



Oregon Department of Environmental Quality

# Drinking Water Assessment for the South Santiam Agricultural Water Quality Management Area

## July 2023

### Overview

- Public drinking water systems in the South Santiam Agricultural Water Quality Management Area (Ag WQMA) utilize groundwater and surface water sources to serve approximately 194,244 persons regularly.
- 21 public water systems have recent alerts (within the past ten years) for *E. coli* bacteria, 11 of these exceed the maximum contaminant level (MCL).
- 92 public water systems have recent alerts for Total Coliform bacteria.
- 18 public water systems have recent alerts for elevated nitrate concentrations.
- 160 of 712 private domestic wells sample results in the area have elevated ( $\geq 3$  mg/L) nitrate concentrations.
- This management area includes the Southern Willamette Valley Groundwater Management Area (GWMA).
- Department of Environmental Quality (DEQ) recommends Oregon Department of Agriculture (ODA) work with the appropriate Soil and Water Conservation Districts (SWCDs) to implement best management practices (BMPs) in and around the GWMA and areas with high nitrate leaching potential.
- Several public water systems in the Ag WQMA have been rated by Oregon Health Authority (OHA) as having medium to high contaminant susceptibility.
- 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 the [Groundwater Resource Guide](#) and [Surface Water Resource Guide](#).

### Water Use

176 public water systems obtain domestic drinking water from groundwater and surface water sources in the South Santiam Agricultural Water Quality Management Area (Ag GWMA). Drinking water is an important beneficial use under the federal Clean Water Act (CWA). When CWA standards are met in source waters, a drinking water treatment plant using standard technology can generate water meeting maximum contaminant levels (MCLs) recognized in the Safe Drinking Water Act (SDWA). **Map 1** demonstrates the drinking water source areas of the public water systems within the South Santiam Ag WQMA. 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.

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There are 41 Community public water systems in the Ag WQMA area using groundwater or/and surface water wells to serve approximately 175,166 people on a regular basis, in addition to visitors at recreation sites. There are 40 Non-Transient, Non-Community workplace or school public water systems using groundwater, serving 7,480 persons regularly. The remaining 95 public water systems are Transient Non-Community systems and Non-Public (also called Oregon Very Small systems or OVS), state-regulated systems with an estimated service population of 11,598. See **Table 1** below for a list of public water systems, their classifications, sources and activity status, and populations served.

Though the public water systems for the City of Corvallis and Cascade Pacific Pulp are outside the Ag WQMA, portions of their drinking water source areas are included within the South Santiam Ag WQMA. Thus, the population of Corvallis and Cascade Pacific Pulp are included in the total population presented in this report.

## **Bacteria**

There are 21 public water systems in the Ag WQMA which have recent alerts (last 10 years) for detections of *E. coli* bacteria. There are recent MCL violations at Agape Family Fellowship, Bridge Open Bible Church, Camp Attitude, Central Electrical Training Center, Corvallis Market, Foster Lake Market, Halsey Shell, Shorewood Estates, Whispering Pines Mobile Lodge, City of Sweet Home, and Wilsonville. 92 public water systems have recent alerts for Total Coliform and no violations.

## **Nitrates**

Nitrate alerts are generated when nitrate levels exceed 5 mg/L. There are 18 public water systems which have recent nitrate alerts. None of the public water systems have recent MCL violations. The drinking water MCL for nitrates is 10 mg/L.

Of the soils assessed in the management area, most have high or moderately high nitrate leaching potential, according to the National Cooperative Soil Survey, based on slope, precipitation, and land use (See **Map 2**). Agricultural land uses (e.g. annual ryegrass, wheat, dairy products, perennial ryegrass, Christmas trees, tree fruit, sheep, etc.) are present near many of the public water system wells in the area (see **Maps 3 and 4**). Nitrate from fertilizers and septic systems can readily penetrate to the aquifers used for drinking water when leaching potential is high, and bacteria removal through soil filtration can be less effective in sandy soils.

The GWMA is partially included in the South Santiam Ag WQMA. The GWMA is an area that experiences elevated nitrate levels in groundwater. Concerned stakeholders have been working for years to reduce nitrate levels. See the DEQ website for more information: [Groundwater Management Areas](#).

DEQ recommends ODA and the SWCDs include a task in the area plan to coordinate with ongoing GWMA efforts and further evaluate agricultural land uses in and around the GWMA as there are recent elevated levels of nitrate in public drinking water in the GWMA area. Implementation of best management practices in these areas may reduce the potential for agricultural sources to impact these groundwater sources of drinking water. In particular, improved fertilizer use practices (e.g. timing adjustments and use of multiple, smaller applications) and planting of nitrogen-scavenging cover crops can be analyzed for current implementation rates and bolstered as needed to reduce nitrate movement into aquifers used for drinking water. In addition, any surface water-related best management practices implemented within the management area (such as livestock exclusion from surface water and off-channel watering) will likely benefit water quality.

Oregon Health Authority (OHA) 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 majority of evaluated PWS wells rate as high or medium susceptibility. 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 would reduce risk to groundwater sources of drinking water.

DEQ specifically 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 cubic feet per second for domestic surface water rights that are household use only, not irrigation) identified 42 private domestic water rights in the Ag WQMA. There are also numerous private groundwater wells for domestic use throughout the Ag WQMA. The Domestic Well Testing Act database includes real estate transaction testing data from 1989-2019. These data indicate 160 results are  $\geq 3$  mg/L, 95 results are  $\geq 5$  mg/L, 52 results are 7mg/L, and 15 are  $\geq 10$ mg/L out of 712 total results included in the database.

## Other

There are recent alerts (2014, 2015) for Dibromochloropropane (DBCP) at Nutrien Ag Solutions. DBCP was used as a soil fumigant in the control of nematodes. Other contaminants found that are likely not related to agriculture include a Di(2-ethylehexyl)-Phthalate, at the City of Wilsonville, which is an industrial byproduct and common ingredient in plastics and PVC. Other alerts were reported for arsenic, lead, copper, sodium, total haloacetic acids (HAA5), and total trihalomethanes (TTHM) at several PWS. 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](mailto:drinkingwater.protection@deq.oregon.gov).

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**Table 1. Public Water Systems in the South Santiam Ag WQMA**

Note: This table 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 with recent *E. coli* alerts.

<b>PWS ID</b>	<b>Public Water System Name</b>	<b>Drinking Water Source</b>	<b>System Type</b>	<b>Population</b>
<u>Groundwater Sources</u>				
<b>4190573</b>	<b>Agape Family Fellowship</b>	<b>1 well</b>	<b>NC</b>	<b>65</b>
4193975	Albany 7th Day Adventist Church	INACTIVE (1 well)	NC	100
4195286	Albany Mennonite Church	1 well	NC	80
4195419	Albany Rifle & Pistol Club	1 well	NC	50
4105100	Albany Supercross	1 well	NC	150
4100004	Albany Trailer Court	1 well	C	130
4100013	Amigo Villa Water Service Inc	1 well	C	100
4195223	Arco Am/Pm #5897	1 well	NC	400
4191993	Arrow Preschool	INACTIVE (1 well)	OVS	22
4195566	Barenburg Water System	1 well	NTNC	100
4194430	Bear Mountain Forest Products	1 well	OVS	18
4194868	Betaseed, Inc.	1 well	NTNC	30
4190637	BLM Yellow Bottom Rec Site	INACTIVE (1 well)	NC	32
4194790	Blue Ox RV Park	INACTIVE (1 well)	NC	100
<b>4195164</b>	<b>Bridge Open Bible Church</b>	<b>1 well</b>	<b>NC</b>	<b>25</b>
4195282	C & R Mini Mart	INACTIVE (1 well)	NC	100
4100027	Camelot Mobile Home Park	3 wells	C	150
<b>4195229</b>	<b>Camp Attitude</b>	<b>1 well</b>	<b>NC</b>	<b>120</b>
4105156	Camp Koinonia	1 well	NC	30
4105147	Camp Morrison BSA	INACTIVE (1 well)	NC	40
4193987	Camp Tadmor	2 wells	NC	300
4191660	Cascades Elementary SD #16	1 well	NTNC	388
4100477	Cascadia Mobile Park	1 well	C	60
4193986	Cedar Shack Drive-In	1 well	NC	50
4194322	Cenex Harvest States	1 well	NTNC	80
<b>4195183</b>	<b>Central Electrical Training Center</b>	<b>1 well</b>	<b>NC</b>	<b>30</b>
4193968	Central Valley Christian School	1 well	NTNC	55
4194755	Centurylink Albany	INACTIVE (1 well)	OVS	6
4195023	Circle K #9640	1 well	NC	50
4100152	City of Brownsville	4 active and GU	C	1720
4100200	City of Coburg	2 wells	C	1,195
4100364	City of Halsey	2 wells	C	800
4100366	City of Harrisburg	5 well	C	3,650
4100795	City of Scio	2 wells: 1 active, 1 inactive emergency	C	900
4101231	City of Sodaville	5 wells: 4 active, 1 inactive emergency and SWP	C	310
4191663	Clover Ridge Elementary, SD 8J	1 well	NTNC	305
4100201	Coburg/Pioneer Valley Estates	INACTIVE (1 well)	C	125
4100232	Colorado Lake Coop	1 well	C	80
<b>4194523</b>	<b>Corvallis Market</b>	<b>1 well</b>	<b>NC</b>	<b>200</b>
4194477	Corvallis-Albany KOA	1 well	NC	75
4194733	Cottonwoods Market	1 well	NC	100
4101403	Country View Estates Water System	4 active wells and 1 inactive emergency well	C	104

4191666	Crabtree Tavern	INACTIVE (1 well)	NC	50
4191667	Crawfordsville Elem SD #55	2 wells: 1 active, 1 inactive emergency	NTNC	30
4194725	Crawfordsville Market	1 well	NC	150
4195239	Crowfoot Market	1 well	NC	80
4191697	D&Ds Diner and BBQ	INACTIVE (1 well)	NC	100
4191717	Diamond Hill RV Park	2 wells: 1 active, 1 inactive emergency	NTNC	203
4194917	East Linn Chr Acad Victory	1 well	NTNC	380
4195048	East Pearl Street Shell	INACTIVE (1 well)	NC	100
<b>4194865</b>	<b>Eastgate Center</b>	<b>1 well</b>	<b>NTNC</b>	<b>200</b>
4100014	Eden Park Homeowners	1 well	C	60
4194942	Eugene Premier RV Resort	3 wells: 2 active, 1 inactive emergency	NC	200
<b>4191685</b>	<b>EZ Trip #1232</b>	<b>1 well</b>	<b>NC</b>	<b>625</b>
4194578	Fairview Mennonite Church	1 well	NC	43
4100472	Fir Grove Mobile Court	2 wells	C	114
4195344	First Baptist Church of Brownsville	1 well	NC	45
4194711	Forest River Harrisburg	1 well	NTNC	120
<b>4195527</b>	<b>Foster Lake Market</b>	<b>1 well</b>	<b>NC</b>	<b>250</b>
4195368	Geary St Market	INACTIVE (1 well)	NC	50
4190561	Grand Prairie	1 well	OVS	15
4100024	Grand Prairie Water Supply Co	1 well	C	110
4193971	Green Acres Elementary SD #16	1 well	NTNC	350
4100852	Green Tree Mobile Home Park	INACTIVE (1 well)	C	30
<b>4100025</b>	<b>Hafez Water System</b>	<b>2 wells: 1 active, 1 inactive emergency</b>	<b>C</b>	<b>78</b>
4100475	Halcyon Villa Mobile Home Park	2 wells	C	79
<b>4193979</b>	<b>Halsey Shell</b>	<b>1 well</b>	<b>NC</b>	<b>600</b>
4190571	Hamilton Creek School, SD #33	1 well	NTNC	360
4100810	Harmony Acres Mobile Park	1 well	C	31
4190568	Harris Private School	INACTIVE (1 well)	NTNC	68
4194469	Hillside Grill	INACTIVE (1 well)	NC	50
4191661	Hilltop Market	1 well	NC	200
4193746	Holley Elementary SD #55	2 wells: 1 active, 1 inactive emergency	NTNC	150
4191673	House of Glory Lebanon	1 well	NC	60
4191673	House of Glory Lebanon	1 well	NC	60
4190887	Kidco Head Start-Riverside	1 well	NTNC	150
4191681	Kidco Head Start-Sunnyside	1 well	NTNC	75
4194811	Knife River - NW Harrisburg	1 well	NTNC	100
4194328	Knife River - NW Tangent	1 well	NTNC	60
4191687	Lacomb Elementary SD #73	1 well	NTNC	320
4195194	Lacomb Grocery Store	1 well	NC	100
4195493	Lacomb Station	INACTIVE (1 well)	NC	25
4101429	Lake Creek Ranch Mobile Home Community	3 wells	C	300
4100474	Lawrence Subdivision Water Assn	2 wells	C	125
4105105	Lebanon Auction Yard	INACTIVE (1 well)	NC	150
4193745	Lebanon High School	1 well	NTNC	1350
4190569	Life Bible Church	1 well	NTNC	30
4190834	Linn Co Parks - Peoria Park	INACTIVE (1 well)	NC	25

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4195287	Linn Co Parks - Riverbend CG	1 well	NC	425
4191708	Linn Co Parks - Roaring River Park	1 well	NC	300
4191715	Linn Co Parks - Sunnyside/Lewis Cr	1 well	NC	500
4191723	Linn Co Parks - Waterloo	INACTIVE (1 well)	NC	200
4194916	Linn Co Parks - Waterloo RV Park	INACTIVE (1 well)	NC	183
4191725	Linn Co Parks - Whitcomb Creek Park	1 well	NC	30
4195287	Linn Co Pks-Riverbend Cg	1 well	NC	425
4101470	Lone Oak Estates	2 wells	C	258
4191693	Lourdes Public Charter School	1 well	NTNC	49
4191694	Lumber Tavern	INACTIVE (1 well)	NC	25
4105606	M & M #14	1 well	NC	200
4195102	Mallard Creek Golf Course	1 well	NC	100
4194394	Mid Willamette Precut Inc	INACTIVE (1 well)	NTNC	60
4194649	Midway Grocery	1 well	NC	75
4190480	Moose Lodge #1866	INACTIVE (1 well)	NC	25
4191690	Motor Vu Drive-In	INACTIVE (1 well)	NC	150
4194345	Nutrien Ag Solutions	1 well	NTNC	50
4100028	Oakvilla Mobile Home Park	2 wells	C	140
4100037	Oakwood Water System Inc	2 wells	C	55
4194760	ODF/WL So Santiam Fish Hatch	1 well	NC	30
<b>4105685</b>	<b>ODFW Roaring River Fish Hatchery</b>	<b>1 well</b>	<b>NC</b>	<b>25</b>
4193536	ODOT HD Oak Grove - Northbound	1 well	NC	500
4193535	ODOT HD Oak Grove - Southbound	1 well	NC	500
<b>4191055</b>	<b>OPRD Cascadia State Park</b>	<b>1 well</b>	<b>NC</b>	<b>670</b>
4195390	OSU Rowing Center	1 well	NC	90
4100029	Periwinkle Mobile Home Park	1 well	C	55
4194871	Pickseed West Inc	1 well	NTNC	30
4191705	Pineway Golf Course	1 well	NC	50
4191700	Pioneer Villa	1 well	NTNC	400
<b>4191707</b>	<b>Pleasant Valley Elem SD #55</b>	<b>1 well</b>	<b>NTNC</b>	<b>100</b>
4194468	Plywood Components, Inc.	1 well	OVS	18
4194242	Queen Anne School SD #16	INACTIVE (1 well)	NTNC	67
4195380	Rays Fruit Stand	INACTIVE (1 well)	NC	25
4100020	Redwood Water Service Inc	1 well	C	125
4194800	Rexius - Coburg	1 well	NTNC	28
4194905	Riverland	1 well	NC	25
4194288	Robert L Pickett Inc	1 well	OVS	18
4194244	Santiam Lumber #1	INACTIVE (1 well)	NTNC	51
4194926	Santiam Lumber #2	1 well	NTNC	54
4100476	Santiam Village	2 wells	C	90
4100796	Scio Mobile Village	1 well	C	40
4194327	Selmet Inc/Rem Products Div	1 well	NTNC	430
4191712	Seven Oak Middle School SD 89	1 well	NTNC	722
4191722	Shedd Cafe	INACTIVE (1 well)	NC	30
4194684	Shedd Market	1 well	NC	100
4193967	Shirley Mays	INACTIVE (1 well)	NC	150
<b>4100030</b>	<b>Shorewood Estates</b>	<b>1 well</b>	<b>C</b>	<b>148</b>
4194767	Subway HWY 34 & I5	1 well	NC	200
<b>4191692</b>	<b>Sweet Home Charter School</b>	<b>1 well</b>	<b>NTNC</b>	<b>165</b>
4194988	Sweetbrier Park	1 well	NC	25
4195037	Tangent Business Park	2 wells	NTNC	50
4191716	Tangent Elementary, SD 8J	2 wells	NTNC	159
4191672	Tangent Inn	1 well	NC	50

4195316	Taqueria la Roca	INACTIVE (1 well)	NC	25
4191720	The Point Restaurant	1 well	NC	200
4191675	The Woods Roadhouse	1 well	NC	50
4194659	Trysting Tree Golf Course	1 well	NC	150
4194874	United Parcel Service	1 well	NTNC	86
4192775	USFS Fernview CG - Hand Pump	1 well	NC	55
4192779	USFS House Rock CG - Hand Pump 1	1 well	NC	43
4192816	USFS House Rock CG - Hand Pump 2	1 well	NC	43
<b>4192776</b>	<b>USFS Longbow Org Camp</b>	<b>1 well</b>	<b>NC</b>	<b>48</b>
4192780	USFS Trout Creek CG - Hand Pump 1	INACTIVE (1 well)	OVS	40
4192782	USFS Trout Creek CG - Hand Pump 3	INACTIVE (1 well)	NC	40
4192781	USFS Trout Creek CG Hand pump 2	1 well	NC	43
4195474	USFS Trout Creek Cg Well 4	1 well	NC	40
<b>4194248</b>	<b>USFS Yukwah CG - Hand Pump 1</b>	<b>1 well</b>	<b>NC</b>	<b>43</b>
4194247	USFS Yukwah CG - Hand Pump 2	1 well	NC	43
4105073	Valley Christian Center	1 well	NC	32
4105013	Valley Inn	1 well	OVS	16
4191795	Van Duyn Properties	2 wells: 1 active, 1 inactive emergency	OVS	15
4194355	Wastequip Oregon	1 well	OVS	24
4194652	Waterloo Store	1 well	NC	100
4194317	Wayne Buck Water System	1 well	NTNC	40
4100230	Weslinn Water Company	1 well	C	200
4194287	Weyerhaeuser Co Lebanon Lumber	INACTIVE (1 well)	NTNC	35
<b>4100223</b>	<b>Whispering Pines Mobile Lodge</b>	<b>1 well</b>	<b>C</b>	<b>90</b>
<b>4105130</b>	<b>Willamette Speedway</b>	<b>1 well</b>	<b>NC</b>	<b>33</b>
4100224	Woodland Mobile Home Park	1 well	C	91
4194734	Yuvis Market	1 well	NC	250
		Total population served by groundwater sources:		30,671
<u>Surface Water Sources</u>				
4100003	Adair Village Water System	Willamette River	C	980
4100012	Albany	South Santiam River	C	54,945
4192152	Cascade Pacific Pulp LLC*	Willamette River	C	800
4100225	Corvallis*	Willamette River	C	56,000
4100473	Lebanon	South Santiam River	C	15,518
<b>4100851</b>	<b>Sweet Home</b>	<b>South Santiam River</b>	<b>C</b>	<b>9,415</b>
<b>4100954</b>	<b>Wilsonville</b>	<b>Willamette River</b>	<b>C</b>	<b>25,915</b>
		Total population served by surface water sources:		163,573

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.

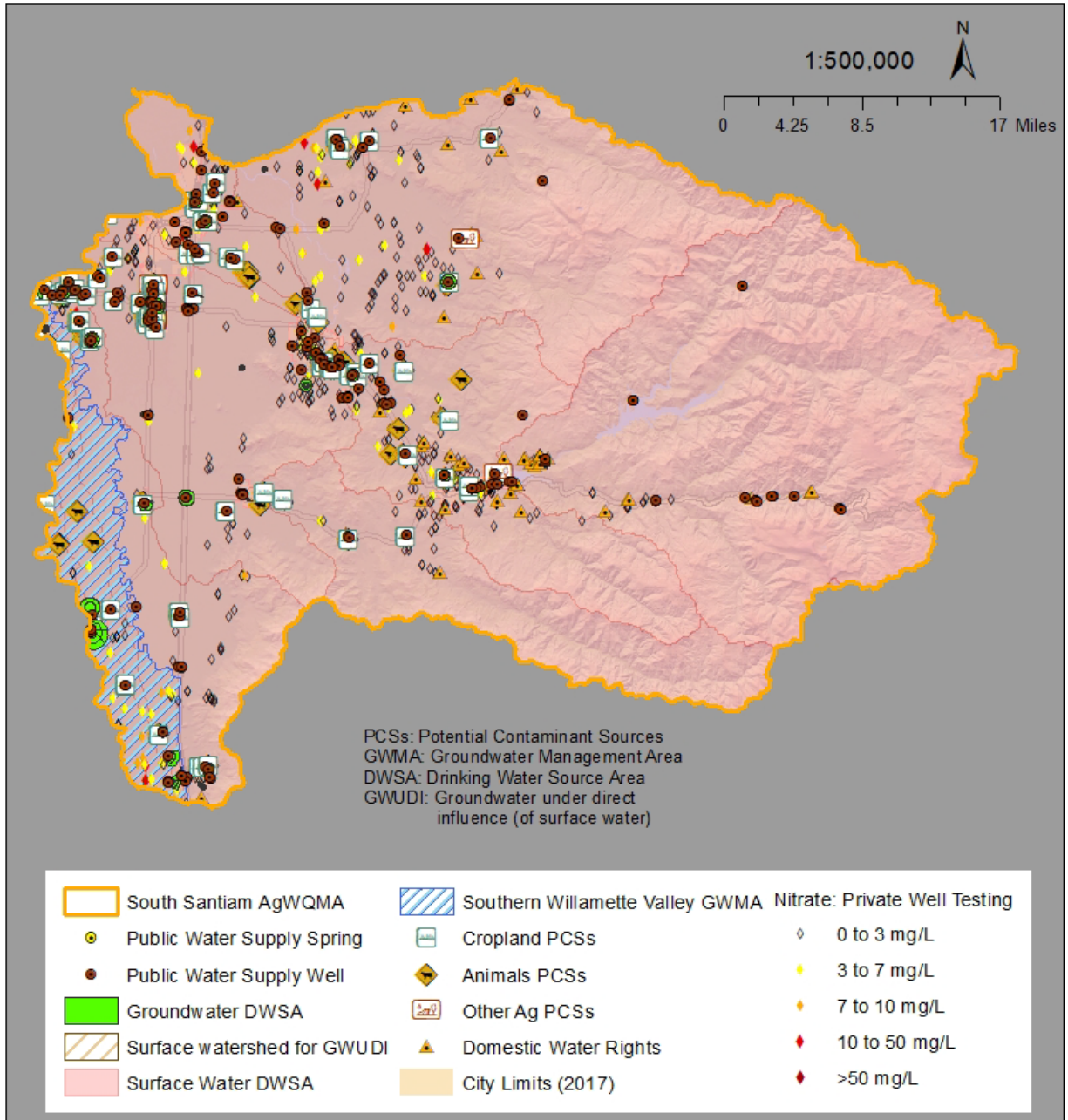
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# Drinking Water Source Areas for Public Water Systems in the South Santiam Agricultural Water Quality Management Area

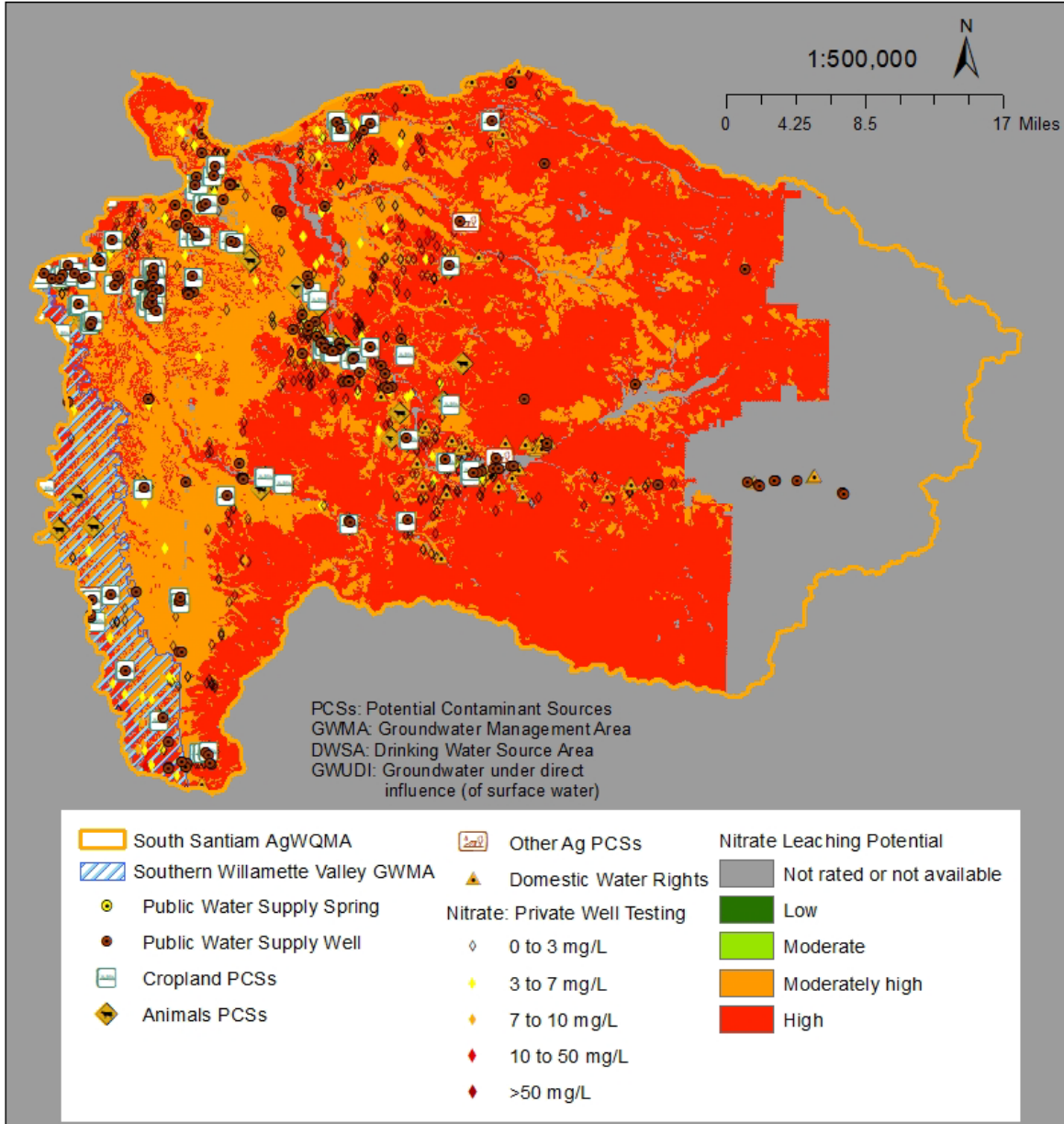


The Drinking Water Source Area (DWSA) delineations define areas that supply the drinking water system. For groundwater this is defined as the area on the surface that overlies that portion of the aquifer that supplies water to a well or spring. DWSAs for wells typically show the 1-, 2-, 5-, and 10- or 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.

Map 1: Drinking Water Source Area for Public Water Systems in the South Santiam Agricultural Water Quality Management Area



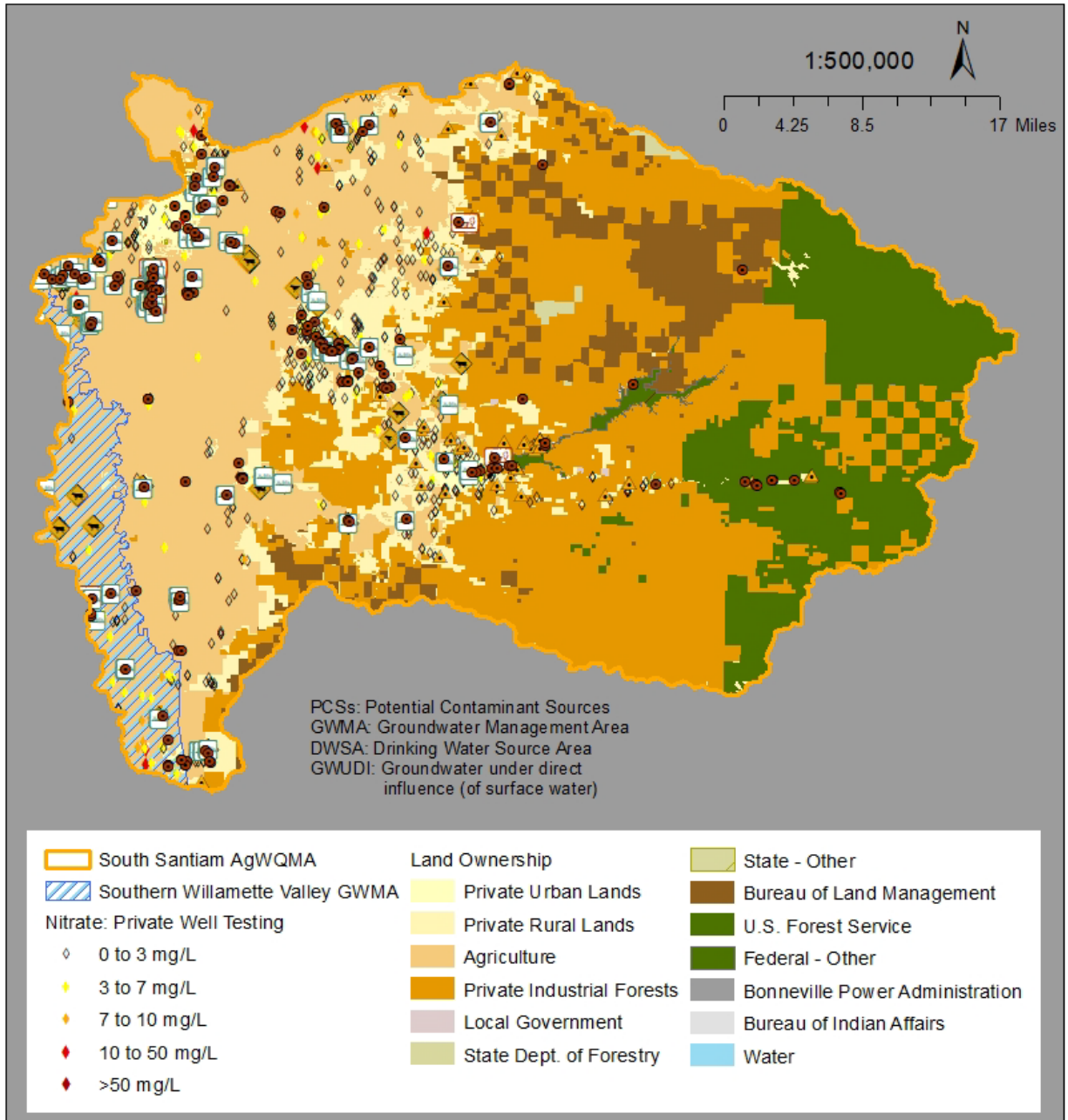
# Drinking Water Source Areas for Public Water Systems in the South Santiam Agricultural WQMA: Nitrate Leaching



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.

Map 2: Drinking Water Source Area for Public Water Systems in the South Santiam Agricultural Water Quality Management Area, Nitrate Leaching

## Drinking Water Source Areas for Public Water Systems in the South Santiam Agricultural WQMA: Land Use / Land Ownership

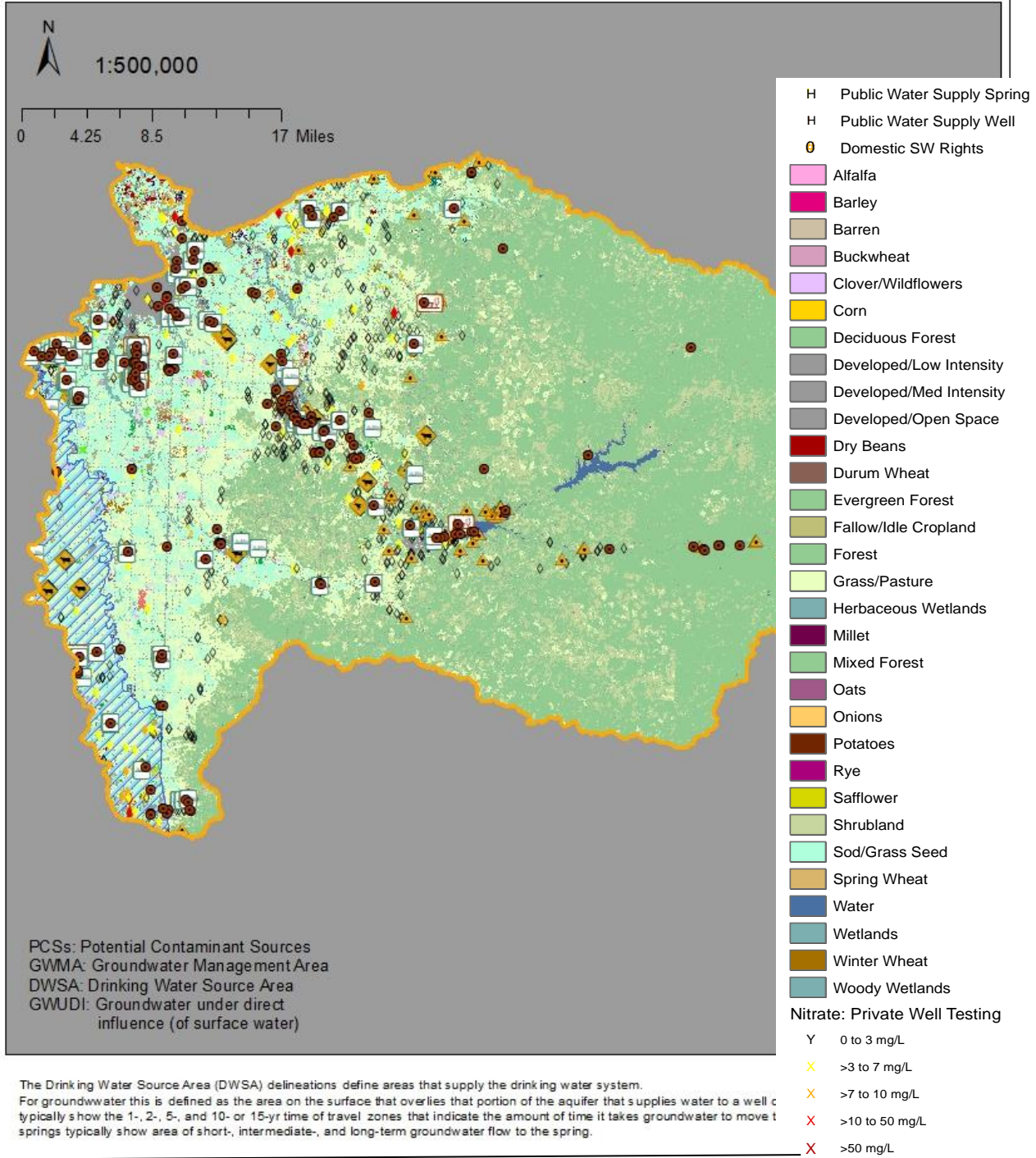


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Map 3: Drinking Water Source Area for Public Water Systems in the South Santiam Agricultural Water Quality Management Area, Land Use/Land Ownership



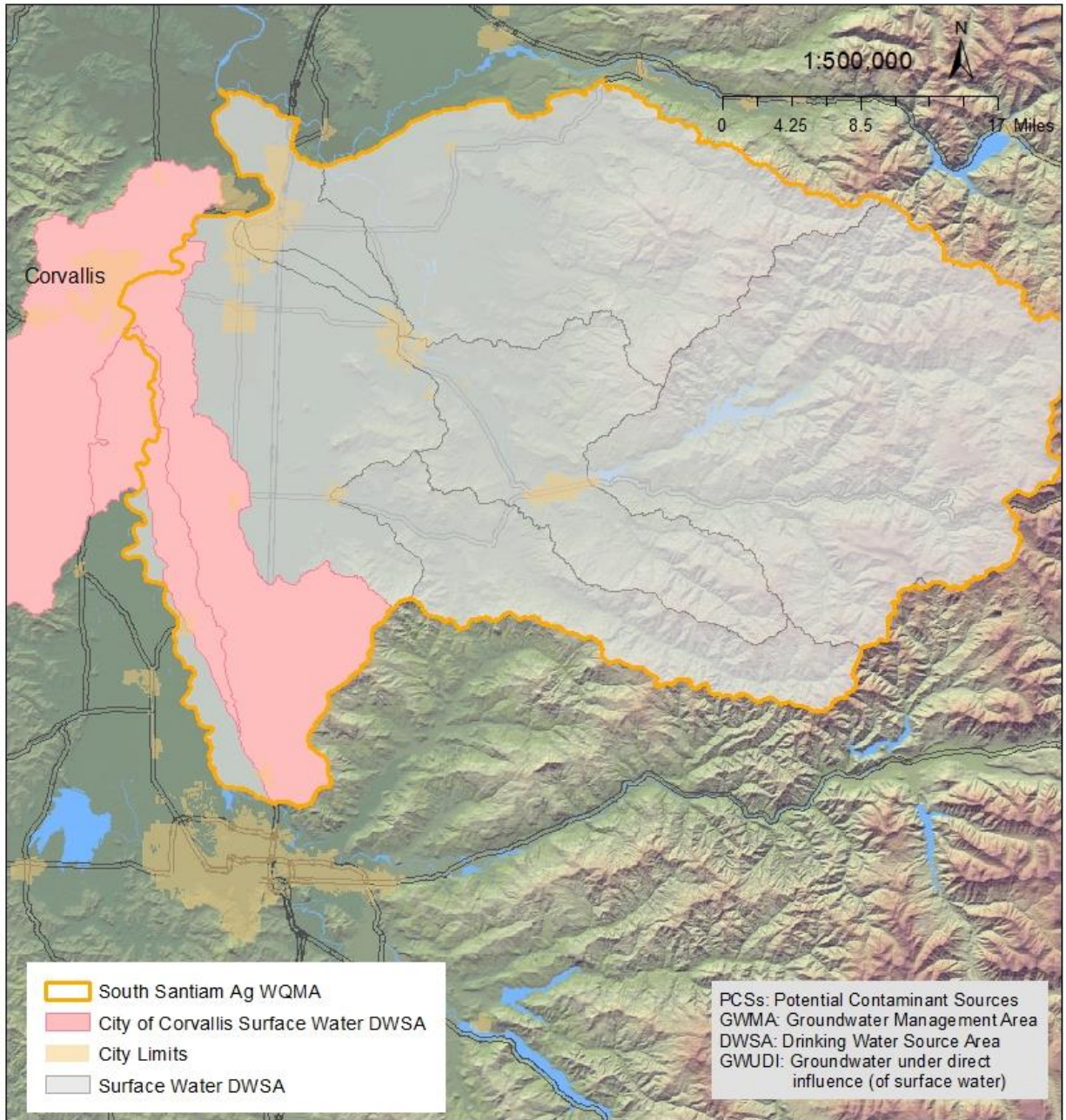
# Drinking Water Source Areas for Public Water Systems in the South Santiam Agricultural WQMA: Crops (NASS 2019)



Map 4: Drinking Water Source Area for Public Water Systems in the South Santiam Agricultural Water Quality Management Area, Crops



## Drinking Water Source Areas for Public Water Systems in the South Santiam Agricultural WQMA: Corvallis Surface Water Sources



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.

Map 5: Drinking Water Source Area for Public Water Systems in the South Santiam Agricultural Water Quality Management Area, Corvallis Surface Water Drinking Water Source Areas