

Drinking Water Information Malheur River  
Agricultural Water Quality Management Area

Oregon Department of Environmental Quality, Drinking Water Protection Program

11/15/2020

- Public drinking water systems in the Malheur River Agricultural Water Quality Management Area utilize groundwater sources to serve approximately 3,811 persons regularly.
- Recent alerts for the *E. coli* bacteria maximum contaminant limit (MCL) were found for four water systems. There were no recent *E. coli* MCL violations.
- Ten water systems had alerts for elevated nitrate concentration and two had MCL violations.
- 125 of 530 of tested private wells in the area had elevated nitrate concentrations ( $\geq 5$  mg/L).
- Potential sources of water quality contaminants from agricultural practices may include fertilizer and/or pesticide use, grazing, streamside management, and manure management.
- Measures to reduce the movement of bacteria and leachable nitrate in soils and managing irrigation to prevent leaching in this area would reduce risk to groundwater sources of drinking water, reducing treatment costs for communities and protecting public health. Resources for addressing risks to drinking water supplies can be found in the [Groundwater Resource Guide](#)
- This management area includes the [Northern Malheur County Groundwater Management Area](#). Many resources have been developed to address the groundwater contamination issues.

Twenty-three public water systems obtain domestic drinking water from groundwater sources in the management area. Drinking water is an important beneficial use under the federal Clean Water Act. When Clean Water Act standards are met in source waters, a drinking water treatment plant using standard technology can generate water meeting the Safe Drinking Water Act maximum contaminant limits (MCLs). There are three community public water systems in the plan area using only groundwater wells to serve approximately 2,030 people on a regular basis, in addition to visitors at recreation sites. There are eight non-transient, non-community workplace or school public water systems using groundwater, serving 971 persons regularly. The remaining 10 public water systems are transient non-community systems with an estimated service population of 810. See Table 1 below for a list of public water systems, their classifications, sources and activity status, and populations served.

Agricultural land uses (primarily livestock and irrigated crops) are present near many of the public water system wells in the area. The agricultural areas are concentrated along the river, in the northeastern part of the management area. This is also where the Northern Malheur County Groundwater Management Area (GWMA) is located. Much of the rest of the areas is dominated by federal lands.

#### *Bacteria*

Two of the community public water systems in the management area have had recent (within the last 10 years) alerts for detections of *E. coli*, OPRD Farewell Bend State Park and Willowcreek Elementary School. These are marked in bold text in Table 1. None of the systems have had recent *E. coli* violations.

## *Nitrates*

Nitrate alerts are generated when nitrate exceeds 5 mg/L. The following nine PWSs had alerts in the last 10 years: Catfish Junction, Catfish Junction LLC, Willowcreek Elementary, Cairo Elementary, the City of Vale, Annex Elementary, Golf Mobile City, River Village MHP, and Fry Foods. Two of these have had recent nitrate violations (when nitrate exceeds 10 mg/L): Golf Mobile City and Catfish Junction.

The drinking water MCL for nitrates is 10 mg/L. These contaminants are often related to animal and cropland agriculture as well as on-site septic systems. The locations of nitrate contamination of private domestic wells (see below) and public drinking water sources are near to agricultural land use such as alfalfa and irrigated crops. The soils in some of the Ag WQMA have high or very high nitrate leaching potential, according to the Natural Resources Conservation Service. Much of the management area has not been rated.

The private wells with elevated nitrate (see below) are in high, moderate, and low leaching potential soils. Nitrate from fertilizers, manure, and septic systems can readily penetrate to the aquifers used for drinking water when leaching potential is high or very high, and bacteria removal through soil filtration can be less effective in sandy soils.

Oregon Health Authority rated some of the public water system wells in the Ag WQMA for contaminant susceptibility for land use impacts to drinking water sources based on Source Water Assessments, aquifer characteristics, and well locations and construction. The area has a mix of moderate and high susceptibility wells. The nitrate and other contamination issues described above and the ready movement of nitrogen into aquifers in the area verify this susceptibility. Measures to reduce leachable nitrate in soils and managing irrigation to prevent leaching would reduce risk to groundwater sources of drinking water.

DEQ only addresses drinking water issues identified for PUBLIC water systems. A query of Oregon Water Resources' water rights database for private domestic points of diversion (using a threshold of 0.005 cfs for domestic surface water rights that are household use only, not irrigation) identified 20 private domestic water rights in the Malheur River WQMA, all located outside of the GWMA.

There are also numerous private groundwater wells for domestic use. The Domestic Well Testing Act database (real estate transaction testing data) for 1989-2018 indicates 88 significant detections of nitrate (>7mg/L) in private wells out of 530 total wells included in the database for this area. Of those private wells, 55 had nitrate concentrations  $\geq 10$ mg/L, including one in Ontario with a measurement of 39.6 mg/L in 2013. Most of the results are from the population centers of Ontario and Vale. Attention may be needed to well depth, well construction, nitrate leaching potential of local soils, and proximity to nutrient sources such as septic systems, fertilizer use sites, and high concentrations of livestock.

## *Other*

There are additional contaminants identified for public water supply wells that are not likely related to agriculture in the management area, including: arsenic, lead, sodium, and uranium.

Drinking Water Protection staff are happy to provide additional details, maps, and recommendations upon request.

**Table 1. Public Water Systems in the Malheur River Ag WQMA**

Note: Table 1 does not include public water systems which purchase drinking water from these water systems but does include the population served by wholesale customers in the Total Population. **Bold text indicates PWSs w/ recent E. coli alerts.**

PWS ID	Public Water System Name	Drinking Water Source	System Type	Population
<b>Groundwater</b>				
4190618	BLM Spring Rec Site	1 GW well	NC	25
<b>4191005</b>	<b>OPRD Farewell Bend State Park</b>	<b>2 GW wells, 1 inactive emergency GW well</b>	<b>NC</b>	<b>250</b>
4193459	Joy Travel Plaza	INACTIVE	NC	200
4193641	Country Campgrounds	1 active GW well, 1 inactive GW well	NC	30
4193644	Oasis Cafe & Motel RV	3 active GW wells	NC	55
4194500	Lake Creek Youth Rec Camp	1 GW well	NC	75
4194796	Catfish Junction	1 GW well	NC	50
4194918	Bates Pizza & Motel	2 GW wells	NC	50
4194980	Catfish Junction LLC	1 GW well	NC	50
4195156	Winners Horseshoe - Annex	1 GW well	NC	25
4193749	Pioneer Elementary SD 8	1 GW well	NTNC	120
<b>4193750</b>	<b>Willowcreek Elementary, SD #89</b>	<b>1 GW well, 1 inactive emergency well</b>	<b>NTNC</b>	<b>80</b>
4193748	Cairo Elementary SD #8	1 GW well	NTNC	145
4194506	Oregon Trail Mushroom Company	INACTIVE	NTNC	110
4190575	Harper High/Elementary SD 66	1 GW well	NTNC	117
4100917	City of Vale	8 GW wells	C	1,950
4195537	US Silica	1 GW well	NTNC	69
4190889	Annex Elementary SD 29	1 GW well	NTNC	50
4100588	Golf Mobile City	1 GW well	C	40
4105854	River Village MHP	1 GW well, 1 inactive emergency well	C	40
4195337	Fry Foods	1 GW well, 1 inactive emergency well	NTNC	280

System Type: C - "Community Water System (C)" means a public water system that has 15 or more service connections used by year-round residents or that regularly serves 25 or more year-round residents.

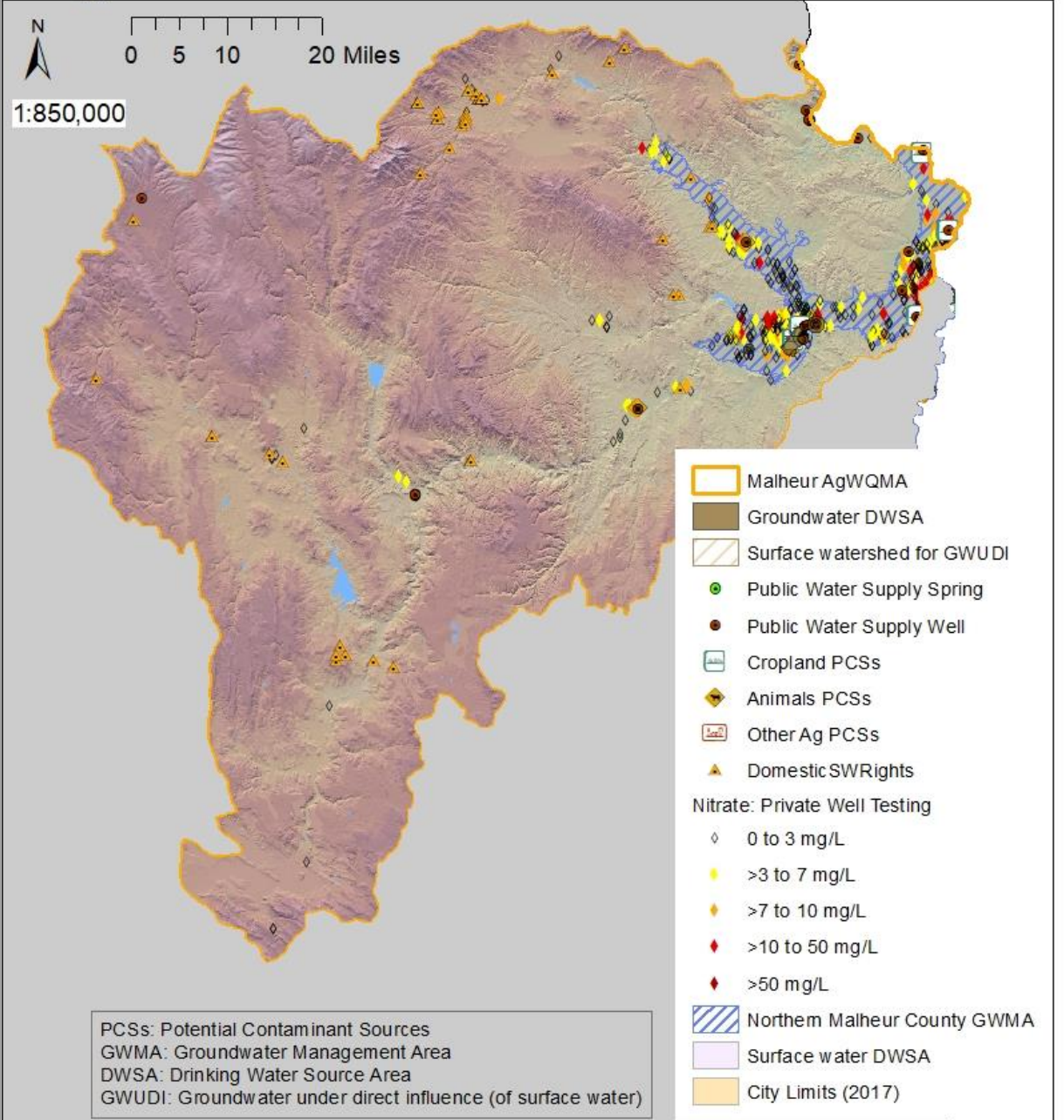
NTNC - "Non-Transient Non-Community Water System (NTNC)" means a public water system that is not a Community Water System and that regularly serves at least 25 of the same persons over 6 months per year.

NC - "Transient Non-Community Water System (NC)" means a public water system that serves a transient population of 25 or more persons.

NP - "State Regulated Water System (NP)" means a public water system, which serves 4 to 14 service connections or serves 10 to 24 people. Monitoring requirements for these systems are the same as those for Transient Non-Community water systems.



# Drinking Water Source Areas for Public Water Systems in Malheur River Agricultural Water Quality Management Area

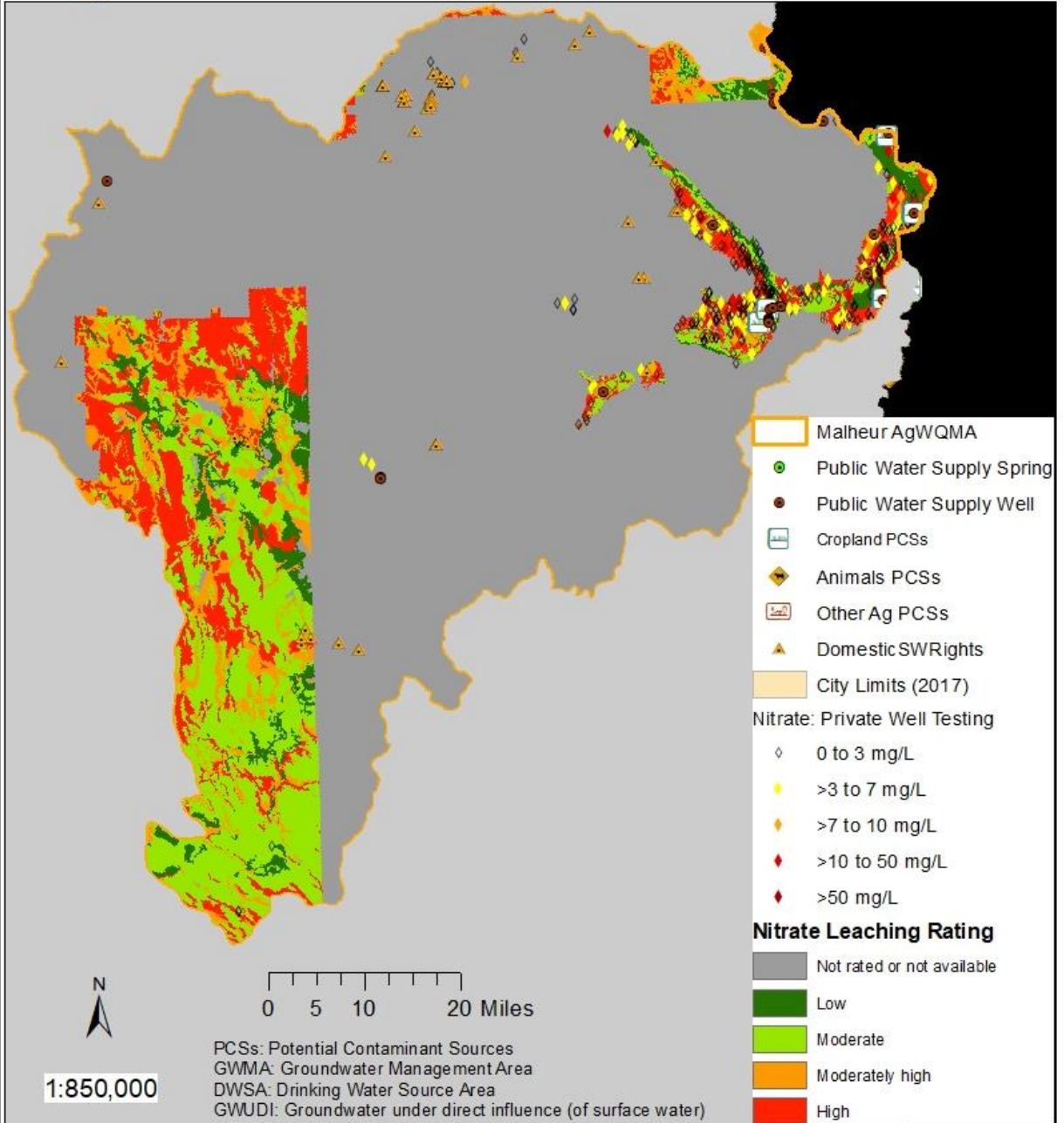


The Drinking Water Source Area (DWSA) delineations define areas that supply the drinking water system. For groundwater this is defined as the area on the surface that overlies that portion of the aquifer that supplies water to a well or spring. DWSAs for wells typically show the 1-, 2-, 5-, and 10- or 15-yr time of travel zones that indicate the amount of time it takes groundwater to move to the wellhead. DWSAs for springs typically show area of short-, intermediate-, and long-term groundwater flow to the spring. DWSAs for surface water represents the watershed that supplies the waterbody where the intake is located.





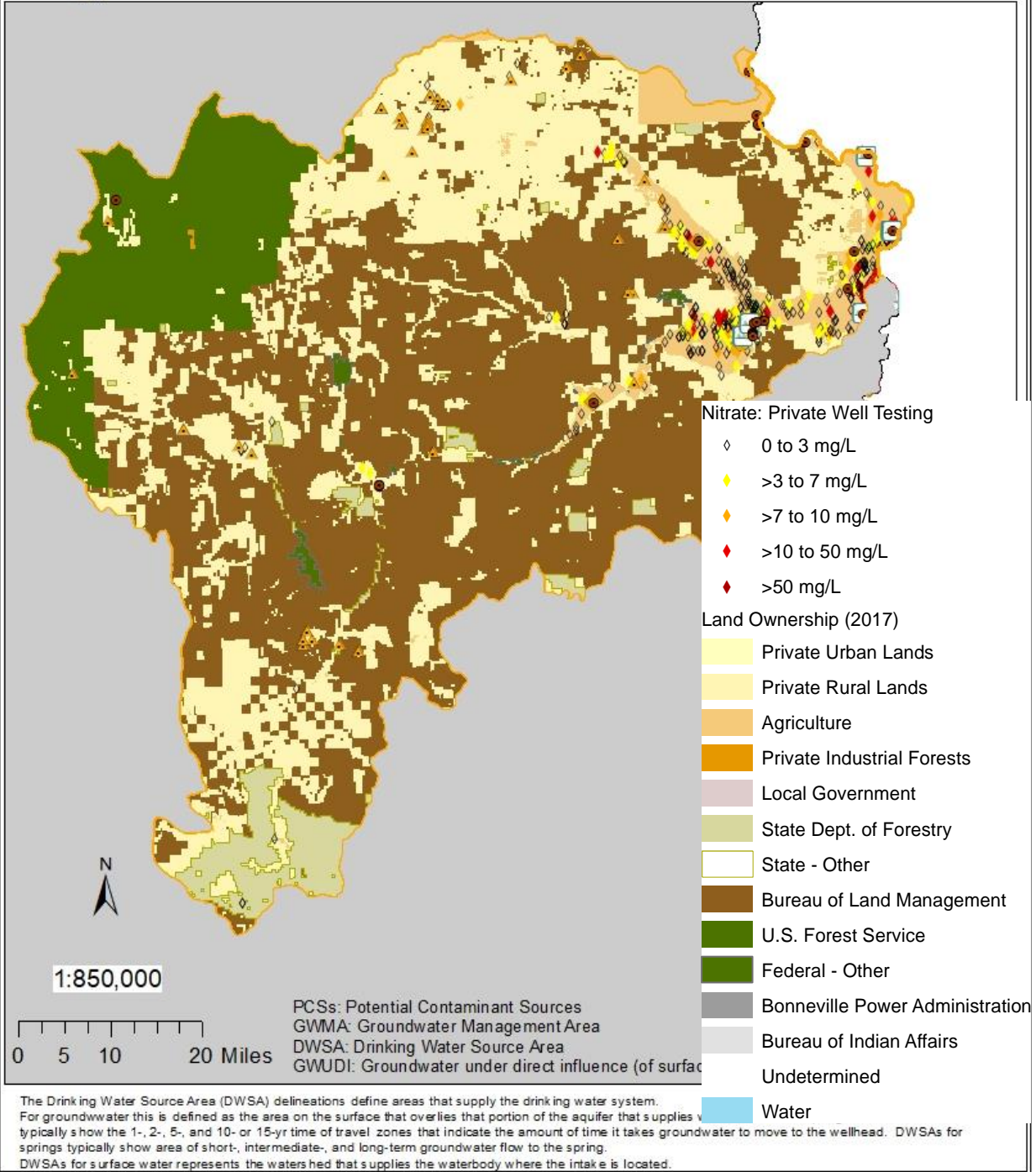
# Drinking Water Source Areas for Public Water Systems in Malheur River Agricultural WQMA: Nitrate Leaching Potential



The Drinking Water Source Area (DWSA) delineations define areas that supply the drinking water system. For groundwater this is defined as the area on the surface that overlies that portion of the aquifer that supplies water to a well or spring. DWSAs for wells typically show the 1-, 2-, 5-, and 10- or 15-yr time of travel zones that indicate the amount of time it takes groundwater to move to the wellhead. DWSAs for springs typically show area of short-, intermediate-, and long-term groundwater flow to the spring. DWSAs for surface water represents the watershed that supplies the waterbody where the intake is located.



# Drinking Water Source Areas for Public Water Systems in Malheur River Agricultural WQMA: Land Use/Ownership

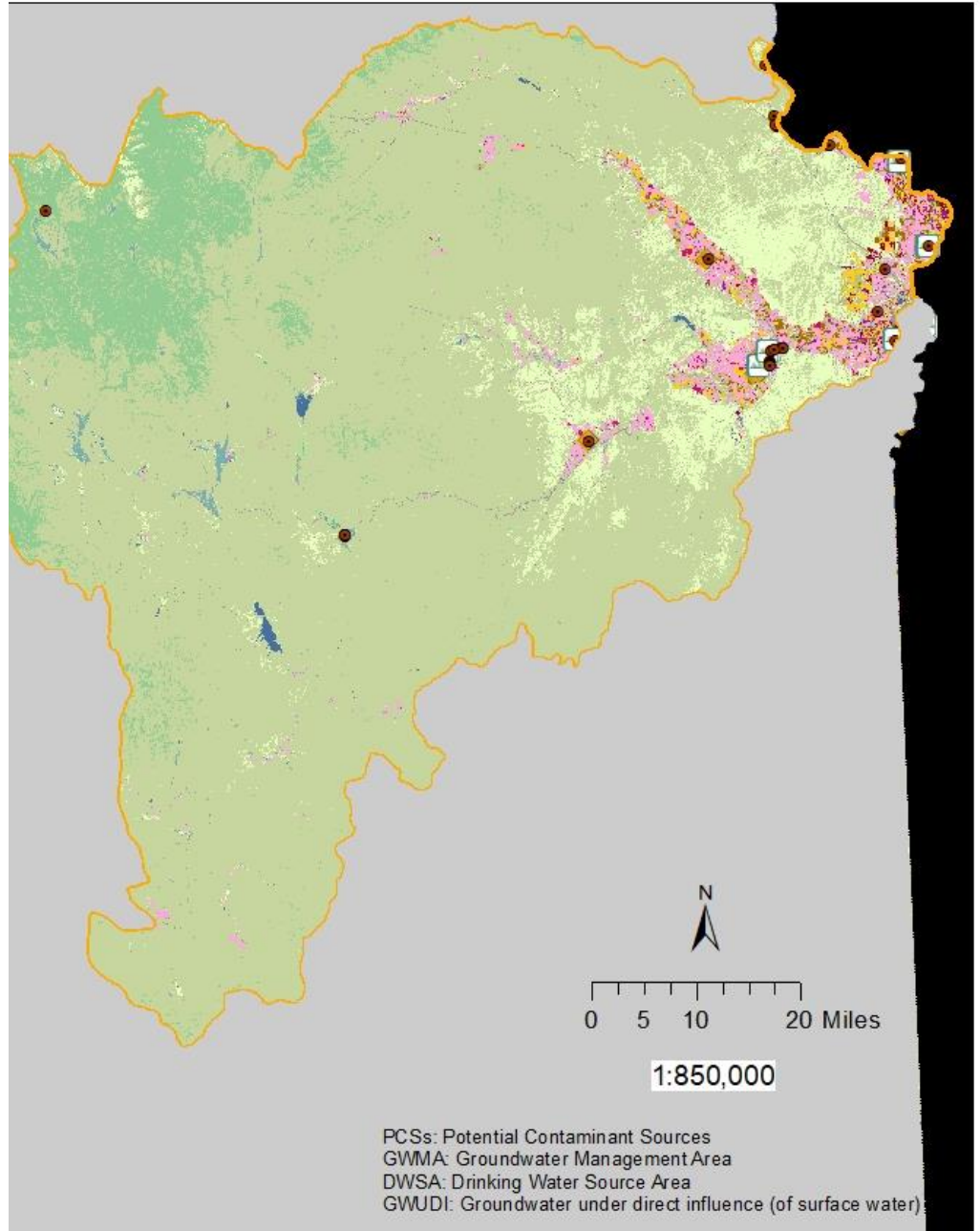






# Drinking Water Source Areas for Public Water Systems in Malheur River Agricultural WQMA: Crops (NASS 2015)

- Corn
- Sorghum
- Sweet Corn
- Barley
- Spring Wheat
- Winter Wheat
- Rye
- Oats
- Millet
- Mustard
- Alfalfa
- Other Hay/Non Alfalfa
- Buckwheat
- Sugarbeets
- Dry Beans
- Potatoes
- Other Crops
- Onions
- Peas
- Herbs
- Clover/Wildflowers
- Sod/Grass Seed
- Fallow/Idle Cropland
- Apples
- Open Water
- Developed/Open Space
- Developed/Low Intensity
- Developed/Med Intensity
- Developed/High Intensity
- Barren
- Evergreen Forest
- Shrubland
- Grass/Pasture
- Woody Wetlands
- Herbaceous Wetlands
- Triticale
- Peppers
- Greens
- Dbl Crop WinWht/Corn
- Lettuce
- Radishes
- Turnips



PCSs: Potential Contaminant Sources  
 GWMA: Groundwater Management Area  
 DWSA: Drinking Water Source Area  
 GWUDI: Groundwater under direct influence (of surface water)

Drinking Water Source Area (DWSA) delineations define areas that supply the drinking water system. DWSAs are defined as the area on the surface that overlies that portion of the aquifer that supplies water to a well or spring. DWSAs for wells are defined as the area of short-, intermediate-, and long-term groundwater flow to the wellhead. DWSAs for springs are defined as the area of short-, intermediate-, and long-term groundwater flow to the spring. DWSAs for surface water intakes represent the watershed that supplies the waterbody where the intake is located.