

HOOD RIVER COUNTY

Hood River County Well Monitoring Network

Progress and Next Steps for Expanding Understanding of the County's
Groundwater Resources

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6/30/2014



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1 Introduction and Objective

With the potential of impacts due to climate change, communities who rely on surface water to supply their water demands are expected to face challenges in meeting their future demands. Communities in Hood River County currently rely on surface water for their water supply and a group of local stakeholders, the Hood River Water Planning Group, is currently overseeing a Water Planning Study to investigate opportunities to face these water supply challenges. There is little information available about the County's groundwater resources and expanding a groundwater monitoring network for Hood River County is the first step in expanding County's understanding of groundwater. The objectives of this report are to:

- Provide an overview of the well information that is currently available for Hood River County.
- Document OWRDs and Mattie Bossler's efforts in expanding the Well Monitoring Network in Hood River County.
- Offer recommendations and a list of tasks necessary to continue the Hood River County Well Monitoring Program.

2 Overview of Well Information for Hood River County

This section provides an overview of the information about the wells and well monitoring in Hood River County. An inventory of the number and type of wells in Hood River County is provided. A summary of water quality data that have been collected from wells in the County is provided. Information about groundwater level measurement and well monitoring programs that have been implemented in the state of Oregon is also provided.

2.1 Inventory of Wells by Use and Type

To account for newly drilled wells as well as any work that is completed on a well, the OWRD requires all well drillers to fill out a well log when a well is drilled and when any work is performed on the well. OWRD oversees an online database which stores well log information for wells drilled in Oregon as far back as 1955. A well log indicates what type of well was drilled and the OWRD designates wells under three types: water supply wells, monitoring wells, and geotechnical wells. Wells drilled for the purpose or exploration of natural gas or geothermal resources are regulated by the Department of Geology and Mineral Industries and are not included in OWRD's well log database. Figure 1 summarizes and categorizes the amount of wells of each type that have been drilled in Hood River County from 1955 to 2012.

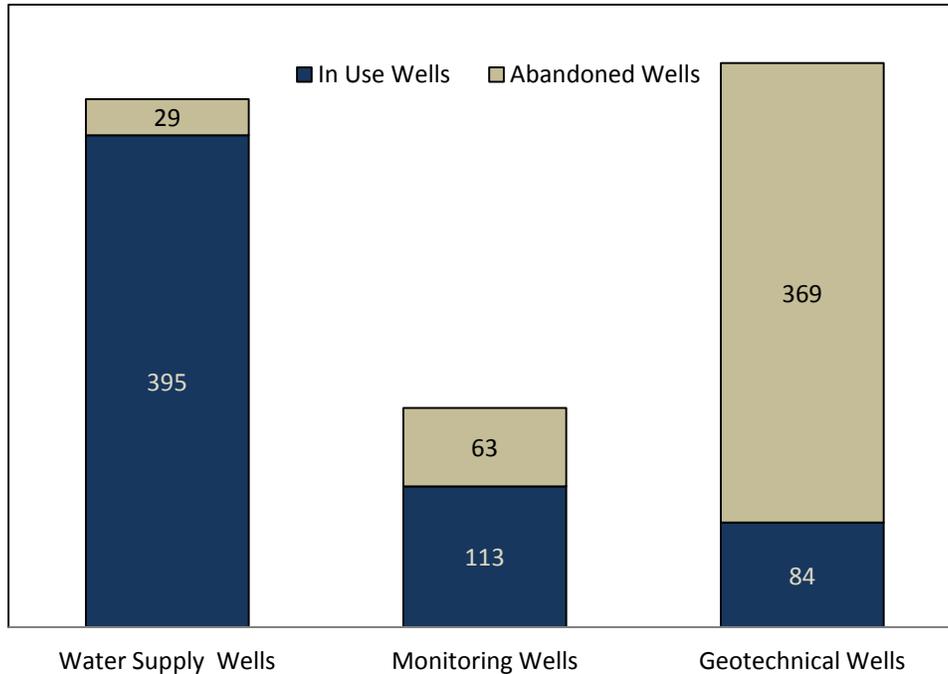


Figure 1. Amount of abandoned and in use water supply, monitoring, and geotechnical wells drilled in Hood River County from 1955 to 2012.

A water supply well is defined as a well to beneficially withdraw or inject groundwater and they include community, dewatering, domestic, irrigation, industrial, municipal, and aquifer storage and recovery wells (OAR 690-240-0010 (85)). A geotechnical well is a hole constructed to evaluate subsurface data or information, monitor movement of landslide features, or to stabilize or dewater landslide features (OAR 690-240-0010 (36)). A monitoring well is a well designed and constructed to determine the physical, chemical, biological, or radiological properties of groundwater (OAR 690-240-0010 (49)).

Figure 2 summarizes the water supply wells drilled from 1955 to 2012 that are currently in use. At least 330 of the 395 water supply wells that are currently in use in Hood River County are domestic wells. The remaining 65 wells are categorized under the remaining uses or as un-designated wells. The 25 undesignated wells either had uncommon uses like supplying potable water to state parks or campgrounds or the well driller failed to identify the use of well. The actual number of wells currently in use could differ from what is documented in the database because some drillers fail to submit well logs to OWRD for newly constructed wells or abandoned wells.

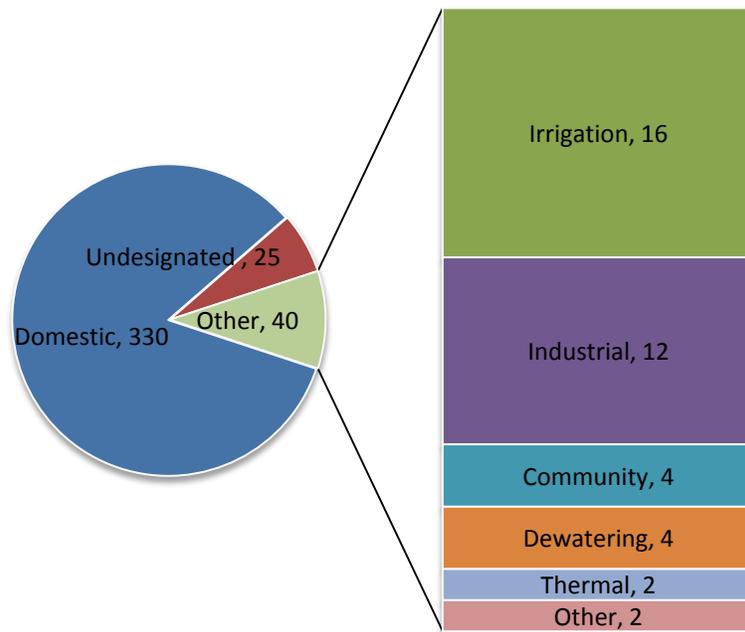


Figure 2. Amount of water supply wells that are currently in-use and categorized by use.

The following three sources provide historical water quality and chemistry data from wells in Hood River Basin:

- The Oregon Department of Human Services' (DHS) Domestic Well Testing for Real Estate Transactions program.
- The Oregon DHS Public Water Systems program.
- The Oregon Department of Environmental Quality's (DEQ) Laboratory Analytical Storage and Retrieval (LASAR) database.

In 1989, the Domestic Well Testing for Real Estate Transactions program was established under the DHS (Oregon Revised Statute (ORS) 448.271). ORS 448.271 requires that the seller test their domestic well for arsenic, nitrates, and total coliform bacteria during a real estate transaction. The seller must provide the results to DHS and DHS is currently updating their database of these results, so information from that program is not currently available to the public.

DHS's Drinking Water Protection program provides water quality data of the sources for groundwater-based Public Water Systems (PWS) in the Basin. There are currently 16 groundwater-based PWS in the County. DHS requires Public Water Systems to test for an array of chemical compounds as well as microorganisms that pose a human health risk on a monthly to annual basis. Due to the large number of results produced from the array of analytes tested for each of the 16 PWSs, only analyte concentrations that exceeded the Environmental Protection Agency's Public Health Goal (PHG) for each analyte tested were summarized in Table 1. The PHGs listed in Table 1 correspond to the date this data was uploaded, so the data may not reflect exceedences that correspond to the EPA's current PHGs for these analytes

listed. The following PWSs did not exceed a PHGs for any of the analytes tested of the period when the data was collected:

- Cooper Spur Ski Area
- Mclsaac Spring
- Mt. Hood Bead and Breakfast
- Mt. Shadows Utilities Company
- ORPD Korberg Beach Rest Area
- USFS Robinhood Campground

Table 1. Analytes tested at Public Water Systems in the Hood River Basin that exceeded concentrations of the EPA Public Health Goal (PHG).

Public Water System	Analyte Concentration & Date PHG was Exceeded			
	Arsenic (PHG: 0 mg/L)	Lead (PHG: 0 mg/L)	Radionuclides ² (PHG: 0 pCi/L) ³	Thallium (PHG: 0.0005 mg/L)
Cooper Spur Mountain Resort Inn	NA ¹	0.003 (1/18/1984)	NA	NA
Crystal Springs Water District	0.008 (1/30/1990)	0.01 (1/2/1990)	0.7 (12/14/2012)	NA
Evergreen Terrace Park	NA	0.05 (8/9/1988)	NA	NA
Hood River, City Of	NA	NA	0.89 (9/4/2009)	0.002 (12/29/1993)
Ice Fountain Water District	NA	NA	0.81 (9/17/2008)	NA
Mt Hood Meadows Hrm & Nordic	0.0009 (5/18/1998)	NA	NA	NA
Oak Grove Water Company	0.027 (7/26/1989)	1.4 (8/1/2011)	NA	NA
Odell Water Company	NA	0.00804 ⁴ (9/26/2012)	NA	NA
Parkdale Water Company Inc	NA	0.001 (12/28/1998)	NA	NA

1. NA: Analyte's PHG was not exceeded.

2. Radionuclides include the following analytes: combined radium (-226); combined uranium; gross alpha, excluding radon & uranium.

3. pCi/L: pico Curie per liter; Curie: 1 gram of pure radium 226.

4. Sample was taken from distribution network; so source may be due to outdated private drinking laterals that were made of lead.

DEQ has conducted various groundwater water quality investigations in Hood River Basin and the LASAR database houses the results from these investigations ([DEQ LASAR Database Link](#)). These investigations included measurements from private wells, monitoring wells adjacent to landfills, and sources for public drinking water systems in the Hood River Basin. In many of these investigations, DEQ tested for over 200 chemical compounds and microorganisms including analytes that pose a human health risk as well as those that do not. Of the analytes DEQ measured that pose a human health risk, nitrate was the only analyte that exceeded its PHG.

2.2 Groundwater Level Measurement

Two methods commonly used to measure groundwater levels involve manual measurements or non-manual measurements. Manual measurements require someone to measure from a well directly either using a pressure gauge or an electronic tape device. OWRD has prepared several reports which describe the methodology to measure a well's water level manually ([OWRD Report Link](#)). Manual measurements are commonly taken from monitoring wells which are usually private water supply wells. Non-manual measurements are commonly recorded by automated water level recorders or data loggers that take continuous measurements of a well's water level. In Oregon, these non-manual measurements are taken in observation wells where they are specifically designed for automotive data collection.

2.3 Overview of Existing Well Monitoring Programs

Many of the groundwater monitoring programs that currently exist in the country have been initialized by regulatory orders or initiatives from state and federal agencies, and funded accordingly. These programs include programs with paid dedicated staff or volunteers and this section provides a review of these programs that currently exist in Oregon.

2.3.1 Volunteer Monitoring Programs

Volunteer monitoring programs have recently become a growing part of environmental data collection as a response to decreasing funds for state and federal programs. A review of monitoring programs that have been implemented in the past could contribute to improving the effectiveness of Hood River County's monitoring program. This section focuses on two groundwater-focused volunteer monitoring programs have been implemented in Oregon in the past.

In 2006, Oregon DEQ declared the Willamette Valley as a Groundwater Management Area due to nitrate levels in the valley's aquifer exceeding the PHG. In partnership with DEQ, Oregon State University sponsored a graduate student to implement a volunteer groundwater monitoring network through the OSU Sea Grant fellowship program. The graduate student, Laila Parker, designed a monitoring program where several different volunteers living in the Valley were responsible for measuring from their own well and neighboring wells within a two to three mile radius of the volunteer's home.

A total of 118 volunteers were recruited to the program through newspaper ads and articles, flyers, event announcements, radio messages, and OSU Extension events. Several training sessions were held to teach the volunteers to measure nitrate from the wells. Laila acted as the program manager and was responsible for entering data and quarterly monitoring reports which were sent to volunteers. The

resources provided by OSU and existing relationships with DEQ contributed to the effectiveness of the volunteer programs.

In response to the public concern over groundwater declines in the Eola Hills area, the State Water Resources Commission directed OWRD to develop a voluntary water use and well measurement program for better interpretation of groundwater conditions. OWRD designed a pilot program to teach Eola Hills citizens about groundwater science and groundwater level measurement. Recruitment included networking with organizations that commonly outreach to landowners like local conservation districts & watershed councils. Two meetings were held at the Yamhill Watershed Council to inform landowners about the program and recruit them. Volunteers were able to collect 11 water level measurements from five wells during the program.

2.3.2 Monitoring Programs with Paid Dedicated Staff

OWRD currently oversees a groundwater monitoring program for water supply wells across the state. As part of this program, OWRD hydrogeologists have taken measurements from 14 wells in Hood River County since 2009. The hydrogeologists take quarterly water level measurements from these wells to track seasonal and long-term changes in the wells. OWRD provides the equipment and staff with expertise to take the measurements. The State of Oregon plans to continue funding of this program for the foreseeable future.

The USGS maintains an observation well network across the country and 14 active observation wells are located in Oregon. The observation wells utilize automated data recorders and the measurements are retrieved by staff periodically or transferred to computer databases via telemetry. Neither the OWRD nor USGS currently oversee observation wells in Hood River County.

3 Current Progress Achieved

This section provides information about progress accomplished with expanding the groundwater monitoring network in Hood River County.

3.1 Well Recruitment

Marc Norton, OWRD hydrogeologist, recommended that 60 to 80 wells would provide enough wells for an ideal monitoring network. In January 2013, Mattie Bossler began selecting additional wells to be included in the monitoring program. Terrence Conlon and Marshall Gannet, USGS hydrogeologists, provided the following guidelines for selecting wells to include in the monitoring program:

- Wells should be selected to provide information on horizontal and vertical groundwater flow, recharge and discharge areas, and groundwater conditions for confined and unconfined aquifers.
- Wells should be selected to provide a spatially distributed network of wells; a density of one well per section is ideal.
- Wells should be selected to provide an understanding of vertical groundwater flow by incorporating wells within an area that are open to a wide range of well depths.

- Wells should be selected to represent the variety of aquifers in the area.
- Wells should be selected at a range of distances from springs, major springs, and canals.

Marc Norton and Joshua Hackett , OWRD hydrogeologist, who measures wells in HRC as well as various locations throughout the State of Oregon , provided some practical considerations for selecting wells for a monitoring network.

- Wells should be selected that are easily accessible.
- Wells should be selected that do not prohibit the ability to take water level measurements.
- Wells should be selected from properties that can contribute to the ease and efficiency of measurements, i.e. guard dogs or locked properties are not conducive to well measurements.

Using recommendations from Terrence, Marshall, Marc and Joshua, along with county well logs and spatial data; approximately 150 wells were selected to include in the monitoring network. In February 2013, Mattie sent a letter to the owners of the 150 selected wells (Section A.1 of 0). Of the well owners who were contacted, 17 expressed interest in participating in the program and in March 2013, OWRD began taking measurements from their wells. In June 2013, an additional 6 wells were added to the monitoring network.

In an effort to recruit an additional 20 wells into the monitoring network, Mattie Bossler sent another letter to well owners in Hood River County. When sending the second round of letters, Mattie expanded the distribution list to all well owners who are currently in Hood River County, including those she originally contacted. Mattie prepared two separate letters for the November mailing, the first letter was directed to those she originally contacted and the second letter was directed to well owners she had not contacted previously (Section A.2 of 0). Of the 235 well owners Mattie contacted, 22 well owners were interested in participating in the program and were added to the network in January and March 2014. Table 2 provides a timeline of how many wells were recruited into the network from 2009 to March 2014.

Table 2. Timeline of when wells were added to the well monitoring network in Hood River County.

Month Wells Were Measured	Number of Wells Added to the Network
March 1964	1
January 2009	13
March 2013	18
June 2013	6
January 2014	19
March 2014	2
Total	59

3.2 Well Monitoring Network

The colored points in Figure 3 represent wells drilled in Hood River County between 1955 and 2012. Green points represent wells in the current monitoring network; wells not included in the network are shown in pink.

The data collected for the HRC Well Monitoring network is broken into two types: spatial and tabular data. The spatial data, as represented in Figure 3, collected for the monitoring network included the following items: 1) a geodatabase of all wells drilled between 1955 and 2012 in the Geologic Unit that DOGAMI prepared as part of their Hood River Geologic Map (McCloughry et al., 2012), 2) a geodatabase prepared by Mike Shrankel of all wells drilled between 1955 and 2012 in Hood River County, and 3) GPS and Google Earth kml points collected by Mattie Bossler of the 45 wells she recruited from March 2013 to March 2014.

The caveat associated with the DOGAMI and HRC well geodatabases is that their spatial accuracy is coarse. The majority of the well locations for the wells in these geodatabases were identified using the legal description of the well provided in the well log. When wells were located by the legal description, they were placed in the centroid of that given area, e.g. if the quarter-quarter section of a section was given, the well was placed in the geometric center of that area. Using this method was efficient for processing and locating the hundreds of wells in HRC, but resulted in complications when uniquely identifying wells.

The tabular data associated with the water level measurements is maintained by OWRD. The data associated with the contact information for well owners as well as information associated with locating and accessing the well and contacting the corresponding well owners is currently maintained by Hood River County.

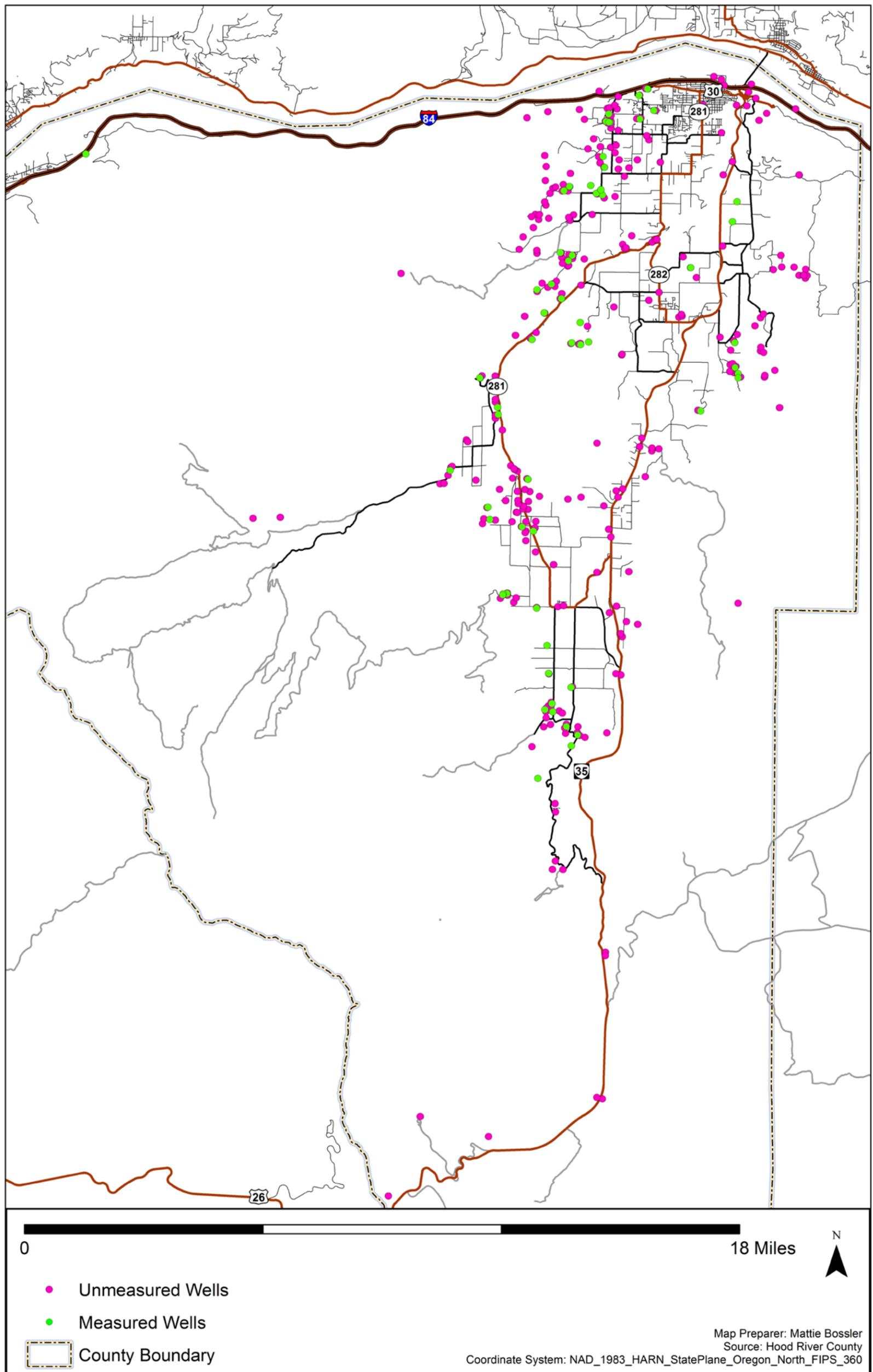


Figure 3. Map of wells in the Hood River County Well Monitoring Network when compared to unmeasured wells in Hood River County.

4 Recommendations and Next Steps

This section offers steps, recommendations, and resources of how to continue administration of the well monitoring network as well as recommendations for expanding the monitoring efforts to include water quality or chemistry monitoring.

4.1 Continued Measurement of the Well Monitoring Network

OWRD and other groundwater specialists have recommended continued measurement of the monitoring network for at least five years. OWRD will continue measurement of most of the wells in the monitoring network. During most of their quarterly measurements, OWRD will be unable to measure all of the 59 wells because they will only be able to dedicate a day to potentially a day and a half to measuring wells from the network. The Hood River Soil and Water Conservation District has offered staff and equipment to assist in measuring the remaining wells OWRD will be unable to measure each quarterly measurement.

4.2 Continued Well Recruitment for the Well Monitoring Network

Well recruitment will be ongoing and iterative for the well monitoring network. As data is collected for wells currently in the network, certain wells may be removed from the network. For example, if two or more nearby wells exhibit similar groundwater levels, the more difficult wells to measure may be removed from the network. As wells are removed from the network, new wells will be added. Recruitment should focus on wells with certain criteria that are not being captured in the current network, e.g. most of the wells in the current network are less than 200 feet deep, so more focus should be placed on wells with deeper completed depths.

OWRD is planning on identifying wells which should be recruited into the network and the HRSWCD will conduct the recruitment of the wells OWRD recommends. Mattie Bossler also was in correspondence with three additional well owners who expressed some interest in participating in the monitoring network. Mattie provided the contact information to OWRD and HRSWCD so they could contact these well owners and hopefully add their wells to the network.

If HRSWCD plans to contact well owners by letter, the mailing list Mattie developed should be used. Included in the mailing list is each well owner's address as well as information indicating whether or not the person was contacted previously, the person's response to the mailing if any, and the possible well log associated with owner's property. Care should be given in reusing the mailing list because it was developed using the HRC and DOGAMI Databases. Due to the inaccuracy of some of the well locations in the geodatabase, as mentioned in section 3.2, those errors were translated into some of the well addresses and some land owners contacted Mattie Bossler indicating they were unaware of a well on their property or knew they did not have a well on their property. Addresses of these wells were identified in the mailing list.

Revising the mailing list by eliminating these addresses, addresses of wells currently in the network, wells owned by well owners who responded to mailings saying they were not interested as well as other addresses where their locations might be suspect, is recommended. Suspect locations can be identified

using the attribute data of the DOGAMI and HRC geodatabases. The location of wells in the DOGAMI database identified by legal description should be considered suspect, especially if the most precise location given was a quarter section or greater in size. The location of wells in the HRC Database can be considered more suspect if the attribute data indicates the well was drilled prior to 1990. Many of the wells older than 1990 were located by outdated legal descriptions.

4.3 Continued Groundwater Data Administration for the Well Monitoring Network

The spatial data currently maintained by Hood River County will also be given to OWRD and HRSWCD to assist measurement and recruitment for the well monitoring network. A new geodatabase of all the wells should be developed using the HRC and DOGAMI database that provides more spatially accurate locations of the wells. The tabular data associated with measurements will continue to be maintained by OWRD. The tabular data associated with well access, contact information, and well locations will be given to HRSWCD.

4.4 Continued Well Owner, Stakeholder, and Public Outreach

Continued outreach to well owners, stakeholders, and the public is an essential piece in facilitating the continuation of the monitoring network. Annual letters should be sent to well owners currently in the network to inform them of the measurements taken over the course of the previous year as well as a description of the web resources they can access to find out more information about the program. These letters will provide the well owners with a better understanding of how the water levels are changing in their wells and provide a stronger connection to the network. Outreach should also focus on reinforcing the importance of the well owners' participation in the program.

Stakeholders like the HRWPG and the HRWG should continue to be informed of the progress of the network. OWRD plans to present results of measuring from the monitoring network in late 2014 to the Hood River Watershed Group. The public should also be informed of the progress of the network through an article in the Hood River News or other local publications.

4.5 Future Water Quality and Chemistry Well Monitoring

The County's current monitoring program focuses on collecting water level data from wells to understand the availability of groundwater resources. In the future, the County might be interested in expanding the program to include an investigation of the water quality or chemistry of the County's groundwater resources. This section provides the supporting information necessary for the County to develop a water quality or chemistry monitoring plan.

The kinds of water quality or chemistry monitoring investigations the County could pursue are endless. Examining objectives of typical groundwater quality monitoring studies and understanding what water quality and/or chemistry concerns are relevant to Hood River County will help with preparation of future water quality studies for the County. Table 3 provides some examples of water quality or chemistry investigations that could be relevant to Hood River County's groundwater resources.

Table 3. Example Water Quality or Chemistry Studies Hood River County could pursue.

Study Objective	Parameters Measured	Summary
Understand the recharge dynamics of an aquifer	Chemical residence time indicators, ¹⁴ C	Estimate the age of aquifer water using carbon dating techniques to estimate the rate of recharge.
Understand impacts of agricultural runoff to groundwater resources	Nitrate Pesticides Pesticides breakdown products	Estimate nitrate and pesticides and their breakdown product concentrations to determine an aquifer's susceptibility to contamination.
Understand the source aquifer(s) contributing to streams and rivers.	Various biological and geochemical reactions	Analysis of surface water and adjacent aquifer chemistry to understand the dynamics of their interchange

Works Cited

McClaghry, J. D., Wiley, T. J., Conrey, R. M., Jones, C. B., & Lite, K. E. (2012). *Digital Geologic Map of the Hood River Valley, Hood River and Wasco Counties, Oregon*. Baker City: Oregon Department of Geology and Mineral Industries.

Appendix A. Well Recruitment

This section provides the resources that were used to recruit well owners into the well monitoring network.

A.1 February 2013 Well Recruitment Letter

Well Owner Address

February 15th, 2013

Well Owner,

I am writing to you on behalf of the Hood River County Water Planning Group (HRCWPG) to inform you about the Water Planning Group's new well monitoring program and hopefully gain your participation in the program.

Background

The HRCWPG was formed in 2008 with the primary objective of "ensuring an adequate supply of clean water for all beneficial uses in Hood River County." The group has several tasks to meet this objective, including; inventory County water resources, evaluate current and future water use, assess potential impacts of climate change on water availability, assess technological advances that will increase water efficiency, and investigate water quality and the needs of fish and wildlife in the watershed. One important component of completing the water resources inventory is an investigation of the Hood River Basin's groundwater resources. Due to most of the County's water demands being supplied by spring and surface water sources, there is limited data available on the groundwater resources in the County.

Establishing a Well Monitoring Network

To further understand groundwater resources in the County, the HRCWPG would like to expand the existing well monitoring network. There are approximately 450 wells in the County, of which 14 are currently being monitored by the Oregon Water Resources Department (OWRD). Adding an additional 60 to 80 wells would establish an ideal network. Based on your well's location plus evaluation of the County's new geologic map and your well driller's log, your well would be ideal to include in the monitoring network and that is why we have contacted you.

Why Would You Want Your Well Monitored?

You might initially be cautious of having your well monitored, but please consider the following points addressing why monitoring your well may benefit you and our basin:

Understanding the Water Levels and Water Quality in Your Well:

Well monitoring will give you an idea of how the groundwater levels are fluctuating seasonally and how your water level changes over time. Understanding whether your water table is falling, remaining steady or increasing will allow you to plan for future changes in your water supply. In addition to monitoring water levels, the potential exists in the future for the program to provide support to monitor water quality parameters like Nitrate. Measuring parameters like Nitrate will help you determine whether or not the water from your well meets water quality standards.

Contributing to the County's Ability to Plan for the Future:

Your participation in the well monitoring program will contribute to a critical and very important body of scientific knowledge about the water resources of the Hood Basin that will benefit all water users in the County.

Protecting Your Water from Future Overdevelopment:

Without beginning the process of quantifying groundwater resources now, the Valley's resources could easily be overdeveloped in the future. Overdevelopment of groundwater resources in other parts of Oregon have led to costly well repairs, the need to deepen or even drill new wells and in some extreme cases, restrictions on new water rights. You might be concerned that data collected could be used to limit your water rights. On the contrary, the HRCWPG will use this information to plan for sustainable water use and hopefully prevent any future restrictions to water rights.

Accurate and Safe Measuring Process:

The equipment is cleaned between each well measurement to minimize the chance of contaminating the well. Also, staff will be working with Oregon Water Resource Department staff to insure accurate measurements.

Next Steps if You would like to Participate

If you are interested in participating in the well monitoring program, please contact me within the next two weeks. I am available during normal business hours (8:00 am -5:00 pm), Monday through Friday. When you call, we can also discuss the best way for me to access the well, including a place to park on your property. If I do not hear from you, I will plan on trying to reach you by phone.

Please contact me with any questions you have related to this study using my email, address, or phone number provided below. We appreciate your assistance with this study and your contribution to improving the County's understanding of groundwater resources in the Hood River Basin.

Sincerely,

Mattie Bossler

Water Planning Technician
Hood River County
601 State Street
Hood River, Oregon 97031
mattie.bossler@co.hood-river.or.us
(541) 387-6869

A.2 November 2013 Well Recruitment Letters

This section provides recruitment letters that were sent in November 2013.

A.1.1 Letter to Previously Contacted Well Owners

Well Owner Address

November 5, 2013

Well Owner,

I originally contacted you in February 2013 and I would like provide an update of the progress the Hood River County Water Planning Group has made in expanding a Well Monitoring Program for the Hood River Basin. I am looking for more well owners to participate in the study, our records indicate a well is located on your property, and would like to talk with you about the possibility of including your well.

The Water Planning Group includes the County, Hood River Watershed Group, Irrigation Districts, Confederated Tribes of Warm Springs, Oregon Water Resources Department, and Oregon Department of Fish & Wildlife. This diverse group was formed in 2008 to assess existing and future water needs in the Hood River Watershed. The group's primary objective is to "ensure an adequate supply of clean water for all beneficial uses in Hood River County." One important component of the assessment is an investigation of the Hood River Basin's groundwater resources. Due to most of the County's water demands being supplied by springs and surface water, little is known about the reliability of groundwater resources.

Currently we are monitoring 36 of the 450 wells in the County. We need an additional 30 to 50 wells to establish a sufficient network. Based on your well's location plus evaluation of the County's new geologic map and your well driller's log, your well would be ideal to include in the monitoring network.

Including your well in our study would benefit you and the study in several ways:

First, well monitoring will give you an idea of how the groundwater levels are fluctuating seasonally and how your water level changes over time. Understanding whether your water table is falling, remaining steady or increasing will allow you to plan for future changes in your water supply. Second, without quantifying groundwater resources now, the Valley's resources could be overdeveloped in the future. Over-development of groundwater resources in other parts of Oregon has led to costly repairs of existing wells and the need to deepen or even drill new wells, The Water Planning group will use results of this study to plan for sustainable water use of surface and

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Mattie Bossler
6/1/14

groundwater, and avoid depletion of Hood River aquifers. Your participation in the well monitoring program will contribute to a critical and very important body of scientific knowledge about the water resources of the Hood Basin that will benefit all water users in the County.

If you are interested in participating in the well monitoring program or have any questions, please contact me within the next two weeks. I am available 8:00 am -5:00 pm, Monday through Friday. If I do not hear from you, I will plan on trying to reach you by phone.

Sincerely,

Mattie Bossler
Water Planning Technician
Hood River County
mattie.bossler@co.hood-river.or.us
(541) 387-6869

A.1.2 Letter to Previously Contacted Well Owners

Well Owner Address

November 5, 2013

Well Owner,

The Hood River County Water Planning Group has recently established a Well Monitoring Program for the Hood River Basin. I am looking for more well owners to participate in the study, our records indicate a well is located on your property, and would like to talk with you about the possibility of including your well.

The Water Planning Group includes the County, Hood River Watershed Group, Irrigation Districts, Confederated Tribes of Warm Springs, Oregon Water Resources Department, and Oregon Department of Fish & Wildlife. This diverse group was formed in 2008 to assess existing and future water needs in the Hood River Watershed. The group's primary objective is to "ensure an adequate supply of clean water for all beneficial uses in Hood River County." One important component of the assessment is an investigation of the Hood River Basin's groundwater resources. Due to most of the County's water demands being supplied by springs and surface water, little is known about the reliability of groundwater resources.

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If you are interested in participating in the well monitoring program or have any questions, please contact me within the next two weeks. I am available 8:00 am -5:00 pm, Monday through Friday. If I do not hear from you, I will plan on trying to reach you by phone.

Sincerely,

Hood River County Well Monitoring Network
Mattie Bossler
6/1/14

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