



Oregon Department of Environmental Quality

Drinking Water Assessment for the Lost River Agricultural Water Quality Management Area

January 2024

Overview

- Active public drinking water systems in the Lost River Agricultural Water Quality Management Area (Ag WQMA) utilize groundwater sources to serve approximately 51,257 persons regularly.
- Three public water systems had an alert within the past ten years for exceeding the MCLG for *E. coli* bacteria (MCLG for *E. coli* bacteria is zero). None of the public water systems had Maximum Contaminant Level (MCL) violations within the past five years (MCL for *E. coli* bacteria is a positive result in two or more consecutive samples).
- One public water systems had an alert within the past ten years for elevated [≥ 5 milligrams per liter (mg/L)] nitrate concentrations. None of the public water systems had Maximum Contaminant Level (MCL) exceedances for nitrate in the past five years.
- There are 709 records of private domestic well sample results submitted to Oregon Health Authority's (OHA's) Real Estate Transaction program in the area. Of these, 107 measured nitrate concentrations above 3 mg/L.
- Contaminants in water supplies potentially related to agriculture occur near human populations, agricultural land uses, and aquifers susceptible to contaminant infiltration.
- Nitrate and bacteria in water supplies are often related to animal and cropland agriculture in areas where agricultural activity occurs near human populations using aquifers susceptible to contaminant infiltration. 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 private domestic and public drinking water wells to reduce high nitrate levels. BMPs to reduce nitrate levels are beneficial in helping communities reduce long term costs associated with treatment, operations, maintenance, and sustainability.
- 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](#).

Water Use

There are 37 active public water systems which obtain domestic drinking water from groundwater sources in the Lost River Agricultural Water Quality Management Area (Ag WQMA). 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 the Safe Drinking Water Act standards. **Figure 1** demonstrates the drinking water source areas of the public water systems within the Lost River Ag WQMA. A drinking water source area is defined as the area of land which contributes water to the

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drinking water supply and where potential contamination from human activities or natural sources may pose a threat to the water quality.

There are 15 active Community public water systems in the Lost River Ag WQMA using only groundwater wells to serve approximately 44,462 people on a regular basis, in addition to visitors at recreation sites. There are 7 Non-Transient, Non-Community workplace or school public water systems using groundwater, serving 4,635 persons regularly. The remaining 15 public water systems are Transient Non-Community systems and Non-Public, state-regulated systems with an estimated service population of 2,160. See **Table 1** below for a list of public water systems, their classifications, sources and activity status, and populations served.

Agricultural land uses (e.g. irrigated crops, pasture, and livestock) are present near many of the public water system wells and springs in the area (**Figure 2**). Agricultural areas south of Upper Klamath Lake and Klamath Falls have the majority of both intensive agriculture area and human population, providing the contributing areas for numerous streams (many used for private domestic water supply) in the Lost River Ag WQMA.

Bacteria

Total coliform bacteria alerts for public water systems are generated by the Oregon Health Authority (OHA) when their presence is detected in sample results. 28 public water systems had an alert within the past ten years for exceeding the Maximum Contaminant Level Goal (MCLG) for total coliform bacteria (MCLG for total coliforms is zero). None of the public water systems received violations for exceeding the Maximum Contaminant Level (MCL) 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 OHA when their presence is detected in sample results. Within the Lost River Ag WQMA, three public water systems had an alert for detections of *E. coli* bacteria in the past ten years: Bonanza Business Center, PP&L Keno Recreation Park, Wisemans Mobile Court (**Figure 1, Table 1**). 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.

Nitrates

An alert for elevated nitrate concentrations is generated by the OHA when nitrate sample results for public water systems exceed 5 mg/L. Within the Lost River Ag WQMA, one public water system had an alert for elevated nitrate results in the past ten years: Ami Mini Mart #1 (**Figure 1, Table 1**). None of the public water systems had MCL violations for nitrate in the past ten years (the MCL for nitrate is 10 mg/L).

In addition, there are numerous private groundwater wells for domestic use within the Lost River Ag WQMA. The Domestic Well Testing Act database includes submitted records of real estate transaction testing data from 1989 to 2018. There are 709 records of private domestic well samples within the Lost River Ag WQMA. Of these 709 records, 60 results are ≥ 5 mg/L, 31 results are >7 mg/L, and 16 are ≥ 10 mg/L out of 709 total results included in the database (**Figure 1**). The locations of nitrate contamination of private domestic wells and public drinking water sources is near the Klamath and Lost Rivers and their tributaries and to agricultural land use such as irrigated crops (**Figures 2 and 4**).

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 Lost River Ag WQMA, most have moderately high to high nitrate leaching potential, according to the Natural Resources Conservation Service's (NRCS) National Cooperative Soil Survey (**Figure 3**). 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 would 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 12 private domestic surface water rights in the Lost River Ag WQMA (see **Figure 1**).

Other Contaminants

Other contaminants found include sodium, copper, lead, and arsenic.

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

Contact

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

Non-Discrimination Statement

DEQ does not discriminate on the basis of race, color, national origin, disability, age or sex in administration of its programs or activities. Visit DEQ's [Civil Rights and Environmental Justice page](#).

Table 1. Public Water Systems in the Lost River Ag WQMA

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

PWS ID	Public Water System Name	Drinking Water Primary Source	System Type	Population	MCLG/MCL Exceedance
Groundwater Systems					
4194052	18 WHEELER TRUCK STOP Inactive System	Groundwater	Transient Non-Community	67	
4194794	AMA MINI MART #1	Groundwater	Transient Non-Community	150	Nitrate
4190813	BONANZA BIG SPRINGS PARK/REC	Groundwater	Transient Non-Community	30	
4194034	BONANZA BUSINESS CENTER	Groundwater	Transient Non-Community	110	E. coli
4194440	BONANZA CITY LIBRARY	Groundwater	Transient Non-Community	40	
4190550	BONANZA HIGH/ELEM SCHOOLS	Groundwater	Non-Transient Non-Community	425	
4105999	BONANZA-BOWNE PARK Inactive System	Groundwater	Transient Non-Community	50	
4194807	CACTUS J	Groundwater	Transient Non-Community	75	
4194178	CINDERS CAFE & BAR	Groundwater	Transient Non-Community	150	
4101522	COLLIER LANE HOA	Groundwater	Community	60	
4193995	COLLINS PRODUCTS LLC	Groundwater	Non-Transient Non-Community	260	
4194403	COLUMBIA PLYWOOD CORP	Groundwater	Non-Transient Non-Community	280	
4194026	COVE PARTNERSHIP	Groundwater	Transient Non-Community	30	
4100446	CROSSROADS MOBILE HOME PARK	Groundwater	Community	150	
4101075	FALCON HEIGHTS	Groundwater	Community	559	
4194801	FAST BREAK BONANZA MARKET	Groundwater	Transient Non-Community	250	
4190643	GERBER WATER SYSTEM	Groundwater	Transient Non-Community	100	
4193994	GREEN DIAMOND RESOURCE CO	Groundwater	Non-Transient Non-Community	50	
4193730	HENLEY HIGH/JR HIGH/ELEMENTARY Inactive System	Groundwater	Non-Transient Non-Community	1500	
4193734	KENO ELEMENTARY COUNTY UNIT Inactive System	Groundwater	Non-Transient Non-Community	200	
4194173	KENO MERCANTILE Inactive System	Groundwater	Transient Non-Community	100	
4100425	KENO WATER CO INC	Groundwater	Community	290	
4194727	KLAMATH AUCTION CAFETERIA	Groundwater	Transient Non-Community	70	
4100443	KLAMATH FALLS WATER DEPT	Groundwater	Community	40475	

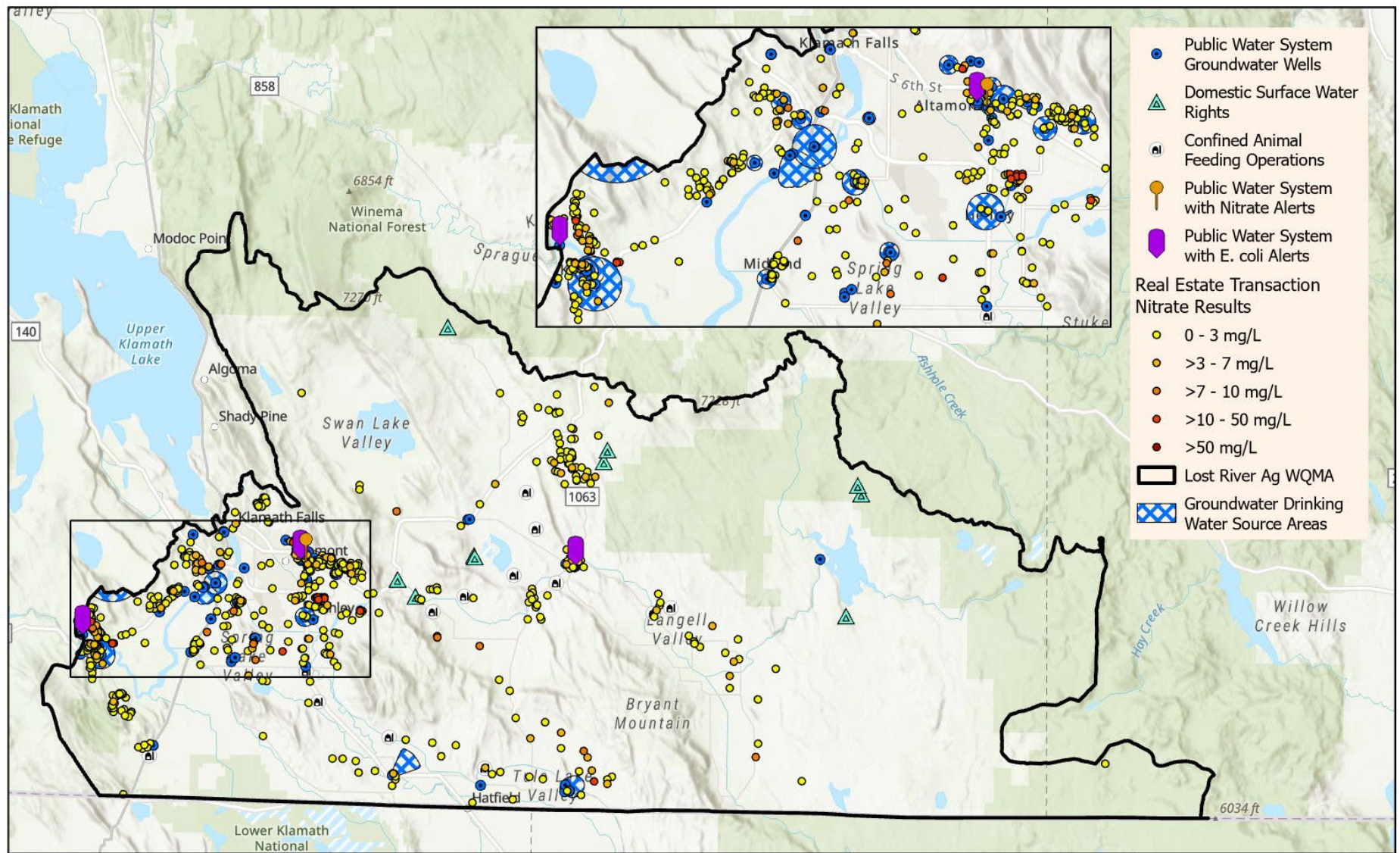
4190552	LOST RIVER HIGH SCHOOL	Groundwater	Non-Transient Non-Community	320	
4194391	MACS STORE	Groundwater	Transient Non- Community	30	
4100504	MALIN MUNICIPAL WATER	Groundwater	Community	815	
4100518	MERRILL WATER DEPARTMENT	Groundwater	Community	907	
4195038	NEW ALGAE CO HARVEST WS Inactive System	Groundwater	Transient Non- Community	90	
4194405	OCONNORS IRISH PUB & DINER	Groundwater	Transient Non- Community	40	
4191110	ODOT HD MIDLAND INFO CTR RA	Groundwater	Transient Non- Community	1000	
4193997	OREGON INSTITUTE OF TECHNOLOGY	Groundwater	Non-Transient Non-Community	3250	
4101503	OREGON WATER UTILITIES - SOUTHVIEW	Groundwater	Community	250	
4195162	PERKED UP Inactive System	Groundwater	Transient Non- Community	50	
4100437	PINE GROVE WATER DIST (KLAMATH)	Groundwater	Community	180	
4194828	PP&L-KENO RECREATION PARK	Groundwater	Transient Non- Community	25	E. coli
4195058	PRODUCTION METAL FORMING INC	Groundwater	Non-Transient Non-Community	50	
4195101	RICK & TAMIS COFFEE SHOP Inactive System	Groundwater	Transient Non- Community	30	
4100438	ROUND LAKE WATER UTILITIES	Groundwater	Community	250	
4101484	SHIELD CREST CONDOS	Groundwater	Community	45	
4194722	SHIELD CREST GOLF CLUB	Groundwater	Transient Non- Community	60	
4101500	SHIELD CREST WATER ASSN	Groundwater	Community	65	
4100439	SKYLINE VIEW DIST IMPROVEMENT	Groundwater	Community	250	
4194151	SPORTSMANS PARADISE MOTEL/TC	Groundwater	Community	52	
4195430	TRANSFORMATION WELLNESS CENTER Inactive System	Groundwater	Transient Non- Community	28	
4190400	WHOA TAVERN Inactive System	Groundwater	Transient Non- Community	25	
4100431	WISEMANS MOBILE COURT	Groundwater	Community	114	E. coli

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.



Drinking Water Source Areas in the Lost River Agricultural Water Quality Management Area



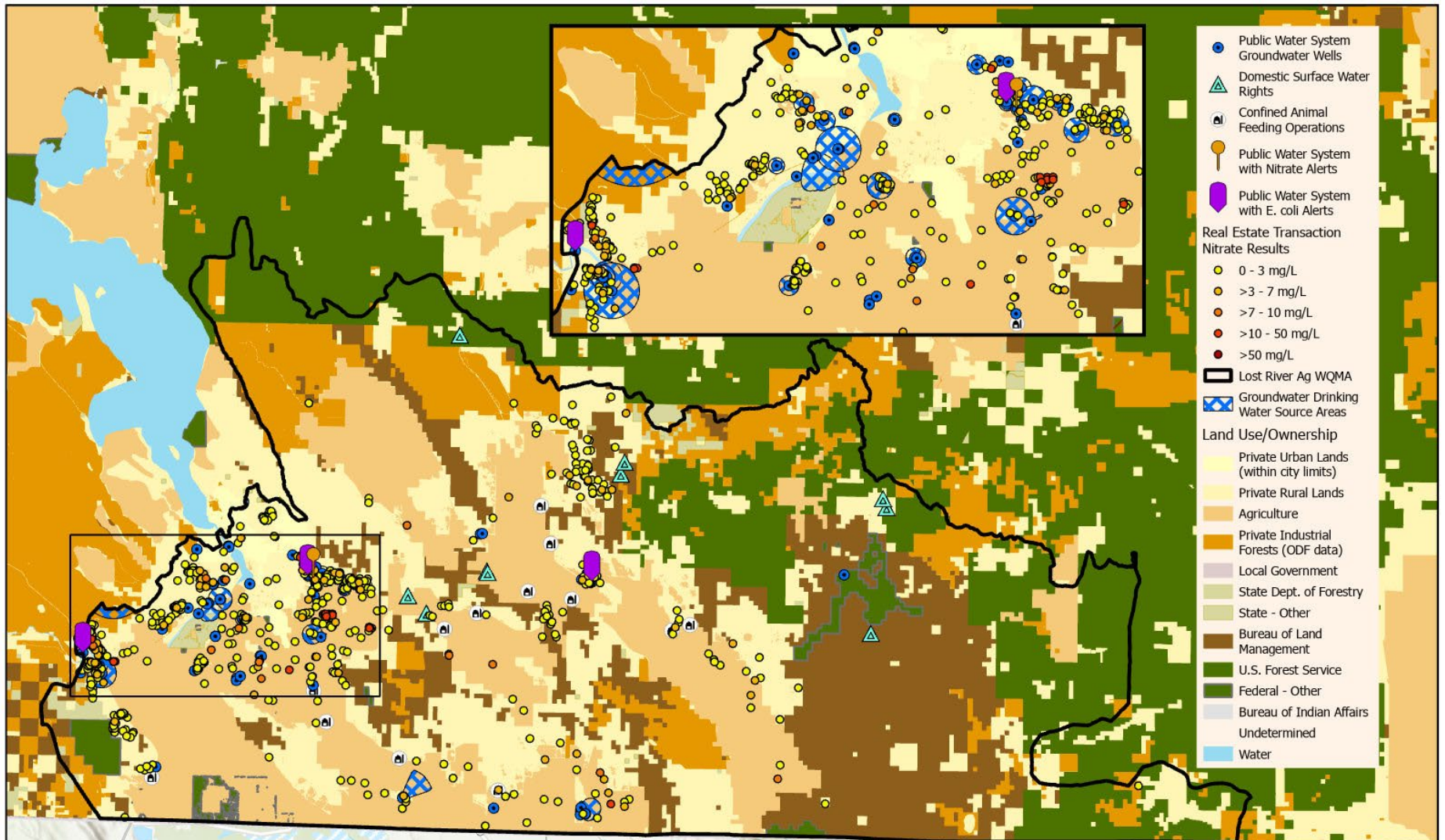
Figure 1



Esri, TomTom, Garmin, FAO, NOAA, USGS, EPA, USFWS, Oregon State Parks, State of Oregon GEO, Esri, TomTom, Garmin, SafeGraph, FAO, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, USFWS, Oregon State Parks, State of Oregon GEO, Esri, TomTom, Garmin, SafeGraph, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, USDA, USFWS, Esri, NASA, NGA, USGS, Esri, NASA, NGA, USGS, FEMA

Coordinate System: NAD 1983 Lambert Conformal Conic





Lower Klamath National

Drinking Water Source Areas in the Lost River Agricultural Water Quality Management Area - Land Use/Ownership

0 5 10 Mi

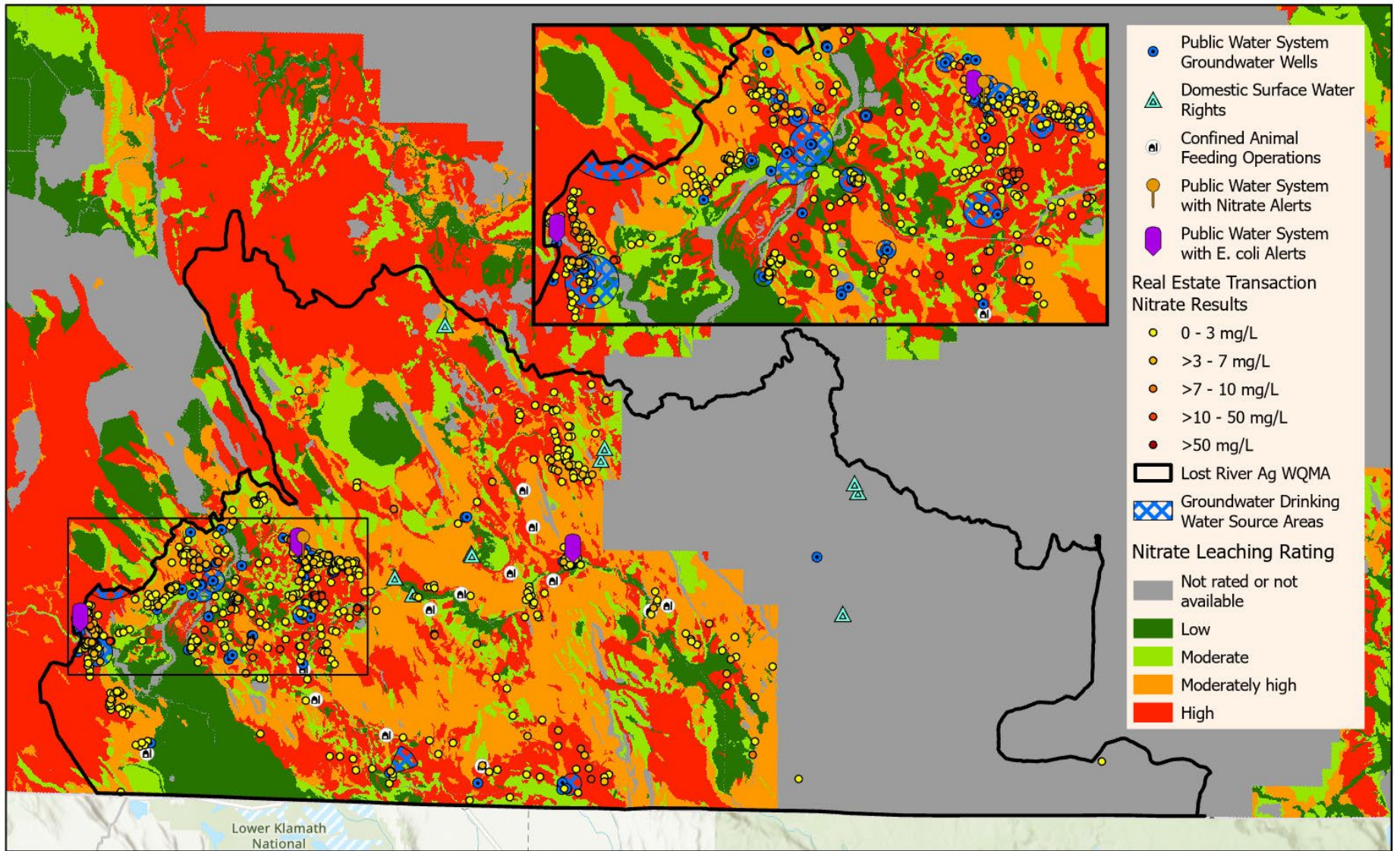
Figure 2



Esri, TomTom, Garmin, FAO, NOAA, USGS, EPA, USFWS, Oregon State Parks, State of Oregon GEO, Esri, TomTom, Garmin, SafeGraph, FAO, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, USFWS, Oregon State Parks, State of Oregon GEO, Esri, TomTom, Garmin, SafeGraph, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, USDA, USFWS, Esri, NASA, NGA, USGS, Esri, NASA, NGA, USGS, FEMA

Coordinate System: NAD 1983 Lambert Conformal Conic





Drinking Water Source Areas in the Lost River Agricultural Water Quality Management Area - NRCS Nitrate Leaching Potential - Irrigated

0 5 10 Mi

Figure 3

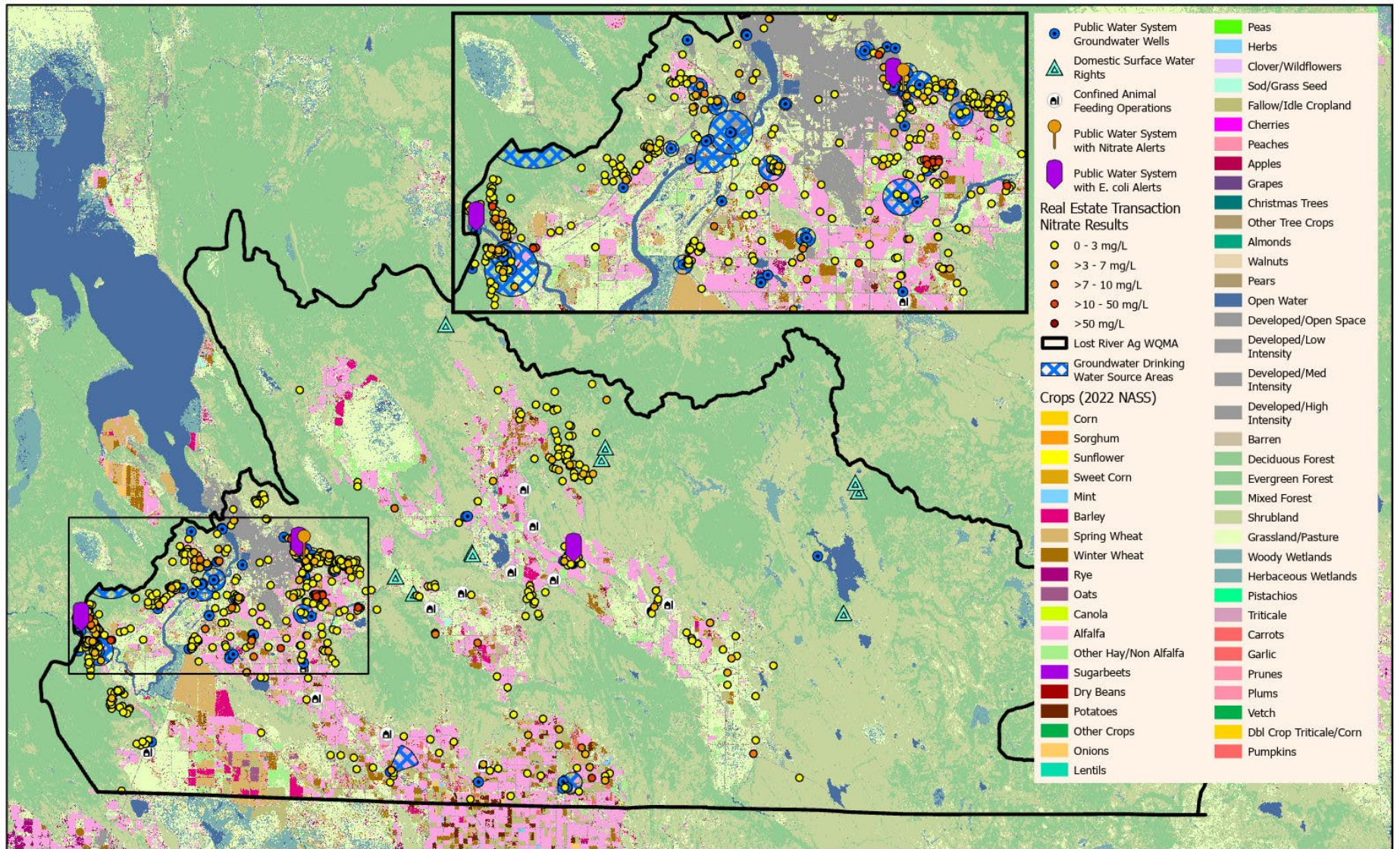
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Coordinate System: NAD 1983 Lambert Conformal Conic

Drinking Water Protection Program
State of Oregon
DEQ

Oregon Health Authority



Drinking Water Source Areas in the Lost River Agricultural Water Quality Management Area Crops (2022 NASS)

0 5 10 Mi

Figure 4



Esri, TomTom, Garmin, FAO, NOAA, USGS, EPA, USFWS, Oregon State Parks, State of Oregon GEO, Esri, TomTom, Garmin, SafeGraph, FAO, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, USFWS, Oregon State Parks, State of Oregon GEO, Esri, TomTom, Garmin, SafeGraph, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, USDA, USFWS, Esri, NASA, NGA, USGS, Esri, NASA, NGA, USGS, FEMA

Coordinate System: NAD 1983 Lambert Conformal Conic

