



NRCS Natural Resources Long Range Strategy in Malheur County, Oregon

In Co-operation with Malheur County Soil & Water Conservation District

June 2010

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**Malheur County,
Oregon**



Update for 2018

It was determined at the 2018 local work group meeting, that there should not be any changes to the priority resource concerns identified in this plan.

Section I. Introduction

The goal of Malheur County NRCS “Strategic Approach to Conservation” is to invest strategically to solve resource problems and be more effective with, and accountable for, staffing, funding, and partnerships. The Long Range Natural Resources Strategy is a 5-year plan that articulates the fundamental objectives of the partnership and lays out long-term goals for implementing the objectives, including resources to reach these goals.

Agriculture in Malheur County consists of irrigated crop, hay and pasture, rangeland, and livestock production. The main irrigated area is the western edge of the Treasure Valley around Ontario, Nyssa, and Vale. The main irrigated cropland consists of intense row crops. The row crops consist of onions, potatoes, sugar beets, corn (both field corn and sweet corn), edible beans, wheat, and other specialty row crops. Hay is mainly alfalfa in lowland fields and grass in upland fields. Some oats are raised for hay. The rangeland is used primarily for wildlife and livestock grazing. Malheur County has a large number of cattle and these cattle represents 63% of the agricultural products sold in the county.

The agriculture areas have many resource concerns and opportunities. The main concerns that the landowners have identified are water availability and conservation of water and soil. Irrigation-induced erosion has proven to be a concern that is common throughout the county as is labor costs.

In Malheur County, there are many groups and agencies that have been working on improving natural resources. Resource concerns in the agriculture community are being serviced by the local soil and water conservation district, the two watershed councils, OSU Research and Extension, and NRCS. The remainder of the county resource concerns on the public lands is serviced by the BLM and the watershed councils.

MALHEUR COUNTY HISTORY

Malheur County was created February 17, 1887, from the southern portion of Baker County. The county was named after the Malheur River that flowed through the area. Peter Skene Ogden, a Hudson’s Bay Company trader, referred to this river in his journal as “Riviere au Malheur” which translates as “unfortunate river.” It was given this name because during an expedition into the Snake River country in 1825 – 1826, property and furs hidden in the area were discovered and stolen.

Malheur County is located in the southeast corner of Oregon. It is bordered by Baker County on the north, the State of Idaho on the east, the State of Nevada on the south, and Harney and Grant Counties on the west. Malheur County is the second largest county in the state with 9,874 square miles.

The county seat is Vale. The first county courthouse was built in 1887 at a cost of \$1,400. The second courthouse was built in 1902 after several years of rivalry between localities contending for the honor of being named the county seat. A third courthouse was built in 1958.

Malheur County held its first general election in 1888 to elect a judge, sheriff, clerk, two commissioners, treasurer, assessor, superintendent of schools, and coroner. Malheur County government is composed of a county judge, two commissioners, a district attorney, clerk, sheriff, and

treasurer.

Malheur County was first settled by miners and stockmen in the early 1860s. The discovery of gold in 1863 in Jordan Creek created an interest in this area which resulted in the establishment of settlements and stock ranches. Basque immigrants settled in the region in the 1890s and were mainly engaged in raising sheep. The Western Treasure Valley, located in the northeast corner of the county, is the center of diversified and intensified farming.

Oregon has what appears to be an outpost of the Roman Empire in its southeast corner. The community of Rome in Malheur County got its name from the imposing nearby formations of fossil-bearing clay that look like Roman ruins. The 100 foot high formations, which are also known as the "Walls of Rome," measure about five miles long and two miles wide. They are near the wild and scenic Owyhee River.

The river, oddly enough, is named for a variation of the word Hawaii. The name is in reference to two Hawaiians (Sandwich Islanders) who were part of a Hudson's Bay Company fur trapping expedition in 1819 when they were killed by Snake Indians. Thus, in a highly improbable historical twist, elements of Rome and Hawaii meet in the remote desert of Oregon.

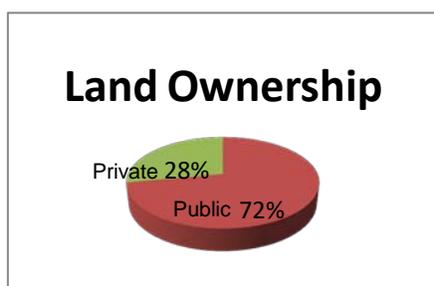
Section II. Resource Inventory

This part of the field office long range strategy examines the natural resources inventory of the county as it relates to human, soil, water, air, energy, plant, and animal resource concerns. Many of these resource concerns have been addressed in other agency and stakeholder management plans, including but not limited to:

Title	Agency
<i>NRCS Rapid Watershed Assessment Profiles</i>	NRCS
<i>Malheur River Basin Agricultural Water Quality Management Area Plan</i>	SWCD, ODA
<i>Malheur Basin Watershed Assessment</i>	NW Power Planning Council, Burns Paiute Tribe
<i>Malheur Basin Action Plan</i>	Malheur Watershed Council
<i>Malheur River Subbasin Assessment and Management Plan For Fish and Wildlife Mitigation</i>	ODFW
<i>Owyhee Agricultural Water Quality Management Area Plan</i>	SWCD, ODA
<i>Upper and Lower Owyhee Watershed Assessments</i>	Owyhee Watershed Council
<i>Fletcher Gulch Watershed Plan and Environmental Assessment</i>	NRCS
<i>Fletcher Gulch – Overstreet Watersheds Implementation Plan</i>	NRCS

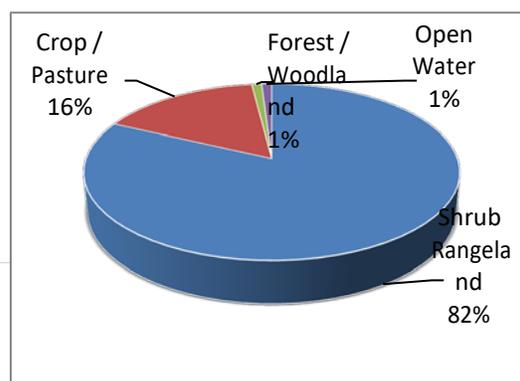
This snap-shot in time looks at the natural resources and county demographics and gives a starting point in addressing the existing resource concerns of NRCS and its partners. The following narratives, along with tables and figures, are reflective of the baseline data of each major resource concern needed to guide this long range strategy.

A. Resource Concerns: Human



According to the 2010 census, the population of Malheur County was 31,313. U.S. Census Bureau data for 2000 indicates a county population of 31,615. The Estimated population in 2012 was 30,630. These numbers show a steady decrease in the population of over 1% in ten years and about 3% in twelve years. Approximately 52% of the population lives within urban areas. As shown in Figure 1, ownership of Malheur County is approximately 28% private and 72% public (Federal and State).

Land cover types (Figure 2) for the county are approximately 82% shrub rangeland, 1% forest or woodland, and 16% crop or pasture land, with the remaining 1% covered by open water. Land use (Figure 2) consists of approximately 83%



grazing land, 1% forest land, 16% crop/hay/pasture, and less than 1% urban or developed areas. Privately owned lands encompass 1,074,841 acres of range lands, 86,500 acres of privately owned forest land, and 395,976 acres of irrigated crop and hay.

Today, as in the past, cattle ranching and irrigated row crops are the major economic enterprises in the county. Climatic characteristics of this region are conducive to a wide variety of annual and perennial row crops. Onions are a large crop that is ranked first in the state and the nation. Cattle sales in the county are also ranked as number one in the state. Row crops and hay must be irrigated due to the lack of rainfall and high crop evapotranspiration during the growing season. Most irrigation is done through organized irrigation districts. Malheur County has 6 recognized irrigation districts. According to the 2007 Census of Agriculture, the average farm size is 937 acres. The number of farms in the county is 1,250; 14% of these are over 1,000 acres in size. There are 56 registered Confined Animal Feeding Operations (CAFO) in the county. Most of these are dairies and cattle feedlots. Animal feeding operations can be found on all ranches during winter months; concerns do exist where run-off from these feed grounds on frozen soils may reach water courses.

Farms by Size ^{1/}	
1 to 9 acres	137
10 to 49 acres	293
50 to 179 acres	348
180 to 499 acres	214
500 to 999 acres	101
1000 acres or more	157
^{1/} 2007 Census of Agriculture	

NRCS has assisted landowners to install twelve practices on 296 acres for the control of animal wastes in the past fifteen years.

B. Resource Concerns: Soil

Malheur County topography has a variety of geologic attributes. Soils were formed by volcanic activity and deposited as alluvial or lacustrine sediments in prehistoric lakes. Major Land Resource Areas of the county include Central Rocky and Blue Mountain Foothills, Snake River Plains, Malheur High Plateau, Humboldt Area, Owyhee High Plateau, Blue and Seven Devils Mountains. Common Resource Areas, subsets of these MLRA's that exhibit unique soils, climate, and vegetation, are shown in Figure 3.

Erosion can be a problem on disturbed areas, especially on cropland where annually tilled crops are surface irrigated. Irrigation-induced erosion is a major problem on some of the cropland soils because of flood irrigation on sloping ground. Stream bank erosion is a concern on most perennial and seasonal streams in the county where spring flows may cause severe down cutting of the channel and ice flows scour the banks in the deeper alluvial soils.

Overall soil health including structure, water holding capacity, and fertility are critical factors for plant productivity on all land uses. Crop and hay production is dependent on soil condition and nutrients that are available for plant growth. Rangeland soils and forage production are related to texture, slope, and depth to restrictive layers. Early spring grazing, when soils are saturated, can cause compaction, pedestalling of plants, and loss of topsoil on steeper slopes.

Prime and unique farmland soils are listed in the Field Office Technical Guide; these soils are found throughout the county primarily on deeper valley bottoms that are irrigated. Highly erodible soils that are subject to wind and water erosion are a concern when planning

tillage on cropland. Hydric soils are found in limited areas of the valley bottoms and along water courses. Adherence to the Food Security Act of 1985 rules, as amended, are needed to maintain farmed wetlands, farmed wetland pasture, and prior converted cropland, while not having a detrimental effect on natural wetlands. Highly erodible and hydric soils lists are also maintained in the Field Office Technical Guide.

C. Resource Concern: Water

Water is a precious resource in this semi-arid region of Oregon, thus water quantity and quality are major concerns. Annual precipitation (Figure 4) ranges from 28 inches in the Trout Creek Mountains in the south west corner of the county to less than 8 inches in the Alvord Desert along the western boundary of the county. Most precipitation comes in the form of snow during the winter and rainfall in spring and early summer. Eight-digit hydrologic unit watersheds (Figure 5) and ten digit HUC sub-watersheds need continued focused prioritization to accomplish whole- watershed planning to improve water quantity and quality.

Many of the major streams of the county have only seasonal flows. Quantity and quality of water are concerns on nearly all of these major streams. Oregon Department of Environmental Quality has a number of the water courses on their 303d list for exceeding water quality parameters (Figure 5). Lack of stream bank vegetation, both herbaceous and woody species, has a detrimental effect on water quality.

Irrigation water is needed for all crop production in the county. Sources of irrigation water are from ground water or streams and reservoirs. Surface irrigation water is largely dependent on winter snowpack for direct stream withdrawals or reservoir storage. Irrigation districts include: Owyhee Irrigation District (North Board and South Board); Old Owyhee Irrigation District; Vale Oregon Irrigation District; Warm Springs Irrigation District; Orchard Irrigation District (Figure 6); and, Jordan Valley Irrigation District. Oregon Water Resources Department and Oregon Department of Environmental Quality have identified the shallow aquifer in the greater Ontario/Nyssa/Vale area as water quality limited. The Oregon Water Resources Department has identified several shallow aquifers in Malheur County as vulnerable or sensitive (Figure 7).

Quantity and quality of drinking water for livestock and wildlife is a resource concern that needs to be addressed. Distance to water can be detrimental to livestock and wildlife health, as well as grazing land health and plant production and vigor. Dependable, season-long water sources are deficient in some areas of the county for both livestock and wildlife.

NRCS has assisted landowners to install 1219 practices on 41,695 acres that have increased irrigation water efficiencies, improved water quality, and improved soil health over the past ten years.

D. Resource Concern: Air and Energy

Air quality has not been identified by DEQ as a major problem in the county. Although, blowing dust can be a problem in early spring on cropland that is tilled and left bare for too long. During fire season in summer and early fall, smoke can blanket much of the populated areas of the county.

Energy costs are a concern for most farmers and ranchers and a limitation in the modernization of irrigation systems. Electricity costs for pumping irrigation water from wells and to pressurize other systems is a major portion of the operating costs for irrigators. Idaho Power provides most of the power to the county.

Alternative energy sources could help farms and ranches have less dependence on fossil fuels. Solar, wind, and biomass energy generation is a need for the near future. Efforts are underway in Ontario for a biomass electric power generation plant and another south of Ontario that will use crop residues to produce electricity. Geothermal energy has been developed near Vale, OR.

E. Resource Concern: Plants and Animals

Section II of the Field Office Technical Guide has several references to endangered plants and animals. A direct link to the web site is <http://www.fws.gov/oregonfwo/Species/Lists/default.asp>, there are a number of threatened and endangered animal and fish species identified in the county. The major species that need protection are Bull Trout and Howell's spectacular thelopody. Other species of concern have been identified by Federal and State wildlife agencies. Consideration must be taken in all planning efforts to not put these species at risk.

In the publication *Greater Sage Grouse Conservation Assessment and Strategy for Oregon* (ODFW, 2005), biologists and land managers laid a framework to manage bird populations and habitat to warrant not listing the sage grouse under the Endangered Species Act. Although the sage grouse was not listed in a 2010 USFWS decision, it was determined to be warranted for listing. Unprecedented efforts are now being made to improve Sage Grouse habitat. High priority areas are the focus of current enhancement projects (Figure 8). In the *Oregon Conservation Strategy* (ODFW, 2006), wildlife conservation opportunity areas were identified throughout the county where improvement to habitat can be addressed for upland bird, big game, migratory waterfowl, and fish species (Figure 9).

Invasive species and noxious weeds are a major concern for private landowners and public land managers. Malheur County has three Cooperative Weed Management Areas. They are the Jordan Valley CWMA, Malheur CWMA, and Juntura CWMA. These areas continue to scout, identify, and control noxious weed infestations within their areas. Partnering with the Weed Management Area Coordinators is a high priority in future planning efforts to control weed infestations for NRCS clients.

Medusahead rye and western juniper continue to invade rangelands and decrease forage production and quality and risk the native web of life. These resource concerns are being

addressed and continued efforts need to be made to prevent the increased expansion of these species that will make rangeland unproductive. Poor rangeland health and pasture condition affects plant production and vigor. Implementing proper grazing and nutrient management are essential to increase plant productivity.

Section III. Conservation Activities and Analysis

Malheur County is known for its vast areas of sagebrush steppe, which are primarily used for grazing and recreational purposes. At the center of this desert ecosystem is over 250,000 acres of irrigated agricultural land. A wide variety of crops and hay are grown, including onions, corn, potatoes, sugar beets, alfalfa, small grains, and more. Water is a scarce resource in this region, which typically receives only 10-11 inches of annual precipitation, much less than that required to meet crop/plant water needs, and drought occurs frequently. A series of reservoirs were constructed to capture snow melt and seasonal runoff from adjacent uplands to allow for the use of this scarce resource in irrigated agriculture, a driving force of the local economy. A series of gravity fed irrigation canals deliver the captured water from the reservoirs to the local farms and ranches.

The local NRCS office in Ontario has assisted landowners/operators with nearly 2000 practices on over 150,000 acres in the past ten years. Partners have assisted landowner/operators with over 100,000 acres of improvements in the past ten years. These practices have addressed irrigation water use efficiency and irrigation induced erosion; animal confinement areas and use of waste; soil health; and rangeland health.

For several years, the Malheur County local work group has identified the priority resource concerns in the county as being: a) irrigation-induced erosion; b) water quality and quantity; c) rangeland health; and d) AFO/CAFO concerns. During these meetings, the local Oregon Department of Agriculture representative has indicated that the AFO/CAFO problems are being addressed at this time. As of the 2014 local work group meeting, it was determined that the resource concern priorities remain. The group strongly supported continued efforts to address water quality and water quantity through the conversion of irrigation systems from flood to sprinkler or drip. These conservation practices also affect irrigation induced erosion by reducing it to practically zero. The group also strongly supports ongoing efforts to address rangeland health through invasive plant species control.

Water Quantity and Quality/Irrigation Induced Erosion

Since the history of irrigated agriculture in Malheur County, irrigation has been achieved primarily through furrow irrigation. Like any flood irrigation technique, furrow irrigation requires a significant water input to effectively push water across the field, and uniform distribution of water is usually unattainable. Generally only 50% or less of the water applied is used by the plant. Furrow irrigation systems also require runoff to ensure enough water is available at the bottom of the field to meet plant needs. Unfortunately, this runoff often results in runoff water high in sediment, nutrients, and/or pesticides, which are often captured and delivered to subsequent irrigators further downstream. Enriched runoff poses a significant threat to surface water quality.

Application of water at rates that exceed plant needs also leads to excessive deep percolation, which results in the leaching of nitrate into the groundwater. Excessive over application of nitrogen fertilizer, well above crop needs, was a common practice in past decades with the availability of inexpensive and abundant commercial fertilizers. The majority of irrigated cropland area in northern Malheur County is

designated as a ground water management area (GWMA). This GWMA was listed as impaired due to levels of nitrates above the EPA standard for drinking water. Excessive deep percolation from inefficient surface water irrigation has been a contributor to this problem. More efficient irrigation systems reduce water use and nutrients being leached into the ground water. Other conservation practices such as split fertilizer applications have been adopted that increase nitrogen use efficiency.

Furrow irrigation can result in significant irrigation induced soil erosion, particularly when row crops are grown or pastures are not managed to maintain sufficient vegetation or in situations where furrows are regularly maintained. The resultant soil loss reduces land productivity over time and continues to deposit sediment and nutrients into local streams and rivers. Furrow irrigation can lead to degraded pasture health, poor production, and increased vulnerability to weed invasion. Practices that improve grazing distribution on pastures and/or limit livestock access to open water sources can assist in addressing these concerns.

Although conversion from flood to drip or sprinkler systems results in more efficient irrigation systems with little to no runoff, this is not an economically viable alternative in all situations. This is particularly true on small or odd shaped fields and in areas where power is limited and pumping abilities are restricted. For some producers, the high initial capital costs associated with these conversions along with the on-going pumping expense in the midst of unreliable crop and livestock markets often prohibit irrigation system improvements.

Many practices have been suggested to address the water quality issue alone (constructed wetlands, buffers, fences, etc.), particularly in the wake of pending TMDLs; however, farmers and ranchers are dependent on additional methods of on-farm improvements to address the many other resource concerns they are facing (particularly water management) in conjunction with improving water quality. In recent years, conversion to sprinkler or drip irrigation systems is becoming an ever-popular way to do just that. By converting to drip, linear, pivot, or other sprinkler systems, producers can dramatically improve their on-farm irrigation efficiencies in the face of frequent water shortages, sustain or improve pasture condition and production, reduce the competitive ability of invasive species by maintaining a vigorous, desirable plant community, and increase crop yields, while nearly eliminating irrigation-induced erosion and nutrient leaching. Increased yields help offset the cost of the system, contribute to maintaining viable farming operations, and help stimulate the local economy. Further, coordinated efforts with irrigation districts, the local SWCD, watershed councils, and others are underway to secure grant funds to pipe several irrigation laterals in this area. Piping in many cases is making the adoption of gravity fed sprinkler systems or systems with low pumping requirements a viable possibility. However, the high initial capital costs associated with these conversions in the midst of unreliable crop and/or livestock markets often prohibit improvements of this nature without financial incentives through conservation programs.

Rangeland Health

Malheur County has the largest population of cattle in Oregon. *E-coli* and soil borne pathogens from livestock operations (AFO, CAFO, and rangeland grazing), either by direct contact with water or soil erosion due to lack of ground cover, contribute to the quality of 303d listed streams and their inability to meet state water quality standards. Streams show high levels of *e-coli* and pathogens that are detrimental to humans and wildlife.

There are approximately 5,611,100 acres of rangeland in Malheur County. Of this amount, 1,044,100 acres are private, 15,900 acres are tribal with the remaining being public lands. The desert rangeland in Malheur County has been historically overgrazed in the late 1800 and early part of the 1900s. With the advent of the Taylor Grazing Act, much of the rangeland started to be managed for grazing. In the mid-1960s to the mid-1970s, the BLM had the Vale project in Malheur County. This project was to improve

range condition by seeding crested wheatgrass, develop watering facilities, and fence pastures to improve grazing management. This was conducted on public lands. The private landowners who could afford improvements started to follow suit with the BLM.

From the early 1900s to present, wildfire suppression has been a way of protecting the valuable rangelands of Malheur County. With the suppression of fire, range health is compromised by the invasion of undesirable vegetation. When wildfire does occur, there is a cause and effect to cause catastrophic fire and the decline of range health. Vegetation is removed and leaves the soil vulnerable to erosion from summer storms and spring runoff. Native vegetation does not compete well with the invasive annual grasses that re-populate the burned areas. This invasion reduces the availability of forage and the economy of landowners and the county in general.

Landowners have been working at increasing range health on their own or through a cost share with either NRCS, SWCD, or watershed councils. Rangeland health could be improved on approximately 150,000 acres of rangeland in Malheur County. An estimated 15,000 acres could be treated each year over the next 10 years.

Section IV. Natural Resource Concerns and Desired Outcomes

Rangeland Health

What is the severity of the problem?

Rangeland health is deteriorating in Malheur County, mainly due to the invasive species problem. Medusahead rye and Juniper are invading livestock grazing areas, which is detrimental to the health of the rangeland and inhibits productivity of wildlife and fish habitats. It is proven that Juniper trees can affect the hydrologic function of rangeland and controlling Juniper can immediately improve sage grouse habitat, along with other types of wildlife and livestock habitats.

Cattle are the largest agricultural market in Malheur County and are negatively affected by the decline in rangeland health from Juniper and noxious weeds. The distance to water in many pastures has posed as an inconvenience for livestock producers and wildlife as well. There is continued high demand for efforts to focus on the rangeland health. Approximately 18,000 acres of Juniper removal has been completed over the past four years.

Threats to Greater Sage Grouse habitat are also a rangeland health concern. US Fish and Wildlife Service has determined that a threatened or endangered listing for the Greater Sage Grouse is warranted but precluded. A final listing determination is expected in September of 2015. Juniper encroachment has been determined to be the primary threat to Greater Sage Grouse habitat in Eastern Oregon. Invasive annual weeds have also been shown to threaten habitat. According to US Fish and Wildlife Service, a major component to keeping Greater Sage Grouse off of the Federal Threatened and Endangered Species list is to improve habitat.

Who is willing to help with this resource concern?

The NRCS, Jordan Valley, Malheur, and Juntura County Weed Management Associations, Malheur County Soil and Water Conservation District, Oregon Department of Fish and Wildlife, Oregon Watershed Enhancement Board, BLM, and US Fish and Wildlife Service are all partners to help improve rangeland health.

In the past 10 years there have been over 200,000 acres treated with conservation practices in an effort to help improve rangeland health. Fencing, range seeding, water developments, pipelines, brush management, troughs, and prescribed grazing are practiced in the county.

Overall, in the past 20 years, the conditions have shown a slight improvement, however they are not yet where they should be.

What are the goals?

- Improve rangeland health to meet the needs of wildlife and ranchers.

NRCS and partners plan to continue working with all different groups and individuals to target priorities throughout the county. The number of landowners interested in participation is unknown and needs to be determined to know where areas can be treated. Private land in Malheur County is very spread out so determining areas to target is very beneficial. There is a great demand for more brush management to control Juniper. Other rangeland conservation practices will be used to improve health such as annual invasive weed control, development of watering facilities, fencing, and grazing management.

NRCS believes that 60% of landowners are more than likely going to be willing and able to participate in cost-share assistance programs to treat rangeland. An estimated 9,000 acres per year should be able to be treated per year.

How much funding is needed?

An estimated \$5,000,000 is needed for the next five years to treat rangeland health. Annually, \$1,000,000 will be needed, depending on the conservation practices needed and implemented.

Water Quantity and Quality/Irrigation Induced Erosion

What is the severity of the problem?

Furrow irrigation is the most common use of irrigation on cropland in Malheur County. This method requires a significant amount of water input to effectively push water across the field and generally only about 50% of the water applied is used by the plant. The extra water runs off, carrying sediment, nutrients, and pesticides into streams. Up to 20-30 tons of soil per acre can be lost due to flood irrigation in Malheur County.

Application of water at rates that exceed plant needs also leads to excessive deep percolation, which results in the leaching of nitrate into the groundwater. Excessive over application of nitrogen fertilizer, well above crop needs, was a common practice in past decades with the availability of inexpensive and abundant commercial fertilizers. The majority of irrigated cropland area in northern Malheur County is designated as a ground water management area (GWMA). This GWMA was listed as impaired due to levels of nitrates above the EPA standard for drinking water. Excessive deep percolation from inefficient surface water irrigation has been a contributor to this problem.

Many streams in the county are exhibiting high *E. coli* levels. Nearly all streams are 303d listed for various reasons. Mercury and other heavy metals from legacy mining operations have negatively affected water quality. Temperature concerns are possibly caused from water being left on field and warming and when it runs off into streams it is a higher temperature. Drip or sprinkler systems have the

potential to reduce water use and potential for nutrients being leached into the ground water.

Water quantity levels are dependent on what flows into the reservoir so conserving water will allow water to remain in the reservoir for longer periods. Reducing runoff from fields will conserve water quantity and improve water quality.

Who is willing to help with this resource concern?

The Malheur and Owyhee Watershed Councils, the Oregon Watershed Enhancement Board, the Malheur County Soil and Water Conservation District, the local irrigation districts, Idaho Power, Bureau of Reclamation, and NRCS are all working together to improve water quality and quantity in Malheur County.

Resource Trends

The Malheur County Soil and Water Conservation District has been taking samples of water quality and flow levels within the county. Preliminary results of the sample tests show positive trends but additional analysis is needed. Anecdotal evidence shows that less runoff is coming off of the fields and water appears to contain less sediment than was seen previously. In recent years, landowners have become more aware of the risks and consequences of using flood irrigation. A great deal of conservation has been implemented to improve water quality. Groundwater has been showing decreasing nitrogen level in the last 20 years.

What are the goals?

- Improve water quality through reduced irrigation induced erosion and deep percolation
- Increase water quantity through improved irrigation efficiencies

Outreach will take place to inform landowners on the detrimental water quality issues and the cost-share assistance programs NRCS funds for conservation practices and irrigation management workshops will continue to create awareness and share the newest and current information.

Practices such as constructed wetlands, buffers, fences, etc., are suggested to address the water quality concern. Conversions from flood irrigation to drip or sprinkler irrigation systems would dramatically improve on-farm efficiencies, reduce runoff, and improve water quality.

Conservation Implementation Strategies are currently targeted toward improving water quality and quantity. These strategies are targeted to convert up to 2,000 acres per year from flood to sprinkler or drip irrigation. Additional practices are also being implemented that directly affect water quality and quantity as well as soil health.

How much funding is needed?

Considerable funding is needed to adequately treat the resource problems. At least \$1,000,000 is needed annually.

Animal Feeding Operations

Malheur County has struggled in the past with the effects of the many Animal Feeding Operations, AFO's. This was a great concern in the past and has dealt with multiple issues often associated with AFO's as

cattle production is a major industry in this economy. *E. coli* and soil borne pathogens from the AFO's, either by direct contact with water or soil erosion due to lack of ground cover, contributed to the quality of 303d listed streams and their inability to meet state water quality standards. Streams showed high levels of *E. coli* and pathogens that are detrimental to humans and wildlife.

After years of hard work and funds, this problem has been mitigated by NRCS and partners. It is a great accomplishment and the current resource concerns mentioned will hopefully also achieve the set goals.

Section V. Prioritization of Natural Resource Concerns and Desired Outcomes

During the 2014 Local Work Group meeting, the prioritization of resource concerns was reviewed. It was determined that there are not any new and emerging resource concerns in Malheur County and that the focus of conservation efforts should continue as it has in the past four years. The Local Work Group will continue to monitor and address resource concerns annually. The Malheur County Local Work Group has prioritized the county resource concerns as follows:

1. Rangeland Health

Rangeland owners countywide are willing to participate in this effort as invasive species diminish the grazing capability, decrease stream quality, and destroy wildlife habitat.

Partner contribution is as follows:

The Oregon Watershed Enhancement Board, the Jordan Valley, Malheur, and Juntura County Weed Management Associations, the Malheur County Soil and Water Conservation District, and the Oregon Department of Fish and Wildlife, US Fish and Wildlife Service, Malheur and Owyhee Watershed Councils, BLM, and OSU Extension are all partners to help NRCS improve rangeland health.

Success will be measured by acres of improved habitat and overall improvements in rangeland health.

2. Water Quantity and Quality

Crop producers and citizens of the county are willing to participate in this effort as water quality and quantity are essential to everyone.

Partner contribution is as follows:

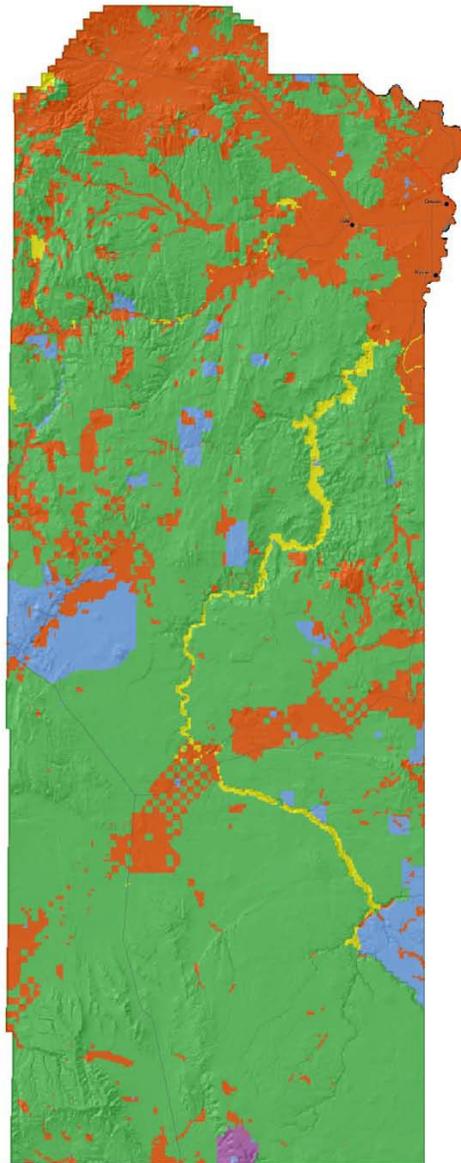
The Malheur and Owyhee Watershed Councils are doing upland improvement practices and pressurized pipelines for the landowners and irrigation districts. The Malheur County Soil and Water Conservation District is working on upland water quality practices as well as irrigation system improvements. The major irrigation districts are working on irrigation system improvements. Funding for conservation improvements has been through the Oregon Watershed Enhancement Board, Bureau of Reclamation, NRCS, Oregon Department of Environmental Quality, Oregon Department of Agriculture, and the irrigation districts. OSU Extension provides research and education as well as valuable outreach. These agencies are all partners with NRCS to help improve water quantity and quality.

Success will be measured by feedback from the local irrigation districts, water quality monitoring results, and the number of irrigation systems updated for efficiency.

Malheur County Ownership

Figure 1

OWNERSHIP Malheur County, Oregon



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Source: Oregon Department of Forestry, 2003

Ownership

- Tribal
- BLM
- State
- Private
- Other

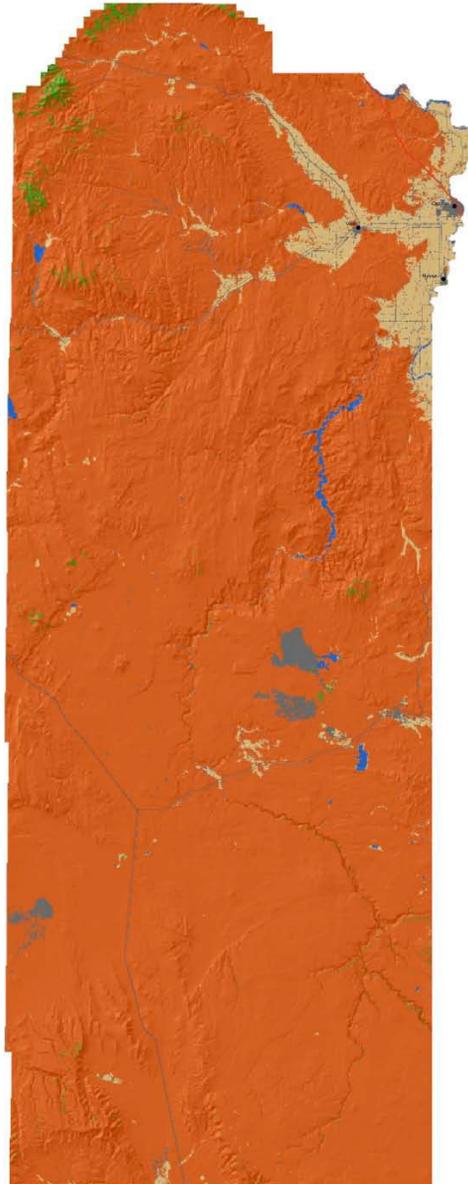


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Malheur County Land Use

Figure 2

Land Use/Land Cover Malheur County, Oregon



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Source: National Land Cover Dataset, USGS 2001.

Land Use/Land Cover

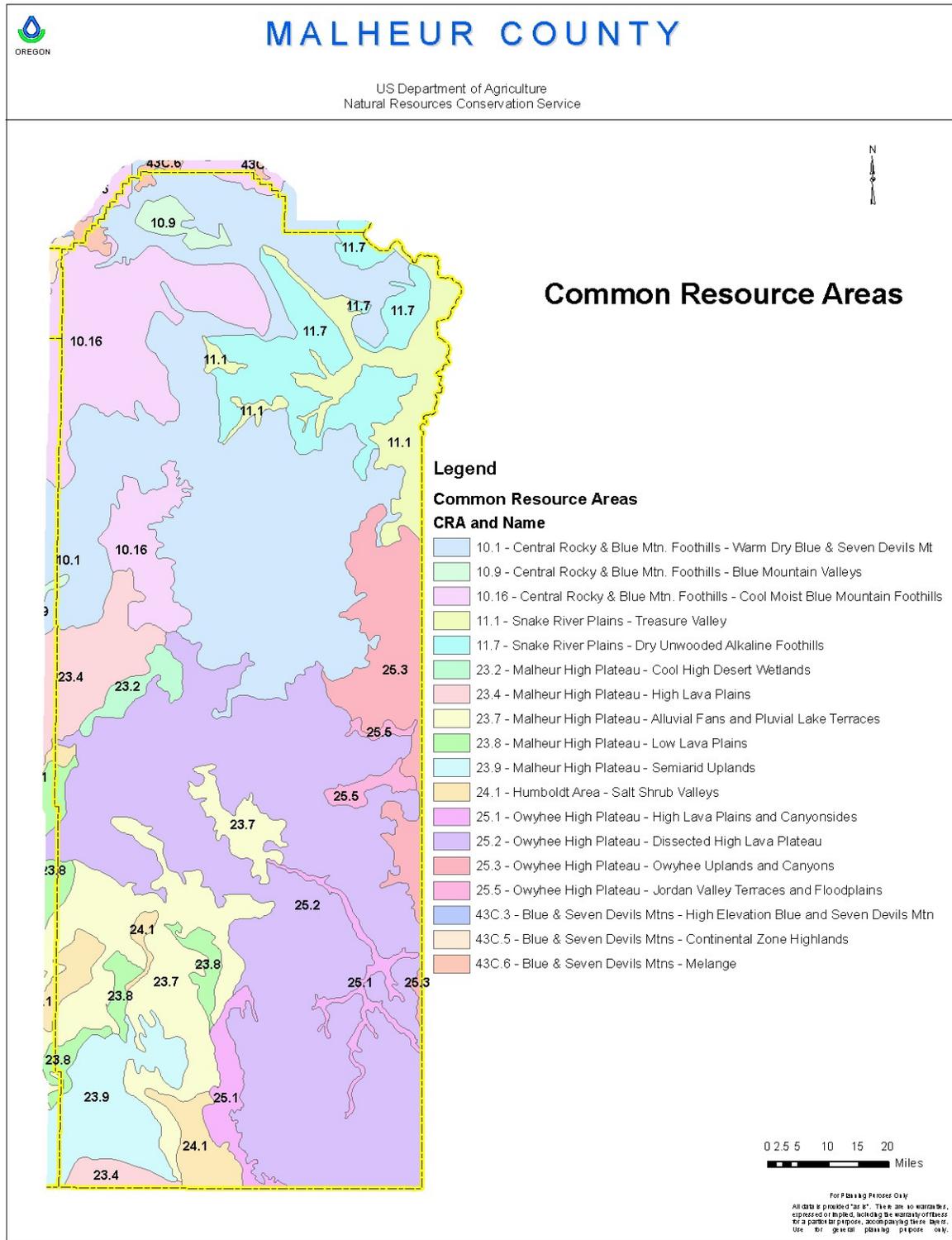
- Forest/Woodland
- Crop/Pasture
- Open Water
- Shrub/Rangeland
- Other



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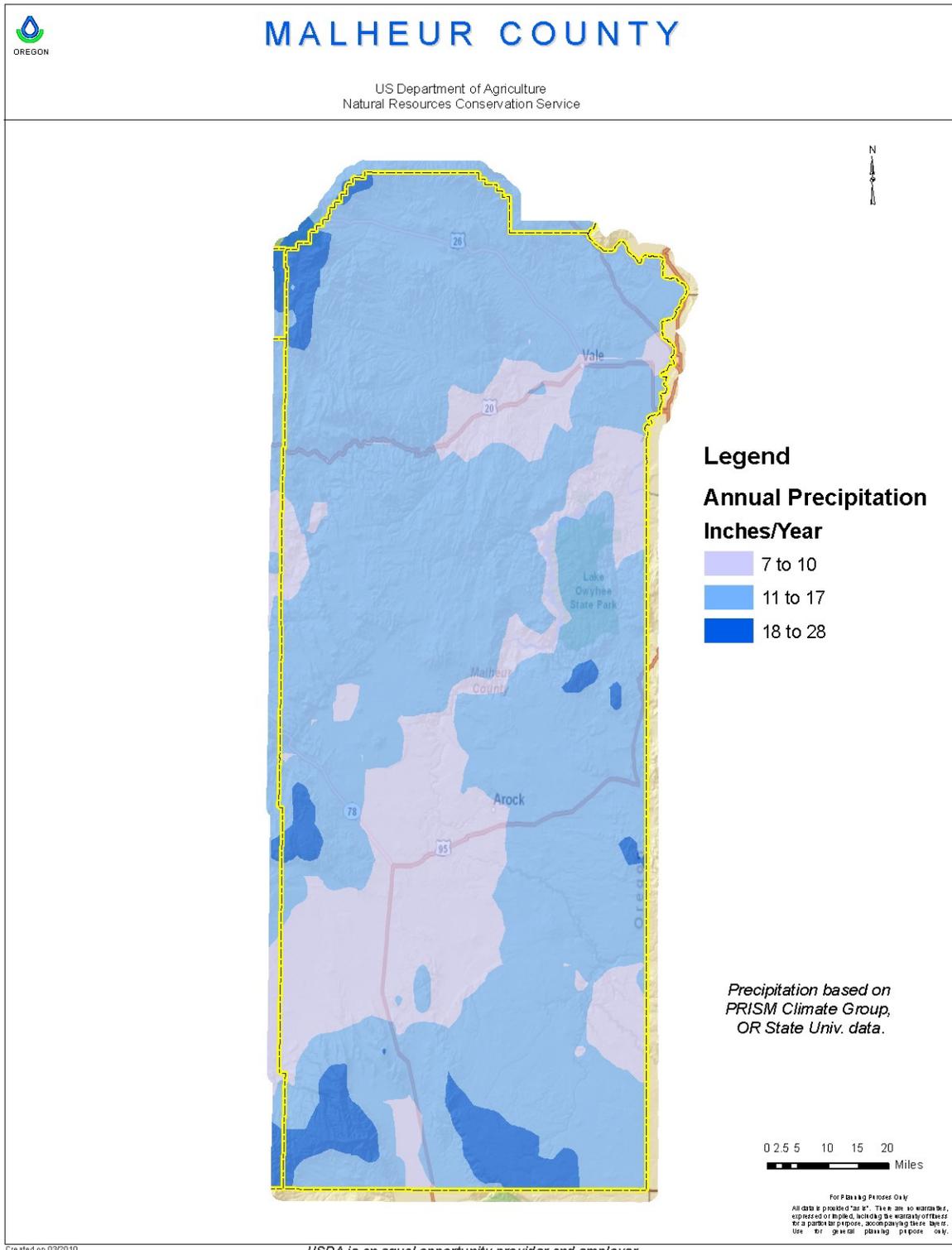
Malheur County Common Resource Areas (CRAs)

Figure 3



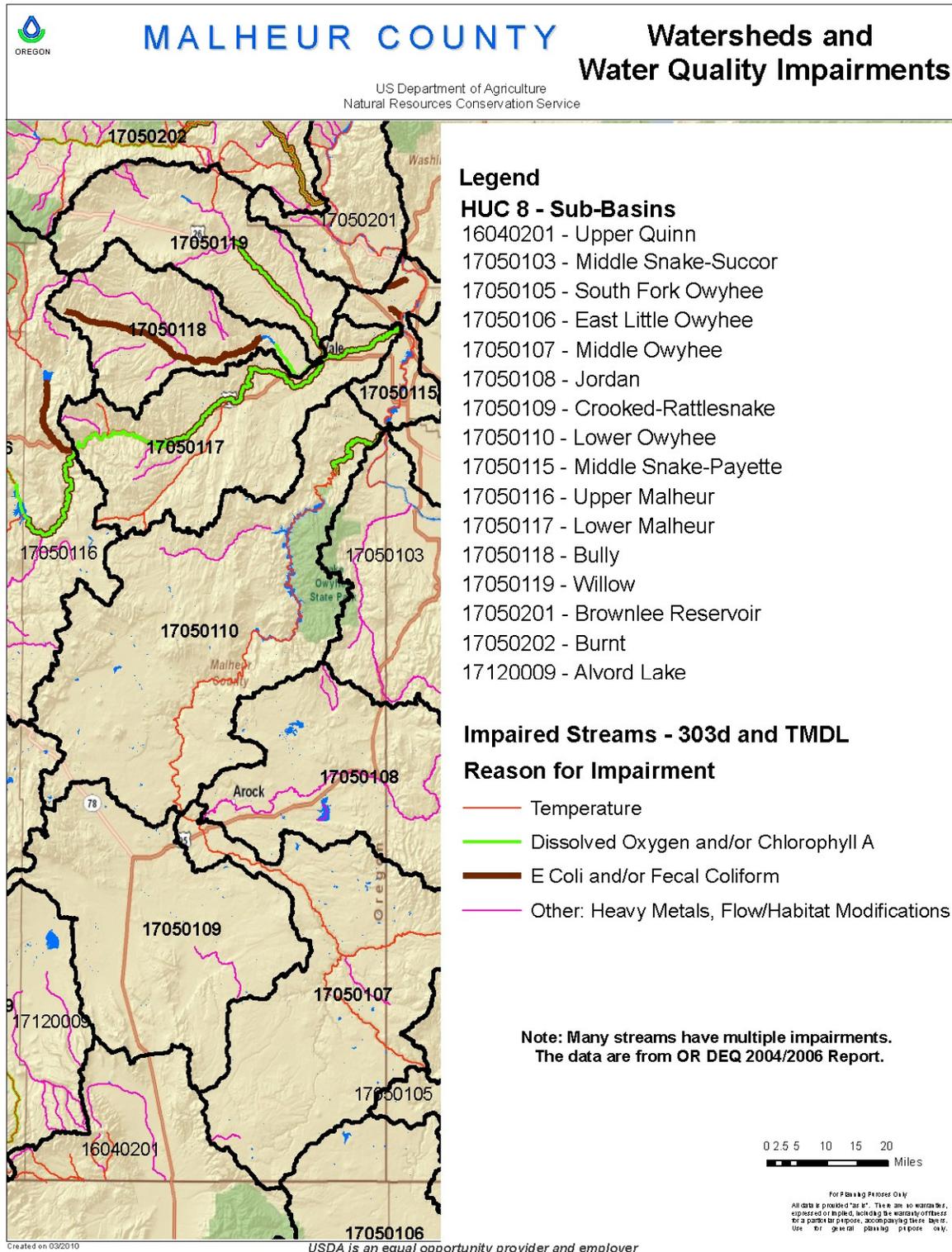
Malheur County Precipitation

Figure 4



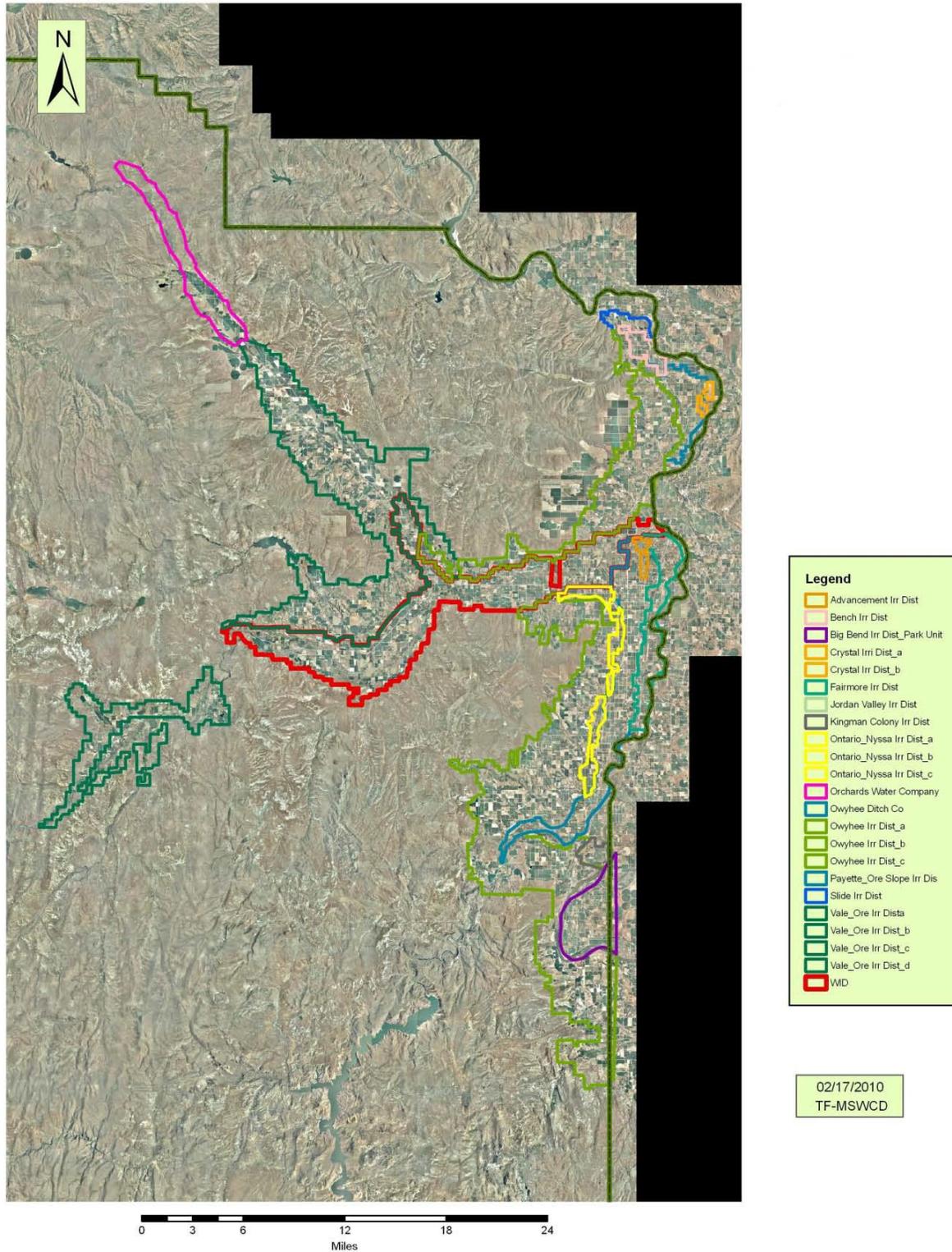
Malheur County Watersheds and 303d streams

Figure 5



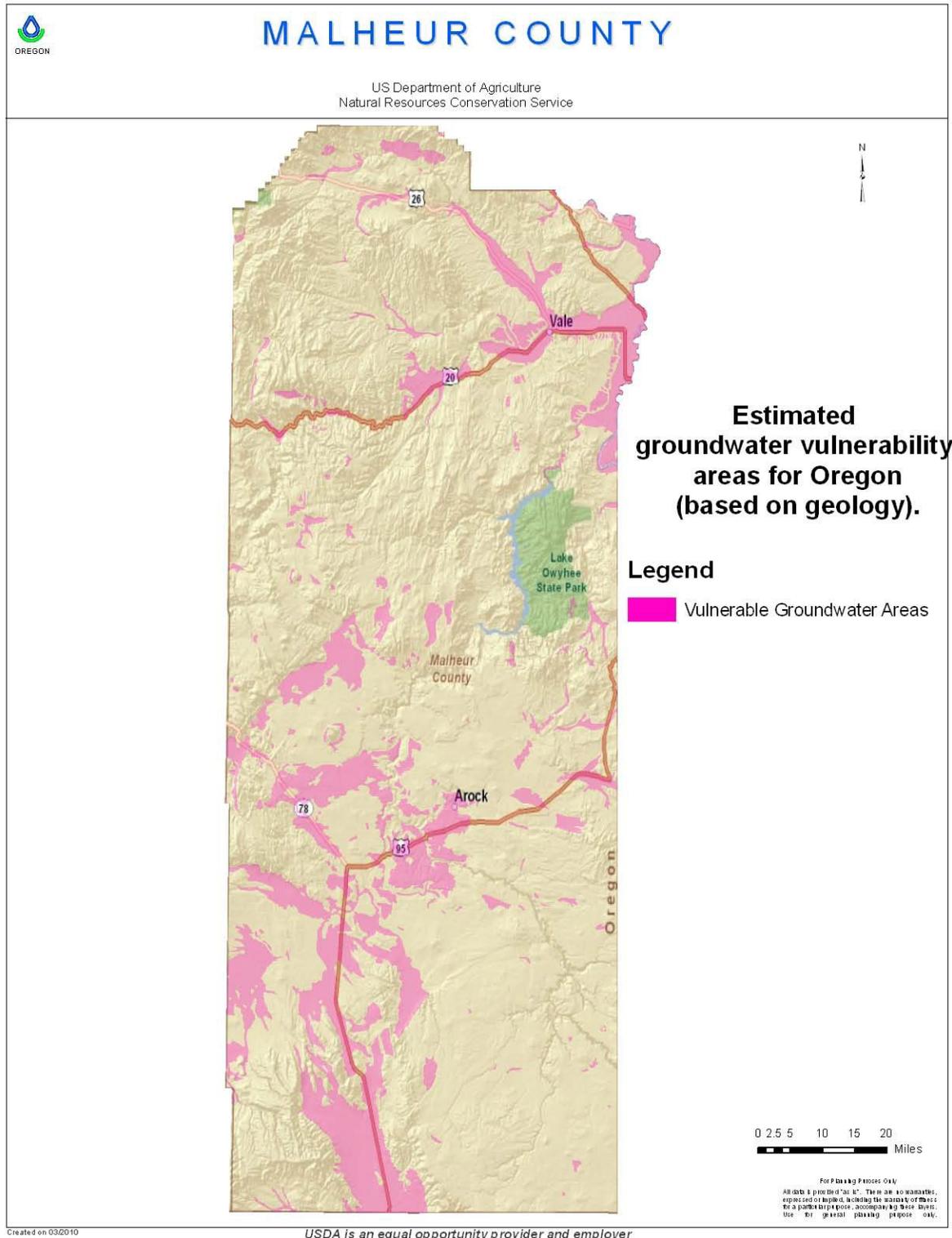
Malheur County Irrigation Districts

Figure 6



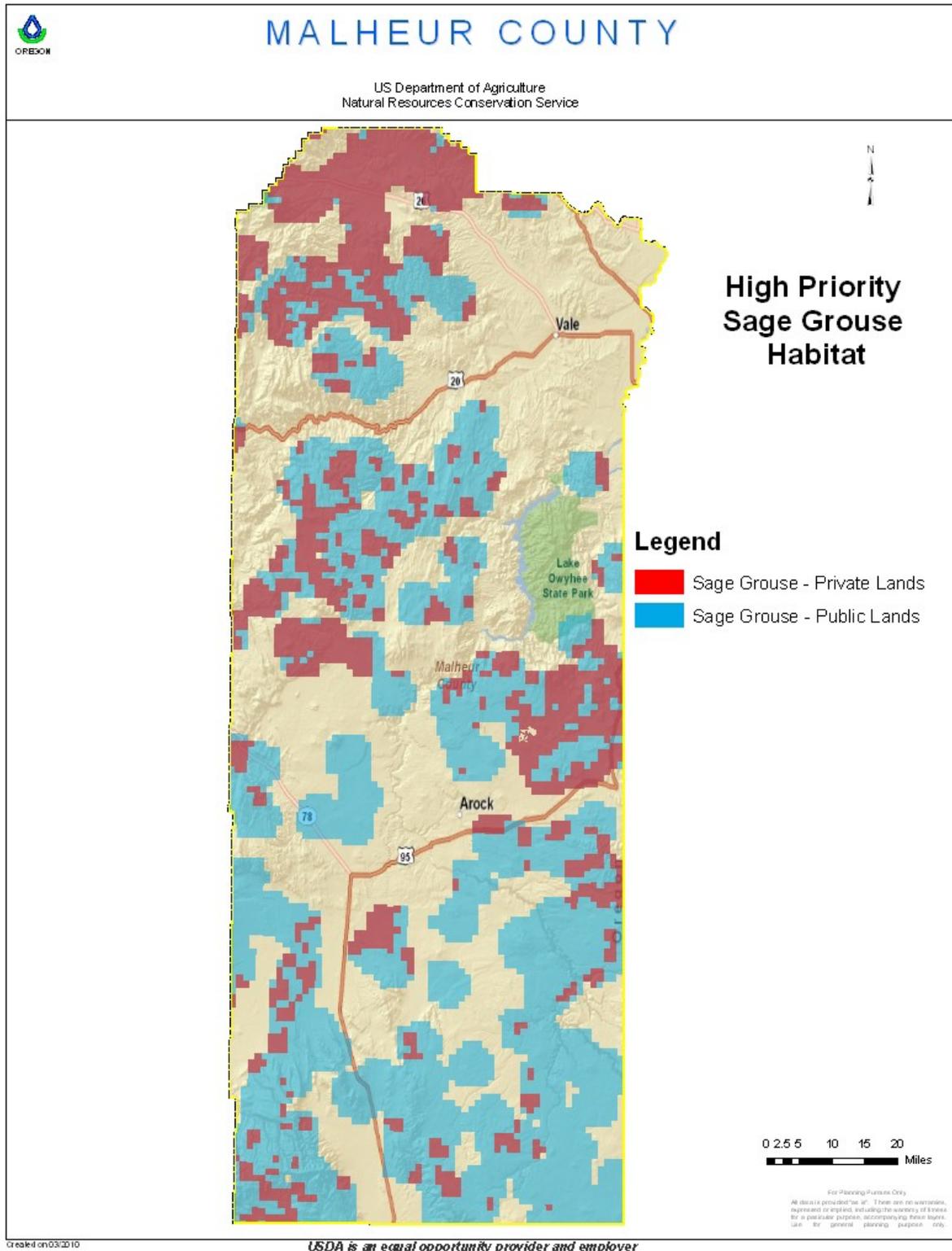
Malheur County Groundwater Areas

Figure 7



Malheur County Sage Grouse Habitat

Figure 8



Malheur County Conservation Opportunity Areas

Figure 9

