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Idaho Department of Water Resources
Open-File Report

Summary of Ground Water Conditions in the Big Wood River Ground Water Management Area

2019 Update

By
Allan Wylie

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Introduction

The Idaho Department of Water Resources maintains a groundwater level monitoring network for the Big Wood River Groundwater Management Area (GWMA) in the Wood River and Camas Creek Valleys, Idaho. The monitoring network currently consists of 70 wells that are visited on a semi-annual basis (Figure 1). Forty-one of the wells are equipped with transducers. The wells are labeled in Figures 2-4. Figures 2-4 focus on different areas within the GWMA. The purpose of the groundwater monitoring program is to observe water levels within the Big Wood GWMA and to provide data for a future recalibration of the Wood River Valley Aquifer Model (Wylie and others, 2019). The GWMA was designated on June 28, 1991, to address the connection between ground and surface water within the Camas Creek, Silver Creek, and Big Wood River drainages above Magic Reservoir.

A groundwater model by Fisher and others (2016) subsequently updated by Wylie and others (2019) was developed since designation of the GWMA to evaluate the groundwater and surface water connection with the Big Wood River and Silver Creek drainages. The United States Geological Survey (USGS) published several earlier studies of the hydrogeology of the Big Wood River and Camas Creek basins. USGS studies of the Big Wood River basin include Stearns and others (1938), Jones (1952), Smith (1959), Smith (1960), Moreland (1977), Frenzel (1989), Skinner and others (2007), Bartolino (2009), Bartolino and Adkins (2012), Hopkins and Bartolino (2013), and Bartolino (2014). The Wood River Valley Aquifer System consists of an unconfined aquifer that extends throughout the valley and a confined system below a clay layer in the southwest portion of the valley shown in Figure 2.

USGS studies of the Camas Creek basin include Stearns and others (1938), Jones (1952), Smith (1960), Walton (1962), Young (1978), and Young and others (1978). The Camas Creek basin also includes an unconfined and a confined aquifer system.

A management plan has not been developed for the GWMA, nor has an advisory committee been formed. An advisory committee for development of the Wood River Valley Groundwater Flow Model was established in April, 2013 and continues to meet on a regular basis to monitor model use, model performance, and help maintain and upgrade the model. Currently, data from this monitoring network provides input for the Wood River Valley Groundwater Flow Model and is a source of information for management of the groundwater resource.

Purpose and Scope

The purpose of this report is to provide an updated summary of the status of the groundwater monitoring network and to present water level data collected over the network's history.

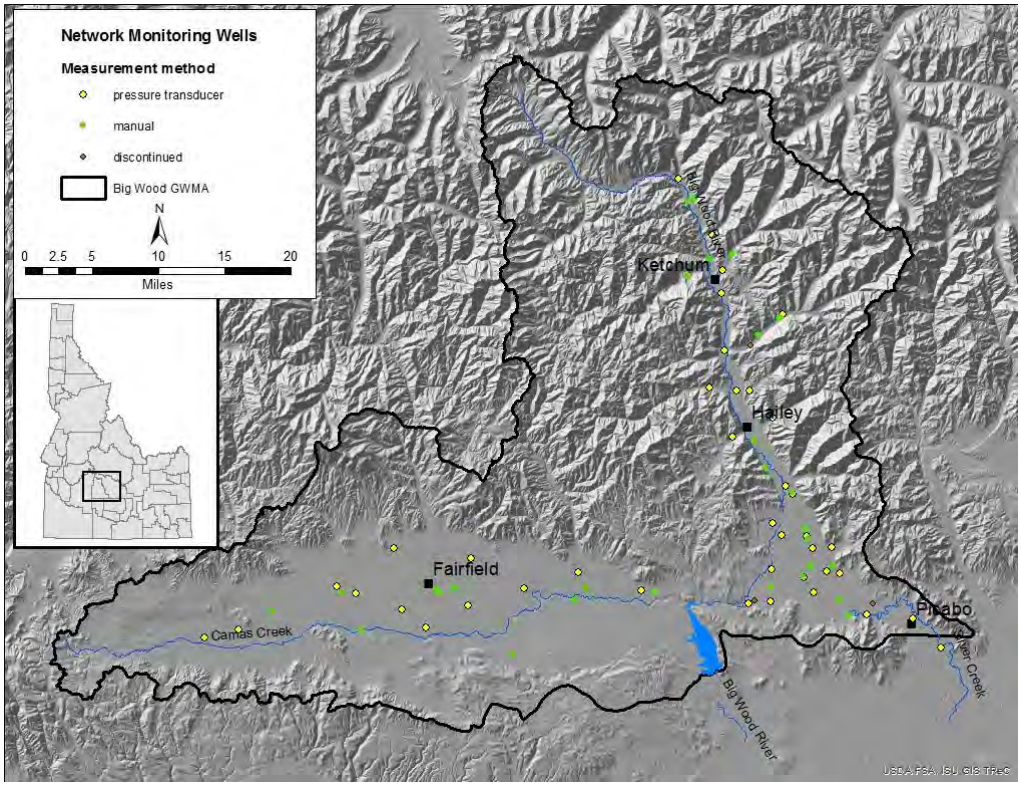

Figure 1. Current Big Wood GWMA monitoring network.

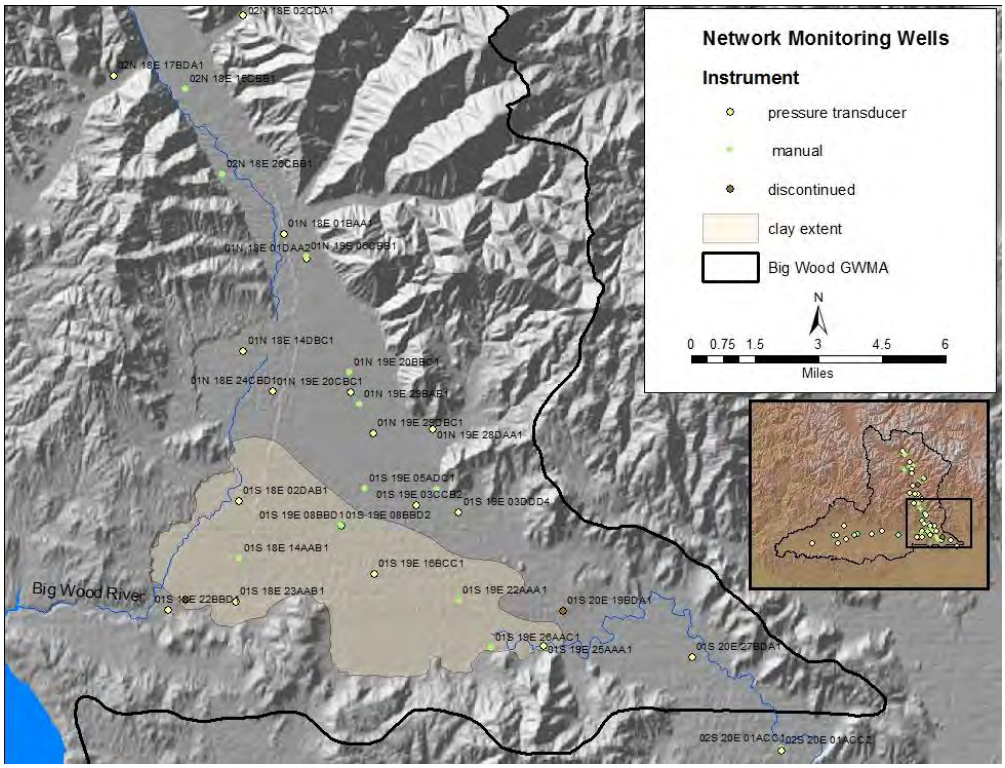

Figure 2. Southeast portion of the Big Wood groundwater monitoring network.

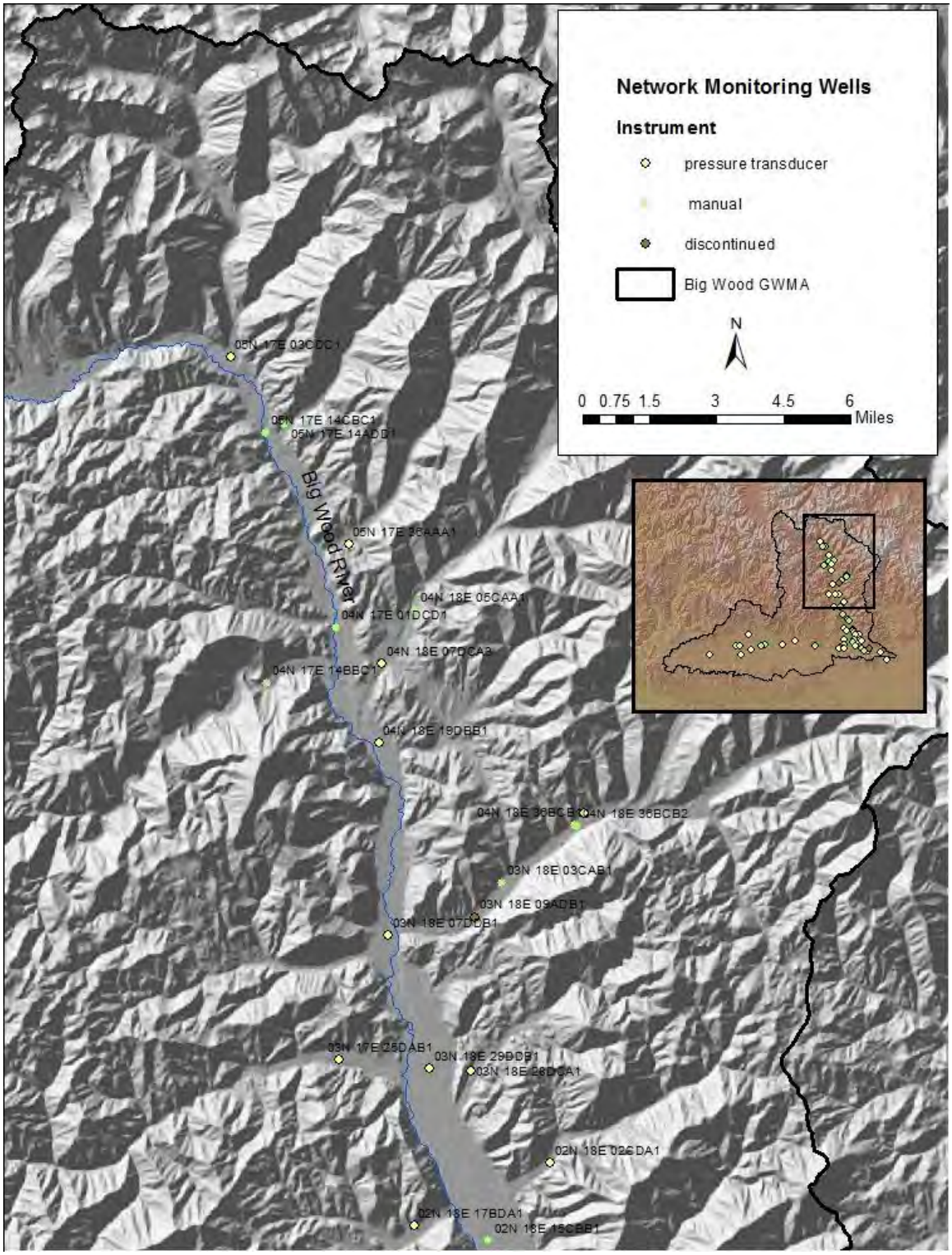

Figure 3. Northeast portion of the Big Wood GWMA groundwater monitoring network.

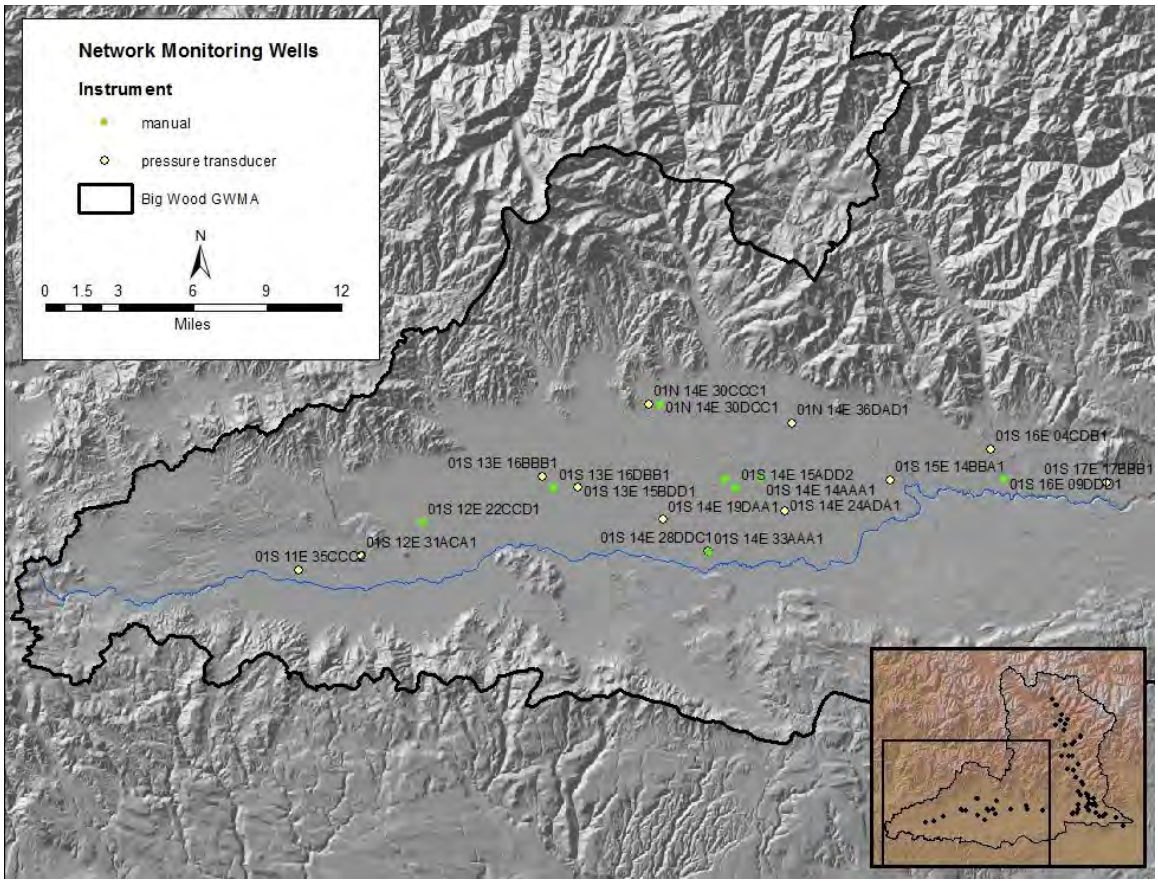

Figure 4. Western portion of the Big Wood groundwater monitoring network.

Status of the Monitoring Network

Monitoring data exists dating back to 1952 (Table 1). Forty-one of the wells have transducers installed (Figures 1-4). Most of the transducers are programmed to collect water levels twice a day, some collect water levels hourly. This water level network is not static, the wells included in the network change as circumstances indicate more need for wells in specific areas. Two wells have no water-levels because they were added recently, while well 01S 19E 03CCB2 has 7,324 because it has been in the network since 1954 and had a transducer installed in it in July, 2012. The average number of water-levels per well is 1,368. The average period of record is about 29 years.

Table 1. Summary of wells in the Big Wood monitoring network. The Well Number corresponds to the well labels in Figures 2-4.

Well Number	WL Date Min	WL Date Max	Site Status	# of water-levels (WL) & comments
01N 18E 01BAA1	5/21/1955	10/23/2018	Active	4606 WL Transducer installed Jul 2012
01N 18E 01DAA2	7/14/1954	10/23/2018	Active	4630 WL Transducer installed Jul 2012
01N 18E 14DBC1	7/11/2012	10/23/2018	Active	3642 WL Transducer installed Jul 2012
01N 18E 24CBD1	10/16/2014	10/22/2018	Active	2939 WL Transducer installed Oct 2014
01N 19E 06CBB1	9/30/1952	10/23/2018	Active	21 WL
01N 19E 20BBC1	5/8/1963	10/23/2018	Active	43 WL

01N 19E 20CBC1	7/5/2017	10/23/2018	Active	838 WL Transducer installed Jul 2017
01N 19E 28DAA1	5/19/1970	10/23/2018	Active	1048 WL Transducer installed May 2017
01N 19E 29BAB1	5/8/1963	10/23/2018	Active	13 WL
01N 19E 29DBC1	3/18/2016	1/17/2019	Active	1026 WL Transducer installed May 2016
01S 18E 02DAB1	4/15/1953	10/22/2018	Active	1750 WL Transducer installed Dec 2014
01S 18E 14AAB1	7/12/1954	10/22/2018	Active	406 WL
01S 18E 15DCC2	5/7/1970	4/11/2017	Discontinued	3 WL
01S 18E 22BBD1	11/1/2017	10/22/2018	Active	138 WL Transducer installed May 2018
01S 18E 23AAB1	7/29/1975	10/22/2018	Active	2931 WL Transducer installed Oct 2014
01S 19E 03BDD1	9/30/1952	10/22/2018	Active	25 WL
01S 19E 03CCB2	7/23/1954	10/22/2018	Active	7324 WL Transducer installed Jul 2012
01S 19E 03DDD4	7/12/2012	11/5/2018	Active	4192 WL Transducer installed Jul 2012
01S 19E 05ADC1	9/18/1952	10/22/2018	Active	58 WL
01S 19E 08BBD1	7/11/2012	10/22/2018	Active	4599 WL Transducer installed Jul 2012
01S 19E 08BBD2	7/11/2012	10/22/2018	Active	11 WL
01S 19E 16BCC1	4/29/1970	10/22/2018	Active	1742 WL Transducer installed May 2015
01S 19E 22AAA1	8/11/1954	10/22/2018	Active	1053 WL Transducer installed Nov 2015
01S 19E 25AAA1	10/17/2014	10/22/2018	Active	2937 WL Transducer installed Oct 2014
01S 19E 26AAC1	5/5/1970	10/22/2018	Active	40 WL
01S 20E 19BDA1	5/15/1963	4/3/2018	Discontinued	30 WL
01S 20E 27BDA1	9/10/1954	10/22/2018	Active	3440 WL Transducer installed Jun 2014
02N 18E 02CDA1	10/23/2018	11/5/2018	Active	1 WL Transducer installed Nov 2018
02N 18E 15CBB1	10/24/2006	10/23/2018	Active	16 WL
02N 18E 17BDA1	10/24/2006	10/23/2018	Active	1684 WL Transducer installed Jul 2016
02N 18E 26CBB1	7/20/1983	10/23/2018	Active	17 WL
02S 20E 01ACC1	9/10/1954	10/22/2018	Active	20 WL
02S 20E 01ACC2	10/18/1954	10/22/2018	Active	5790 WL Transducer installed Jul 2012
03N 17E 25DAB1	2/15/2012	10/23/2018	Active	4369 WL Transducer installed Nov 2012
03N 18E 03CAB1	10/25/2006	10/23/2018	Active	4 WL
03N 18E 07DDB1	7/12/2012	11/5/2018	Active	4589 WL Transducer installed Jul 2012
03N 18E 09ADB1	10/25/2006	11/2/2017	Discontinued	10 WL
03N 18E 28DCA1	10/25/2006	10/23/2018	Active	1570 WL Transducer installed Aug 2016
03N 18E 29DDB1	7/12/2012	10/23/2018	Active	4571 WL Transducer installed Jul 2012
04N 17E 01DCD1	4/9/1986	10/24/2018	Active	7 WL
04N 17E 14BBC1	8/19/1983	10/24/2018	Active	109 WL
04N 18E 05CAA1	10/24/2006	10/24/2018	Active	12 WL
04N 18E 07DCA3	10/1/2015	10/24/2018	Active	2237 WL Transducer installed Oct 2015
04N 18E 19DBB1	4/10/1986	11/5/2018	Active	4596 WL Transducer installed Jul 2012
04N 18E 25CCC1	6/17/2015	10/24/2018	Active	1870 WL Transducer installed May 2016
04N 18E 36BCB1			New	Dept of Lands Monitoring Well 20
04N 18E 36BCB2			New	Dept of Lands Monitoring Well 21

05N 17E 03CDC1	7/12/2012	10/24/2018	Active	4516 WL Transducer installed Jul 2012
05N 17E 14ADD1	10/23/2006	10/24/2018	Active	16 WL
05N 17E 14CBC1	8/25/1983	10/24/2018	Active	17 WL
05N 17E 36AAA1	10/23/2006	11/5/2018	Active	4595 WL Transducer installed Jul 2012
01N 14E 30DCC1	7/28/1977	4/2/2018	Active	14 WL
01N 14E 36DAD1	3/24/1977	10/25/2018	Active	1633 WL Transducer installed Oct 2016
01S 11E 35CCC2	6/22/2016	10/25/2018	Active	1440 WL Transducer installed Oct 2016
01S 12E 22CCD1	10/25/1995	10/25/2018	Active	11 WL
01S 13E 16BBB1	4/17/1978	10/25/2018	Active	1168 WL Transducer installed Nov 2017
01S 14E 15ABB2	6/13/2000	10/25/2018	Active	6 WL
01S 14E 24ADA1	3/16/1978	4/2/2018	Active	469 WL Transducer installed Nov 2017
01S 14E 28DDC1	6/17/1974	10/25/2018	Active	1741 WL Transducer installed Oct 2016
01S 16E 09DDD1	4/2/2018	10/25/2018	Active	3 WL
01S 17E 16BCA1	10/31/2018	10/31/2018	Active	1 WL
01S 17E 17BBB1	12/24/1974	10/25/2018	Active	1677 WL Transducer installed Oct 2016
01S 14E 19DAA1	6/8/1977	11/14/2018	Active	7 WL Transducer installed Oct 2018
01S 12E 31ACA1	10/31/2018	10/31/2018	Active	1 WL Transducer installed Oct 2018
01N 14E 30CCC1	3/17/1977	6/8/1993	Active	15 WL Transducer installed Oct 2018
01S 13E 15BDD1	3/25/1977	9/18/1991	Active	8 WL Transducer installed Oct 2018
01S 13E 16DBB1	11/12/1976	5/29/1983	Active	7 WL
01S 14E 14AAA1	4/26/1977	9/19/1977	Active	5 WL
01S 14E 15ADD2	6/4/1977	10/31/2018	Active	7 WL
01S 14E 33AAA1	12/6/1976	10/25/2018	Active	8 WL
01S 15E 14BBA1	1/18/1977	10/31/2018	Active	18 WL Transducer installed Oct 2018
01S 16E 04CDB1	7/23/1957	10/31/2018	Active	10 WL Transducer installed Oct 2018

Water-Level Analysis

A review of the data from the wells included in the current monitoring network was conducted to generate potentiometric maps, determine trends, evaluate seasonal water-level fluctuations, and establish short and long-term changes. Appendix A contains hydrographs of the wells shown in Figure 2, Appendix B contains hydrographs of the wells shown in Figure 3, and Appendix C contains wells shown in Figure 4. Hydrographs in Appendices A-C with a record beginning prior to year 2000 have a second hydrograph beginning in 2000. Figure 5 is a map showing the location of the wells with at least 20 years of record without significant gaps. The hydrographs for these wells along with a computed trend line and p[1] value for the slope in the trend line are shown in Appendix D. Wells 04N 17E 14BBC1 and 02S 20E 01ACC2 are not completed in the WRV aquifer. 04N 17E 14BBC1 is completed in a geothermal aquifer and 02S 20E

[1] The p-value is the probability of obtaining the existing dataset when in fact the null hypothesis is true. In this case the null hypothesis is that the water-level trend is flat. If the p-value is less than 0.05, then the null hypothesis is rejected at the 95% confidence level.