OREGON DEPARTMENT OF AGRICULTURE

Lower John Day Agricultural Water Quality Management Area Plan

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Developed by the

Oregon Department of Agriculture

and the

Lower John Day Local Advisory Committee

with support from the

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Acronyms and Terms

Ag Water Quality Program – Agricultural Water Quality Program
Area Plan – Agricultural Water Quality Management Area Plan
Area Rules – Agricultural Water Quality Management Area Rules
CAFO – Confined Animal Feeding Operation
CWA – Clean Water Act
DEQ – Oregon Department of Environmental Quality
GWMA – Groundwater Management Area
HUC – Hydrologic Unit Code
LAC – Local Advisory Committee
LMA – Local Management Agency
Management Area – Agricultural Water Quality Management Area
NRCS – Natural Resources Conservation Service
OAR – Oregon Administrative Rules
ODA – Oregon Department of Agriculture
ORS – Oregon Revised Statute
OWEB – Oregon Watershed Enhancement Board
OWRI – Oregon Watershed Restoration Inventory
PSP – Pesticide Stewardship Partnership
SIA – Strategic Implementation Area
SWCD – Soil and Water Conservation District
TMDL – Total Maximum Daily Load
US EPA – United States Environmental Protection Agency

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Foreword

This Agricultural Water Quality Management Area Plan (Area Plan) provides guidance for addressing water quality related to agricultural activities in the Agricultural Water Quality Management Area (Management Area). The Area Plan identifies strategies to prevent and control water pollution from agricultural lands through a combination of outreach programs, suggested land treatments, management activities, compliance, and monitoring.

The Area Plan is neither regulatory nor enforceable (Oregon Revised Statute (ORS) 568.912(1)). The Area Plan refers to associated Agricultural Water Quality Management Area Rules (Area Rules). The Area Rules are Oregon Administrative Rules (OARs) and are enforced by the Oregon Department of Agriculture (ODA).

Required Elements of Area Plans

Area Plans must describe a program to achieve the water quality goals and standards necessary to protect designated beneficial uses related to water quality as required by federal and state law (OAR 603-090-0030(1)).

Plan Content

Chapter 1: Agricultural Water Quality Program Purpose and Background. Presents consistent and accurate information about the Ag Water Quality Program.

Chapter 2: Local Background. Provides the local geographic, water quality, and agricultural context for the Management Area. Describes the water quality issues, Area Rules, and potential practices to address water quality issues.

Chapter 3: Implementation Strategies. Describes activities to make and track progress towards the goals of the Area Plan. Presents goals, measurable objectives, strategic initiatives, proposed activities, and monitoring efforts.

Chapter 4: Progress and Adaptive Management. Describes progress toward achieving Area Plan goals and measurable objectives by summarizing accomplishments and monitoring results.

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Chapter 1: Agricultural Water Quality Program

1.1 Purpose of Agricultural Water Quality Program and Applicability of Area Plans

As part of Oregon's Agricultural Water Quality Program (Ag Water Quality Program), the Area Plan guides landowners and partners such as Soil and Water Conservation Districts (SWCDs) in addressing water quality issues related to agricultural activities. The Area Plan identifies strategies to prevent and control "water pollution from agricultural activities and soil erosion" (ORS 568.909(2)) on agricultural and rural lands within the boundaries of this Management Area (OAR 603-090-0000(3)) and to achieve and maintain water quality standards (ORS 561.191(2)). The Area Plan has been developed and revised by ODA and the Local Advisory Committee (LAC), with support and input from the SWCD and the Oregon Department of Environmental Quality (DEQ). The Area Plan is implemented using a combination of outreach, conservation and management activities, compliance with Area Rules, monitoring, evaluation, and adaptive management.

The provisions of the Area Plan do not establish legal requirements or prohibitions (ORS 568.912(1)).

Each Area Plan is accompanied by Area Rules that describe local agricultural water quality regulatory requirements. ODA will exercise its regulatory authority for the prevention and control of water pollution from agricultural activities under the Ag Water Quality Program's general regulations (OAR 603-090-0000 to 603-090-0120) and under the Area Rules for this Management Area (OAR 603-095-2940). The general regulations guide the Ag Water Quality Program, and the Area Rules for the Management Area are the regulations with which landowners must comply. Landowners are encouraged through outreach and education to implement conservation and management activities.

The Area Plan and Area Rules apply to all agricultural activities on non-federal and non-Tribal Trust land within this Management Area including:

- Farms and ranches,
- Rural residential properties grazing animals or raising crops,
- Agricultural lands that lay idle or on which management has been deferred,
- Agricultural activities in urban areas,
- Agricultural activities on land subject to the Forest Practices Act (ORS 527.610).

Water quality on federal land in Oregon is regulated by DEQ and on Tribal Trust land by the respective tribe, with oversight by the United States Environmental Protection Agency (US EPA).

1.2 History of the Ag Water Quality Program

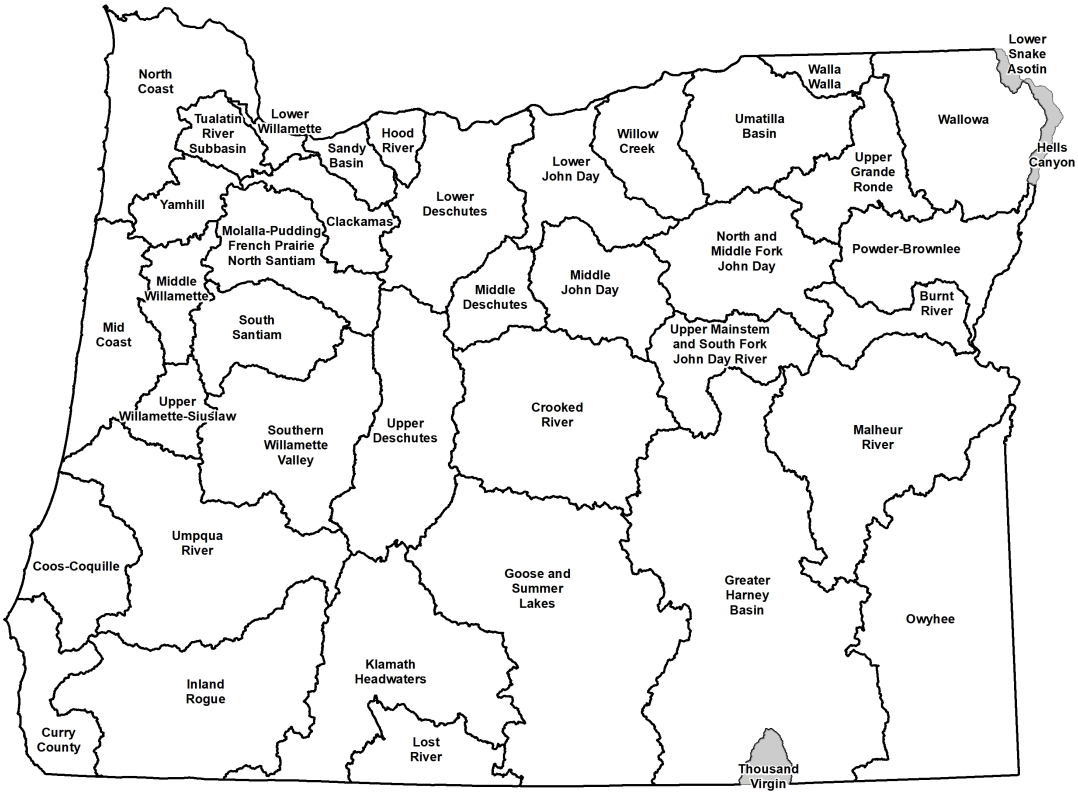
In 1993, the Oregon Legislature passed the Agricultural Water Quality Management Act directing ODA to develop plans to prevent and control water pollution from agricultural activities and soil erosion and achieve water quality standards and to adopt rules as necessary (ORS 568.900 through ORS 568.933). The Oregon Legislature passed additional legislation in 1995 to clarify that ODA is the lead agency for regulating agriculture with respect to water quality (ORS

561.191). The Area Plan and Area Rules were developed and subsequently revised pursuant to these statutes.

Between 1997 and 2004, ODA worked with LACs and SWCDs to develop Area Plans and Area Rules in 38 watershed-based Management Areas across Oregon (Figure 1.2). Since 2004, ODA, LACs, SWCDs, and other partners have focused on implementation including:

- Providing education, outreach, and technical assistance to landowners,
- Implementing projects to improve agricultural water quality,
- Investigating complaints of potential violations of Area Rules,
- Conducting biennial reviews of Area Plans and Area Rules,
- Monitoring, evaluation, and adaptive management,
- Developing partnerships with state and federal agencies, tribes, watershed councils, and others.

Figure 1.2 Map of 38 Agricultural Water Quality Management Areas*



*Gray areas are not included in Ag Water Quality Management Areas

1.3 Roles and Responsibilities

1.3.1 Oregon Department of Agriculture

ODA is the agency responsible for implementing the Ag Water Quality Program (ORS 568.900 to 568.933, ORS 561.191, OAR 603-090, and OAR 603-095). The Ag Water Quality Program was established to develop and implement water quality management plans for the prevention

and control of water pollution from agricultural activities and soil erosion. State and federal laws that drive the establishment of an Area Plan include:

- State water quality standards,
- Load allocations for agricultural or nonpoint source pollution assigned under Total Maximum Daily Loads (TMDLs) issued pursuant to the federal Clean Water Act (CWA), Section 303(d),
- Approved management measures for Coastal Zone Act Reauthorization Amendments (CZARA),
- Agricultural activities detailed in a Groundwater Management Area (GWMA) Action Plan (if DEQ has established a GWMA in the Management Area and an Action Plan has been developed).

ODA bases Area Plans and Area Rules on scientific information (ORS 568.909). ODA works in partnership with SWCDs, LACs, DEQ, and other partners to implement, evaluate, and update the Area Plans and Area Rules. If and when other governmental policies, programs, or rules conflict with the Area Plan or Area Rules, ODA will consult with the appropriate agencies to resolve the conflict in a reasonable manner.

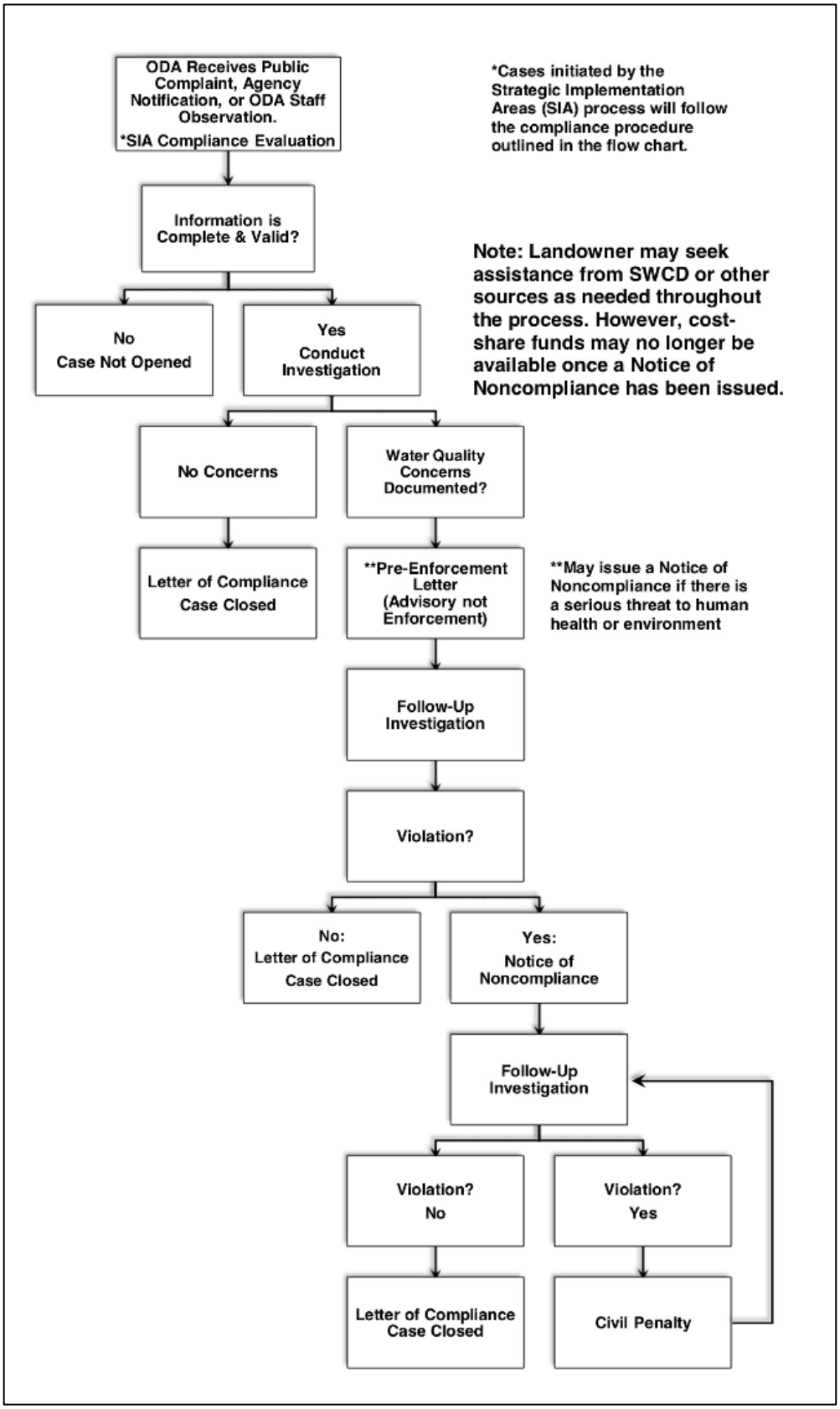
1.3.1.1 ODA Compliance Process

ODA is responsible for any actions related to enforcement or determination of noncompliance with Area Rules (OAR 603-090-0080 through OAR 603-090-0120). ORS 568.912(1) and ORS 568.912(2) give ODA the authority to adopt rules that require landowners to perform actions necessary to prevent and control pollution from agricultural activities and soil erosion.

The Area Rules are a set of standards that landowners must meet on all agricultural or rural lands. “Landowner” includes any landowner, land occupier, or operator per OAR 603-95-0010(24). All landowners must comply with the Area Rules. ODA will use enforcement where appropriate and necessary to achieve compliance with Area Rules. Figure 1.3.1 outlines ODA’s compliance process. ODA will pursue enforcement action only when reasonable attempts at voluntary solutions have failed (OAR 603-090-0000(5)(e)). If a violation is documented, ODA may issue a pre-enforcement notification or an enforcement order such as a Notice of Noncompliance. If a Notice of Noncompliance is issued, ODA will direct the landowner to remedy any conditions through required corrective actions under the provisions of the enforcement procedures outlined in OAR 603-090-060 through OAR 603-090-120. If a landowner does not implement the required corrective actions, ODA may assess civil penalties for continued violation of the Area Rules.

Any member of the public may file a complaint, and any public agency may file a notification of a potential violation of the Area Rules. ODA also may initiate an investigation based on its own observation or from cases initiated through the Strategic Implementation Area process (See Figure 1.3.1).

Figure 1.3.1 Compliance Flow Chart



1.3.2 Local Management Agency

A Local Management Agency (LMA) is an organization designated by ODA to assist with the implementation of an Area Plan (OAR 603-090-0010). The Oregon Legislature intended that SWCDs be LMAs to the fullest extent practical, consistent with the timely and effective implementation of Area Plans (ORS 568.906). SWCDs have a long history of effectively assisting landowners to voluntarily address natural resource concerns. Currently, all LMAs in Oregon are SWCDs.

The day-to-day implementation of the Area Plan is accomplished through an Intergovernmental Grant Agreement between ODA and each SWCD. Every two years, each SWCD submits a scope of work to ODA to receive funding to implement the Area Plan. Each SWCD implements the Area Plan by providing outreach and technical assistance to landowners. SWCDs also work with ODA and the LAC to establish implementation priorities, evaluate progress toward meeting Area Plan goals and objectives, and revise the Area Plan and Area Rules as needed.

1.3.3 Local Advisory Committee

For each Management Area, the director of ODA appoints an LAC (OAR 603-090-0020) with up to 12 members. The LAC serves in an advisory role to the director of ODA and to the Board of Agriculture. The role of the LAC is to provide a high level of citizen involvement and support the development, implementation, and biennial reviews of the Area Plan and Area Rules. The LAC's primary role is to advise ODA and the LMA on local agricultural water quality issues as well as evaluate the progress toward achieving the goals and objectives of the Area Plan. LACs are composed primarily of agricultural landowners in the Management Area and must reflect a balance of affected persons.

The LAC is convened at the time of the biennial review; however, the LAC may meet as frequently as necessary to carry out its responsibilities, which include but are not limited to:

- Participate in the development and subsequent revisions of the Area Plan and Area Rules,
- Recommend strategies necessary to achieve the goals and objectives in the Area Plan,
- Participate in biennial reviews of the progress of implementation of the Area Plan and Area Rules,
- Submit written biennial reports to the Board of Agriculture and the ODA director.

1.3.4 Agricultural Landowners

The emphasis of the Area Plan is on voluntary action by landowners to control the factors affecting water quality in the Management Area. In addition, each landowner in the Management Area is required to comply with the Area Rules. To achieve water quality goals or compliance, landowners may need to select and implement an appropriate suite of measures. The actions of each landowner will collectively contribute toward achievement of water quality standards.

Technical assistance, and often financial assistance, is available to landowners who want to work with SWCDs or other local partners, such as watershed councils, to achieve land conditions that contribute to good water quality. Landowners may also choose to improve their land conditions without assistance.

Under the Area Plan and Area Rules, agricultural landowners are not responsible for mitigating or addressing factors that are caused by non-agricultural activities or sources, such as:

- Hot springs, glacial melt water, unusual weather events, and climate change,
- Wildfires and other natural disasters,
- Septic systems and other sources of human waste,
- Public roadways, culverts, roadside ditches, and shoulders,
- Dams, dam removal, hydroelectric plants, and non-agricultural impoundments,
- Housing and other development in agricultural areas,
- Impacts on water quality and streamside vegetation from wildlife such as waterfowl, elk, and feral horses,
- Other circumstances not within the reasonable control of the landowner.

However, agricultural landowners may be responsible for some of these impacts under other legal authorities.

1.3.5 Public Participation

The public was encouraged to participate when ODA, LACs, and SWCDs initially developed the Area Plan and Area Rules. In each Management Area, ODA and the LAC held public information meetings, a formal public comment period, and a formal public hearing. ODA and the LACs modified the Area Plan and Area Rules, as needed, to address comments received. The director of ODA adopted the Area Plan and Area Rules in consultation with the Board of Agriculture.

ODA, LACs, and LMAs conduct biennial reviews of the Area Plan and Area Rules. Partners, stakeholders, and the general public are invited to participate in the process. Any revisions to the Area Rules will include a formal public comment period and a formal public hearing.

1.4 Agricultural Water Quality

The federal CWA directs states to designate beneficial uses related to water quality, decide on parameters to measure to determine whether beneficial uses are being met, and set water quality standards based on the beneficial uses and parameters.

1.4.1 Point and Nonpoint Sources of Water Pollution

There are two types of water pollution. Point source water pollution emanates from clearly identifiable discharge points or pipes. Point sources are required to obtain permits that specify their pollutant limits. Agricultural operations regulated as point sources include permitted Confined Animal Feeding Operations (CAFOs), and all permitted CAFOs are subject to ODA's CAFO Program requirements. Irrigation return flow from agricultural fields may drain through a defined outlet, but is exempt under the CWA and does not currently require a permit.

Nonpoint-source water pollution originates from the general landscape and is difficult to trace to a single source. Nonpoint water pollution sources include runoff from agricultural and forest lands, urban and suburban areas, roads, and natural sources. In addition, groundwater can be polluted by nonpoint sources including agricultural amendments (fertilizers and manure).

1.4.2 Beneficial Uses and Parameters of Concern

Beneficial uses related to water quality are defined by DEQ for each basin. The most sensitive beneficial uses usually are fish and aquatic life, water contact recreation, and public and private domestic water supply. These uses generally are the first to be impaired because they are affected at lower levels of pollution. While there may not be severe impacts on water quality from a single source or sector, the combined effects from all sources can contribute to the impairment of beneficial uses in the Management Area. Beneficial uses that have the potential to be impaired in this Management Area are summarized in Chapter 2.4.1.1.

Many waterbodies throughout Oregon do not meet state water quality standards. The most common water quality concerns statewide related to agricultural activities are temperature, bacteria, biological criteria, sediment, turbidity, phosphorous, nitrates, algae, pH, dissolved oxygen, harmful algal blooms, pesticides, and mercury. Water quality impairments vary across the state; they are summarized for this Management Area in Chapter 2.4.

1.4.3 Impaired Waterbodies and Total Maximum Daily Loads

Every two years, DEQ is required by the CWA to assess water quality in Oregon, resulting in the "Integrated Report." CWA Section 303(d) requires DEQ to identify "impaired" waters that do not meet water quality standards. The resulting list is commonly referred to as the "303(d) list" (http://www.oregon.gov/deq/wq/Pages/WQ-Assessment.aspx). In accordance with the CWA, DEQ must establish TMDLs for pollutants on the 303(d) list. For more information, visit www.oregon.gov/deq/wq/tmdls/Pages/default.aspx.

A TMDL includes an assessment of conditions (based on water quality data, land condition data, and/or computer modeling) and describes a plan to achieve water quality standards. TMDLs specify the daily amount of pollution a waterbody can receive and still meet water quality standards. TMDLs generally apply to an entire basin or subbasin, not just to an individual waterbody on the 303(d) list. In the TMDL, point sources are assigned waste load allocations that are then incorporated into National Pollutant Discharge Elimination System permits. Nonpoint sources (agriculture, forestry, and urban) are assigned a load allocation to achieve.

As part of the TMDL process, DEQ identifies Designated Management Agencies and Responsible Persons, which are parties responsible for submitting TMDL implementation plans. TMDLs designate ODA as the lead agency responsible for implementing the TMDL on agricultural lands. ODA uses the applicable Area Plan(s) as the implementation plan for the agricultural component of the TMDL. Biennial reviews and revisions to the Area Plan and Area Rules must address agricultural or nonpoint source load allocations from relevant TMDLs.

The 303(d) list, the TMDLs, and the agricultural load allocations for the TMDLs that apply to this Management Area are summarized in Chapter 2.4.1.

1.4.4 Oregon Water Pollution Control Law – ORS 468B.025 and 468B.050

In 1995, the Oregon Legislature passed ORS 561.191. This statute states that any program or rules adopted by ODA "shall be designed to assure achievement and maintenance of water quality standards adopted by the Environmental Quality Commission."

To implement the intent of ORS 561.191, ODA incorporated ORS 468B.025 and 468B.050 into all 38 sets of Area Rules.

ORS 468B.025 (prohibited activities) states that:
"(1) Except as provided in ORS 468B.050 or 468B.053, no person shall:
(a) Cause pollution of any waters of the state or place or cause to be placed any wastes in a location where such wastes are likely to escape or be carried into the waters of the state by any means.
(b) Discharge any wastes into the waters of the state if the discharge reduces the quality of such waters below the water quality standards established by rule for such waters by the Environmental Quality Commission.
(2) No person shall violate the conditions of any waste discharge permit issued under ORS 468B.050."

ORS 468B.050 identifies the conditions when a permit is required. A permit is required for CAFOs that meet minimum criteria for confinement periods and have large animal numbers or have wastewater facilities. The portions of ORS 468B.050 that apply to the Ag Water Quality Program state that:
"(1) Except as provided in ORS 468B.053 or 468B.215, without holding a permit from the Director of the Department of Environmental Quality or the State Department of Agriculture, which permit shall specify applicable effluent limitations, a person may not:
(a) Discharge any wastes into the waters of the state from any industrial or commercial establishment or activity or any disposal system."

Definitions used in ORS 468B.025 and 468B.050:

" 'Pollution' or 'water pollution' means such 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 discharge of any liquid, gaseous, solid, radioactive, or other substance into any waters of the state, which will or tends to, either by itself or in connection with any other substance, create a public nuisance or which will or tends to 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" (ORS 468B.005(5)).

" 'Water' or 'the waters of the state' include lakes, bays, ponds, impounding reservoirs, springs, wells, rivers, streams, creeks, estuaries, marshes, inlets, canals, the Pacific Ocean within the territorial limits of the State of Oregon and all other bodies of surface or underground waters, natural or artificial, inland or coastal, fresh or salt, public or private (except those private waters which do not combine or affect a junction with natural surface or underground waters), which are wholly or partially within or bordering the state or within its jurisdiction" (ORS 468B.005(10)).

" 'Wastes' means sewage, industrial wastes, and all other liquid, gaseous, solid, radioactive, or other substances, which will or may cause pollution or tend to cause pollution of any waters of the state.' (ORS 468B.005(9)). Additionally, the definition of 'wastes' given in OAR 603-095-0010(53) "includes but is not limited to commercial fertilizers, soil amendments, composts, animal wastes, vegetative materials or any other wastes."

1.4.5 Streamside Vegetation and Agricultural Water Quality

Across Oregon, the Ag Water Quality Program emphasizes streamside vegetation protection and enhancement. Streamside vegetation can provide three primary water quality functions: shade to reduce stream temperature warming from solar radiation, streambank stability, and filtration of pollutants. Other water quality functions from streamside vegetation include water

storage in the soil for cooler and later season flows, sediment trapping that can build streambanks and floodplains, narrowing and deepening of channels, and biological uptake of sediment, organic material, nutrients, and pesticides. In addition, streamside vegetation provides habitat for numerous species of fish and wildlife. Streamside vegetation conditions can be monitored to track progress toward achieving conditions that support water quality.

Site-Capable Vegetation

The Ag Water Quality Program uses the concept of "site-capable vegetation" to describe the streamside vegetation that can be expected to grow at a particular site, given natural site factors (e.g., elevation, soils, climate, hydrology, wildlife, fire, floods) and historical and current human influences that are beyond the program's statutory authority (e.g., channelization, roads, modified flows, previous land management). Site-capable vegetation can be determined for a specific site based on current streamside vegetation at the site, streamside vegetation at nearby reference sites with similar natural characteristics, Natural Resources Conservation Service (NRCS) soil surveys and ecological site descriptions, and/or local or regional scientific research.

The goal for Oregon's agricultural landowners is to provide the water quality functions (e.g., shade, streambank stability, and filtration of pollutants) produced by site-capable vegetation along streams on agricultural lands. The Area Rules for each Management Area require that agricultural activities allow for the establishment and growth of streamside vegetation to provide the water quality functions equivalent to what site-capable vegetation would provide.

Occasionally, mature site-capable vegetation such as tall trees may not be needed along narrow streams. For example, shrubs and grass may provide shade, protect streambanks, and filter pollutants. However, on larger streams, mature site-capable vegetation is needed to provide the water quality functions.

In many cases, invasive, non-native plants, such as introduced varieties of blackberry and reed canary grass, grow in streamside areas. This type of vegetation has established throughout much of Oregon due to historic and human influences and may provide some of the water quality functions of site-capable vegetation. ODA's statutory authority does not require the removal of invasive, non-native plants, however, ODA encourages landowners to remove these plants voluntarily. In addition, the Oregon State Weed Board identifies invasive plants that can impair watersheds. Public and private landowners are responsible for eliminating or intensively controlling noxious weeds, as described in state and local laws. For more information, visit www.oregon.gov/ODA/programs/weeds.

1.4.6 Soil Health and Agricultural Water Quality

An increasingly important concept in Oregon and across the United States is soil health. The Ag Water Quality Program promotes soil health to reduce erosion and keep sediment out of surface waters, thereby helping to maintain and improve water quality. Healthy soils have relatively high organic matter and well-formed soil structure. These characteristics may resist erosion and increase water infiltration, leading to less surface runoff and greater groundwater recharge; the resultant groundwater flows in some cases can help moderate stream water temperatures. (Note that the beneficial effects on water quality vary based on factors such as soil type and ecoregion.) According to the NRCS and others, there are four soil health principles that together build highly productive and resilient soils: minimize disturbance; and maximize cover, continuous living roots, and diversity above and below the surface.

Building soil health increases resiliency to extreme weather, protects water quality, and helps keep farms and ranches viable. Incorporating soil health practices can help landowners adapt and reduce risks. For information, visit www.nrcs.usda.gov/wps/portal/nrcs/detail/or/soils/health.

1.5 Other Water Quality Programs

The following programs complement the Ag Water Quality Program and are described here to recognize their link to agricultural lands.

1.5.1 Confined Animal Feeding Operation Program

ODA is the lead state agency for the CAFO Program, which was developed to ensure that operators do not contaminate ground or surface water with animal manure or process wastewater. The CAFO Program coordinates with DEQ to issue permits. These permits require the registrant to operate according to a site-specific, ODA-approved, Animal Waste Management Plan that is incorporated into the CAFO permit by reference. For more information, visit oda.direct/CAFO.

1.5.2 Groundwater Management Areas

Groundwater Management Areas (GWMAs) are designated by DEQ where groundwater is polluted from, at least in part, nonpoint sources. After designating a GWMA, DEQ forms a local groundwater management committee comprised of affected and interested parties. The committee works with and advises the state agencies that are required to develop an action plan to reduce groundwater contamination in the area.

Oregon DEQ has designated three GWMAs because of elevated nitrate concentrations in groundwater: Lower Umatilla Basin, Northern Malheur County, and Southern Willamette Valley. Each GWMA has a voluntary action plan to reduce nitrates in groundwater. After a scheduled evaluation period, if DEQ determines that voluntary efforts are not effective, mandatory requirements may become necessary.

Any GWMA in this Management Area is described in Chapter 2.4.1.5. Any Measurable Objectives for the GWMA will be described in Chapter 3.1.5.

1.5.3 The Oregon Plan for Salmon and Watersheds

In 1997, Oregonians began implementing the Oregon Plan for Salmon and Watersheds, referred to as the Oregon Plan (www.oregon-plan.org). The Oregon Plan seeks to restore native fish populations, improve watershed health, and support communities throughout Oregon. The Oregon Plan has a strong focus on salmonids because of their great cultural, economic, and recreational importance to Oregonians, and because they are important indicators of watershed health. ODA's commitment to the Oregon Plan is to develop and implement Area Plans and Area Rules throughout Oregon.

1.5.4 Pesticide Management and Stewardship

ODA's Pesticides Program holds the primary responsibility for registering pesticides and regulating their use in Oregon under the Federal Insecticide, Fungicide, and Rodenticide Act.

ODA's Pesticide Program administers regulations relating to pesticide sales, use, and distribution, including pesticide operator and applicator licensing as well as proper application of pesticides, pesticide labeling, and registration.

In 2007, Oregon formed the interagency Water Quality Pesticide Management Team to expand efforts to improve water quality in Oregon related to pesticide use. This team facilitates and coordinates activities such as monitoring, analysis and interpretation of data, effective response measures, and management solutions. The team relies on monitoring data from the Pesticide Stewardship Partnership (PSP) program and other federal, state, and local monitoring programs to assess the possible impact of pesticides on Oregon's water quality. Pesticide detections in Oregon's streams can be addressed through multiple programs and partners, including the PSP.

Through the PSP, state agencies and local partners work together to monitor pesticides in streams and to improve water quality (www.oregon.gov/ODA/programs/Pesticides/Water/Pages/PesticideStewardship.aspx). ODA, DEQ, and Oregon State University Extension Service work with landowners, SWCDs, watershed councils, and other local partners to voluntarily reduce pesticide levels while improving water quality and crop management. Since 2000, the PSPs have made noteworthy progress in reducing pesticide concentrations and detections.

Any PSPs in this Management Area are described in Chapter 3.1.4.

ODA led the development and implementation of a Pesticides Management Plan (PMP) for the state of Oregon (www.oregon.gov/ODA/programs/Pesticides/water/pages/AboutWaterPesticides.aspx). The PMP, completed in 2011, strives to protect drinking water supplies and the environment from pesticide contamination, while recognizing the important role that pesticides have in maintaining a strong state economy, managing natural resources, and preventing human disease. By managing the pesticides that are approved for use by the US EPA and Oregon in agricultural and non-agricultural settings, the PMP sets forth a process for preventing and responding to pesticide detections in Oregon's ground and surface water.

1.5.5 Drinking Water Source Protection

Oregon implements its drinking water protection program through a partnership between DEQ and the Oregon Health Authority. The program provides individuals and communities with information on how to protect the quality of Oregon's drinking water. DEQ and the Oregon Health Authority encourage preventive management strategies to ensure that all public drinking water resources are kept safe from current and future contamination. For more information, visit www.oregon.gov/deq/wq/programs/Pages/dwp.aspx.

1.6 Partner Agencies and Organizations

1.6.1 Oregon Department of Environmental Quality

The US EPA delegated authority to DEQ to implement the federal CWA in Oregon. DEQ is the lead state agency with overall authority to implement the CWA in Oregon. DEQ works with other state agencies, including ODA and the Oregon Department of Forestry to meet the requirements of the CWA. DEQ sets water quality standards and develops TMDLs for impaired

waterbodies, which ultimately are approved or disapproved by the US EPA. In addition, DEQ develops and coordinates programs to address water quality including National Pollutant Discharge Elimination System permits for point sources, the CWA Section 319 grant program, the Source Water Protection Program (in partnership with the Oregon Health Authority), the CWA Section 401 Water Quality Certification, and Oregon's Groundwater Management Program. DEQ also coordinates with ODA to help ensure successful implementation of Area Plans.

A Memorandum of Agreement between DEQ and ODA recognizes that ODA is the state agency responsible for implementing the Ag Water Quality Program. ODA and DEQ updated the Memorandum of Agreement in 2012 and reviewed and confirmed it in 2018 (www.oregon.gov/ODA/shared/Documents/Publications/NaturalResources/DEQODAmoa.pdf).

The Environmental Quality Commission, which serves as DEQ's policy and rulemaking board, may petition ODA for a review of part or all of any Area Plan or Area Rules. The petition must allege, with reasonable specificity, that the Area Plan or Area Rules are not adequate to achieve applicable state and federal water quality standards (ORS 568.930(3)(a)).

1.6.2 Other Partners

ODA and SWCDs work in close partnership with local, state, and federal agencies and other organizations, including: DEQ (as described above), the NRCS and United States Department of Agriculture Farm Service Agency, watershed councils, Oregon State University Agricultural Experiment Stations and Extension Service, tribes, livestock and commodity organizations, conservation organizations, and local businesses. As resources allow, SWCDs and local partners provide technical, financial, and educational assistance to individual landowners for the design, installation, and maintenance of effective management strategies to prevent and control agricultural water pollution and to achieve water quality goals.

1.7 Measuring Progress

Agricultural landowners have been implementing effective conservation projects and management activities throughout Oregon to improve water quality for many years. However, it has been challenging for ODA, SWCDs, and LACs to measure progress toward improved water quality. ODA is working with SWCDs, LACs, and other partners to develop and implement strategies that will produce measurable outcomes. ODA is also working with partners to develop monitoring methods to document progress.

1.7.1 Measurable Objectives

A measurable objective is a numeric long-term desired outcome to achieve by a specified date. Milestones are the interim steps needed to make progress toward the measurable objective and consist of numeric short-term targets to reach by specific dates. Together, the milestones define the timeline and progress needed to achieve the measurable objective.

The Ag Water Quality Program is working throughout Oregon with SWCDs and LACs toward establishing long-term measurable objectives to achieve desired conditions. ODA, the LAC, and the SWCD will establish measurable objectives and associated milestones for each Area Plan. Many of these measurable objectives relate to land conditions and primarily are developed for

focused work in small geographic areas (Chapter 1.7.3). ODA's longer-term goal is to develop measurable objectives, milestones, and monitoring methods at the Management Area scale.

The State of Oregon continues to improve its ability to use remote-sensing technology to measure current streamside vegetation conditions and compare these to the conditions needed to meet stream shade targets. As the State's use of this technology moves forward, ODA will use the information to help LACs and LMAs set measurable objectives for streamside vegetation. These measurable objectives will be achieved through implementing the Area Plan, with an emphasis on voluntary incentive programs.

At each biennial review, ODA and its partners will evaluate progress toward measurable objectives and milestone(s) and why they were or were not achieved. ODA, the LAC, and LMA will evaluate whether changes are needed to continue making progress toward the measurable objective(s) and will revise strategies to address obstacles and challenges.

The measurable objective(s) and associated milestone(s) within the Management Area are in Chapter 3.1 and progress toward achieving the measurable objective(s) and milestone(s) is summarized in Chapter 4.1.

1.7.2 Land Conditions and Water Quality

Land conditions can serve as useful surrogates (indicators) for water quality parameters. For example, because shade blocks solar radiation from warming the stream, streamside vegetation, or its associated shade, generally is used as a surrogate for water temperature. In some cases, sediment can be used as a surrogate for pesticides or phosphorus, which often adhere to sediment particles.

The Ag Water Quality Program focuses on land conditions, in addition to water quality data, for several reasons:

- Landowners can see land conditions and have direct control over them,
- Improved land conditions can be documented immediately,
- Water quality impairments from agricultural activities are primarily due to changes in land conditions and management activities,
- It can be difficult to separate agriculture's influence on water quality from other land uses,
- There is generally a lag time between changes on the landscape and the resulting improvements in water quality,
- Extensive monitoring of water quality would be needed to evaluate progress, which would be expensive and may not demonstrate improvements in the short term.

Water quality monitoring data will help ODA and partners to measure progress or identify problem areas in implementing Area Plans. However, as described above, water quality monitoring may be slower to document changes than land condition monitoring.

1.7.3 Focused Implementation in Small Geographic Areas

Focus Areas

A Focus Area is a small watershed with water quality concerns associated with agriculture. The Focus Area process is SWCD-led, with ODA oversight. The SWCD delivers systematic, concentrated outreach and technical assistance. A key component is measuring conditions

before and after implementation to document the progress made with available resources. The Focus Area approach is consistent with other agencies' and organizations' efforts to work proactively in small watersheds.

Focus Areas have the following advantages: a proactive approach that addresses the most significant water quality concerns, multiple partners that coordinate and align technical and financial resources, a higher density of projects that may lead to increased connectivity of projects, and a more effective and efficient use of limited resources.

Any Focus Areas in this Management Area are described in Chapter 3.1.2. SWCDs will also continue to provide outreach and technical assistance to the entire Management Area.

Strategic Implementation Areas

Strategic Implementation Areas (SIAs) are small watersheds selected by ODA, in consultation with partners, based on a statewide review of water quality data and other available information. ODA conducts an evaluation of likely compliance with Area Rules and contacts landowners with the results and next steps. The Oregon Watershed Enhancement Board (OWEB) and other partners make funding and technical assistance available to support conservation and restoration projects. These efforts should result in greater ecological benefit than relying solely on compliance and enforcement. Landowners have the option of working with the SWCD or other partners to voluntarily address water quality concerns. ODA follows up, as needed, to enforce the Area Rules. Finally, ODA completes a post-evaluation to document progress in the SIA.

Any SIAs in this Management Area are described in Chapter 3.1.3.

1.8 Progress and Adaptive Management

1.8.1 Biennial Reviews

The ODA, LAC, LMA, and partners evaluate progress of Area Plan implementation through the biennial review process. At each biennial review, they discuss: 1) Progress toward meeting measurable objectives and implementing strategies, 2) Local monitoring data from other agencies and organizations, including agricultural land conditions and water quality, and 3) ODA compliance activities. As a result of these discussions, ODA and partners revise implementation strategies and measurable objectives in Chapter 3 as needed.

ODA provides information from the Oregon Watershed Restoration Inventory (OWRI) on restoration project funding and accomplishments at biennial reviews and uses the information for statewide reporting. The majority of OWRI entries represent voluntary actions of private landowners who have worked in partnership with federal, state, and local groups to improve aquatic habitat and water quality conditions. OWRI is the single largest restoration information database in the western United States. For more information, visit www.oregon.gov/oweb/data-reporting/Pages/owri.aspx.

1.8.2 Agricultural Water Quality Monitoring

In addition to monitoring land conditions, ODA relies on water quality monitoring data where available. These data may be provided by other state or federal agencies or local entities; ODA seldom collects water quality samples outside of compliance cases.

As part of monitoring water quality status and trends, DEQ regularly collects water samples every other month throughout the year at more than 130 sites on more than 50 rivers and streams across the state. Sites are located across the major land uses (forestry, agriculture, rural residential, and urban/suburban). Parameters measured include alkalinity, biochemical oxygen demand, chlorophyll a, specific conductance, dissolved oxygen, bacteria (*E. coli)*, ammonia, nitrate and nitrite, pH, total phosphorus, total solids, temperature, and turbidity.

DEQ provides status and trends reports for selected parameters in relation to water quality standards. ODA will continue to work with DEQ to summarize the data results and how they apply to agricultural activities.

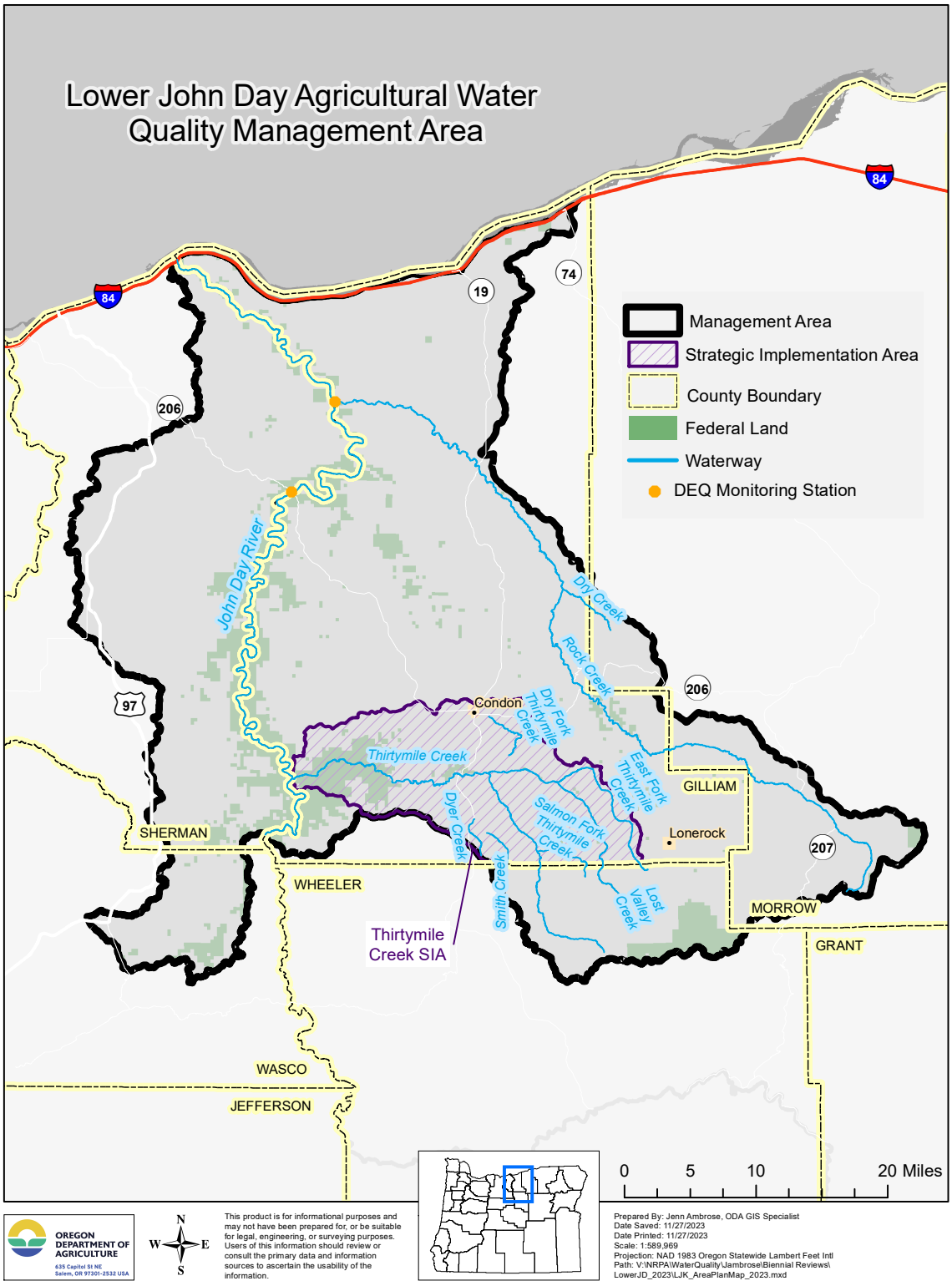
Water quality monitoring efforts in this Management Area are described in Chapter 3, and the data are summarized in Chapter 4.

Chapter 2: Local Background

Chapter 2 provides the local geographic, water quality, and agricultural context for the Management Area. It also describes the water quality issues, Area Rules, and potential practices to address water quality issues.

This Area Plan applies to agricultural activities on all non-federal agricultural, rural, and forest lands in the Lower John Day Management Area. This Management Area consists of 1) all lands drained by the John Day River and its tributaries downstream but not inclusive of the Butte Creek drainage, and 2) all streams flowing into the Columbia River between the Lower Deschutes drainage and the Willow Creek drainage. It applies to lands in current agricultural use and those lying idle or on which management has been deferred. It also applies to agricultural operations within incorporated city boundaries.

Figure 2 Lower John Day Management Area



2.1 Local Roles

2.1.1 Local Advisory Committee

The LAC was formed to assist with the development of the Area Plan and Area Rules and with subsequent biennial reviews. Table 2.1.1 lists the current members of the LAC.

Table 2.1.1 Current LAC members

Name	Geographic Representation	Description
Brad Eakin	Grass Valley	Dryland crops
Corey Wade	Arlington	Dryland crops, cattle
Guy Weedman	Moro	Dryland crops, cattle
John Anderson	Condon	Dryland crops, cattle, Gilliam SWCD vice chair
Marvin Thompson	Moro	Dryland crops
Rich Harper	Ione	Dryland crops
Susie Anderson	Condon	Cattle, Lower John Day Watershed Council
Tracy Fields	Wasco	Dryland crops, cattle
Wally Powell	Condon	Dryland crops
Vacant		
Vacant		
Vacant		

2.1.2 Local Management Agency

SWCDs implement Area Plans through OWEB capacity grants, with details negotiated between ODA and each SWCD. The resulting Scopes of Work define the SWCDs as the LMAs for implementation of the Ag Water Quality Program in specific Management Areas. The LMAs for this Management Area are Gilliam County and Sherman County SWCDs. These SWCD(s) were also involved in development of the Area Plan and Area Rules.

The LMAs implement the Area Plan by conducting activities detailed in Chapter 3, which are intended to achieve the goals and objectives of the Area Plan.

2.2 Area Plan and Area Rules: Development and History

The director of ODA approved the initial Area Plan and Area Rules in 2004.

Since approval, the LAC has met biennially to review the Area Plan and Area Rules. The biennial review process includes an assessment of progress toward achieving the goals and objectives in the Area Plan.

2.3 Geographical and Physical Setting

2.3.1 Location, Description and Land Use

The Management Area is an interior plateau generally situated between the Blue Mountains to the east and the Cascades Mountain Range to the west in north central Oregon.

The John Day River is unique in that it's the second longest undammed river (280 river miles) in the continental United States, behind Yellowstone River. It contains designations of federal Wild and Scenic River and state Scenic River in some sections and hosts a diversity of fish and wildlife. Located in the southern section of the Columbia Plateau Ecological Province, the John Day River Basin is an 8,100-square-mile drainage area, the fourth largest basin in the state. The flows originate in the Strawberry Mountains (elevation 9,000 feet) and flow generally westward and then northward for approximately 284 miles, discharging into the Columbia River east of Rufus (200 feet) at River Mile (RM) 217.

Major towns in the Management Area include Arlington, Condon, Grass Valley, and Moro. This area is not highly populated (0.9-2.2 people/square mile).

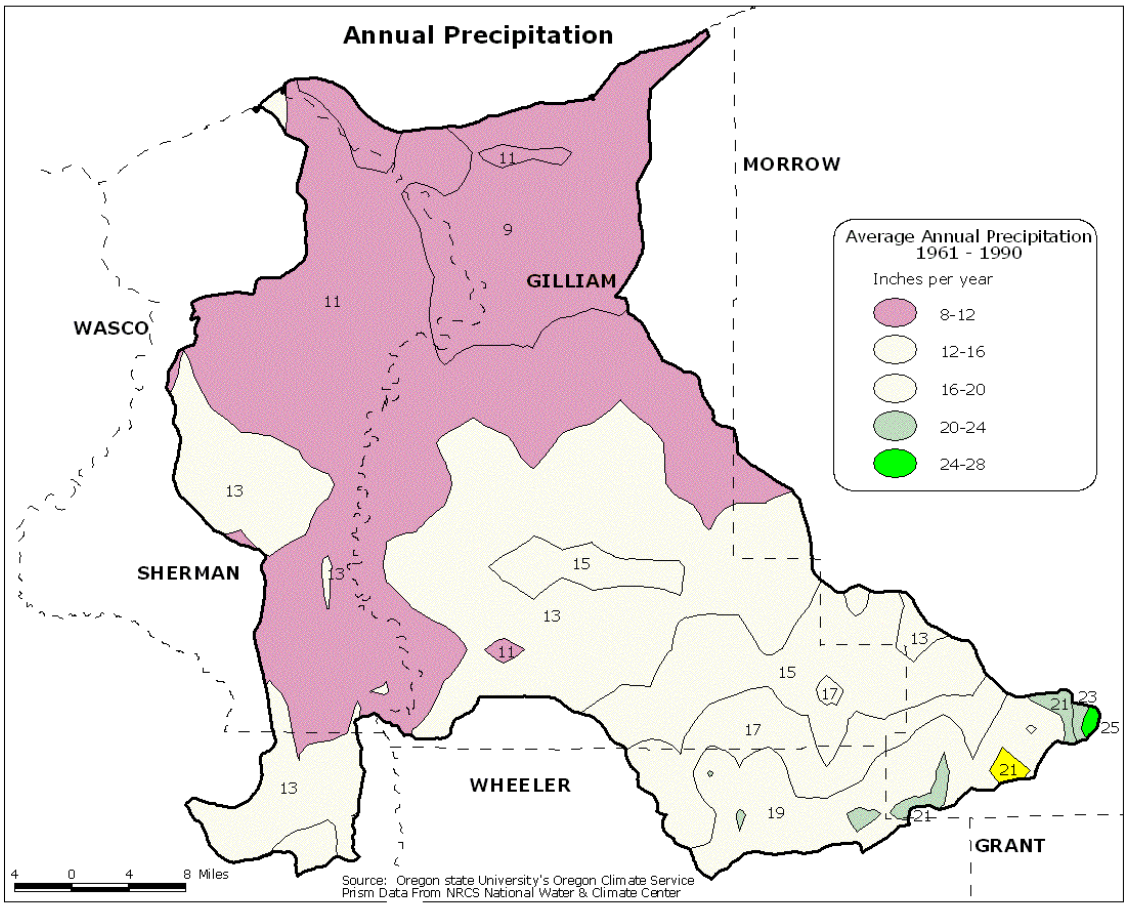
The Management Area contains 1,181,194 acres (1,845 square miles). Most of the land (1.07 million acres) is privately owned. Bureau of Land Management manages 88,566 acres (7.5 percent), mostly along the John Day River, while the U.S. Forest Service only manages 13,551 acres (1.1 percent) in the southeastern corner.

Today the economy is heavily based on agriculture, tourism, and agricultural-related industries. The small population, isolation from major cities, and limited transportation facilities limit expansion of the economy. The timber industry (logging) is most important in the forested upper portions of the Management Area. Dryland production of grain crops is the major economic activity on the plateaus of the Management Area. Raising livestock is important throughout the Management Area and consists mostly of cattle and sheep ranching and associated hay crops. Tourism and recreation are growing industries, constituting a significant sector of the economy, and are inextricably tied to the production of natural resources. Hunting, fishing, boating, camping, wildlife observation, photography, hiking, swimming, and scenic viewing are among the most common recreational activities. Federal Wild and Scenic River segments and state Scenic Waterway designation have undoubtedly contributed to the rise in tourism and recreation. These river segments contain outstandingly remarkable values and provide opportunities for whitewater rafting, warm-water bass fishing, and wildlife viewing.

2.3.2 Climate

The climate ranges from subhumid in the upper Management Area to semiarid in the lower Management Area. The area has a continental climate, characterized by low winter and high summer temperatures, low average annual precipitation, and dry summers. The low annual rainfall on the majority of the landscape is characteristic of the Intermountain Region, which receives most precipitation (70-80 percent) between November and March. Less than 10 percent of the annual precipitation falls as rain during July and August, usually from sporadic, but violent thunderstorms. The other events that produce substantial and damaging runoff in this area are heavy precipitation or rapid snowmelt on frozen soils. These events occur relatively infrequently and cannot be predicted. Annual rainfall varies from about 8 inches in the northeast portion of the Management Area to about 28 inches in the extreme southeast, higher elevation forested areas. Most of the agricultural areas receive between 10 and 14 inches of precipitation per year. Mean annual temperatures vary inversely with elevation. Mean annual temperature ranges from 38ºF in the upper subbasin to 58ºF in the lower basin. Throughout the Management Area, actual temperatures vary from subzero during the winter months to more than 100ºF during the summer. Inflows of moist Pacific air moderate extreme winter temperatures. The average frost-free period is 50 days in the upper basin and 200 days in the lower basin.

Figure 2.3.2 Area Climate



2.3.3 Hydrology

The John Day and Columbia rivers are the largest watercourses within the area. Most water in the Management Area is derived from the upper watersheds, primarily in the form of melting snow. The John Day is a free-flowing system with highly variable discharge from peak to low flows. Discharge usually peaks from March through June and seasonal low flows typically occur from August to October. The John Day River tends to experience floods in December and January when warm temperatures and high precipitation result in rain on snow events, which lead to extreme runoff. Average annual discharge of the John Day River into the Columbia River is approximately 1.5 million acre-feet (or 2,103 cfs), with a range of 1 million to 2.25 million acre-feet. Peak flow at the McDonald Ferry gauging station (RM21) is typically more than 100 times greater than the lowest flows the same year. From year to year, peak flows can vary as much as 300 to 700 percent. Major tributaries of the Lower John Day River in the Management Area include Rock Creek, Grass Valley Canyon Creek, Pine Hollow Creek, Thirtymile Creek, Dry Creek, Blalock Canyon Creek, and Juniper Creek.

2.3.4 Topography/Geology

Rock assemblages within the Management Area include masses of oceanic crust, marine sediments, volcanic materials, ancient river and lake deposits, and recent river and landslide deposits. Major geologic events included volcanic eruptions, uplifting, faulting, and erosion. Volcanic activity in the form of lava flows, mudflows, and ash fall formed and stratified three key formations in the subbasin over the course of approximately 37 to 54 million years: the Clarno Formation, the John Day Formation, and the Columbia River Basalt Group. The Columbia River Basalt Group, a less erodible formation, resulted from a series of flood basalt 12 to 19 million years ago. The Columbia River Basalt Group is the dominant rock at elevations below 4,000 feet. Igneous rocks are exposed in the higher reaches of the subbasin, while the lower basin exposures are primarily extrusive rocks, ash, and wind-blown loess. After volcanic activity ceased (10 million years ago), erosion and faulting continued to alter the landscape.

2.3.5 Vegetation

The present plant communities differ from the original flora because of intensive grazing, fire suppression, and introduction of exotic plants. Native bunch grasses have been largely replaced by western juniper, sagebrush, and exotic plants (e.g., cheatgrass). Land cover is predominantly rangeland and cropland. Agriculture is the primary private sector economic activity. The primary agricultural products in the Management Area are small grain and beef cattle production. The maximum allowable acreage (25% of total cropland) has been enrolled in the Conservation Reserve Program (CRP), removed from crop production, and planted to perennial grasses.

Classifiable plant communities (ecological sites) are categorized into four basic divisions, according to the topographic position which they occupy: riparian, terrace, upland, and forest-woodland. Grass, shrub, and juniper communities dominate the valleys; ponderosa pine, lodgepole pine, Douglas fir, and white fir communities dominate higher elevations. Soil diversity also contributes to the variety of vegetation types. Exotic plants (noxious weeds) and uncontrolled growth of some native species (e.g., juniper) is a growing problem within the region. The single greatest threat to native rangeland biodiversity and recovery of less than healthy watersheds is the rapidly expanding invasion of noxious weeds. Although many weeds occupy lands in the Management Area, those causing most concern are diffuse, spotted, and Russian knapweeds; Dalmation toadflax; yellow starthistle; Scotch thistle; purple loosestrife; rush skeletonweed; leafy spurge; poison hemlock; Russian thistle; Canada thistle; and medusahead rye.

2.3.6 Fish and Wildlife Resources

Historically, the John Day River was one of the most significant anadromous fish producing rivers in the Columbia River basin. Today, the John Day continues to support some of the most diverse native and non-native fish assemblages and healthiest populations of anadromous fish. It is estimated that there are 27 species of fish, including 17 native species, found in the John Day Basin. The relative health of these populations has been largely attributed to the absence of any large dams, limited releases of hatchery fish, and the presence of quality habitat in headwater areas. The John Day Basin supports wild runs of spring and fall Chinook salmon, summer steelhead, and Pacific lamprey; resident populations of westslope cutthroat; interior redband; and bull trout.

A variety of wildlife species, including large and small mammals, waterfowl, passerines, raptors, reptiles, and amphibians, are associated with riverine, wetland, and upland habitats. Many wildlife species live in the shrub-steppe habitat.

Certain populations of wildlife species are being managed by federal and state wildlife managers, including big game, fur bearer, upland birds, and waterfowl species. Many raptors inhabit the subbasin as well.

2.4 Agricultural Water Quality

2.4.1 Water Quality Issues

2.4.1.1 Beneficial Uses

Beneficial uses in the Management Area include public and private water supply, irrigation, industrial, livestock watering, anadromous fish passage, salmonid fish rearing and spawning, resident fish and aquatic life, wildlife and hunting, boating, fishing, water contact recreation, and aesthetics (OAR 340-41-602, Table 10). Of the beneficial uses of water, the most sensitive use for most waters and parameters of concern is spawning and rearing of cold-water fisheries.

2.4.1.2 Water Quality Parameters of Concern

The primary water quality concerns for agriculture in the 2022 Integrated Report are high temperature, sedimentation, bacteria levels, low oxygen concentrations, and impaired biological conditions (https://www.oregon.gov/deq/wq/Pages/epaApprovedIR.aspx).

2.4.1.3 TMDLs and Agricultural Load Allocations

The John Day Basin TMDL, includes this Management Area, was approved in 2010. This Area Plan serves as the implementation plan for agriculture's load allocation in the Management Area and may be revised to address the load allocations as they are implemented. A copy of the John Day TMDL can be found at https://www.oregon.gov/deq/wq/tmdls/Pages/TMDLs-Basin-John-Day.aspx.

2.4.1.4 Drinking Water

DEQ summarizes drinking water issues in each Management Area prior to biennial reviews. DEQ's full report is available at: https://www.oregon.gov/deq/wq/programs/Pages/Nonpoint-Implementation.aspx.

There are 12 public water systems using groundwater wells in the plan area serving approximately 2,650 people. From 2022-2023, four nitrate samples have been collected for the Sherman County School from its only water source, the school well. All four samples have detected nitrate with sample results ranging from 5.99 mg/L to 8.8 mg/L. In addition, the City of Moro has collected three samples over the past year. Each sample was collected from the entry point of the following wells: City Hall, Hart, and Cemetery. All three samples detected nitrate with values ranging from 1.41 mg/L to 4.73 mg/L. The drinking water standard for nitrates is 10 mg/L. These contaminants are often related to animal and cropland agriculture; fecal bacteria are present throughout the Management Area. All of the public groundwater systems have agricultural land uses (irrigated crops, pasture and/or livestock) within their source areas,

although intensity of use varies. Real Estate Testing data for 1989-2019 indicates no significant detections of nitrate (>7mg/L) in private wells. However, only four wells are included in the database for this area.

DEQ recommends ODA and the SWCDs include a task in the plan to further evaluate agricultural land uses in the area near City of Moro and Sherman County School, as these show nitrate contamination. Implementation of best management practices in this area may reduce the potential for agricultural sources to impact drinking water sources.

The Sherman SWCD contacted the Sherman County School District to discuss nitrate contamination in the wells. The school district is currently monitoring the nitrate levels in the water by doing quarterly testing. The school district will contact the Sherman SWCD if there are concerns of high nitrate levels.

2.4.2 Sources of Impairment

Nonpoint source pollution is pollution emanating from landscape scale sources and cannot be traced to a single point. Probable nonpoint sources of pollution in the John Day River watershed include eroding agricultural and forest lands, eroding streambanks, runoff and erosion from roads and urban areas, and runoff from livestock and other agricultural operations. Pollutants from nonpoint sources such as pesticides, sediment, nutrients, and bacteria are carried to the surface water or groundwater through the action of rainfall, snowmelt, irrigation and urban runoff, and seepage.

While there may not be severe impacts on water quality from a single source or activity, the combined effects from all sources contribute, along with impacts from other land uses and activities, to the impairment of beneficial uses of the John Day River.

2.5 Regulatory and Voluntary Measures

2.5.1 Area Rules and Voluntary Measures

This Area Plan provides farmers, ranchers, and other agricultural land users in the Management Area a tool to achieve the following conditions on the land they occupy and manage:

- Soil erosion on uplands not exceeding acceptable rates,
- Elimination of placement, delivery, or sloughing of wastes into streams,
- Riparian vegetation for bank stability, filtration of overland flows and stream shading consistent with vegetative site capability.

The intent of this Area Plan is not to tell anyone how to farm, ranch, or otherwise utilize natural resources. However, SWCD personnel along with the NRCS in local offices help farmers, ranchers, and other agricultural land users implement recommendations in this Area Plan. For detailed information, please refer to the Prevention and Control Measures in Chapter 2.5.2. Each farmer, rancher, or other agricultural land user is expected to manage their property to ensure that undesirable conditions do not exist or that conditions are beginning to improve. If problems are encountered in meeting the goals of this Area Plan, land managers are encouraged to seek assistance as they will be required to bring the land they own or operate on into compliance with these goals.

A landowner or operator's responsibility under this Area Plan is to implement measures that

prevent and control the sources of water pollution associated with agricultural and rural lands and activities. A landowner or operator is not responsible for conditions caused by other landowners or for circumstances not within their reasonable control including unusual weather events. Reasonable control means that the landowner or operator is using technically sound and economically feasible measures to address conditions that can result in water pollution.

2.5.2 Prevention and Control Measures

All landowners must comply with prevention and control measures (OAR 603-095-2940).

Prevention and Control Measures
(1) Limitations: All landowners or operators conducting activities on agricultural lands are provided the following exemptions from the requirements of OAR 603-095-2940 (2), (3), and (4).
(a) A landowner or operator shall be responsible for water quality resulting from conditions caused by the management of the landowner or operator.
(b) These rules do not apply to conditions resulting from unusual weather events or other circumstances not within the reasonable control of the landowner or operator. Reasonable control of the landowner means that technically sound and economically feasible measures are used to address conditions described in Prevention and Control Measures.
(c) The Department may allow temporary exceptions when a specific integrated pest management plan is in place to deal with certain weed or pest problems.
(d) The capability of a site is the highest ecological status a site can attain given political, social, or economic constraints.

The sections that follow describe more detailed information related to the Lower John Day area rules and potential agricultural water quality concerns in the Lower John Day Management Area. The sections also provide definitions of commonly used terms, provides dates when rules are effective and provides some exemptions to the rules.

To implement proper management practices and ensure an area is healthy or functioning properly, the capability and potential of a site must be understood. Site capability is the highest ecological status a site can attain considering political, social, or economic constraints. These constraints are often referred to as limiting factors. Site potential is the highest ecological status a site can attain given no political, social, or economic constraints and is often referred to as the "potential natural community."

2.5.2.1 Waste Management

Landowners must prevent the introduction of waste materials into nearby bodies of water.

(2) Waste Management: Effective on rule adoption, no person subject to these rules shall violate any provisions of ORS 468B.025 or 468B.050.

2.5.2.2 Upland Management

Landowners must implement measures to control water pollution from agricultural activities and soil erosion. This includes agricultural and rural lands that may not be in close proximity to waterbodies.

Upland areas are the rangelands, forests, and croplands upslope from the riparian areas. These areas extend to the ridge tops of watersheds. With a protective cover of crops and crop residue, grass (herbs), shrubs or trees that are consistent with site capability, these areas will capture, store, and safely release precipitation thereby reducing the potential of excessive soil erosion or delivery of soil or pollutants to the receiving stream or other body of water. Vegetation is dependent on physical characteristics including soil, geology, landform, water, and other climate factors. Proper management of upland vegetation considers physical and biological conditions, controls soil erosion, and minimizes transport of soil and nutrients to the stream. Upland management also considers crop and livestock production while, at the same time, should consider forest health and protection of fish and wildlife habitat. Healthy uplands maintain productivity over time and are resilient to stresses caused by variations in physical conditions such as climatic changes.

Healthy upland areas provide several important ecological functions. These include:

- Capture, storage, and beneficial release of precipitation,
- Providing for plant health and diversity that support habitat (cover and forage) for wildlife and livestock,
- Filtration of sediment,
- Filtration of polluted runoff,
- Providing for plant growth that increases root mass that utilizes nutrients and stabilizes soil against erosion.)

Indicators of these conditions include:

- Recruitment of beneficial plant species,
- Groundcover to limit runoff of nutrients and sediment,
- Cropland cover that is sufficient to limit movement of nutrients and sediment,
- Roads and related structures designed, constructed, and maintained to limit sediment delivery to streams,
- Noxious weed and insect pest populations contained (see state weed laws and county weed regulations to determine weed species that must be controlled).

Factors to evaluate upland area condition may include:

- Vegetation utilization through stubble height measurements,
- Plant species composition to measure plant health and diversity,
- Groundcover (live plants, standing plant litter, and ground litter) as a measure of potential erosion,
- Evidence of overland flow (pattern and quantity),
- Site productivity (domestic livestock and wildlife carrying capacity),
- Soil erosion potential through prediction models available through NRCS.

Location and management of roads can significantly impact upland and riparian conditions. Weed infestations and runoff causing erosion are common problems associated with roads. Farm roads are considered as part of the agricultural operation and must be managed to control erosion. Agricultural lands must be managed to reduce the impacts of runoff onto public rights of way.

This Area Plan does not prescribe specific practices to landowners for management of upland areas to reduce runoff of sediment and other wastes. Site-specific recommendations for management to protect water quality, including grazing management systems, desirable vegetation types, and road construction and maintenance, can be obtained from sources listed in Chapter 3.

The Soil Erosion and Sediment Control Rule (OAR 603-095-2940(3)), minimizes sediment at its source by controlling erosion on site and recognizes an established system of conservation plans and farming practices that is likely to provide compliance with the Waste Management Rule (OAR 603-095-2940(2)). Most landowners or operators exercising control of soil erosion in compliance with the "soil erosion" rule would avoid discharging sufficient sediment into a stream to cause violation of the "waste management" rule. However, if monitoring demonstrates a water quality problem, then existing conservation plans may need to be modified to assure protection of beneficial uses.

In addition to complying with this rule, landowners should be aware that the waste rule requires them to prevent pollution from sediment delivery to streams. While an NRCS-approved farm plan may show compliance with the erosion rule, farming in accordance with the plan may still result in pollution in violation of OAR 603-095-2940(3). If ODA determines during a compliance investigation that a landowner's farm plan is not adequate to comply with the waste rule, ODA will work with the SWCD, NRCS, and the landowner to modify the plan to comply with the waste rule.

(3) Soil Erosion and Sediment Control: By January 1, 2008, landowners must control upland soil erosion using technically sound and economically feasible methods.
(a) On croplands, a landowner may demonstrate compliance with this rule by:
(A) operating consistent with a Soil and Water Conservation District (SWCD) approved conservation plan that meets Resource Management Systems (RMS) quality criteria for soil and water resources; or
(B) operating in accordance with an SWCD-approved plan for Highly Erodible Lands (HEL) developed for the purpose of complying with the current US Department of Agriculture (USDA) farm program legislation; and farming non-HEL cropland in a manner that meets the requirements of an approved USDA HEL compliance plan for similar cropland soils in the county; or
(C) farming such that the predicted sheet and rill erosion rate does not exceed 5 tons/ acre/year, as estimated by the Revised Universal Soil Loss Equation (RUSLE); or
(D) constructing and maintaining terraces, sediment basins, or other structures sufficient to keep eroding soil out of streams.
(b) On rangelands, a landowner may demonstrate compliance with this rule by:
(A) operating consistent with a Soil and Water Conservation District (SWCD)-approved conservation plan that meets Resource Management Systems (RMS) quality criteria for soil and water resources, or
(B) maintaining sufficient live vegetation cover and plant litter, consistent with site capability, to capture precipitation, slow the movement of water, increase infiltration, and reduce excessive movement of soil off the site; or
(C) minimizing visible signs of erosion, such as pedestal or rill formation and areas of sediment accumulation.
(c) Landowners must control active gully erosion to protect against sediment delivery to streams. 'Active Gully Erosion' means gullies or channels that at the largest dimension have a cross sectional area of at least one square foot and that occur at the same location for two or more consecutive years of cropping or grazing.

2.5.2.3 Riparian and Streamside Area Management

Landowners must implement measures that seek to control water pollution from agricultural activities. Areas near waterbodies are especially important to water quality and sensitive to management activities.

The riparian area is a zone of transition from an aquatic to a terrestrial system, dependent upon surface or subsurface water, that reveals through the zone's existing or potential soil-vegetation complex the influence of such surface or subsurface water. A riparian area may be located adjacent to a lake, reservoir, estuary, pothole, spring, bog, wet meadow, muskeg, slough, or ephemeral, intermittent, or perennial stream.

The streamside area is defined as the area near the stream where management practices can most directly influence the conditions of the water. This area usually ranges from 10 feet to 100 feet from the water, depending on the slope, soil type, stream size, and morphology.

Water is the distinguishing characteristic of riparian areas, but soil, vegetation, and landform also exert strong influence on these systems. In a healthy riparian ecosystem, these four components interact to produce a wide variety of conditions.

Healthy riparian areas provide several important ecological functions. These include:

- Dissipation of stream energy associated with high flows and thus influencing the transport of sediment,
- Capturing suspended sediment and bed load that builds streambanks and develops floodplain function,
- Retaining floodwater and recharging groundwater,
- Stabilizing streambanks through plant root mass,
- Developing diverse channel characteristics providing pool depth, cover, and variations in water velocity necessary for fish production,
- Supporting biodiversity,
- Shading for moderation of solar heat input,
- Recruitment of large woody debris for aquatic habitat.

Indicators to determine improvement of this condition include:

- Ongoing, natural recruitment of desirable riparian plant species,
- Management activities maintain at least 50 percent of each year’s growth of woody vegetation, both trees and shrubs,
- Management activities minimize the degradation of established native vegetation,
- Maintenance of established beneficial vegetation,
- Maintenance or recruitment of woody vegetation, both trees and shrubs,
- Streambank integrity capable of withstanding 25-year flood events.

Factors used to evaluate improvement of the riparian area condition could include:

- Expansion of riparian area as evidenced by development of riparian vegetation and plant vigor,
- Reduction in actively eroding streambank length beyond that expected of a dynamic stream system,
- Community composition changes reflecting an upward trend in riparian condition. (Increases in grass-sedge-rush, shrubs, and litter and decreases in bare ground),

- Plant community composition reflecting an upward trend as indicated by decreases in noxious plant species,
- Stream channel characteristics show upward trend consistent with landscape position (i.e., a decrease of width-to-depth ratio of the channel),
- Shade patterns consistent with site capability,
- Stubble height of herbaceous species and leader growth of shrubs and trees.

Riparian area management addresses the water quality parameters of concern identified in the 303(d) list. Streamside vegetation influences water temperature through shade, stream width-to-depth ratio, groundwater recharge and discharge, and other hydrological factors. Sediment reductions improve fish and invertebrate habitat. Healthy riparian condition improves biological criteria and habitat by reducing stream disturbances, preventing excessive heat and contaminant inputs, and adding to stream habitat complexity.

Management may directly influence healthy riparian areas. Specific recommendations for management to protect water quality, including buffer width, vegetation types, and grazing timing, can be obtained from several sources listed in Chapter 3 of this Area Plan.

(4) Streamside Management: By January 1, 2008, management must allow the establishment and improvement, over time, of riparian vegetation for streambank stability, filtering sediment and shading, consistent with site capability.

2.5.2.4 Livestock Management

Landowners must prevent water pollution from livestock operations. Livestock production is a common agricultural activity in the Management Area. Careful management of grazing, feeding, and handling areas is critical to the success of livestock operations and can improve water quality by limiting runoff of sediment and animal wastes. A grazing management system should promote and maintain adequate vegetative cover for protection of water quality by consideration of intensity, frequency, duration, and season of grazing. Grazing near streams should be managed to prevent negative impacts to streambank stability, allow for recovery of plants, and leave adequate vegetative cover to ensure protection of riparian functions including shade and habitat. Off-stream watering systems, upland water developments, feed, salt, and mineral placement are examples of methods to be considered as ways to reduce impacts of livestock to streamside areas.

Factors used to evaluate effectiveness of management may include:

- Safe diversion of runoff,
- Protection of clean water sources,
- Off-stream watering systems,
- Lot maintenance, i.e, smoothing, mounding, seeding,
- Structural measures, i.e., filter strips, catch basins, berms,
- Waste collection, storage, and application methods,
- Plant community is neither dominated by invasive annual plant species nor by overgrowth of native woody species,
- Plant cover (plants plus plant litter) is adequate to protect site,
- Distribution and amount of bare ground does not exceed what is expected for site,
- Livestock utilization patterns do not exhibit excessive sustained use in key areas,
- Plant vigor levels and regeneration are sufficient to protect long term site integrity.

2.5.2.5 Irrigation Management

Landowners must control water pollution from irrigation. Diversion of water for irrigation or other uses and the return of excess water to the stream are activities that have potential for contributing to water quality problems.

Irrigated lands are lands upon which water is applied to grow crops. Irrigation water use is regulated by the Oregon Water Resources Department in the form of water rights, which specify the rate and amount of water that can be applied to a particular parcel of land (OAR 690, Division 250 and ORS 536 through 543).

Irrigation is done by either flooding or sprinklers. Water usually is diverted from a surface source (stream or pond) but may also be from groundwater sources. Water withdrawals can reduce stream flows and thus, indirectly reduce water quality. There may be some positive benefits occurring from flood irrigation, including flow augmentation as water returns back to the stream, cooling and filtering of water through underground percolation, and the recharge of shallow wells and springs due to the connectivity of surface water to groundwater. Irrigation water may be used more than once as it returns to the stream and is available for instream uses or by other irrigators.

Characteristics of an irrigation system that has minimal effect on water quality include:

- Efficient delivery of water to the land within legal water rights,
- Minimal overland return flows,
- Return flow routing that provides for settling, filtering and infiltration,
- Minimal effect on stability of streambanks and minimal soil erosion,
- Appropriate scheduling of water application to the site including consideration of soil conditions, crop needs, climate, and topography,
- Diversion structures that are installed and managed to control erosion and sediment delivery, and protect the stability of streambanks. If funding becomes available, temporary diversions, which must be reinstalled every year, should be replaced with suitable permanent diversions (i.e., pumping stations, infiltration galleries, dams),
- Diversions that are adequately screened and which provide for fish passage. Refer to ORS 498.268 for screen requirements,
- Sediment is captured from irrigation runoff before it enters rivers and streams.

Chapter 3: Implementation Strategies

Chapter 3 describes efforts to make and track progress toward the goals of the Area Plan. It presents the goals, measurable objectives, strategic initiatives, proposed activities, and monitoring efforts.

Purpose

The purpose of this Area Plan is to establish a framework to minimize agriculture's impact on water quality within the Lower John Day Management Area. The Area Plan establishes procedures to identify and control factors that contribute to pollution originating on agricultural and rural lands. It also describes a program designed to achieve the goals of this Area Plan.

Goal

Prevent and control water pollution from agricultural activities and soil erosion and to achieve applicable water quality standards.

The LAC established these objectives to achieve the Area Plan goal:

1) **Control soil erosion on uplands to acceptable rates.**
   Intent: While all soil lost from fields through erosion may not necessarily enter streams due to distance from stream or practices such as sediment basins, the reduction in such erosion will reduce the likelihood that soil will enter streams.

2) **Control pollution caused by the introduction of or discharge of wastes into waters of the state.**
   Intent: This ensures that high nutrient concentrations, pathogens associated with high animal density areas, high sediment concentrations in runoff, or other potential pollutants are not readily transported to streams and groundwater. It is also consistent with existing state statutes.

3) **Provide riparian vegetation for streambank stability and stream shading.**
   Intent: To provide for streambank stability and stream shading, consistent with site capability, not to restore riparian areas to their pre-settlement conditions or to address wetland areas away from streams. Because most of these changes take time and may require planning and implementation of management changes, landowners should take current actions necessary to achieve the desired conditions.

3.1 Measurable Objectives and Strategic Initiatives

Measurable objectives allow the Ag Water Quality Program to evaluate progress toward meeting water quality standards and TMDL load allocations. Any measurable objectives are stated here. Progress is reported in Chapter 4.1.

3.1.1 Management Area

3.1.1.1 Measurable Objective #1

Control pollution caused by the introduction of or discharge of wastes into waters of the state.

Livestock operations along streams are evaluated for likelihood of pollution from bacteria and sediment. The method consists of looking for likely sources (manure piles and heavy use areas) during a riparian vegetation field survey. If sources are identified, ODA or the SWCD will contact the landowner to provide technical assistance, if needed.

Measurable Objective
By June 30, 2037, reduce the number of livestock operations identified that are likely to pollute perennial streams to 0% through voluntary efforts, assuming funding is available.

3.1.1.2 Measurable Objective #2

Control soil erosion on uplands to acceptable rates.

Uplands will be evaluated for erosion potential. ODA and the SWCDs will develop an assessment method that will track soil loss on uplands. The assessment and the results will be presented at the next biennial review.

Measurable Objective
Objective will be updated during the next biennial review when the assessment is completed showing baseline data.

3.1.1.3 Measurable Objective #3

Provide riparian vegetation for streambank stability and stream shading.

Perennial stream reaches are evaluated for vegetative water quality function (shading, bank stability, and filtration of potential pollutants in overland flows).

Streamside vegetation is categorized based on the degree to which it is likely to prevent and control water pollution, based on the site's ability to grow vegetation, based on current constraints such as roads ("site capability"). The key water quality functions provided by plants are shade, bank stability, and filtration of pollutants in overland flows. Because these functions are usually difficult to determine remotely, this method uses the surrogates of canopy cover and ground cover.

SWCDs use a combination of the most recent aerial photography, ground truthing, and local knowledge to describe and map site-capable vegetation communities and to classify existing vegetation.

This method has limitations related to accuracy of the estimates. However, it can provide a useful approximation of the degree to which streamside vegetation is protecting water quality and it identifies areas that need improvement.

Methodology

1. Identify perennial stream reaches on agricultural lands.
2. Identify site-capable plant communities.

3. Classify vegetation.
4. Results.

1. Identify perennial stream reaches on agricultural lands.
SWCD staff identified perennial stream reaches on non-federal and non-tribal trust lands and entered the data into their GIS systems.

2. Identify site-capable plant communities.
SWCD staff determined plant community types and descriptors, relying primarily on visual estimates from public viewpoints and personal knowledge. They mapped these and created the following table.

Table 3.1.1.3a Identified site-capable streamside vegetation communities in Management Area

Community Name	Indicator Species	% canopy cover over stream	% ground cover	Where	% of assessed streams in county
Open Riparian Shrub	Mostly willows and other shrubs with some alder/cottonwood	≤ 80	≤ 80	Sherman Co: Lower elevation / lower rainfall / small streams	100
Riparian Tree	White alder, black cottonwood, black hawthorn, western juniper	75	n/a	Gilliam Co.: Lower elevation / higher rainfall	25
Riparian Shrub	Coyote willow, red osier dogwood, wild rose, blue elderberry, Wyoming big sagebrush	50	n/a	Gilliam Co.: deeper soils / lower rainfall	64
Riparian Grass	Wheatgrass, Idaho fescue, thickspike wheatgrass, downy brome, reed canary grass	5	n/a	Gilliam Co.: shallow soils / lower rainfall	10
Riparian Forest	Ponderosa pine, Douglas fir, western juniper	65	n/a	Gilliam Co.: higher elevation / higher rainfall	1

3. Classifying vegetation.
Both SWCDs classified vegetation into the three main classes. In addition, Sherman County SWCD separated out areas where invasive plants are affecting the ability of stream vegetation to provide water quality functions (Class 3X).

Vegetation was assessed within 35 feet of the stream. Reaches for designating community types and Class I and II needed to be at least a quarter mile long to avoid tedious and irrelevant reach breaks. Class III and Class IIIx could be less than a quarter mile to identify areas of concern.

SWCD staff determined classifications based on Table 3.1.1.3b. Sherman SWCD evaluated both ground and canopy cover; Gilliam SWCD evaluated only canopy cover due to the large number of streams they needed to assess. Both SWCDs created GIS maps with the results for their own use.

Table 3.1.1.3b Determining classes based on surrogates (compared to that provided by site capability)			
WQ functions provided by riparian veg, to the extent allowed by site capability	**How to determine classes?**	**% of that provided by site capability**	
		Canopy Cover Over Stream	**Ground Cover**
Class I = Fully provided	Both of the following met	>75%	>75%
Class II = Partially provided, not impaired by agricultural activities	At least one of the following met	>50%	>50%
Class III = Likely not provided due to agricultural activities	At least one of the following met	<50%	<50%
Class IIIx = Likely not provided due to weeds	At least one of the following met	<50%	<50%

4. Results

SWCD staff calculated the percentages of stream miles (not streambanks) in each category for their respective counties and provided these to ODA. Because of large properties and landownership patterns in this Management Area, landowners generally own both sides of a stream and the vegetation on opposite banks tends to be in a similar class. Results are presented in Chapter 4.1.1.

Measurable Objective
By June 30, 2027, assuming funding is available, 75% of perennial streams in agricultural areas will have streamside vegetation that likely provides the full suite of water quality functions the site is capable of (i.e., shade, bank stability, filtration of overland flow).

3.1.2 Focus Areas and Other Coordinated Efforts in Small Watersheds

There are currently no focused efforts in small watersheds in this Management Area.

3.1.3 Strategic Implementation Areas (SIA)

Thirtymile Creek SIA (2018)

In 2018, ODA selected Thirtymile Watershed in Gilliam County as an SIA. The Thirtymile Watershed is located in the north-central part of Oregon, in Gilliam and Wheeler counties. The SIA only takes place on the approximately 140,000 acres (78%) located in Gilliam County. Thirtymile Creek flows into the John Day River, which flows into the Columbia River 20 miles west of Arlington. Thirtymile Creek provides critical habitat for Mid-Columbia steelhead, a species listed as threatened by the federal Endangered Species Act in 1998. Thirtymile Creek is included in Oregon's 303d List for not meeting state water quality standards for temperature.

SIA Compliance Evaluation Method:

ODA evaluated all agricultural tax lots within the SIA to identify opportunities to improve water quality and ensure compliance with Area Rules. The evaluation considered the condition of streamside vegetation, areas of bare ground, and potential livestock impacts (including manure management). The process involved both a remote evaluation and field verification from publicly accessible areas. For more information see:
www.oregon.gov/oda/shared/Documents/Publications/NaturalResources/SIAProgressReport.pdf

Opportunity levels:

- **Likely in Compliance (LC):** ODA identified no likely agricultural water quality regulatory concerns, and the goals of the Area Plan are likely being achieved.
- **Restoration Opportunity (RO):** ODA identified no likely agricultural water quality regulatory concerns, but there is likely some opportunity for improvement through voluntary measures to reach the goals of the Area Plan.
- **Compliance Opportunity (CO):** ODA identified that agricultural activities may impair water quality or evaluation was inconclusive. There also may be an opportunity for improvement through voluntary measures to reach the goals of the Area Plan.
- **Potential Violation (PV):** During the Field Evaluation, ODA observed a potential violation of the Area Rules. There also may be an opportunity for improvement through voluntary measures to reach the goals of the Area Plan.

Measurable Objective
By December 28, 2022, all 14 tax lots identified as a Potential Violation or a Compliance Opportunity will be downgraded to Restoration Opportunity or Likely in Compliance.

3.1.4 Pesticide Stewardship Partnerships (PSP)

There are no PSPs in this Management Area.

3.1.5 Groundwater Management Area (GWMA)

There is no GWMA in this Management Area.

3.2 Proposed Activities

ODA, the LAC, the LMA, and other partners have identified the following priority activities to track progress toward meeting the goals and objectives of the Area Plan (Table 3.2).

Table 3.2 Planned Activities for 2024-2025 throughout the Management Area by Gilliam SWCD and Sherman SWCD

Activity	2-year Target	Description
Landowner Engagement		
# events that actively engage landowners (workshops, demonstrations, tours)	16	
# landowners participating in active events	290	
Technical Assistance (TA)		
# landowners provided with TA (via phone/walk-in/email/booth/site visit)	450	
# site visits	210	
# conservation plans written*	30	
On-the-ground Project Funding		
# funding applications submitted	50	
* Definition: any written management plan to address agricultural water quality concerns, such as: nutrients, soil health, grazing, irrigation, and streamside vegetation. Can include farm and ranch plans (including small acreages) and NRCS-certified plans. Excludes projects with weak connection to agricultural water quality.		

3.3 Additional Agricultural Water Quality and Land Condition Monitoring

3.3.1 Water Quality

3.3.1.1 DEQ Monitoring

DEQ monitors water quality in the Management Area as part of its ambient monitoring network.

3.3.1.2 Gilliam SWCD Monitoring

Gilliam SWCD monitors water temperature in the Thirtymile watershed. Robust stream temperature monitoring with 21 loggers has been occurring since 2018. Data has not yet been analyzed.

3.3.1.3 Sherman SWCD Monitoring

Sherman SWCD monitors stream temperature in Pine Hollow and Grass Valley Canyon. Stream and temperature monitoring started in 2020 for Grass Valley Canyon Creek and Pine Hollow Creek. Due to staffing shortages, monitoring efforts have not been able to continue. Once fully staffed, monitoring on these streams can resume.

3.3.2 Land Conditions

There is no additional land condition monitoring.

Chapter 4: Progress and Adaptive Management

Chapter 4 describes progress toward achieving Area Plan goals and measurable objectives by summarizing accomplishments and monitoring results. Tracking activities is straightforward; monitoring water quality or land conditions takes more effort; relating changes in land conditions to changes in water quality is important but more challenging.

4.1 Measurable Objectives and Strategic Initiatives

The following tables provide the assessment results and progress toward measurable objectives and milestones in the past five years (2019-2023). See Chapter 3.1 for background and assessment methods.

4.1.1 Management Area

Table 4.1.1.1 Management Area Results

Control pollution caused by the introduction of or discharge of wastes into waters of the state.

Measurable Objective
By June 30, 2037, reduce the number of livestock operations identified that are likely to pollute perennial streams to 0% through voluntary efforts, assuming funding is available.
Milestones
By June 30, 2027, reduce the number of livestock operations identified that are likely to pollute perennial streams to 50% through voluntary efforts, assuming funding is available.
Assessment Results
In 2017, 10 livestock operations were identified to likely pollute perennial streams. In 2023, 9 livestock operations were identified to likely pollute perennial streams.
Progress Toward Measurable Objectives and Milestones
In 2019, one livestock operation addressed the likelihood of pollution from bacteria and sediment to enter the stream and was removed from the evaluation.
Activities and Accomplishments
Through the Thirtymile SIA, ODA worked with one landowner to move their livestock operation away from stream.
Adaptive Management Discussion
ODA and the SWCDs will reevaluate the assessment method for identifying livestock operations that are likely to pollute perennial streams. ODA and the SWCDs will define the threshold for what determines if a livestock operation is likely to pollute.

Table 4.1.1.2 Management Area Results

Control soil erosion on uplands to acceptable rates.

Measurable Objective
Measurable objectives are not developed at this time. The goal is to keep soil loss below soil loss tolerance (either two or five tons per acre per year, depending on soil type).
Activities and Accomplishments
• Funding and technical assistance was provided for maintenance of existing soil erosion practices. • Sherman SWCD continues to fund new projects that decrease/minimize soil erosion in both cropland and rangeland. • Sherman SWCD and local NRCS are currently taking inventory on the amount of water and sediment control basins that need to be repaired. If the amount is substantial (which is predicted) then partners will create a Conservation Implementation Strategy (CIS) for funding.

• SWCDs continue to provide ongoing technical assistance to landowners to continue to keep soil loss below soil loss tolerance.
Adaptive Management Discussion
• ODA met with NRCS staff to discuss new RUSLE method. Due to limited resources, NRCS will not provide a RUSLE run for the Lower John Day Management Area. • Continue to promote no-till farming practices and grazing management. • ODA, SWCDs, and the LAC decided to develop a different assessment method that can easily be repeated to ensure soil loss does not change over time.

Table 4.1.1.3 Management Area Results

Provide riparian vegetation for streambank stability and stream shading.

Measurable Objective
By June 30, 2027, assuming funding is available, 75% of perennial streams in agricultural areas will have streamside vegetation that likely provides the full suite of water quality functions the site is capable of growing (Class I) (i.e., shade, bank stability, filtration of overland flow).
Milestones
No milestone has been developed.
Assessment Results
Percent of assessed streams on agricultural lands in different classes.

	2016	**2023**
Class I: Fully provided	64%	71%
Class II: Partially provided, not impaired by agricultural activities	31%	24%
Class III: Likely not provided due to agricultural activities	4%	4%
Class IIIx: Likely not provided due to weeds	1%	1%
Total	**100%**	**100%**

Progress Toward Measurable Objectives and Milestones
Class I has increased by 7%.
Activities and Accomplishments
• The Thirtymile SIA identified and improved Class I streamside vegetation. • In addition, Class I increased due to the following non-regulatory programs: Focused Investment Partnership (FIP) and Conservation Reserve Enhancement Program (CREP).
Adaptive Management Discussion
• Due to limited staff time (ODA and SWCD), updated class numbers were based on FIP projects, SIA compliance cases, and new CREP enrollments since 2016. • Beaver dam analogs (BDAs) are now being used in conjunction with planting and riparian fencing.

4.1.2 Focus Areas and Other Focused Efforts in Small Watersheds

There are currently no focused efforts in small watersheds in this Management Area.

4.1.3 Strategic Implementation Areas

Table 4.1.3 2018 Thirtymile Creek SIA

Evaluation Results
As of December 28, 2018, 14 tax lots were identified as either a Potential Violation or a Compliance Opportunity. PV = 2, CO = 12, RO = 20, LC = 318.
Measurable Objective
As of December 28, 2022, all 14 tax lots identified as a Potential Violation or a Compliance Opportunity will be downgraded to Restoration Opportunity or Likely in Compliance.

Post Evaluation
As of July 2, 2021, all 14 tax lots identified as a Potential Violation or a Compliance Opportunity were downgraded to Restoration Opportunity or Likely in Compliance. PV = 0, CO = 0, RO = 34, LC = 318. The measurable objective was achieved.
Adaptive Management Discussion
The SIA is closed, and work is completed. ODA and partners met the measurable objective stated above. Organizing the monitoring and developing the sampling and analysis plan were challenging but eventually completed. New relationships were built with a few landowners thanks to the SIA. More than $1.25 million in grant funding has assisted with improving water quality in the watershed.
Monitoring Activities
New temperature monitoring locations were added that are within a large-scale restoration project area that is not currently evaluated by existing temperature monitoring conducted by ODFW and the GCSWCD. The monitoring design leverages the Thirtymile Creek restoration design and consists of establishing eight additional monitoring locations within the project area. Extreme surface temperatures during mid-summer are most critical to juvenile survival on Thirtymile creek, and the data collection interval will focus on that period.

Activity	Accomplishment	Description
ODA		
# acres evaluated	128,508	
# stream miles evaluated	867	
# landowners at Open House	10	
# landowners receiving outreach materials	94	
SWCD and Conservation Partners		
# landowners provided with technical assistance	152	
# site visits	141	
# conservation plans written	0	
SIA and Project Funding		
# funding applications submitted	11	**1)** SIA TA and monitoring - $125,000 **2)** ODA AgWQ Support Grant - $115,233 **3)** Thirtymile Hydrologic Assessment (water quantity/quality) - $53,737 **4)** Thirtymile Steelhead/Bass Interaction - $239,083 **5)** Sniption Low-Tech Process Based Restoration - $67,833 **6)** Upper Thirtymile Low-Tech Process Based Restoration - $172,375 **7)** Butte-Thirtymile Monitoring Phase 2 - $237,090 **8)** Butte-Thirtymile Monitoring Phase 1 - $150,394 **9)** Thirtymile Floodplain Analysis and Prioritization - $62,909 **10)** Dyer Spring Development - $9,000 **11)** McConnel Water Development - $13,204
# funding applications awarded	11	

4.1.4 Pesticide Stewardship Partnerships

There are no PSPs in this Management Area.

4.1.5 Groundwater Management Area

There is no GWMA in this Management Area.

4.2 Activities and Accomplishments

ODA, the LAC, the LMA, and other partners identified the following priority activities to track progress toward meeting the goals and objectives of the Area Plan.

Future Area Plans will compare results and targets in Table 4.2a.

Table 4.2a Activities conducted in 2019-2022 throughout the Management Area by Gilliam SWCD and Sherman SWCD

Activity	4-year results	Description
Landowner Engagement		
# events that actively engage landowners (workshops, demonstrations, tours)	31	
# landowners participating in active events	596	
Technical Assistance (TA)		
# landowners provided with TA (via phone/walk-in/email/booth/site visit)*	969	
# site visits	364	
# conservation plans written**	126	
On-the-ground Project Funding		
# funding applications submitted	86	
# funding applications awarded	61	

* Number reported likely double-counts some landowners due to tracking methods.
** Definition: any written management plan to address agricultural water quality concerns, such as: nutrients, soil health, grazing, irrigation, and streamside vegetation. Can include farm and ranch plans (including small acreages) and NRCS-certified plans. Excludes projects with weak connection to agricultural water quality.

Table 4.2b and 4.2c summarize information from the OWRI on restoration project funding and accomplishments on agricultural lands in the Management Area. The majority of OWRI entries represent voluntary actions of private landowners who have worked in partnership with federal, state, and local groups to improve aquatic habitat and water quality conditions. OWRI results are provided annually in January after a year of proofing and GIS management.

Many conservation activities and implementation monitoring tracks have been implemented to benefit water quality. The SWCD and NRCS track activities that have been implemented through quarterly reports to ODA and through a NRCS database, respectively. Projects that have received funding from the OWEB are tracked in OWEB's restoration database. In addition, partner agencies can submit reports of projects and activities in the Management Area that improve water quality.

Table 4.2b Implementation funding (cash and in-kind) for projects on agricultural lands reported 1997-2020 (OWRI data include most, but not all projects, implemented in the Management Area.)

Landowner	OWEB	DEQ	NRCS*	BPA	CTWS	SWCDs	All other sources**	TOTAL
$1,610,334	$3,435,588	$2,027	$596,431	$361,842	$250,570	$278,735	$2,909,814	**$9,445,341**

* This table may not include all NRCS funding due to privacy concerns.
**Includes city, county, tribal, other state and federal programs, and non-profit organizations. There were too many entities to list.

Table 4.2c Miles and acres treated on agricultural lands reported 1997-2020 (OWRI data include most, but not all projects, implemented in the Management Area.)

Activity Type*	Miles	Acres	Count**	Activity Description
Upland		111,321		Wagner Mountain Upland Fencing (16,500 ac.)
Road	0		1	Sleepy Elk Wildlife Enhancement (culvert added for off-channel watering site)
Streamside Vegetation	98	1,277		Ferry Canyon CIS Weed Support (15 mi./352 ac.)/Upper Thirtymile Weed MA Initiative (15 mi.)
Wetland		0		N/A
Instream Habitat	7			Armstrong/Cope Canyon Flash Flood Restoration: Large wood placed; Riparian treated for non-native or noxious plant species (5.6 miles)
Instream Flow	0		0 cfs	N/A
Fish Passage	325		12	Upper and Lower Kayser Fish Passage (134 mi.) Ramsey/Rock Creek Fish Ladder (2 count)
TOTAL	**430**	**112,598**	**13**	

* This table may not include all NRCS projects due to privacy concerns.
** # hardened crossings, culverts, etc.

4.3 Additional Agricultural Water Quality and Land Condition Monitoring

4.3.2 Water Quality

DEQ
DEQ analyzed data for dissolved oxygen, *E. coli*, pH, total phosphorus, temperature, and total suspended solids in the Management Area. (DEQ. 2022 Oregon Water Quality Status and Trends Report; https://www.oregon.gov/deq/wq/programs/Pages/wqstatustrends.aspx).

Data are from DEQ, US EPA, and USGS databases for 2001 through 2020. DEQ determined status for stations in five-year periods and trends for stations with at least eight years of data collected at the same time of year.

The following locations have sufficient data to calculate recent status and trends and are most likely to help characterize agricultural water quality (Table 4.3.1).

Table 4.3.1 Attainment of water quality standards for 2016-2020, and 2000-2020 trends

Site Description	Parameter					
	E. coli	pH	Dissolved Oxygen	Temperature	Total Phosphorus	Total Suspended Solids
	Attainment Status/Trend					
John Day River @ Hwy 206	Attaining/ No trend	Attaining/ Steady	Attaining/ No trend	-	Unassessed /No Trend	Unassessed/No Trend
Rock Creek @ mouth	Attaining/ No trend	Attaining/ No trend	Attaining/ No trend	-	Unassessed /No Trend	Unassessed/ **Improving**

Few concerns were identified in this analysis. *E. coli,* pH, and dissolved oxygen are attaining status and trend. While total suspended solids at Rock Creek is unassessed, there is an improving trend.

The biggest concern is that half the total phosphorus values in Rock Creek exceed the ODA benchmark. Highest phosphorus values coincide with the highest suspended sediment values at both locations, so phosphorus likely enters the streams via soil erosion. However, phosphorus values are higher and sediment is lower in Rock Creek than in the John Day River, so some of this phosphorus may be entering Rock Creek from organic sources such as manure or fertilizer. We speculate this because the geologic sources of phosphorus (concentrations in soil) are likely to be similar in both areas, undisturbed and natural areas tend to be low in stream phosphorus, and Rock Creek has a predominance of range and ranch use.

4.3.2 Land Conditions

There is no additional land condition monitoring.

4.4 Biennial Reviews and Adaptive Management

ODA, the LAC, the LMA, and other partners met on October 11, 2023, to review implementation of the Area Plan and provided recommendations for the future (Tables 4.4a and 4.4b).

Table 4.4a Summary of biennial review discussion

Progress
The SWCDs and local partners continue to show progress toward meeting the goal and measurable objectives in the area plan.
Impediments
Riparian vegetation: Restoration projects could lead to landowners losing farmable land. Permits and cultural resource surveys need to be streamlined. BLM is buying parcels of land but not managing them for riparian restoration projects. New cultural resource requirements for OWEB grants will slow projects down. *Soil erosion:* Potential for more soil loss to occur if landowners no longer participate in CRP. ODA met with NRCS staff to discuss new RUSLE method. Due to limited resources, NRCS will not provide a RUSLE run for the Lower John Day Management Area. *Pollution from wastes*: Livestock operations that are likely to pollute is not defined. *Other:* Not enough staff to implement projects.
Recommended Modifications and Adaptive Management
Riparian vegetation: Conduct a demonstration project showcasing riparian vegetation and floodplain connection that will slow and retain water in the Management Area. Conduct field trips for people who

are doing the permitting as well as legislator so they can see the projects that they are permitting, especially for beaver dam analogs.
Soil erosion: ODA, SWCDs, and the LAC decided to develop a different assessment method that can easily be repeated to ensure soil loss does not change over time.
Pollution from wastes: ODA and the SWCDs will define the threshold for what determines if a livestock operation is likely to pollute.
Other: Placed Based Planning program will address drinking water concerns in the Management Area. Increase capacity funding.

Table 4.4b Number of ODA compliance activities in 2019-2022

Location	Cases		Site Visits	Agency Actions				
				Letter of Compliance		Pre-Enforcement Notification	Notice of Noncompliance	Civil Penalty
	New	Closed		Already in compliance	Brought into compliance			
Outside SIA	0	0	0	0	0	0	0	0
Within SIA	0	1	6	0	1	2	1	0