. During the rest of the year the effluent is land applied in an adjacent field.

The City's wastewater treatment facility consists of headworks with a mechanical screen, a manually-cleaned grit chamber and a 6-inch Parshall flume followed by a primary clarifier. The major treatment process used is Stabilization Lagoons with Aeration. Solids settled out in the clarifier are processed in a two-cell aerobic digester. Wastewater from the clarifier flows by gravity to a four-cell, synthetic-lined, 10-acre facultative lagoon system. Two of the lagoon cells are mechanically aerated. Effluent from the second cell is chlorinated and then flows through a 24-inch diameter contact pipe to the third cell. The third and fourth cells are used as dechlorination, storage and polishing ponds. Effluent from the fourth cell is measured using a 3-inch Parshall flume and discharged to Prairie Creek at river mile 4.0 through an 8-inch diameter, 9,500 feet long outfall pipe, or is pumped to the land application site.

City of Wallowa Sewage Treatment Plant

The City of Wallowa owns and operates a wastewater treatment facility that was originally constructed in 1972. The facility is located adjacent to the Wallowa River in the north end of the City. The treatment facility receives primarily domestic wastewater from residential and commercial sources. There are no categorical users that contribute to the wastewater flow to the facility.

The wastewater treatment facility consists of a two cell, facultative lagoon with a total surface area of 7.5 acres, influent Parshall flume and flow recorder, lift station, chlorination system, V-notch, effluent weir and recorder. Effluent is discharged to the Wallowa River at river mile 23.0 year-around. The facility completed its last upgrade in 2002. During that upgrade, they expanded and divided their cells and replaced their disinfection system. The facility presently serves a population of 750- 810, although the design population used for the new collection system and plant was a projected population of 1,000.

Wallowa Forest Products Industrial Discharges

The Wallowa Forest Products lumber mill is located at approximately river mile 20 on the Wallowa River approximately three miles northwest of Wallowa, Oregon. The mill site consists of log storage decks, wood waste landfill, sawmill, lumber drying kiln, boiler, and product storage areas. Wallowa Forest Products holds general permits for boiler blowdown (NPDES General Permit 500-J) and for stormwater (NPDES General Permit 1200-Z). Boiler blowdown is discharged to a sump, which flows to an unlined pond and commingled with industrial storm water prior to discharge at Outfall 001. The facility has been closed since December, 2007, although the permits are still active.

ODFW Wallowa River Hatchery

The Wallowa Fish Hatchery is located on Fish Hatchery Lane, just northeast of the City of Enterprise. It is fed by and discharges to Spring Creek which runs right next to its driveway. The hatchery is managed by the Oregon Department of Fish and Wildlife (ODFW), which holds a general permit for aquatic animal production facilities (NPDES General Permit 300J). This permit covers discharges from facilities which produce at least 20,000 pounds of fish per year, but have less than 300,000 pounds on hand at any time. There are limits set in the general permit for total suspended solids (TSS), settleable solids, temperature and pH in the discharge.

1.3.5.2 Confined Animal Feeding Operations

Confined Animal Feeding Operations (CAFOs) are generally defined as the concentrated confined feeding or holding of animals in buildings, pens or lots where the surface is prepared to support animals in wet weather or where there are wastewater treatment facilities for livestock (e.g., manure lagoons). CAFO wastes include but are not limited to manure, silage pit drainage, wash down waters, contaminated runoff, milk wastewater, and bulk tank wastewater. The CAFO permit program began in the early 1980s to prevent CAFO wastes from contaminating groundwater and surface water.

All CAFOs operate under a general NPDES permit issued and managed by the Oregon Department of Agriculture (ODA). The CAFOs covered by this permit have the potential to discharge a variety of pollutants to receiving streams throughout the state. The general permit prohibits discharge of CAFO wastes. There are some exceptions for discharges which occur under extreme rainfall events for facilities which meet certain design criteria. These criteria are not met for any of the CAFOs in the Wallowa River Subbasin (Ron Jones, personal communication), so no discharges are allowed for any of these facilities.

All land application of manure and process wastewater must be done in accordance with an ODA approved Animal Waste Management Plan (AWMP). The AWMP is required for each CAFO. The general permit refers to each site-specific AWMP. Each permitted CAFO receives a routine inspection from the area Livestock Water Quality Inspector once a year, on average. During this inspection, the operator and inspector discuss the operation and review required plans and records. The inspector views the entire operation to assure compliance with permit terms and water quality rules and laws. The inspection reports detail permit compliance in the following areas: permitted number of animals, animal confinement requirements, manure and silage containment requirements, manure application requirements, AWMP, and record keeping. Problems in any of these areas, including incomplete record keeping, can result in the issuance of a water quality advisory or a notice of noncompliance (NON). When a discharge occurs or where there is a potential for a discharge to occur, ODA may take samples of the effluent to determine bacterial concentrations. Surface water quality samples are taken when visual or anecdotal evidence of discharge is present. In the event a violation is found, the inspector works with the operator to develop a solution to the problem and a schedule to complete the corrective actions. ODA can also issue civil penalties for violations listed in NONs.

There are currently six CAFOs in the Lower Grande Ronde Subbasins (**Table 1-7, Figure 1-9**). All of these are in the Wallowa Subbasin.

Table 1-7. CAFOs located in the Lower Grande Ronde Subbasins
(data downloaded from ODA website in December,2009
http://oda.state.or.us/dbs/licenses/search.lasso?&division=nrd)

License Number	*Facility Name*	*Location*	*Expiration Date*
AG-P0155824CAFG	Goertzen's Buckhorn Ranch	Joseph	6/20/2010
AG-P0181713CAFG	Johnston Ranch	Wallowa	6/20/2010
AG-P0175766CAFG	McClaran Feedlot	Joseph	6/20/2010
AG-P0063583CAFG	Mt. Joseph Cattle Co, Inc.	Joseph	6/20/2010
AG-P1000003CAFG	Rocking 11 Ranch, LLC	Lostine	6/20/2010
AG-P0172757CAFG	Wayne/Gordon Wolfe Prtnr	Wallowa	6/20/2010

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