OWYHEE
AGRICULTURAL WATER QUALITY MANAGEMENT AREA PLAN

Developed by the
OWYHEE
LOCAL ADVISORY COMMITTEE

with assistance from

OREGON DEPARTMENT OF AGRICULTURE
and
MALHEUR COUNTY SOIL AND WATER CONSERVATION DISTRICT

March, 2003

Local Advisory Committee Members

Rod Frahm, Chair	Reid Saito, Vice chair	Dave Bunker
Charles Barlow	Mike Hanley	Vikki Price
Martin Andre	Lou Wettstein	Bob Skinner
Dan Papp	Norm Bennett	Ray Waldo

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ACRONYMS

AgWQM	Agricultural Water Quality Management
CWA	Clean Water Act
DEQ	Oregon Department of Environmental Quality
EPA	Environmental Protection Agency
LAC	Local Advisory Committee
NRCS	Natural Resources Conservation Service
ODA	Oregon Department of Agriculture
OSU	Oregon State University
SWCD	Soil and Water Conservation District
TMDL	Total Maximum Daily Load
USDA	United States Department of Agriculture

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TABLE OF CONTENTS

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FOREWORD

This Agricultural Water Quality Management (AgWQM) Area Plan provides guidance for addressing agricultural water quality issues in the Owyhee Basin. The purpose of this AgWQM Area Plan is to identify strategies to reduce water pollution from agricultural lands through a combination of educational programs, suggested land treatments, management activities, and monitoring. The provisions of this AgWQM Area Plan do not establish legal requirements or prohibitions. The Oregon Department of Agriculture (ODA) will exercise its enforcement authority for the prevention and control of water pollution from agricultural activities under administrative rules for the Owyhee Basin, and Oregon Administrative Rules 603-090-0060 through 603-090-0120.

The administrative rules for the Owyhee Basin set forth the requirements and/or prohibitions that will be used by the ODA in exercising its enforcement authority for the prevention and control of water pollution from agricultural activities. In addition, Oregon Administrative Rules 603-090-0060 through 603-090-0120 describe the enforcement actions that may be triggered upon the finding of a violation by the ODA.

APPLICABILITY

This Area Plan applies specifically to agricultural activities on all agricultural, rural, and forestlands within the Owyhee Agricultural Water Quality Management Area that are not owned by the federal government or are not Tribal Trust Lands. This Area Plan covers 9 subbasins, which are as follows:

- Southern portion of the Middle Snake - Payette,
- Lower Owyhee,
- Middle Snake - Succor,
- Crooked Rattlesnake,
- Jordan,
- Middle Owyhee,
- South Fork Owyhee,
- East Little Owyhee,
- Upper Quinn.

The Area Plan applies to agricultural lands in current use, those lying idle or on which management has been deferred, and lands (like private roads) not strictly in agricultural use but that support agricultural activities.

Activities governed by the Forest Practices Act are outside the jurisdiction of this Area Plan and the associated Rules. The Pesticide Control Act (Oregon Revised Statutes 634) governs pesticide use. The ODA Pesticides Division administers those laws. Certain Confined Animal Feeding Operations (CAFO), as defined by Oregon Administrative Rule (OAR 603-074) are required to operate in accordance with the conditions of a permit issued to the facility. CAFOs that are not required to have a permit and other livestock operations are subject to the provisions

of this plan and associated rules. The ODA Natural Resources Division administers this Area Plan and the CAFO program.

INTRODUCTION

The 1993 Oregon Legislature, in passing Senate Bill 1010, provided for the Oregon Department of Agriculture (ODA) to be the lead state agency working with agriculture to address water pollution. Federal law, the Clean Water Act, requires each state to develop and implement a program to control water pollution. Oregon adopted Senate Bill 1010 to give agriculture an effective way to meet the requirements of federal and state clean water regulations.

The Federal Clean Water Act (CWA) requires each state to identify beneficial uses for each water body, designate parameters to monitor for each beneficial use, establish a standard for each parameter, to report findings to Congress every two years, and to correct water quality problems.

Section 303(d) of the CWA requires each state to develop a list of water bodies that do not meet the standards designed to protect the most sensitive beneficial use. Water bodies that do not meet standards are placed on the 303(d) water quality limited list.

The CWA also requires each state to develop a strategy and Total Maximum Daily Load (TMDL) to reduce pollution on each water body on the 303(d) list. A TMDL refers to the total amount of a pollutant a stream can accept and still support beneficial uses. In Oregon, the Department of Environmental Quality (DEQ) has the responsibility for determining beneficial uses, standards, and whether beneficial uses are being supported. DEQ also has the authority to develop TMDL's for point and nonpoint source pollution. ODA develops management plans and regulations to control pollution arising from agricultural activities, and the Oregon Department of Forestry has the responsibility for forestry related activities on private lands.

This AgWQM Area Plan was developed by the ODA with assistance from volunteer members of the Owyhee River Basin Agricultural Water Quality Local Advisory Committee (LAC) and the Malheur County Soil and Water Conservation District (SWCD), in consultation with members of the community. All entities involved in developing this plan are committed to maintaining and improving the economic viability of agriculture in the Owyhee Basin. Productive and profitable agriculture is the cornerstone of the local Owyhee Basin economy. Social well-being is directly tied to this agricultural activity and the value-added processed goods provided. The income from these enterprises is indispensable.

The agricultural community of the Owyhee Basin has a sincere desire to protect the natural resources that everyone depends on. Most farmers and ranchers in the area have demonstrated that concern by applying environmentally friendly practices on their property. Many have implemented conservation projects to improve water quality and protect wildlife.

It is important to remember that if society is to be realistic in its environmental goals, it cannot ignore economics. People cannot maintain what they cannot afford, and conservation can be expensive. It is because of this expense and the low long-term average earnings in agriculture that the pace of change is often slow. The non-agricultural community must provide time, patience and help to have agriculture achieve environmental objectives.

This Plan assumes that human society cannot go backwards to a time before modern agriculture because we cannot feed, clothe, house and warm today's population with yesterday's technology. Today's agricultural producers, especially those in industrialized countries, work to provide these goods so that the vast majority of people can be involved in other activities. Because of the efficiency of modern agriculture, society benefits because people do not have to spend all their time scratching a living from the earth.

This AgWQM Area Plan provides farmers, ranchers, and other agricultural land users in the plan area a guide to maintain and improve in the following areas:

1. Sediment in irrigation return flows.
2. Stream bank erosion.
3. Minimize the placement, delivery, or sloughing of wastes into streams.
4. Riparian vegetation for bank stability and stream shading consistent with vegetative site capability.

Farmers, ranchers, and other agricultural land users are not expected to achieve any or all of the above conditions immediately. Landowners are expected to take current action in adapting their management techniques so that they can improve the conditions on their property.

The purpose of this AgWQM Area Plan is not to tell anyone how to farm, ranch, or otherwise utilize their natural resources. The Natural Resources Conservation Service (NRCS), along with SWCD personnel in local offices can provide technical assistance to help farmers, ranchers, and other agricultural land users to meet the requirements set forth in this AgWQM Area Rules. For detailed information relating to the AgWQM Area Rules requirements please refer to the Prevention and Control Measures section of this plan or to Administrative Rules (OAR 603-095-2740).

MISSION STATEMENT

Enhance or maintain water quality through the promotion of agricultural activities that are technically and economically feasible.

GOALS

- Maintain or improve water quality.
- Secure adequate funding for the implementation of this Area Plan to achieve its mission, goals and objectives.
- Use the media and other educational methods to increase awareness of agriculture's efforts to maintain and improve water quality.
- Minimize conditions on agricultural lands that might contribute to a reduction in water quality.
- Promote the use of state tax credits for landowners who are implementing good stewardship practices on their land.
- Encourage the federal government to allow tax credits for landowners who are implementing good stewardship practices on their land.
- Promote the coordination of water quality protection efforts among the federal and state agencies, landowners, and all residents of the Owyhee Basin.
- Monitor and evaluate the effectiveness of the Area Plan and update as needed.

GEOGRAPHIC SETTING

Physical Description

The Owyhee River rises in northern Nevada and flows northwesterly through a small portion of Idaho and enters Oregon near the southeast corner of the state. Thereafter, it flows mostly to the north until it joins the Snake River just upstream from Nyssa, Oregon. The total length of the Owyhee River is 280 miles, and it drains approximately 11,000 square miles; 6,200 of which are in Oregon. Major tributaries are the North, South and Middle Forks of the Owyhee, the Little Owyhee and Jordan Creek.

The management area contains several streams that are not tributaries to the Owyhee River. Succor Creek, for example, flows directly into the Snake River. At the far southern end of the management area several small, intermittent streams such as McDermitt Creek flow into the Quinn River, and the Quinn River is a closed basin that is mostly in Nevada.

This Area Plan covers 9 subbasins identified by Hydrologic Unit Codes, which are as follows:

- Southern portion of the Middle Snake - Payette
- Lower Owyhee,
- Middle Snake - Succor,
- Crooked Rattlesnake,

- Jordan,
- Middle Owyhee,
- South Fork Owyhee,
- East Little Owyhee,
- Upper Quinn.

Climate

As with most areas in eastern Oregon, it is hot and dry in the Owyhee during the summer. Weather in this semiarid area is the result of maritime air moving eastward from the Pacific Ocean over the Coast and Cascade Mountain ranges. As air masses rise to cross these mountains, much of the moisture in the air condenses and falls to the ground, making the air relatively dry by the time it reaches southeastern Oregon. There is an abundance of sunshine and a wide range between maximum and minimum daily temperatures.

Average annual precipitation in the region is between 8 and 14 inches, with some isolated areas receiving up to 30 inches or more. Most of the precipitation occurs from November through February, with about one-third falling as snow. The amount of precipitation in a particular location depends on topography —the higher the elevation, the greater the precipitation.

Thunderstorms, occasionally accompanied by hail, typically occur each year over virtually every part of the planning area. High-intensity thunderstorms occur between April and September; storms during June or July are typically drier than those in August or September. At elevations below 6,000 feet, the snow pack usually melts by April, but at higher elevations remains until mid-June. Localized flooding often follows late winter or spring snowmelt. Flooding can occur as often as once every five years in the Jordan Valley area. These high flows can cause severe bank erosion, and can rip out existing riparian vegetation. The sediment the stream receives from this erosion is a significant portion of the nutrients found in the streams and rivers downstream. In contrast to these high spring flows, many streams run dry late in the summer because the area receives low amounts of precipitation and most of it falls in the winter.

Reservoirs

One of the most prominent man-made features of the Owyhee area is the Owyhee Dam, which is located about 11 miles south west of Adrian, Oregon. It stores about 1.1 million acre-feet of water, most of which farmers use for irrigation. Construction of the Owyhee Dam began in 1928 and finished in 1932. The Antelope Reservoir, located south west of Jordan Valley, Oregon, is another important water storage facility. Its capacity is about 70,000 acre-feet. Upper and Lower Cow Lakes, which are natural lakes found a few miles northwest of Jordan Valley, are managed for irrigation and flood control. Succor Creek Reservoir holds about 6,000 acre-feet of water and serves a water improvement district.

These larger reservoirs were constructed with the intention of opening up new land for crops or improving existing irrigation facilities. After constructing the Owyhee Reservoir, the government recruited farmers to settle in the region. For example, the U.S. Department of the

Interior had a signup to assign 33 farm units in 1937. Applicants had to have $2,000, farm equipment and farming experience. Ex-servicemen were given preference.

Reservoirs have lead to many benefits besides irrigation. The Bureau of Reclamation estimates that the Owyhee Reservoir has provided an accumulated $33,000,000 in flood control benefits from 1950 to 1998. Water released from the bottom of the reservoir is cold. This area immediately below the reservoir supports a productive fishery that is well known by local fishermen. The lake behind the reservoir provides many recreational opportunities as well. The BLM estimates that the reservoir provides about 5,000 angler days a year, and many people use the reservoir and lands around it for boating, camping and hunting.

Land Use

The public owns the majority of the land in the Owyhee basin. The BLM manages approximately 3.3 million acres, and there are about 230,000 acres of state owned land. Private lands total approximately 460,000 acres.

The majority of the acres in this basin are rangeland, and most ranchers are cow/calf producers. Most of the row crop production occurs below the Owyhee Reservoir. Farmers there grow a great variety of crops, and all of them are dependent on irrigation. Some of the most important are as follows:

- Onions,
- Potatoes,
- Sugar beets,
- Alfalfa for hay and seed,
- Grains, and
- Corn.

Economic Importance of Agriculture to Malheur County

Agriculture and its related industries are the largest sector of the Malheur County economy (Malheur Action Plan, 1999). When measured by the percentage of total sales, food crop procurement and processing was the largest industry, followed by crop production, livestock production, procurement and feeding, and wholesale and retail trade. The estimate of Malheur County gross agricultural income for the year 2001 was $171,400,000 (OSU Extension Service, Malheur County). Cattle and onions were the commodities that produced the largest farm income in the county for 2001.

The 1997 Census of Agriculture estimated that Malheur County had approximately 1,200 farms that covered approximately 1,260,000 acres. The average market value of the land and buildings was $655,345 per farm, and the value of all the machines and equipment on average was $103,558.

Legacy Issues

One of the primary legacy issues that affects water quality in this management area is mining. Gold was discovered in the Silver City, Idaho area in 1863, and many mines were active in Idaho until the 1920s . Some mining activity has continued. Miners used mercury to amalgamate the gold and silver at these Idaho mining sites, and it is still present in mining tailings and around old Idaho mining sites. There is a plume of mercury contamination from mining around Silver City, Idaho that flows down Jordan Creek into Oregon and on into Antelope Reservoir, the Owyhee River, the Owyhee Reservoir, the Snake River affecting the Brownlee Reservoir. No attempt has been made to clean up these sources.

Geological formations, such as Cinnabar Mountain south east of Silver City, Idaho near Jordan Valley, and other geological sources of mercury also contribute to mercury levels in streams in this area. In fact, much of the mercury used for mining was obtained from nearby deposits in Nevada, south and west of McDermitt.

Several creeks have been altered in the management area. Some of the alterations have been beneficial and some have not. One example of a detrimental change occurred in the mid 1980s when the U.S. Corps of Engineers straightened Jordan Creek upstream of the bridge at Denwitty Lane. Soon after, the straitening, high flows eroded a channel 12 to 15 feet deep in places. The streambanks have been slow to recover from this event.

Several river reaches in the Owyhee planning area are on the 1998 303 (d) list because the water contains high levels of DDT and/or dieldrin. Both of these chemicals were banned in the United States in the early 1970s. However, they are very slow to break down and they accumulate in the fatty tissues of fish and other animals. These facts explain why they are still found in the management area.

Irrigation

Most ranchers flood irrigate their meadow and pasture areas. The system of dikes and levees maintained by ranchers mimic what beavers did historically by storing and dispersing spring floodwaters. The return flow from this irrigation helps augment water availability for use lower in the basin.

Irrigation practices in the row crop areas below the reservoir differ from those in most areas in Oregon. Furrow irrigation is the primary technique farmers use, and it consists of placing water in furrows and allowing the water to proceed across the field by gravity. When the water reaches the end of the field it is collected in a small ditch, which could direct it to a variety of places. Usually the water is returned to an irrigation ditch and reused by another farmer down the line. By the time the water is returned to the Owyhee or the Snake River it has been used several times.

The Bureau of Reclamation and private companies developed the irrigation system with this reuse of return flow in mind. The system consists of diverting water from a reservoir or from the river to a main canal then to smaller canals and laterals and finally to individual farms. The main

canals are arranged one below the next to catch the return flow. During the later part of the irrigation season the water in many of these ditches is entirely return flow. In many ways, this reuse of water is efficient. It helps spread the amount of water longer in the season.

This system would be difficult to change because of the complexity of its design and many other considerations. Some of these considerations include:

- The potential to lower groundwater levels to the point where wells dry up if farmers eliminate flood irrigation. This could negatively affect late season stream flows too.
- The system of canals and ditches are not designed to accommodate all users at one time. The system depends on return flow.
- The investment in the current system is very high. Restructuring this system would need another large investment. The competitive nature of the agricultural economy makes the conversion from the current system to a new system cost prohibitive.

A critical barrier to conversion from flood irrigation is the cost of electrical power to run water pumps. With commodity prices low and expenses high, farmers cannot afford the added costs of pumping irrigation water. Not only are the electrical usage rates high, but also the expense and time required to construct facilities to deliver the power to the fields would not be cost effective. Estimates can be as high as $15,000 for a quarter mile of line to bring in the appropriate kind of power to run an irrigation pump. Farmers would also have to invest in pipe, sprinklers and other irrigation equipment, which would add a great deal to the cost of converting from flood irrigation.

Fisheries

Streams, lakes and reservoirs in the planning area provide habitat for at least 15 native fish species and several nonnative trout, sunfish, and bass species. Oregon Department of Fish and Wildlife periodically stocks a coastal strain of hatchery rainbow trout in reservoirs. In addition to rainbow trout fingerlings, brown trout are planted by ODFW in the Owyhee River below Owyhee Dam and provide a popular catch-and-release fishery.

Although ODFW no longer routinely stocks warm water fish species, smallmouth bass, black crappie, channel catfish, and black bullhead have become established from previous introductions in the Owyhee River above the Owyhee Reservoir and in Cow Lakes.

Lahontan cutthroat trout inhabit two basins in the Trout Creek Mountains, and a small number occur in Sage Creek and Line Canyon Creek in the Quinn River Basin. The BLM reports annually to the U.S. Fish and Wildlife Service for grazing authorization on allotments where Lahontan cutthroat trout are present. Initial consultation concluded that current grazing practices are not likely to jeopardize the continued existence of the trout.

WATER QUALITY ISSUES

The Federal Clean Water Act (CWA) requires each state to identify beneficial uses for each water body, designate parameters to monitor for each beneficial use, establish a standard for each

parameter, analyze water quality for compliance with the standards which have been set, report findings to Congress every two years, and correct water quality problems.

Section 303(d) of the CWA requires each state to develop a list of water bodies that do not meet the standards designed to protect the most sensitive beneficial use. Water bodies that do not meet standards are placed on the 303(d) water quality limited list. Some rivers and streams in the Owyhee River Basin do not meet water quality standards for the following parameters:

- water temperature
- bacteria
- toxics
- dissolved oxygen, and
- chlorophyll a

Table 1 in the Appendix contains the waterbodies in the Owyhee River Basin on the 303 (d) list, and Figure 1 is a map showing these listed rivers and streams.

Snake River – Hells Canyon TMDL

The Snake River - Hells Canyon Total Maximum Daily Load (TMDL) is a joint effort between the Idaho Department of Environmental Quality, the Oregon Department of Environmental Quality (ODEQ), and the US Environmental Protection Agency (EPA). The scope of this TMDL effort extends from where the river intersects the Oregon/Idaho border to immediately upstream of the inflow of the Salmon River. This includes the Hells Canyon Complex reservoirs: Brownlee, Oxbow and Hells Canyon. This Area Plan will serve as the implementation plan for agriculture's part of meeting the TMDL targets.

BENEFICIAL USES NOT BEING SUPPORTED IN THE OWYHEE PLANNING AREA

The Oregon DEQ has determined that several beneficial uses are not being supported in the Owyhee Management Area. Most of the water quality standards that some streams in the Owyhee River Basin do not achieve relate to the beneficial use of cold-water resident fish and aquatic life. Some examples are temperature and algae (measured as chlorophyll a). In addition to DEQ's determination that aquatic life is not being adequately supported, excessive levels of bacteria (E. coli) and toxics degrade the water so that standards developed for water contact recreation standards and in some cases drinking water standards are not met.

The beneficial uses for the Owyhee River Basin are listed in OAR 340-41-842.

IMPLEMENTATION STRATEGY

The strategy of the Oregon Department of Agriculture and the Malheur County SWCD for controlling pollution on agricultural and rural lands relies on existing and expanded programs, while focusing on proactive planning activities for those conditions which are the most significant and controllable sources of nutrients, sediment, bacteria, and other sources of pollution arising from agricultural use.

Some specific guidance about the water quality issues of this plan are as follows:

Streamside Conditions

Vegetation, both in the uplands and in the riparian area, plays a critical role in water quality. Generally, healthy plant communities:

- hold soil in place
- protect stream banks
- capture, store and safely release precipitation
- filter nutrients from both the ground water and surface runoff
- provide shade to moderate water temperatures

In addition to the water quality benefits, healthy vegetation improves fish habitat. Riparian vegetation protects spawning, rearing and holding areas by trapping sediment that could smother eggs. Vegetation improves the recruitment of large woody debris. This debris helps to create pools for fish to rest in, provides hiding cover and habitat diversity. Vegetation provides organic debris to feed aquatic insects, which are an essential element in the diets of many fish.

Healthy riparian vegetation benefits farmers and ranchers too. Some benefits include increased forage production, less stream bank erosion, increased late season flows and stable stream channels. Techniques that improve riparian area management can lead to economic benefits as well. Many research projects and practical on-farm examples have shown this to be true.

Riparian vegetation, consistent with site capability, is a cost effective means of reducing stream bank erosion and heating from solar radiation.

In recent years, the state and federal governments have developed several cost-share programs to aid landowners in improving their management of riparian areas. These programs will help pay for fencing to establish riparian pastures, pay an annual rental fee for planting woody vegetation along streams, assist in developing off-stream watering sources that will help keep cattle out of the riparian area and many other options. Some of the programs available include:

- Conservation Reserve Program (CRP)
- Oregon Watershed Enhancement Board (OWEB)
- Environmental Quality Incentives Program (EQIP)

It must be recognized that each riparian area is different and will only support vegetation communities adapted to that area. This is known as site capability. Capability in this instance is defined as the highest ecological status an area can attain given political, social, or economic constraints, which are often referred to as limiting factors. Capability does not apply to uses such as grazing, farming, recreation and timber practices, which can be changed. While these uses can affect the condition of a riparian area, they do not prevent it from achieving potential. Capability only applies to constraints that the land manager cannot eliminate or change through a management action.

A map of site capability will be created by ODA with the help of the local NRCS, SWCD and OSU Extension.

Stream Temperature Considerations

Readers of this document should realize there are many important factors to consider when discussing stream temperature in the Owyhee area. As discussed in the Climate section of this plan, air temperatures are high and stream flows are low during the summer in southeastern Oregon. This limits the ability to have cool water. Other natural factors such as the numerous hot springs in the area, the north-to-south orientation of the main stem, and the heat radiating from rocky canyon walls have a profound heating effect on stream temperatures. Wide channels of the main stem of the Owyhee, and of some tributaries due to flooding, minimize stream shading by riparian vegetation. Thus, the moderating influence of shade is limited in these situations. Flooding also makes it difficult to maintain established riparian vegetation.

Another consideration is that large areas of the Owyhee River (roughly 186 river miles) have no agricultural activities occurring near it. This is because the Main, West Little, and North Fork Owyhee Rivers are designated National Wild and Scenic Rivers. An “Order of Modified Injunction ” was filed in the District Court of Oregon on April 28, 2000. The order directed the elimination of grazing at “areas of concern ” identified in the 1993 “Main, West Little, and North Fork Owyhee National Wild and Scenic Rivers Management Plan.” Before this Court Order, cattle had access to only 12 miles of the river.

Agricultural Waste

The aim of agricultural waste control is to minimize the transport of nutrients, pathogens, and sediment into waters of the state. Numerous conservation strategies may be taken to minimize waste inputs into waters of the state. A discussion of these strategies, broken down by waste component, follows.

Nutrients

Crop nutrients are elements taken in by a plant that are essential to its growth, and which are used by the plant in the production of its food and tissue. Over-application of crop nutrients may result in nutrient runoff and leaching into waters of the state. This may cause nuisance algal growth, which leads to fluctuating pH, and low dissolved oxygen levels. Landowners and operators are encouraged to adopt sound agronomic strategies to guide crop nutrient applications.

Sound agronomic strategies include: use of generally accepted fertilizer guidelines; setting realistic yield goals; regular calibration of fertilizer application equipment; appropriate application timing; periodic soil testing and plant tissue analysis; periodic nutrient analysis of manure and/or compost products that are applied; managing irrigation to prevent nutrient loss through leaching and/or surface runoff; carefully managing nutrient applications; and accounting for "nonfertilizer" sources of nutrients such as manure, compost biosolids and crop residues.

Livestock Waste

Manure is an important nutrient source for crop and pasture production. Proper livestock waste management can decrease nutrient and bacteria contamination of water resulting from agricultural activities. It should be noted that much of the bacteria detected in streams is from waterfowl and other wildlife. Livestock are not responsible for all the bacteria found in creeks and rivers.

There are many different conservation strategies a landowner or operator can take to help minimize animal waste reaching waters of the state. Harrowing pastures after livestock have been moved off helps to incorporate the manure into the soil so the crop will take up the nutrients. This also greatly reduces the chances bacteria and nutrients will runoff into a stream. Vegetative buffer strips can minimize the effects of runoff, by catching pollutants before reaching a stream. Some examples of waste management systems may be clean water diversions; waste collection, storage, and utilization; and facilities operation and maintenance. If applying manure to cropland, it is important to apply at rates that do not exceed agronomic needs for nitrogen and phosphorus based on soil and/or tissue tests for the crop to be grown. Pasture management and/or prescribed grazing can help maintain the integrity of pastures, thus decreasing waste runoff. Through the management of livestock access to riparian areas, the effects of animal waste can be reduced. Some examples of techniques to achieve this may be off stream watering, seasonal grazing (riparian pastures), and/or exclusion (temporary or permanent).

Animal Feeding Area Management

Management of animal waste from confined areas has become a local and national priority recently, and it is likely to remain so for the near future. The Local Advisory Committee encourage livestock operators to assess their feeding area management for any discharges of pollution to the waters of the state. If operators think they might have a problem, the Local Advisory Committee recommends they contact local, county, state, and federal agencies for technical assistance.

When assessing their management, the Local Advisory Committee suggests operators consider the following:

- animal waste collection, storage, and disposal at agronomic rates
- excluding waters of the state from confinement areas
- control of surface runoff to and from the waste storage and confinement areas
- off-stream water development

Sediment in Irrigation Return Flow

Excessive levels of sediment in tailwater discharges can harm aquatic life and can carry nutrients, particularly phosphorus, into streams and rivers. It should be noted that sediment is defined as soil particles, both mineral and organic, that are in suspension, are being transported, or have been moved from the site of origin by flowing water or gravity.

This is a particular concern in some parts of the Owyhee Basin because of the existing irrigation system. Most crop fields are furrow irrigated. Normally the irrigation tailwater is returned to a ditch and reused by another farmer down the line. By the time the water is returned to the Owyhee or the Snake River, it has been used several times. The irrigation water can pick up sediment and other substances as it travels down the furrow. This effect is compounded when the water is reused.

It is important to note that most soils in the planning area consist of very fine particles. These soils are the silts that were the last material to settle out of the water from the Lake Bonneville Flood[1]. Once they are in water, they stay suspended for a long time. Long-time residents, many of whom where the first farmers to irrigate crops, describe the soils as having the consistency of baby powder. In the early days of irrigation, water moving down a furrow could kick up a small dust cloud. Thus, the nature of the soils makes it difficult to control irrigation-induced erosion.

[1] This massive flood occurred about 14,000 years ago when water from a 20,000 square mile lake broke loose. This flood greatly affected the Snake River and the region around it. Floodwaters carved out new canyons and deposited huge amounts of soil and boulders. When the flood came through the area around the mouth of the Owyhee River the water backed up and the silt settled out over several years.

Many farmers have been reducing soil loss from furrow irrigation. Some of the methods they use include:

- laser leveling,
- straw mulching,
- polyacrylamide,
- filter strips,
- gated pipe,
- cement ditches,
- sediment ponds,
- water control structures,
- pump back systems,
- surge irrigation,
- bubblers (eliminate trash in irrigation water, which helps to reduce water applied to a field),
- conservation tillage,
- conservation crop rotations,
- irrigation management (soil moisture monitoring, proper scheduling etc.) and
- sprinkler and drip irrigation in place of surface flood irrigation where technically and economically feasible.

Researchers at the Malheur Experiment Station have worked on many methods to maximize water use efficiency. Producers in the area have adopted many of the practices recommended from the results of this work.

Many ranchers who flood irrigate their hay meadows have installed berms to redirect the surface flow back onto the meadow. This improves control of their irrigation, and reduces surface return flow to rivers.

The LAC recommends that irrigation and drainage districts and their members work together to develop comprehensive and systematic measures to reduce sediment that reaches creeks and rivers from irrigation return flow. The committee thought that examining the entire system as a whole would be an efficient approach to the problem. Once the districts and the landowners have identified the problems and potential solutions, they could apply for grant monies as a unit to implement the solutions.

Please note the LAC is not suggesting new landowner fees to fund this activity. They are only suggesting everyone work to together to develop strategies to help reduce sediment levels. The LAC thinks this will be a more successful approach. This does not exempt individuals from doing their part in controlling sediment leaving their fields. It is still important that individuals continue to do their best to control sediment losses.

Monitoring

Monitoring activities are integral components of Agricultural Water Quality Management (AgWQM) Area Plans. When effectively used, monitoring activities can provide valuable

information on how much effect a plan is having, how extensively it is being implemented, and where more efforts are needed in a basin.

Before initiating the design of a monitoring program, problem definition, monitoring goals, and monitoring objectives must be determined. Questions to be answered by the monitoring program need to be clearly and carefully articulated. The Owyhee Watershed Council and the Malheur County SWCD plan to develop an extensive monitoring program for the Owyhee Basin in the near future.

Education And Outreach

The Malheur County SWCD will work with partner agencies and groups such as Oregon State University Extension Service, Experiment Station, USDA Natural Resources Conservation Service, Oregon Department of Agriculture, Owyhee Watershed Council, Bureau of Land Management, local school agriculture and science programs, and community college natural resource classes to carry out the education strategies outlined in this Area Plan.

The strategies for carrying out the educational component of the Area Plan will include:

1. Conduct education programs to promote public awareness of water quality issues and their solutions.
   - Hold workshops on water quality issues and the conservation practices that will help improve water quality and agricultural operation efficiency.
   - Develop demonstrations to highlight successful conservation practices and systems in conjunction with local educational institutions.
   - Organize tours of demonstration projects for agricultural managers and producers.
   - Produce and distribute brochures about water quality issues.
   - Focus educational efforts on small acreage /hobby farmers.

2. Develop an ongoing media program to inform agricultural operators and the public of conservation issues and events.
   - Include updates on the status of the Owyhee Agricultural Water Quality Management Area Plan and water quality data in the SWCD newsletter and in local newspapers/media.
   - Develop and implement a newsletter to be sent to all agricultural producers in Owyhee Management Area.
   - Submit news articles and public service announcements to area newspapers, radio stations and newsletters.
   - Invite media to conservation tours and workshops.

3. Involve the agricultural and rural community in conservation education.
   - Create and maintain a list of experienced agricultural operators willing to share their best management practices with other interested people by speaking, leading tours and providing tour sites.

4. Build partnerships with agriculture businesses to promote conservation.
   - Co-sponsor workshops and tours with the SWCD.
   - Share education materials with agribusiness field representatives and with feed stores, and retail agricultural suppliers to target small farm operations.

5. Involve educational institutions in conservation, education and research. For example, places such as Oregon State University Extension, Malheur Experiment Station, the community college and high school science and agricultural programs are high potential partners. The focus of the educational effort will be:
   - Prevention, restoration and enhancement using sound agricultural management strategies,
   - Management of small acreages for water quality protection,
   - Riparian areas – issues and considerations, and
   - Water Quality Conditions.

PREVENTION AND CONTROL MEASURES

Voluntary efforts are the focus of the ODA, the Malheur County Soil and Water Conservation District (SWCD) and the Local Advisory Committee. However, situations may arise when a particular landowner refuses to correct the conditions on his or her property. In this case, the Oregon Department of Agriculture must have a regulatory backstop to ensure pollution control. At the same time, the ODA does not want to mandate or prohibit any specific agricultural activity. To maintain this flexibility, this plan and its associated administrative rules describe Prohibited Conditions.

Readers should note that this AgWQM Area Plan is only a guidance document. By itself it is not regulatory. However, it does refer to administrative rules that set requirements for landowners. To help distinguish between this Area Plan and its associated rules, all rule language is separated from the rest of the text by solid lines.

OAR 603-095-2740
Prohibited Conditions

(1) A landowner shall be responsible for only those conditions caused by activities conducted on land managed by the landowner. Criteria do not apply to conditions resulting from unusual weather events or other exceptional circumstances that could not have been reasonably anticipated.

Pollution Control and Waste Management

The committee did not write the following Prohibited Condition. It has been adapted from ORS 468B.025. This language must be incorporated into this AgWQM Area Plan and Rules to have the ODA as the primary agricultural water quality regulatory authority as directed by the legislature through SB 1010 and SB 502.

OAR 603-095-2740
(2) Pollution Control and Waste Management: Effective on rule adoption.

No person subject to these rules shall violate any provision of ORS 468B.025 or ORS 468B.050.[2]

Streamside Conditions

OAR 603-095-2740
(3) Streamside Conditions

By January 1, 2008, no person may contribute to conditions that preclude establishment and development of adequate riparian vegetation for streambank stability and shading, consistent with site capability.

Irrigation Surface Water Return Flow

OAR 603-095-2740
(4) Irrigation Surface Water Return Flow

(a) After January 1, 2008, irrigation surface water return flow to waters of the state shall not cause an excessive, systematic, or persistent increase in sediment levels already present in the receiving waters, except where the return flows do not cause the receiving waters to exceed established sediment standards.

(b) A landowner conducting irrigation activities in accordance with a plan approved in writing by the department or its designee shall be deemed to be in compliance with this rule.

[2] **ORS 468B.025 Prohibited Activities.**
(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.
(3) Violation of subsection (1) or (2) of this section is a public nuisance.

ORS 468B.050 When permit required.
(1) Except as provided in ORS 468B.053 or 468B.215, without first obtaining a permit from the Director of the Department of Environmental Quality, which permit shall specify applicable effluent
limitations, no person shall:
(a) Discharge any wastes into the waters of the state from any industrial or commercial establishment or activity or any disposal system.
(b) Construct, install, modify or operate any disposal system or part thereof or any extension or addition thereto.
(c) Increase in volume or strength any wastes in excess of the permissive discharges specified under an existing permit.
(d) Construct, install, operate or conduct any industrial, commercial, confined animal feeding operation or other establishment or activity or any extension or modification thereof or addition thereto, the operation or conduct of which would cause an increase in the discharge of wastes into the waters of the state or which would otherwise alter the physical, chemical or biological properties of any waters of the state in any manner not already lawfully authorized.
(e) Construct or use any new outlet for the discharge of any wastes into the waters of the state.
(2) As used in this section, "confined animal feeding operation" has the meaning given in ORS 468B.205.

PLAN AND RULE EVALUATION AND MODIFICATION

ODA and as resources allow, the Malheur County SWCD, will evaluate the effectiveness of the Area Plan in improving water quality and land conditions. Results of these evaluations will be presented to the Local Advisory Committee on an annual basis. Two years following approval of the Area Plan and adoption of the Area Rules, the LAC will meet to review and update the Area Plan and Rules. Based on the evaluation of the Owyhee Area Plan and Rules, as well as any additional water quality concerns identified, the LAC, the ODA, the Malheur County SWCD, and the State Board of Agriculture will consider making appropriate modifications to the Area Plan and Rules.

PUBLIC PARTICIPATION

The Director of the Oregon Department of Agriculture appointed an Owyhee Local Advisory Committee to represent:

- Local agricultural producers
- Local landowners
- Local environmental interests
- Local recreation interests
- Malheur County Soil and Water Conservation District

Their purpose was to help develop this AgWQM Area Plan and the associated draft Area Rules. Committee meetings were conducted over a 6-month period. All meetings of the Local Advisory Committee were public meetings, were advertised in advance, and opportunity was given at each meeting for public input. In addition, the department conducted two public hearings and a comment period on the Area Plan and Rules. The Local Advisory Committee met at the close of the comment period discussed and incorporated appropriate public comments.

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APPENDIX 1

Table 1
WATERBODIES IN THE OWYHEE RIVER BASIN ON THE 1998 303 (D) LIST

Waterbody Name	Boundaries	Parameter
Antelope Reservoir	Reservoir	Toxics
Indian Creek	Mouth to Headwaters	Temperature
Jordan Creek	Mouth to Headwaters	Toxics
Little Owyhee River, West	River mile 45 to Headwaters	Temperature
McDermitt Creek	Mouth to Headwaters (Oregon Portion)	Temperature
Owyhee Reservoir	Reservoir	Toxics
Owyhee River	Black Willow Creek to Owyhee Reservoir	Dissolved Oxygen (DO)
Owyhee River	Owyhee Reservoir to Rome	Temperature
Owyhee River	Rome to Idaho Border	Temperature
Owyhee River	Owyhee Reservoir to headwaters	Toxics
Owyhee River	Mouth to Black Willow Creek	Bacteria
Owyhee River	Black Willow Creek to Owyhee Reservoir	Dissolved Oxygen (DO)
Owyhee River	Mouth to Black Willow Creek	Toxics
Owyhee River	Mouth to Black Willow Creek	Chlorophyll a
Owyhee River, Middle Fork	Mouth to Idaho Border	Temperature
Owyhee River, North Fork	Mouth to Idaho Border	Temperature
Sage Creek	Mouth to Headwaters (Oregon Portion)	Temperature

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DEFINITIONS

Site Capability

is the highest ecological status an area can attain given political, social, or economical constraints, which are often referred to as limiting factors. Capability does not apply to uses such as grazing, farming, recreation and timber practices, which can be changed. While these uses can affect the condition of a riparian area, they do not prevent it from achieving potential. Capability only applies to constraints that the land manager cannot eliminate or change through a management action.

Water Pollution - (ORS 468B.005(3))

means such alteration of the physical, chemical or biological properties of any water 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 of the habitat thereof.

"Water" or "the waters of the State" - (ORS 468B.005(8))

includes 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 effect a junction with natural surface or underground waters), which are wholly or partially within or bordering the state or within its jurisdiction.

"Wastes" - (ORS 468B.005(7))

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.

Confined Animal Feeding Operation – (OAR 603-074-0010) means:

(a) the concentrated confined feeding or holding of animals or poultry, including but not limited to horse, cattle, sheep, or swine feeding areas, dairy confinement areas, slaughterhouse or shipping terminal holding pens, poultry and egg production facilities and fur farms,

(A) in buildings or in pens or lots where the surface has been prepared with concrete, rock or fibrous material to support animals in wet weather; or

(B) that have wastewater treatment works; or

(C) that discharge any wastes into waters of the state.

or

(b) an animal feeding operation that is subject to regulation as a concentrated animal feeding operation pursuant to 40 CFR § 122.23.

A CAFO under federal regulations (40 CFR § 122.23) is an operation that confines animals for at least 45 days in a year, and the confinement area is devoid of vegetation, and:
(a) has more than 1,000 animal units (AU), or
(b) has 301 to 1,000 AU and wastes are discharged through a man-made conveyance or directly into US waters, or
(c) is designated a CAFO by the permitting authority on a case-by-case basis.