Oregon Department of Environmental Quality

Drinking Water Assessment for the Middle Deschutes Water Quality Management Area

June 2025

Overview

- There are 12 public drinking water systems in the Middle Deschutes Agricultural Water Quality Management Area which utilize groundwater sources to serve approximately 19,845 persons regularly.
- A total of 11 public water systems within the past ten years received one or more alerts for exceeding the Maximum Contaminant Level Goal for total coliform bacteria.
- A total of three public water systems within the past ten years received one or more alerts for exceeding the Maximum Contaminant Level Goal for *E. coli* bacteria.
- Three public water systems received an alert within the past ten years for nitrate contamination. One water system revived a violation within the past five years for nitrate levels that exceed 10 milligrams per liter.
- There are 29 records of private domestic well sample results submitted to Oregon Health Authority's Real Estate Transaction program in the area. Of these, 10 measured nitrate concentrations ≥3 mg/L.
- Contaminants in water supplies potentially related to agriculture occur near human populations, agricultural land uses, and aquifers susceptible to contaminant infiltration.
- DEQ recommends public water systems utilize Source Water Protection Practices to prevent potential contamination and increase resiliency.
- Resources for addressing risks to drinking water supplies can be found in either the Groundwater Resource Guide or Surface Water Resource Guide.

Water use

There are 12 public water systems within the Middle Deschutes Agricultural Water Quality Management Area which obtain drinking water from groundwater sources. Drinking water is an important beneficial use under the 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 standards. **Figure 1** shows the drinking water source areas of the public water systems within the Middle Deschutes Agricultural Water Quality Management Area. A drinking water source area is defined as the area of land which contributes water to the drinking water supply and where potential contamination from human activities or natural sources may pose a threat to the water quality.

Of the 12 public water systems in the Middle Deschutes Agricultural Water Quality Management Area, three are active community public water systems which use groundwater sources to serve approximately 15,695 people on a regular basis, in addition to visitors at recreation sites. There are no active non-transient, non-community workplace or school public water systems. The remaining eight active public water systems are transient non-community systems and state-regulated systems with an estimated service population of 4,125. There is one additional public water systems in the Middle Deschutes Agricultural Water Quality Management

Area that is currently inactive. See **Table 1** for a list of the public water systems, their classifications, primary source and activity status, and populations served.

The Middle Deschutes Agricultural Water Quality Management Area land uses are primarily private rural land and agricultural with some USDA land present in the central portion and U.S. Forest Service land present in the southeastern portion of the management area. Other land use and ownership within the management area includes private industrial forests, private urban lands, private urban lands, state owned lands, Bureau of Land Management, and other federally owned lands. (**Figure 3**).

Bacteria

Total coliform bacteria alerts for public water systems are generated by Oregon Health Authority when their presence is detected in sample results. There are 11 public water systems which received one or more alerts for exceeding the Maximum Contaminant Level Goal for total coliform bacteria within the past ten years. The MCLG for total coliforms is zero. Of these public water systems, two had more than 20 alerts in the last ten years: City of Antelope with 41 alerts, and Deschutes Valley Water District with 33 alerts. None of the public water systems received violations for exceeding the Maximum Contaminant Level for total coliform bacteria within the past five years. A public water system will receive an MCL violation if total coliform is present in more than 5% of their routine samples taken each month. Additionally, a public water system will receive an MCL violation for total coliform bacteria if they fail to resample following a routine positive sample.

E. coli bacteria alerts for public water systems are generated by the Oregon Health Authority when their presence is detected in sample results. Within the Middle Deschutes Agricultural Water Quality Management Area, three public water systems had alerts for detections of *E. coli* bacteria in the past ten years (**Figure 1, Table 1**). No public water systems had a violation with the Oregon Health Authority for *E. coli* bacteria in the past five years. A public water system will receive an MCL violation for *E. coli* bacteria if they collect a sample indicating total coliforms are present and the resample is also positive for either fecal coliform or *E. coli* bacteria.

The locations of public water systems with *E. coli* bacteria alerts occur near areas designated for land use as agricultural and private rural land. Refer to DEQ's Surface Water Resource Guide > Section 3.0 – Surface Water Characterization and Risks > Using Oregon Data to Identify Priorities > Bacteria Data and Susceptibility, to learn more about preventing bacterial contamination in surface water bodies from various land uses.

Nitrates

An alert for elevated nitrate concentrations is generated by the Oregon Health Authority when nitrate sample results for public water systems exceed 5 mg/L. Within the Middle Deschutes Agricultural Water Quality Management Area, three of the public water systems had an alert for elevated nitrate results in the past ten years. One public water system, the City of Antelope, had an MCL violation in the past five years (the MCL for nitrate is 10 mg/L).

There are numerous private groundwater wells for domestic use within the Middle Deschutes Agricultural Water Quality Management Area. The Domestic Well Testing Act database includes submitted records of real estate transaction testing data from 1989 to 2018. There are 29 records of private domestic well samples within the management area. Of these 29 records, 10 measured nitrate concentrations ≥3 mg/L, four measured nitrate concentrations ≥5 mg/L, none measured nitrate concentrations ≥7mg/L, and none of the records measured nitrate concentrations ≥10mg/L (**Figure 1**). For wells testing at elevated concentrations, attention to well depth, well construction, nitrate leaching potential of local soils, and proximity to nutrient sources such as septic

systems, fertilizer use areas, and high concentrations of livestock should be considered when investigating the cause of nitrate contamination.

Of the soils assessed in the Middle Deschutes Agricultural Water Quality Management Area, much of the western portion of the area with agricultural land uses has high nitrate leaching potential, according to the Natural Resources Conservation Service's (NRCS) National Cooperative Soil Survey (**Figure 2**). Nitrate leaching potential is based on the area's slope, precipitation, and land use. Nitrate from fertilizers and septic systems can readily penetrate aquifers used for drinking water when leaching potential is high. Additionally, bacteria removal through soil filtration can be less effective in sandy soils. Measures to reduce leachable nitrate in soils reduce risk to groundwater sources of drinking water. Refer to section 5.0 - Pollutant Reduction Tools in the Groundwater Resource Guide to learn more about nitrate leachability and potential reduction strategies.

DEQ specifically addresses drinking water issues identified for public water systems. A query of Oregon Water Resources Department's (OWRD's) water rights database for private domestic points of diversion (using a threshold of 0.005 cubic feet per second for domestic surface water rights that are household use only, not irrigation) identified 26 private domestic surface water rights in the Middle Deschutes Agricultural Water Quality Management Area (see **Figure 1**).

Other contaminants

Water quality samples from public water systems within the Middle Deschutes Agricultural Water Quality Management Area also detected other contaminants including sodium and lead. These are unlikely to be related to agricultural activities.
Within the past 10 years, no public water systems received alerts for HAA5 or TTHM. HAA5 and TTHM are disinfection byproducts that form when chlorine compounds that are used to disinfect water react with other naturally occurring chemicals in the water.

Contact

For more information, please contact the Drinking Water Protection Program or send an email to drinkingwater.protection@deq.oregon.gov.

Non-discrimination statement

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Table 1. Public Water Systems in the Middle Deschutes Ag WQMA

Note: Table 1 does not include public water systems that purchase drinking water from these water systems.

PWS ID	Public Water System Name	System Type	Population	MCL Alerts
Groundwater Systems				
4100042	ANTELOPE, CITY OF	Community	55	E.coli
4100500	MADRAS, CITY OF	Community	3,940	
4100501	DESCHUTES VALLEY WATER DIST	Community	11,700	E.coli
4100499	DESCHUTES CANYON CG (Inactive)	Transient Non-Community	25	
4105092	PGE SEE WATER SYSTEM	Transient Non-Community	250	E.coli
4190507	PGE PELTON PARK	Transient Non-Community	250	
4191024	OPRD PETER OGDEN STATE WAYSIDE	Transient Non-Community	2,000	Nitrate
4191173	OPRD COVE PALISADES - CROOKED RIVER	Transient Non-Community	600	
4193530	ODOT HD COW CANYON REST AREA	Transient Non-Community	400	
4194230	DESCHUTES TRAILER PARK	Transient Non-Community	25	Nitrate
4194321	RAINBOW MARKET	Transient Non-Community	250	Nitrate
4194424	LAKE SIMTUSTUS RV PARK	Transient Non-Community	350	

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 or OVS - "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. This designation was recently changed to OVS for Oregon Very Small systems. Both designations are still used.

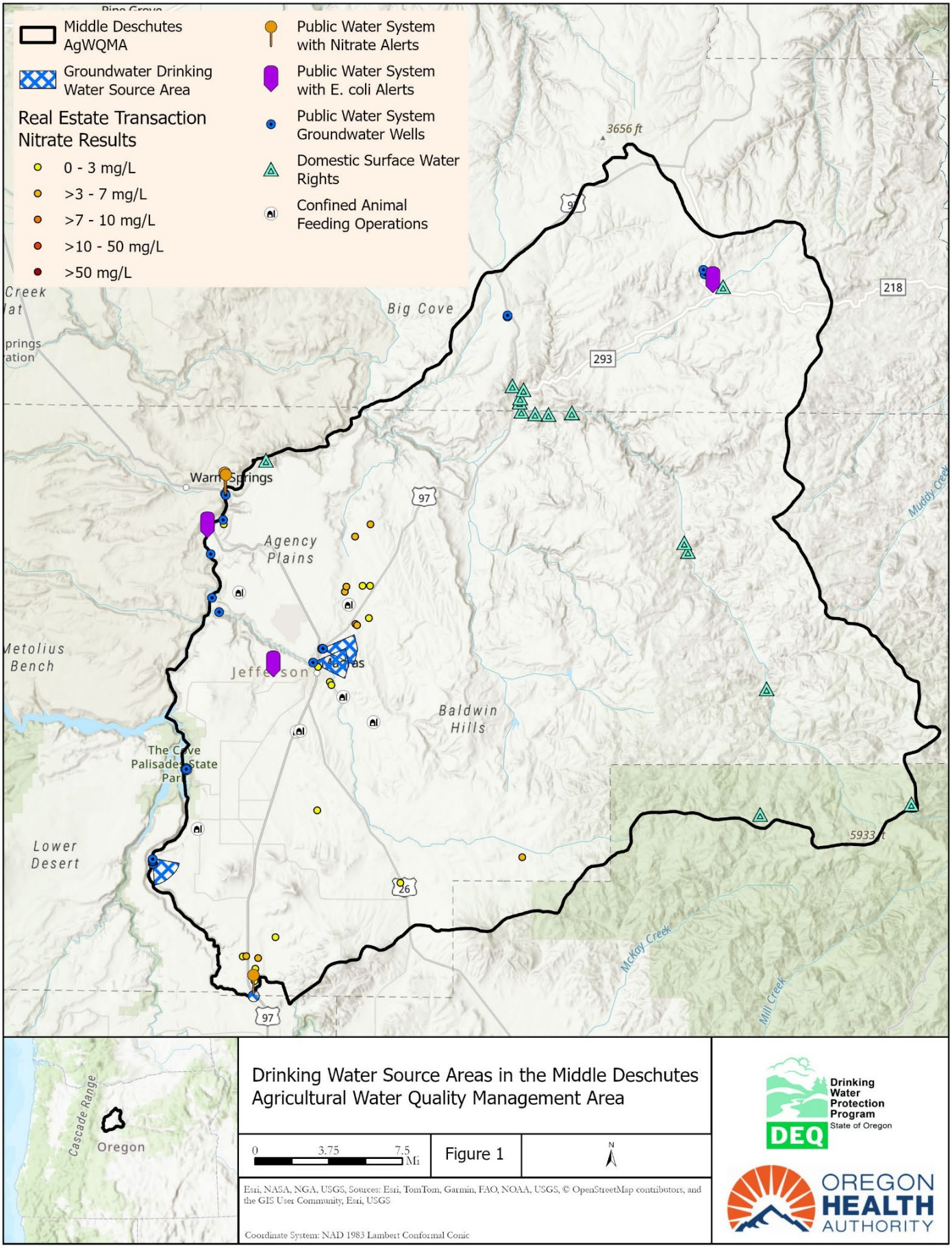

Figure 1: Drinking Water Source Area for Public Water Systems in the Middle Deschutes Agricultural Water Quality Management Area

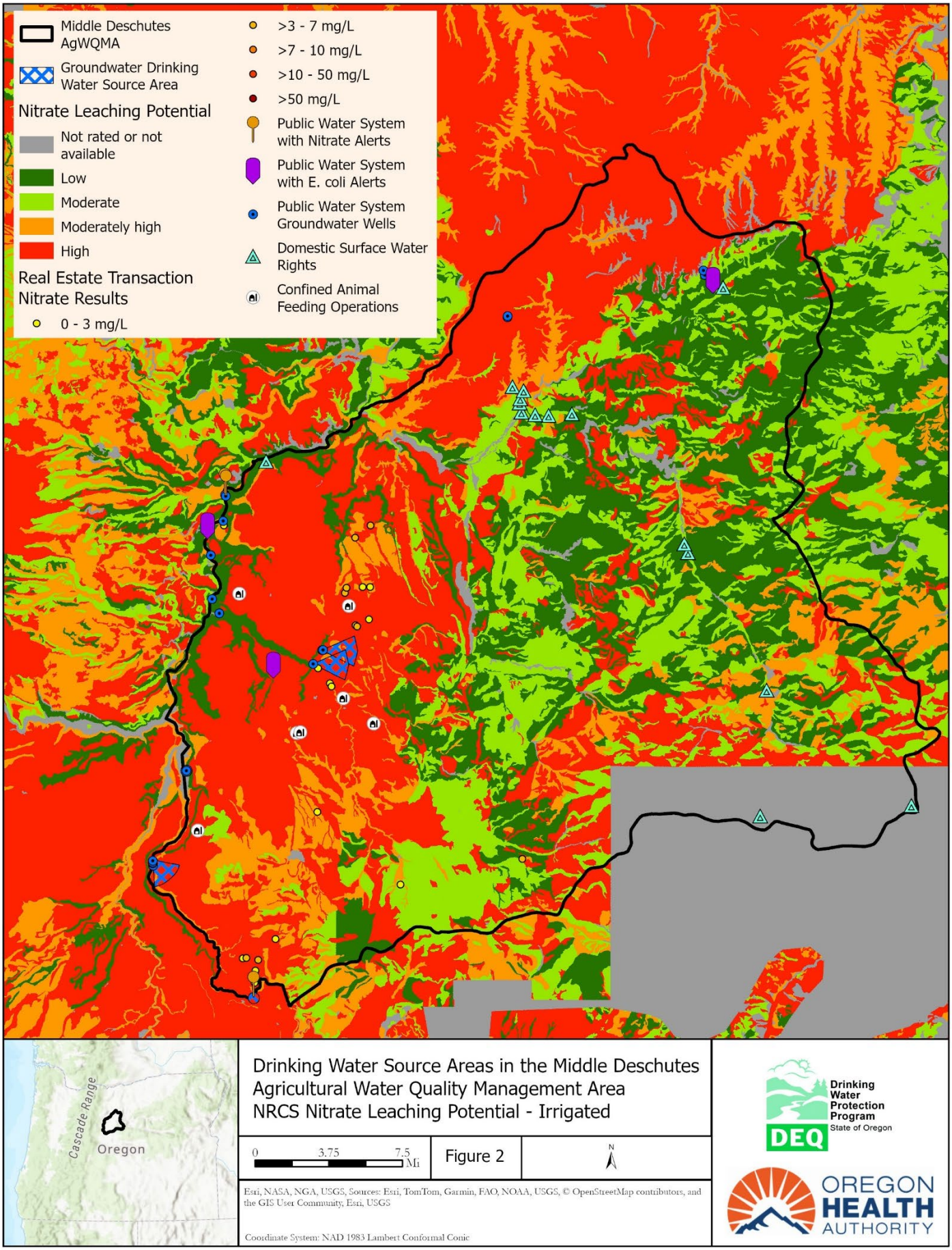

Figure 2: Drinking Water Source Area for Public Water Systems in the Middle Deschutes Agricultural Water Quality Management Area, Nitrate Leaching Potential

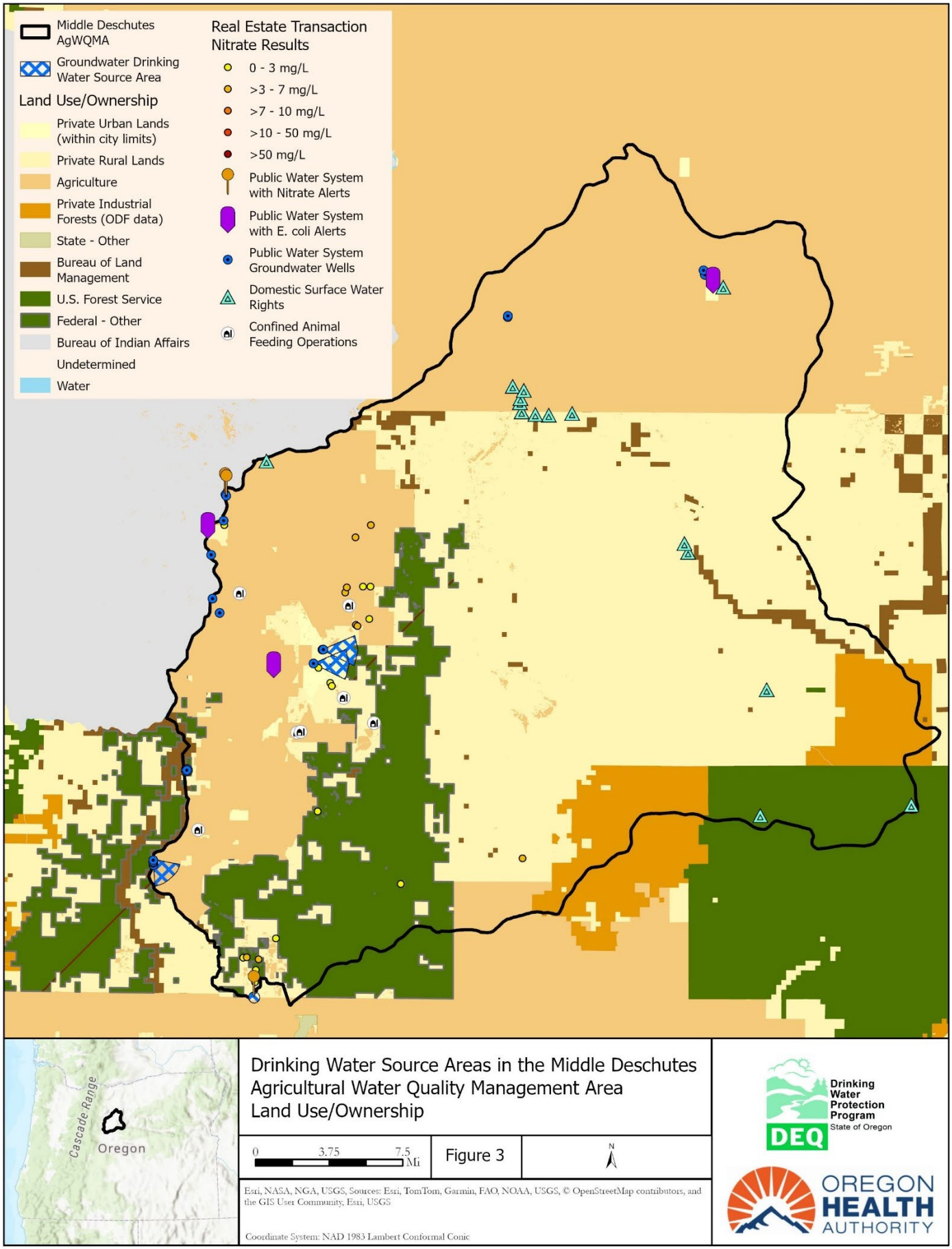

Figure 3: Drinking Water Source Area for Public Water Systems in the Middle Deschutes Agricultural Water Quality Management Area, Land Use/Land Ownership