



SOUTHERN NEVADA
WATER AUTHORITY

Water Resources Division

Spring Valley Stipulation Agreement Hydrologic Monitoring Plan Status and Data Report

March 2008

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ACRONYMS

BLM	Bureau of Land Management
BWG	Biological Working Group
DOI	Department of Interior
EC	electrical conductivity
HB	hydrographic basin
SNPLMA	Southern Nevada Public Lands Management Act
SNWA	Southern Nevada Water Authority
TRP	Technical Review Panel
USGS	U.S. Geological Survey
UTM	Universal Transverse Mercator

ABBREVIATIONS

°C	degrees Celsius
afy	acre-feet per year
amsl	above mean sea level
bgs	below ground surface
cfs	cubic feet per second
cm	centimeter
ft	foot
gpm	gallons per minute
in.	inch
L	liter
m	meter
µg	microgram
µS	microsiemen
mg	milligram
mS	millisiemens
pCi	picocurie
pmc	percent modern carbon



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1.0 INTRODUCTION

This document prepared by the Southern Nevada Water Authority (SNWA) presents the current status of each element of the Hydrologic Monitoring, Management and Mitigation Plan for the Development of Groundwater in the Spring Valley Hydrographic Basin (HB) Pursuant to the Application Nos. 54003 through 54021 by the SNWA (SV3M Plan). It provides the Technical Review Panel (TRP) and the State Engineer with historical data from each of the current Stipulation related hydrologic monitoring locations including data collected in 2007. The report also includes a brief summary of the hydraulic testing (including well performance and aquifer tests) conducted and water-chemistry sampling results from monitor and test wells installed during the exploratory drilling program.

1.1 Background

SNWA holds groundwater rights in Spring Valley HB 184 for municipal and domestic purposes under permits 54003 through 54015, inclusive, as well as 54019 and 54020. These permits were granted by the Nevada State Engineer by Ruling 5726 issued April 16, 2007 and total 60,000 afy following a staged development (Nevada State Engineer, 2007). The staged development guidelines call for a minimum ten-year period during which time a maximum of 40,000 afy can be pumped in any one year with a ten consecutive-year average of at least 35,000 afy. At the end of the ten-year period and a review of the findings of the staged development period, SNWA may have the opportunity to develop the full 60,000 afy.

Prior to the hearing on September 8, 2006, a Stipulation for Withdrawal of Protests (Stipulation) was established between SNWA and U.S. Department of Interior (DOI) on behalf of the Bureau of Indian Affairs, the Bureau of Land Management, (BLM) the National Park Service, and the U.S. Fish and Wildlife Service (collectively known as the DOI Bureaus). This Stipulation requires that SNWA develop comprehensive hydrologic (SV3M Plan) and biologic monitoring plans, which are presented in Exhibits A and B of the Stipulation, respectively. As part of the Stipulation, an Executive Committee was established to oversee the implementation of the Stipulation. A TRP and Biological Working Group (BWG), composed of representatives of parties to the agreement, were also established to develop and oversee implementation of monitoring and mitigation plans, review program data, and modify the monitoring plans, if necessary.

1.2 Report Scope

[Section 2.0](#) of this report presents the status and data collected for each major element of SV3M Plan. The section is organized to correspond to each subsection presented in Part 2, Monitoring Requirements, of the SV3M Plan. In addition to Stipulation related data, this document also presents a brief summary of the exploratory drilling activities, hydraulic testing and water chemistry sampling



results, performed in Spring Valley. More detailed documentation of the well construction and aquifer testing programs have been provided to the TRP in preliminary data reports for three test well locations. Preliminary data reports for three additional recently installed test wells will be prepared in 2008. Detailed Geologic Analysis Reports and Hydrologic Analysis Reports are currently being prepared by SNWA for each test well location.

2.0 SV3M PLAN STATUS AND DATA

The current status of each major element of the SV3M Plan is presented in this section. Historical data, including data collected in 2007 in satisfaction of the requirements of each element of the Plan, is presented in each respective section. Additionally, non-stipulation related aquifer test and water chemistry data from the SNWA exploratory monitor and test wells is included in [Section 2.1](#).

2.1 Part 2 Section B: Exploratory and Production Well Monitoring

2.1.1 Plan Requirements

This section of the SV3M Plan states that SNWA shall record discharge and water levels in all completed SNWA production wells on a continuous basis. There are currently no SNWA production wells associated with this project. Continuous measurements are planned to be collected from all future production wells.

Water-level measurements are required in all SNWA exploratory wells at least quarterly. Following the beginning of groundwater withdrawal, a representative number of exploratory wells will be identified for continuous measurement by the TRP.

2.1.2 Exploratory Program Wells

Eight (8-in. diameter) exploratory monitor wells and five (20-in. diameter) test wells have been completed by SNWA in Spring Valley. The locations of monitor and test wells are presented in [Figure 2-1](#). Well construction and completion data for these wells are presented in [Table 2-1](#). One additional test well, SPR7005X (formerly named 184W111), located at Cooper Canyon is currently being completed. Each test well is paired with a monitor well. Test wells were not constructed at location 184W508M due to low hydraulic conductivity volcanics encountered at the site, or SPR7006M (formerly named 184W514M) due to the large depth to groundwater. A professional grade survey of location coordinates, ground surface and top of casing measuring reference point elevation is planned to be performed for each well in 2008.

A simplified SNWA well naming system was established for all new well installations. Recently constructed wells with names different from those used in previous correspondence with the TRP have old names are bracketed. The list of current and replaced names are listed in [Table 2-1](#).

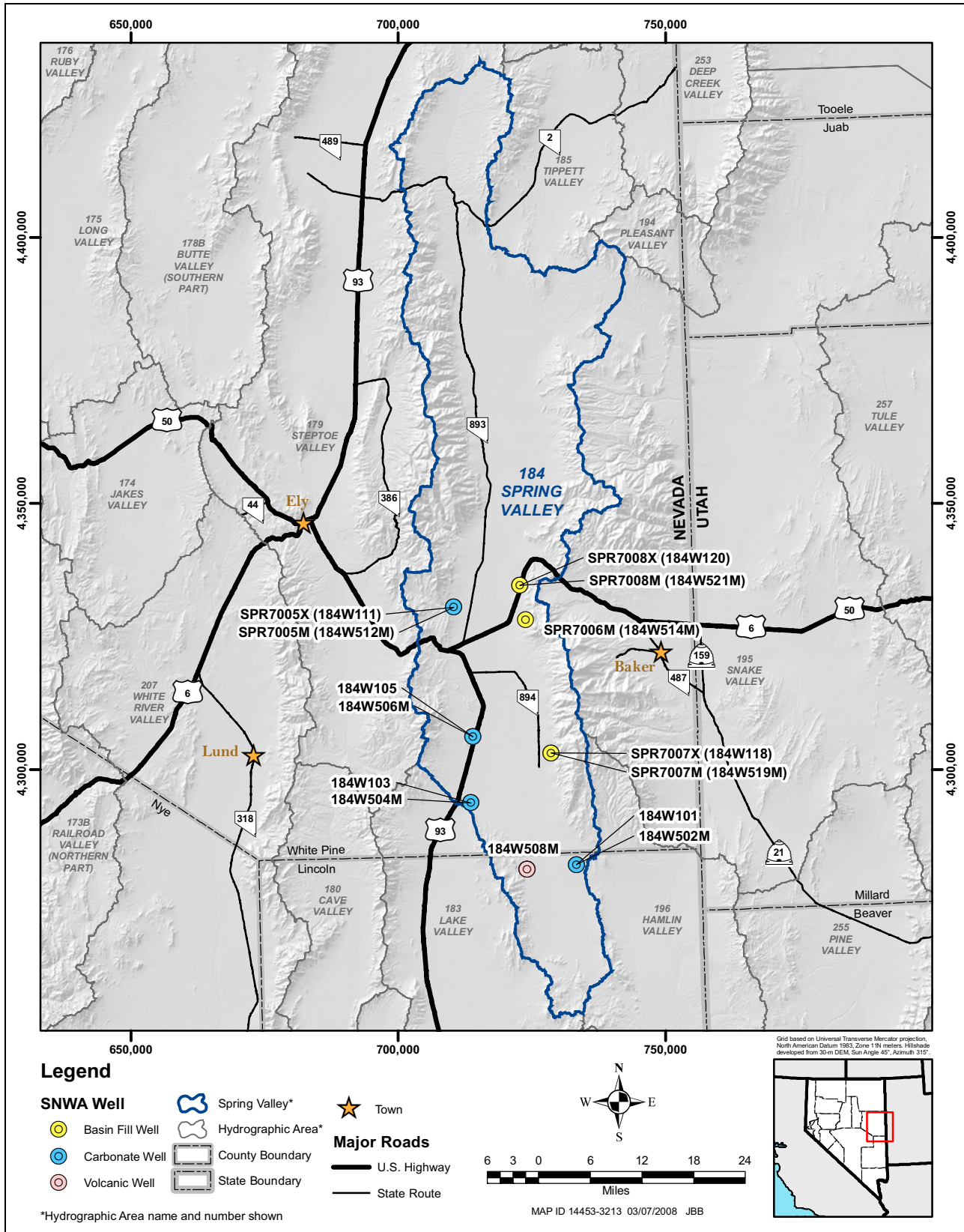


Figure 2-1
SNWA Exploratory and Test Wells in Spring Valley, Nevada (as of March 2008)

Table 2-1
SNWA Exploratory and Test Wells in Spring Valley, Nevada (as of March 2008)

Site Identification Number	UTM ^a Northing (m)	UTM ^a Easting (m)	Estimated Surface Elevation (ft-amsl)	Aquifer	Well Completion Date	Well Depth (ft)	Well Casing Diameter (in.)	Perforated Interval (ft-bgs)	Gravel Pack Interval (ft-bgs)	Specific Capacity (gpm/ft)
184W508M	4,281,309	724,070	6,055	Volcanic	12/19/2006	1,160	8	376 to 1,139	237 to 1,180 ^b	--
184W101	4,281,861	733,301	6,186	Carbonate	2/24/2007	1,749	20	796 to 1,728	54 to 1,760	11.13
184W502M	4,282,117	733,293	6,188	Carbonate	1/24/2007	1,800	8	495 to 1,779	60 to 1,828 ^c	6.25
184W103	4,293,483	713,703	5,910	Carbonate	12/1/2006	1,017	20	296 to 996	54 to 1,046	4.18
184W504M	4,293,713	713,647	5,919	Carbonate	11/19/2006	1,020	8	309 to 999	58 to 1,040 ^c	11.03
184W506M	4,306,214	713,939	6,002	Carbonate	10/19/2006	1,140	8	427 to 1,120	80 to 1,160 ^c	323
184W105	4,306,010	713,997	5,996	Carbonate	11/1/2006	1,135	20	420 to 1,114	50 to 1,160	54.89
SPR7005M (184W512M)	4,330,472	710,370	6,397	Carbonate	7/11/2007	1,406	8	665 to 1,385	452 to 1,412	302
SPR7005X (184W111) ^e	4,330,562 ^d	710,380 ^d	6,397 ^d	Carbonate	On-going	1,360 ^d	20	660 to 1,340 ^d	500 to 1,364 ^d	--
SPR7006M (184W514M) ^e	4,328,154	723,861	6,520	Carbonate	9/13/2007	1,700	8	980 to 1,680	167 to 1,720 ^c	--
SPR7007M (184W519M) ^e	4,303,143	727,972	6,070	Basin-Fill	8/18/2007	1,020	8	300 to 1,000	112 to 1,040	87.11
SPR7007X (184W118) ^e	4,303,150	727,949	6,037	Basin-Fill	1/25/2008	1,020	20	299 to 1,000	114 to 1,040	95.54
SPR7008X (184W120) ^e	4,334,751	722,701	5,740	Basin-Fill	11/28/2007	970	20	241 to 941	109 to 970	11.78
SPR7008M (184W521M) ^e	4,334,638	722,753	5,740	Basin-Fill	7/25/2007	946	8	226 to 946	69 to 960	6.09

^aUniversal Transverse Mercator, North American Datum, 1983, Zone 11

^bInterval - Bottom of intermediate casing to total depth.

^cInterval - Bottom of Conductor casing to total depth.

^dEstimate, well not completed.

^eA revised SNWA well naming system was established for new well installations. Recently constructed wells with names different from those used in correspondence to the TRP will have old names bracketed.



2.1.3 Well Performance and Aquifer Testing

A well performance step-drawdown test, constant-rate aquifer test, and water-chemistry sampling of each test well was performed as part of the exploratory program and was not required by the Stipulation. Testing of SPR7005X is planned for April 2008. Each test well was developed after installation using airlifting and swabbing methods. Additional development was performed as part of the well performance and aquifer evaluation testing program using a surge-and-pump method until specific capacity and field chemistry stabilized. For monitor wells, single well short term (up to 8 hour) constant rate test was performed after development.

Prior to performing the step-drawdown performance test, each test well was allowed to recover for a minimum of 24 hours after development. The step-drawdown performance test consisted of four to five steps of different production rates. After a minimum of 24 hours of recovery, a 72- to 120-hour constant rate test was performed. Recovery data was collected for several days after completion of the pumping phase of the test. A summary of data associated with the well performance and aquifer testing is presented in [Table 2-2](#).

A preliminary data report was prepared for hydraulic testing program conducted at test wells 184W101, 184W103, and 184W105. The report includes well construction, well and aquifer test description, and drawdown data plots. The report was posted on the current FTP exchange web site and distributed to the TRP participants and Office of the Nevada State Engineer. Additional preliminary data reports on test wells SPR7005X (184W111), SPR7007X (184W118), and SPR7008X (184W120) will be distributed after their completion. A comprehensive Geologic Analysis Report and Hydrologic Analysis Report including aquifer parameter evaluation will be prepared for each test well and will be distributed to the TRP participants and Office of the Nevada State Engineer.

2.1.4 Water Chemistry

Before the end of the constant-rate tests, groundwater chemistry samples were collected at each location for laboratory analysis. The groundwater chemistry samples were collected as part of the exploratory program and was not required by the Stipulation. For the monitor wells, with the exception of 184W508M, samples were collected during the single well short term constant-rate test for analysis of a limited suite of chemical parameters. Well 184W508M was not sampled due to low yield encountered. Groundwater samples were collected for a more comprehensive parameter suite of analysis at each test well during the 72-to 120-hour constant rate test. Water chemistry results for all monitor and test well locations are presented in [Table 2-3](#). An evaluation of the water chemistry data will be included in the Hydrologic Analysis Report.

2.1.5 Hydrologic Monitoring Data

Water-level data were collected from all monitor and test wells. Water-level measurements were regularly collected from monitor and test wells using an electronic probe. Long term continuous water level data is also currently being collected from the first four SNWA monitor wells 184W502M, 184W504M, 184W506M, and 184W508M installed in south Spring Valley. Three of

Table 2-2
 Aquifer Test Summary Data for SNWA Spring Valley Monitor and Test Wells

Test Well Number	Associated Observation Well/Spring	Distance from Test Well (ft)	Specific Capacity (gpm/ft)	Constant Rate Test Duration (hours)	Constant Rate Test Flow Rate (gpm)	Step Test Range (gpm)	Casing Diameter (in.)	Drill Depth (ft-bgs)	Gravel Pack Interval (ft-bgs)	Drawdown at end of Constant Rate Test (ft)	Change in Spring Discharge
184W101	184W101	--	11.13				20	1,760	54 to 1,760	226.38	--
184W101	184W502M	175	--	72	2,520	2,200 to 2,600	8	1,828	60 to 1,828 ^a	21.12	--
	184W504M ^b	14 miles	--				--	--	--	0 ^c	--
184W103	184W103	--	4.18				20	1,046	52 to 1,046	131.50	--
	184W504M	177	--	72	550	410 to 630	8	1,040	58 to 1,040 ^a	3.92	--
184W105	184W506M ^b	8 miles	--				--	--	--	0 ^c	--
	184W105	--	54.89				20	1,160	50 to 1,160	54.65	--
184W105	184W506M	212	--	72	3,000	2,300 to 3,700	8	1,160	80 to 1,160 ^a	4.63	--
	184W504M ^b	8 miles	--				--	--	--	0 ^c	--
SPR7007X	SPR7007X	--	95.54				20	1,040	114 to 1,040	31.40	--
	SPR7007M (184W519M)	99	--				8	1,040	112 to 1,040	13.50	--
SPR7007X (184W118)	390352114305401 ^b	17 miles	--	120	3,000	2,000 to 4,000	2	160	Unknown (50 to 160)	0 ^c	--
	Swallow Spring	2,300	--				--	--	--	--	(Discharge constant) ^d
SPR7008X	Minerva Spring	1.7 miles	--				4	35	15 to 35	0 ^c	--
	Piezometer										
SPR7008X (184W120)	SPR7008X	--	11.78				20	970	109 to 970	169.71	--
	SPR7008M (184W521M)	100	--				8	960	69 to 960	42.74	--
SPR7008X (184W120)	390803114251001	376	--	72	2,000	1,500 to 3,300	2	200	Unknown (50 to 200)	0.38	--
	390352114305401 ^b	--	--				2	160	Unknown (50 to 160)	0 ^c	--
Layton Spring	Layton Spring	2.5 miles	--				--	--	--	--	(Discharge constant) ^e
	MX Flowing Well	3,900	--				2	Unknown	Unknown	--	(Discharge constant) ^e

^aInterval from bottom of conductor casing to total depth (Open borehole).

^bBackground well.

^cDrawdown as a result of the pump test. Actual water level fluctuations due to barometric and tidal influences.

^dFlow measured with 3 in. and 6 in. Parshall Flumes downstream of the North and South orifices, respectively.

^eFlow measured volumetrically.



**Table 2-3
Groundwater Chemistry Data for SNWA Spring Valley Monitor and Test Wells
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Constituent	Unit	184W101	184W103	184W105	184W502M	184W504M	184W506M	SPR7005M	SPR7006M	SPR7006M	SPR7007M
		4/12/2007 8:00 AM	3/26/2007 8:30 AM	3/8/2007 8:00 AM	1/29/2007 10:00 AM	12/14/2006 10:21 AM	10/31/2006 11:53 AM	8/22/2007 4:18 PM	10/18/2007 10:40 PM	9/5/2007 1:15 PM	9/18/2007 4:42 PM
Field Measured											
Conductivity	µS/cm	359	263	282	394	333	385	325	298	343	294
Dissolved Oxygen	mg/L	2.29	6.34	5.08	--	--	--	--	--	--	--
pH	units	7.7	7.9	7.8	8.49	7.46	8.1	7.72	8.2	7.86	7.87
Temperature Water	°C	24.1	12	13	20.5	12.1	12.7	24.1	22.3	14.3	20.4
Turbidity	NTU	--	--	--	--	--	--	0.88	2.66	3.1	--
Major Constituents											
Alkalinity Bicarbonate LAB	mg/L as HCO ₃	230	190	200	210	190	190	200	130	190	140
Alkalinity Carbonate LAB	mg/L as CaCO ₃	< 2	< 2	< 2	--	< 2	4.5	< 2	< 2	< 2	< 2
Alkalinity Total LAB	mg/L as CaCO ₃	190	160	170	170	160	160	160	110	150	110
Alkalinity Hydroxide LAB	mg/L as CaCO ₃	< 2	< 2	< 2	--	< 2	< 2	< 2	< 2	< 2	< 2
Chloride	mg/L	4.6	5.2	7.5	5.4	6.0	7.9	2.0	7.1	1.8	9.6
Nitrate	mg/L	< 0.5	4.4	3.1	0.66	4.6	3.1	1.5	1.6	1.8	1.9
Sulfate	mg/L	18	17	16	18	12	17	15	12	7.3	13
Calcium	mg/L	43	35	35	47	33	36	38	34	48	34
Magnesium	mg/L	16	19	20	18	17	20	14	6.8	11	7.7
Sodium	mg/L	9.1	9.6	9.3	16	17	16	9.9	11	4.2	14
Potassium	mg/L	2.7	2.4	1.8	2.7	2.8	1.8	1	3.2	0.69	2.3
Silica	mg/l	25	27	17	22	27	17	10	20	8.6	16
Total Dissolved Solids LAB	mg/L	180	190	200	170	200	250	--	150	210	190
Sodium Adsorption Ratio	None	0.425	0.459	0.439	--	--	--	--	--	--	--
Total Suspended Solids	mg/L	< 5	< 5	< 5	48	< 5	25	--	< 5	--	< 5
Hardness (calc)	mg/L as CaCO ₃	180	170	170	--	--	--	150	--	--	120
Langelier Index	N/A	0.282	0.134	0.073	--	--	--	--	--	--	--
Ryznar Stability Index	N/A	7.14	7.63	7.66	--	--	--	--	--	--	--
Cation/Anion Balance	%	4.7	0.13	2	7.5	2	3.2	1.1	2.2	2.8	3.2
Trace and Minor											
Aluminum Total	µg/L	8.4	< 5	26	180 ^a	130 ^a	320 ^a	9.1 ^a	15 ^a	60 ^a	19 ^a
Antimony Total	µg/L	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Arsenic Total	µg/L	4.3	2.8	2.4	5.6	2.8	1.8	1.4	4	0.44	5.4
Arsenic III	µg/L	< 1	3.3	2.4	--	--	--	--	--	--	--
Arsenic V	µg/L	4.2	< 1	< 1	--	--	--	--	--	--	--
Barium Total	µg/L	210	52	92	200	38	47	120	230	36	240
Beryllium Total	µg/L	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1

Table 2-3
Groundwater Chemistry Data for SNWA Spring Valley Monitor and Test Wells
 (Page 2 of 7)

Constituent	Unit	184W101 4/12/2007 8:00 AM	184W103 3/26/2007 8:30 AM	184W105 3/8/2007 8:00 AM	184W502M 1/29/2007 10:00 AM	184W504M 12/14/2006 10:21 AM	184W506M 10/31/2006 11:53 AM	SPR7005M 8/22/2007 4:18 PM	SPR7006M 10/18/2007 10:40 PM	SPR7006M 9/5/2007 1:15 PM	SPR7007M 9/18/2007 4:42 PM
Boron Total	µg/L	41	37	40	28	63	54	18	31	19	64
Bromide	µg/L	42	51	66	43	47	72		55	16	50
Cadmium Total	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium Total	µg/L	0.33	1.2	3.6	0.77	1.4	2	<0.2	<0.2	0.29	0.2
Chromium (III)	µg/L	0.21	<0.2	1.8							
Chromium (VI)	µg/L	<0.3	1.2	1.8							
Copper Total	µg/L	0.73	<0.5	<0.5	2.6	<0.5	2.7	1.8	0.58	0.98	0.7
Fluoride	mg/l	0.27	0.18	0.16	0.36	0.23	0.25	<0.1	0.36	<0.1	0.24
Iron Total	µg/L	<20	<20	<20	5,700 ^a	500 ^a	300 ^a	390 ^a	280 ^a	44 ^a	32 ^a
Lead Total	µg/L	0.3	0.31	0.46	3.6	0.28	0.78	0.58	1.6	0.88	1
Lithium Total	µg/L	11	<10	<10	19	16	<10	<10	16	<10	<10
Manganese Total	µg/L	2.8	1.8	0.78	39 ^a	24 ^a	62 ^a	28 ^a	14 ^a	4 ^a	6.8 ^a
Mercury Total	µg/L	<0.1	<0.1	<0.1	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2
Molybdenum Total	µg/L	5.4	0.91	2.2	6.2	1.4	2.1	0.92	2.7	0.34	1.5
Nickel Total	µg/L	2.3	<0.8	<0.8	0.98	<0.8	1.4	<0.8	<0.8	<0.8	<0.8
Nitrogen Nitrite	µg/L as N	<100	<100	<100				<150			<150
Phosphate	µg/L as P	<2	4.4	<2							
Phosphorus	µg/L as P	<10	<10	<10							
Selenium Total	µg/L	0.42	0.84	2.1	<0.4	0.69	1.5	<0.4	<0.4	<0.4	<0.4
Silver Total	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Strontium Total	µg/L	180	280	170	170	180	<0.2	160	150	170	140
Thallium Total	µg/L	0.42	<0.2	<0.2	0.39	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Uranium Total	µg/L	2.73	1.70	2.82							
Uranium Total (Duplicate)	µg/L	2.71	1.72								
Vanadium Total	µg/L	3	4.9	3.7	3.2	3	3	0.58	0.56	0.54	1.1
Zinc Total	µg/L	<5	5.5	<5	56 ^a	55 ^a	29 ^a	<5 ^a	7.6 ^a	<5 ^a	<5 ^a
Radionuclides											
Gross Alpha	pCi/L	3.8	4.1	3.1							
Gross Beta	pCi/L	0	2.2	1.8							
Radium Total	pCi/L	1.2	0.4	0.5							
Radium-226	pCi/L	1.2	0.4	0.5							
Radium-228	pCi/L	<0.4	<0.3	<0.4							
Radon	pCi/L	353	515	353							
Strontium-90	pCi/L	<0.6		<0.6							



Table 2-3
Groundwater Chemistry Data for SNWA Spring Valley Monitor and Test Wells
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Constituent	Unit	184W101	184W103	184W105	184W502M	184W504M	184W506M	SPR7005M	SPR7006M	SPR7006M	SPR7007M
		4/12/2007 8:00 AM	3/26/2007 8:30 AM	3/8/2007 8:00 AM	1/29/2007 10:00 AM	12/14/2006 10:21 AM	10/31/2006 11:53 AM	8/22/2007 4:18 PM	10/18/2007 10:40 PM	9/5/2007 1:15 PM	9/18/2007 4:42 PM
Tritium	pCi/L	< 337	< 519	< 340	--	--	--	--	--	--	--
Tritium	TU	< 0.8	< 0.8	< 0.8	--	--	--	--	--	--	--
Uranium	pCi/L	1.8	1.1	2	--	--	--	--	--	--	--
Environmental Isotopes											
Carbon-13/12 DIC	per mil	-5.8	-6.7	-5.8	--	--	--	--	--	--	--
Carbon-14 DIC	pmc	4.93	10.37	6.09	--	--	--	--	--	--	--
Chlorine-36/Chloride	ratio	4.86E-13	5.45E-13	4.29E-13	--	--	--	--	--	--	--
Hydrogen-2/1	per mil	-113.05	-110.69	-112.18	-112.15	-110.43	-111.77	--	--	--	--
Hydrogen-2/1 (Duplicate)	per mil	-113.05	-110.36	-112.82	-112.57	-110.01	-111.65	--	--	--	--
Oxygen-18/16	per mil	-14.98	-14.77	-14.84	-14.99	-14.84	-15.09	--	--	--	--
Oxygen-18/16 (Duplicate)	per mil	--	-14.76	--	--	--	-14.97	--	--	--	--
Strontium-87/86	ratio	0.710535	0.70902	0.709282	--	--	--	--	--	--	--
Uranium-234/238, Activity	ratio	2.9748	3.7492	2.0803	--	--	--	--	--	--	--
Uranium-234/238, Activity (Duplicate)	ratio	2.9735	3.7482	--	--	--	--	--	--	--	--
Organics											
1,1,2-Trichloro-1,2,2-trifluoroethane	µg/L	< 10	< 10	< 10	--	--	--	--	--	--	--
1,2,4-Trimethylbenzene	µg/L	< 0.5	< 0.5	< 0.5	--	--	--	--	--	--	--
1,2-Dibromo-3-chloropropane	µg/L	< 0.01	< 0.01	< 0.01	--	--	--	--	--	--	--
Acifluorfen	µg/L	< 0.5	< 0.5	< 0.5	--	--	--	--	--	--	--
Alachlor	µg/L	< 0.1	< 0.1	< 0.1	--	--	--	--	--	--	--
Aldicarb	µg/L	< 2	< 2	< 2	--	--	--	--	--	--	--
Aldicarb Sulfone	µg/L	< 2	< 2	< 2	--	--	--	--	--	--	--
Aldicarb Sulfoxide	µg/L	< 2	< 2	< 2	--	--	--	--	--	--	--
Aldrin	µg/L	< 0.075	< 0.075	< 0.075	--	--	--	--	--	--	--
Atrazine	µg/L	< 0.1	< 0.1	< 0.1	--	--	--	--	--	--	--
Baygon	µg/L	< 5	< 5	< 5	--	--	--	--	--	--	--
Bentazon	µg/L	< 2	< 2	< 2	--	--	--	--	--	--	--
Benzene	µg/L	< 0.5	< 0.5	< 0.5	--	--	--	--	--	--	--
Benzo(a)pyrene	µg/L	< 0.1	< 0.1	< 0.1	--	--	--	--	--	--	--
BHC (Alpha)	µg/L	< 0.01	< 0.01	< 0.01	--	--	--	--	--	--	--
BHC (Beta)	µg/L	< 0.05	< 0.05	< 0.05	--	--	--	--	--	--	--
BHC (Delta)	µg/L	< 0.05	< 0.05	< 0.05	--	--	--	--	--	--	--
BHC (Gamma) [Lindane]	µg/L	< 0.2	< 0.2	< 0.2	--	--	--	--	--	--	--
bis (2-Ethylhexyl)adipate	µg/L	< 5	< 5	< 5	--	--	--	--	--	--	--

Table 2-3
Groundwater Chemistry Data for SNWA Spring Valley Monitor and Test Wells
 (Page 4 of 7)

Constituent	Unit	184W101 4/12/2007 8:00 AM	184W103 3/26/2007 8:30 AM	184W105 3/8/2007 8:00 AM	184W502M 1/29/2007 10:00 AM	184W504M 12/14/2006 10:21 AM	184W506M 10/31/2006 11:53 AM	SPR7005M 8/22/2007 4:18 PM	SPR7006M 10/18/2007 10:40 PM	SPR7006M 9/5/2007 1:15 PM	SPR7007M 9/18/2007 4:42 PM
bis (2-Ethylhexyl)phthalate	µg/L	< 3	< 3	6.1	--	--	--	--	--	--	--
Bromacil	µg/L	< 1	< 1	< 1	--	--	--	--	--	--	--
Bromobenzene	µg/L	< 0.5	< 0.5	< 0.5	--	--	--	--	--	--	--
Bromochloromethane	µg/L	< 0.5	< 0.5	< 0.5	--	--	--	--	--	--	--
Bromodichloromethane	µg/L	< 0.5	< 0.5	< 0.5	--	--	--	--	--	--	--
Bromoform	µg/L	< 0.5	< 0.5	< 0.5	--	--	--	--	--	--	--
Butachlor	µg/L	< 0.2	< 0.2	< 0.2	--	--	--	--	--	--	--
Butanone (2)	µg/L	< 5	< 5	< 5	--	--	--	--	--	--	--
Butylbenzene (n)	µg/L	< 0.5	< 0.5	< 0.5	--	--	--	--	--	--	--
Butylbenzene (sec)	µg/L	< 0.5	< 0.5	< 0.5	--	--	--	--	--	--	--
Carbaryl	µg/L	< 2	< 2	< 2	--	--	--	--	--	--	--
Carbofuran	µg/L	< 5	< 5	< 5	--	--	--	--	--	--	--
Carbon Tetrachloride	µg/L	< 0.5	< 0.5	< 0.5	--	--	--	--	--	--	--
Chlorate	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	--	< 10	< 10	< 10
Chlordane (tech)	µg/L	< 0.1	< 0.1	< 0.1	--	--	--	--	--	--	--
Chlorobenzene	µg/L	< 0.5	< 0.5	< 0.5	--	--	--	--	--	--	--
Chloroethane	µg/L	< 0.5	< 0.5	< 0.5	--	--	--	--	--	--	--
Chloroethylvinyl ether (2)	µg/L	< 1	< 1	< 1	--	--	--	--	--	--	--
Chloroform	µg/L	< 0.5	< 0.5	< 0.5	--	--	--	--	--	--	--
Chloroethanol	µg/L	< 5	< 5	< 5	--	--	--	--	--	--	--
Chlorotoluene (2)	µg/L	< 0.5	< 0.5	< 0.5	--	--	--	--	--	--	--
Chlorotoluene (4)	µg/L	< 0.5	< 0.5	< 0.5	--	--	--	--	--	--	--
Cyanide	mg/L	< 0.01	< 0.01	< 0.01	--	--	--	--	--	--	--
D (2,4)	µg/L	< 0.5	< 0.5	< 0.5	--	--	--	--	--	--	--
Dalapon	µg/L	< 0.5	< 0.5	< 0.5	--	--	--	--	--	--	--
DB (2,4)	µg/L	< 2	< 2	< 2	--	--	--	--	--	--	--
DCPA	µg/L	< 0.1	< 0.1	< 0.1	--	--	--	--	--	--	--
DDD (4,4)	µg/L	< 0.02	< 0.02	< 0.02	--	--	--	--	--	--	--
DDE (4,4)	µg/L	< 0.01	< 0.01	< 0.01	--	--	--	--	--	--	--
DDT (4,4)	µg/L	< 0.02	< 0.02	< 0.02	--	--	--	--	--	--	--
Diazinon	µg/L	< 0.1	< 0.1	< 0.1	--	--	--	--	--	--	--
Dibromochloromethane	µg/L	< 0.5	< 0.5	< 0.5	--	--	--	--	--	--	--
Dibromomethane	µg/L	< 0.5	< 0.5	< 0.5	--	--	--	--	--	--	--
Dicamba	µg/L	< 0.6	< 0.6	< 0.6	--	--	--	--	--	--	--



**Table 2-3
Groundwater Chemistry Data for SNWA Spring Valley Monitor and Test Wells
(Page 5 of 7)**

Constituent	Unit	184W101 4/12/2007 8:00 AM	184W103 3/26/2007 8:30 AM	184W105 3/8/2007 8:00 AM	184W502M 1/29/2007 10:00 AM	184W504M 12/14/2006 10:21 AM	184W506M 10/31/2006 11:53 AM	SPR7005M 8/22/2007 4:18 PM	SPR7006M 10/18/2007 10:40 PM	SPR7006M 9/5/2007 1:15 PM	SPR7007M 9/18/2007 4:42 PM
Dichlorobenzene (1,2)	µg/L	< 0.5	< 0.5	< 0.5	--	--	--	--	--	--	--
Dichlorobenzene (1,3)	µg/L	< 0.5	< 0.5	< 0.5	--	--	--	--	--	--	--
Dichlorobenzene (1,4) (p)	µg/L	< 0.5	< 0.5	< 0.5	--	--	--	--	--	--	--
Dichlorobenzoic acid (3,5)	µg/L	< 1	< 1	< 1	--	--	--	--	--	--	--
Dichlorodifluoromethane	µg/L	< 0.5	< 0.5	< 0.5	--	--	--	--	--	--	--
Dichloroethane (1,1)	µg/L	< 0.5	< 0.5	< 0.5	--	--	--	--	--	--	--
Dichloroethane (1,2)	µg/L	< 0.5	< 0.5	< 0.5	--	--	--	--	--	--	--
Dichloroethene (cis 1,2)	µg/L	< 0.5	< 0.5	< 0.5	--	--	--	--	--	--	--
Dichloroethene (1,1)	µg/L	< 0.5	< 0.5	< 0.5	--	--	--	--	--	--	--
Dichloroethene (trans 1,2)	µg/L	< 0.5	< 0.5	< 0.5	--	--	--	--	--	--	--
Dichloropropane (1,2)	µg/L	< 0.5	< 0.5	< 0.5	--	--	--	--	--	--	--
Dichloropropane (1,3)	µg/L	< 0.5	< 0.5	< 0.5	--	--	--	--	--	--	--
Dichloropropane (2,2)	µg/L	< 0.5	< 0.5	< 0.5	--	--	--	--	--	--	--
Dichloropropane (1,1)	µg/L	< 0.5	< 0.5	< 0.5	--	--	--	--	--	--	--
Dichloropropene (1,3)	µg/L	< 0.5	< 0.5	< 0.5	--	--	--	--	--	--	--
Dichloropropene (cis 1,3)	µg/L	< 0.5	< 0.5	< 0.5	--	--	--	--	--	--	--
Dichloropropene (trans 1,3)	µg/L	< 0.5	< 0.5	< 0.5	--	--	--	--	--	--	--
Dichloroprop	µg/L	< 0.3	< 0.3	< 0.3	--	--	--	--	--	--	--
Dieldrin	µg/L	< 0.02	< 0.02	< 0.02	--	--	--	--	--	--	--
Di-isopropyl ether	µg/L	< 3	< 3	< 3	--	--	--	--	--	--	--
Dimethoate	µg/L	< 0.2	< 0.2	< 0.2	--	--	--	--	--	--	--
Dinoseb	µg/L	< 0.5	< 0.5	< 0.5	--	--	--	--	--	--	--
Diquat	µg/L	< 4	< 4	< 4	--	--	--	--	--	--	--
Endosulfan I	µg/L	< 0.02	< 0.02	< 0.02	--	--	--	--	--	--	--
Endosulfan II	µg/L	< 0.01	< 0.01	< 0.01	--	--	--	--	--	--	--
Endosulfan Sulfate	µg/L	< 0.05	< 0.05	< 0.05	--	--	--	--	--	--	--
Endothall	µg/L	< 45	< 45	< 45	--	--	--	--	--	--	--
Endrin	µg/L	< 0.1	< 0.1	< 0.1	--	--	--	--	--	--	--
Endrin aldehyde	µg/L	< 0.05	< 0.05	< 0.05	--	--	--	--	--	--	--
Ethylbenzene	µg/L	< 0.5	< 0.5	< 0.5	--	--	--	--	--	--	--
Ethylene dibromide [EDB]	µg/L	< 0.02	< 0.02	< 0.02	--	--	--	--	--	--	--
Glyphosate	µg/L	< 5	< 5	< 5	--	--	--	--	--	--	--
Heptachlor	µg/L	< 0.01	< 0.01	< 0.01	--	--	--	--	--	--	--
Heptachlor Epoxide	µg/L	< 0.01	< 0.01	< 0.01	--	--	--	--	--	--	--

Table 2-3
Groundwater Chemistry Data for SNWA Spring Valley Monitor and Test Wells
 (Page 6 of 7)

Constituent	Unit	184W101 4/12/2007 8:00 AM	184W103 3/26/2007 8:30 AM	184W105 3/8/2007 8:00 AM	184W502M 1/29/2007 10:00 AM	184W504M 12/14/2006 10:21 AM	184W506M 10/31/2006 11:53 AM	SPR7005M 8/22/2007 4:18 PM	SPR7006M 10/18/2007 10:40 PM	SPR7006M 9/5/2007 1:15 PM	SPR7007M 9/18/2007 4:42 PM
Hexachlorobenzene	µg/L	< 0.5	< 0.5	< 0.5	---	---	---	---	---	---	---
Hexachlorobutadiene	µg/L	< 0.5	< 0.5	< 0.5	---	---	---	---	---	---	---
Hexachlorocyclopentadiene	µg/L	< 1	< 1	< 1	---	---	---	---	---	---	---
Hexanone (2)	µg/L	< 5	< 5	< 5	---	---	---	---	---	---	---
Hydroxycarboturan (3)	µg/L	< 2	< 2	< 2	---	---	---	---	---	---	---
Isopropylbenzene	µg/L	< 0.5	< 0.5	< 0.5	---	---	---	---	---	---	---
Isopropyltoluene (p)	µg/L	< 0.5	< 0.5	< 0.5	---	---	---	---	---	---	---
MBAS	mg/L	< 0.05	< 0.05	< 0.05	---	---	---	---	---	---	---
Methiocarb	µg/L	< 3	< 3	< 3	---	---	---	---	---	---	---
Methomyl	µg/L	< 2	< 2	< 2	---	---	---	---	---	---	---
Methoxychlor	µg/L	< 10	< 10	< 10	---	---	---	---	---	---	---
Methyl Bromide	µg/L	< 0.5	< 0.5	< 0.5	---	---	---	---	---	---	---
Methyl Chloride	µg/L	< 0.5	< 0.5	< 0.5	---	---	---	---	---	---	---
Methyl-2-pentanone (4)	µg/L	< 5	< 5	< 5	---	---	---	---	---	---	---
Methylene Chloride	µg/L	< 0.5	< 0.5	< 0.5	---	---	---	---	---	---	---
Metolachlor	µg/L	< 0.1	< 0.1	< 0.1	---	---	---	---	---	---	---
Metribuzin	µg/L	< 0.1	< 0.1	< 0.1	---	---	---	---	---	---	---
Molinate	µg/L	< 0.1	< 0.1	< 0.1	---	---	---	---	---	---	---
MTBE	µg/L	< 3	< 3	< 3	---	---	---	---	---	---	---
Naphthalene	µg/L	< 0.5	< 0.5	< 0.5	---	---	---	---	---	---	---
Oxamyl [ydate]	µg/L	< 2	< 2	< 2	---	---	---	---	---	---	---
PCB 1016 Aroclor	µg/L	< 0.1	< 0.1	< 0.1	---	---	---	---	---	---	---
PCB 1221 Aroclor	µg/L	< 0.1	< 0.1	< 0.1	---	---	---	---	---	---	---
PCB 1232 Aroclor	µg/L	< 0.1	< 0.1	< 0.1	---	---	---	---	---	---	---
PCB 1242 Aroclor	µg/L	< 0.1	< 0.1	< 0.1	---	---	---	---	---	---	---
PCB 1248 Aroclor	µg/L	< 0.1	< 0.1	< 0.1	---	---	---	---	---	---	---
PCB 1254 Aroclor	µg/L	< 0.1	< 0.1	< 0.1	---	---	---	---	---	---	---
PCB 1260 Aroclor	µg/L	< 0.1	< 0.1	< 0.1	---	---	---	---	---	---	---
PCBs Total	µg/L	< 0.5	< 0.5	< 0.5	---	---	---	---	---	---	---
Pentachlorophenol	µg/L	< 0.2	< 0.2	< 0.2	---	---	---	---	---	---	---
Picloram	µg/L	< 1	< 1	< 1	---	---	---	---	---	---	---
Prometon	µg/L	< 0.2	< 0.2	< 0.2	---	---	---	---	---	---	---
Prometryn	µg/L	< 0.1	< 0.1	< 0.1	---	---	---	---	---	---	---
Propachlor	µg/L	< 0.5	< 0.5	< 0.5	---	---	---	---	---	---	---



**Table 2-3
Groundwater Chemistry Data for SNWA Spring Valley Monitor and Test Wells
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Constituent	Unit	184W101 4/12/2007 8:00 AM	184W103 3/26/2007 8:30 AM	184W105 3/8/2007 8:00 AM	184W502M 1/29/2007 10:00 AM	184W504M 12/14/2006 10:21 AM	184W506M 10/31/2006 11:53 AM	SPR7005M 8/22/2007 4:18 PM	SPR7006M 10/18/2007 10:40 PM	SPR7006M 9/5/2007 1:15 PM	SPR7007M 9/18/2007 4:42 PM
Propylbenzene (n)	µg/L	< 0.5	< 0.5	< 0.5	--	--	--	--	--	--	--
Silvex	µg/L	< 0.2	< 0.2	< 0.2	--	--	--	--	--	--	--
Simazine	µg/L	< 0.1	< 0.1	< 0.1	--	--	--	--	--	--	--
Styrene	µg/L	< 0.5	< 0.5	< 0.5	--	--	--	--	--	--	--
T (2,4,5)	µg/L	< 0.2	< 0.2	< 0.2	--	--	--	--	--	--	--
TCDD (2,3,7,8) [dioxin]	pg/L	< 5	< 5	< 5	--	--	--	--	--	--	--
tert-amyl Methyl Ether	µg/L	< 3	< 3	< 3	--	--	--	--	--	--	--
tert-Butyl Ethyl Ether	µg/L	< 3	< 3	< 3	--	--	--	--	--	--	--
tert-Butylbenzene	µg/L	< 0.5	< 0.5	< 0.5	--	--	--	--	--	--	--
Tetrachloroethane (1,1,1,2)	µg/L	< 0.5	< 0.5	< 0.5	--	--	--	--	--	--	--
Tetrachloroethane (1,1,2,2)	µg/L	< 0.5	< 0.5	< 0.5	--	--	--	--	--	--	--
Tetrachloroethene	µg/L	< 0.5	< 0.5	< 0.5	--	--	--	--	--	--	--
Thiobencarb	µg/L	< 0.2	< 0.2	< 0.2	--	--	--	--	--	--	--
Toluene	µg/L	< 0.5	< 0.5	< 0.5	--	--	--	--	--	--	--
Total Organic Carbon (TOC)	mg/L	< 0.3	< 0.3	< 0.3	0.5	0.92	1.4	--	< 0.3	0.31	0.34
Toxaphene	µg/L	< 1	< 1	< 1	--	--	--	--	--	--	--
Trichlorobenzene (1,2,3) [TCB]	µg/L	< 0.5	< 0.5	< 0.5	--	--	--	--	--	--	--
Trichlorobenzene (1,2,4) [TCB]	µg/L	< 0.5	< 0.5	< 0.5	--	--	--	--	--	--	--
Trichloroethane (1,1,1) [TCE]	µg/L	< 0.5	< 0.5	< 0.5	--	--	--	--	--	--	--
Trichloroethane (1,1,2) [TCE]	µg/L	< 0.5	< 0.5	< 0.5	--	--	--	--	--	--	--
Trichloroethene	µg/L	< 0.5	< 0.5	< 0.5	--	--	--	--	--	--	--
Trichlorofluoromethane	µg/L	< 5	< 5	< 5	--	--	--	--	--	--	--
Trichloropropane (1,1,2,3)	µg/L	< 0.5	< 0.5	< 0.5	--	--	--	--	--	--	--
Trifluralin	µg/L	< 0.01	< 0.01	< 0.01	--	--	--	--	--	--	--
Trimethylbenzene (1,3,5)	µg/L	< 0.5	< 0.5	< 0.5	--	--	--	--	--	--	--
Vinyl Chloride	µg/L	< 0.5	< 0.5	< 0.5	--	--	--	--	--	--	--
Xylene (m,p) isometric pair	µg/L	< 0.5	< 0.5	< 0.5	--	--	--	--	--	--	--
Xylene (o)	µg/L	< 0.5	< 0.5	< 0.5	--	--	--	--	--	--	--
Xylenes Total	µg/L	< 0.5	< 0.5	< 0.5	--	--	--	--	--	--	--

*The concentrations of these constituents may have been impacted by the casing used for the monitoring wells.

the four locations are adjacent to test wells 184W101, 184W103 and 184W105. The four recently installed monitor wells SPR7005M (184W512M), SPR7006M (184W514M), SPR7007M (184W519M), and SPR7008M (184W521M) have not yet been equipped with continuous water level measurement pressure transducer and datalogger instrumentation.

Groundwater level data and hydrographs for monitor well 184W514M and test wells 184W101, 184W103, and 184W105 are presented in [Appendix A](#). Additional data on the other seven SNWA monitor wells which have also been included in the existing well network, discussed in the next section, are presented in [Appendix B](#).

2.2 Part 2 Section C: Existing Well Monitoring Network

The Plan states that SNWA shall monitor water levels quarterly in 10 representative monitor wells and continuously in 15 representative monitor wells in the Spring Valley and Hamlin Valley HBs as approved by the TRP.

In 2007, the TRP selected 25 wells to be included in the existing well monitoring network. Wells were selected based upon integrity of construction, spatial distribution, and completion information. Wells included in the network are completed in carbonate, volcanic and basin-fill aquifers. Locations of the wells and aquifers monitored are presented in [Figure 2-2](#). Simplified well identification numbers relate to the list of wells presented in Water Resources Assessment for Spring Valley Table D.1-1 (SNWA, 2006). Each well identification number on the figure includes a Q or C designation for quarterly or continuous measurements. A network well attribute table including construction, location coordinates, and best elevation, is presented in [Table 2-4](#). A professional grade survey of location coordinates, ground surface and top of casing measuring point elevations is planned to be performed for each network well in 2008. A field report documenting attributes of each well included in the network including well photos and map locations has been posted on the FTP site. This will be transferred to the Web Exchange in April, 2008.

The network includes wells owned by SNWA, U.S. Geological Survey (USGS), BLM, and two wells owned by the Eldridge Ranch. Network well ownership and access are currently being verified. All continuously monitored wells are owned by SNWA or USGS. Currently, SNWA is developing a Memo of Understanding with USGS to install appropriate instrumentation. The continuously monitored wells are planned to be equipped with Design Analysis Associates, Inc. (Logan, Utah) datalogger and pressure transducer instrumentation.

Historical discrete water-level data and a hydrograph depicting this data is presented in [Appendix B](#) for each well in this monitoring network. Some early historical data collected at certain well locations are approximate due to variations in reference point used for the measurement.

Daily mean values derived from continuous groundwater level data collected from four SNWA monitor wells using In Situ Corporation Level Troll integrated pressure transducers are presented in [Appendix C](#). In Situ instrumentation at these locations will be replaced with Design Analysis Associates, Inc. datalogger and pressure transducer instrumentation in 2008.

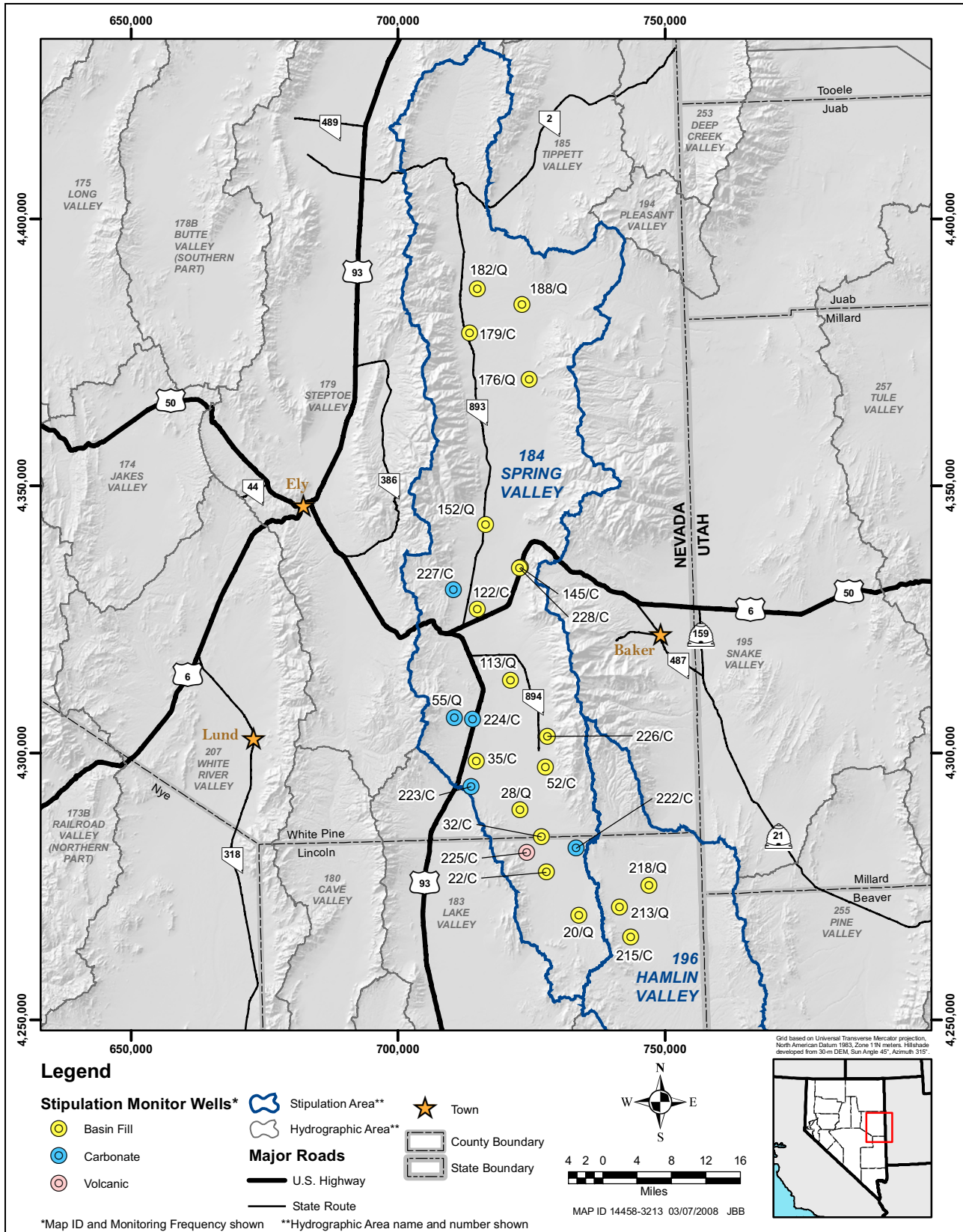


Figure 2-2 Existing Well Monitoring Network

Table 2-4
Spring Valley Existing Well Monitoring Network

Map ID	HA	Site Number	Station Local Number	UTM Northing (m)	UTM Easting (m)	Completion Date	Estimated Surface Elevation (ft-amsl)	Drill Depth (ft-bgs)	Well Depth (ft-bgs)	Well Diameter (in.)	Open Interval (ft-bgs)	Gravel Pack Interval (ft-bgs)	Aquifer	Monitor Frequency
22	184	383704114225001	184 N09 E68 30AAA B 1 USGS-MX (Spring Valley S.)	4,277,594	727,759	8/7/1980	6,003	700	679	11	559 to 679	50 to 700	Basin Fill	Continuous
32	184	384039114232701	184 N10 E68 31CD 1 USGS-MX	4,284,275	726,871	--	5,913	--	150	2	--	50 to 150	Basin Fill	Continuous
35	184	384831114314301	184 N11 E66 23AB 1 USGS-MX	4,298,411	714,632	--	5,843	102	102	2	--	50 to 102	Basin Fill	Continuous
52	184	384745114224401	184 N11 E68 19DCDC 1 USGS-MX (Spring Valley)	4,297,305	727,553	--	5,899	200	200	2	--	50 to 200	Basin Fill	Continuous
122	184	390352114305401	184 N14 E66 24BDDD 1 USGS-MX (Spring Valley N.)	4,326,895	714,873	--	5,840	--	160	2	--	50 to 160	Basin Fill	Continuous
145	184	390803114251001	184 N15 E67 26CA 1 USGS-MX	4,334,741	722,962	--	5,719	--	200	2	--	50 to 200	Basin Fill	Continuous
179	184	393211114320701	184 N19 E66 11B 1	4,378,628	713,379	4/22/1960	5,762	--	400	--	--	50 to 400	Basin Fill	Continuous
215	196	383023114115302	196 N08 E69 35DC 2 USGS-MX (Hamlin Valley S.)	4,266,403	743,597	8/7/1980	5,779	435	435	2	--	50 to 435	Basin Fill	Continuous
222	184	184W502M	184 N09 E68 11 BD 2	4,282,117	733,293	1/24/2007	6,188	1,828	1,800	8	495 to 1,779	60 to 1,828	Carbonate	Continuous
223	184	184W504M	184 N11 E66 34 DD 2	4,293,713	713,647	11/19/2006	5,919	1,040	1,020	8	309 to 999	58 to 1,040	Carbonate	Continuous
224	184	184W506M	184 N12 E66 26 BA 2	4,306,214	713,939	10/19/2006	6,002	1,160	1,140	8	427 to 1,120	80 to 1,160	Carbonate	Continuous
225	184	184W508M	184 N09 E67 11 DB 1	4,281,309	724,070	12/19/2006	6,055	1,180	1,160	8	376 to 1,139	50 to 1,180	Volcanic	Continuous
226	184	SPR7007M (184W519M)	184 N11 E68 05 BC 2	4,303,143	727,972	8/18/2007	6,070	1,040	1,020	8	300 to 1,000	112 to 1,040	Basin Fill	Continuous
227	184	SPR7005M (184W512M)	184 N14 E66 09 AB 2	4,330,472	710,370	7/11/2007	6,397	1,412	1,406	8	665 to 1,385	452 to 1,412	Carbonate	Continuous
228	184	SPR7008M (184W521M)	184 N15 E67 26 CD 2	4,334,638	722,753	7/25/2007	5,740	960	946	8	226 to 946	69 to 960	Basin Fill	Continuous
20	184	383351114180201	184 N08 E68 14A 1 USBLM	4,269,505	733,844	--	6,182	--	495	6	50 to 495	50 to 495	Basin Fill	Quarterly
28	184	384310114261401	184 N10 E67 22AA 1 USGS-MX (Spring V Central)	4,289,331	722,826	--	5,857	--	100	2	--	50 to 100	Basin Fill	Quarterly
55	184	184 N12 E66 21CD 1	184 N12 E66 21CD 1	4,306,564	710,561	9/13/1966	6,397	631	633	6	3 to 631	3 to 631	Carbonate	Quarterly
113	184	385636114265501	184 N13 E67 33DDA 1	4,313,592	721,084	--	5,770	--	--	36	--	--	Basin Fill	Quarterly
152	184	391224114293601	184 N16 E66 36DBAD 1 USBLM - Cleve Creek Well	4,342,684	716,360	--	5,862	--	--	--	--	--	Basin Fill	Quarterly
176	184	392703114230501	184 N18 E67 01CCAA 1	4,369,958	724,523	--	5,591	45	42	38	--	--	Basin Fill	Quarterly
182	184	184 N20 E66 13AB 1	184 N20 E66 13AB 1	4,386,884	714,869	6/26/1966	5,771	907	296	16	135 to 296	--	Basin Fill	Quarterly
188	184	393442114231801	184 N20 E67 26ABBD 1 USBLM	4,383,957	723,237	--	5,709	--	130	6	--	50 to 130	Basin Fill	Quarterly
213	196	383325114134901	196 N08 E69 15B 1	4,271,102	741,541	--	5,732	--	110	6	--	50 to 110	Basin Fill	Quarterly
218	196	383533114102901	196 N08 E70 06B 1 USBLM - Monument Well	4,275,166	747,014	7/22/1947	5,674	--	164	6	111 to 115 152 to 164	--	Basin Fill	Quarterly

-- Information Not Available
Coordinates are approximate and will be surveyed.
Well construction data is based upon best available information from well logs, MX Project Report and direct field measurements.



2.3 Part 2 Section D: New Monitor Wells

2.3.1 Interbasin Monitoring Zone Network

The SV3M Plan establishes an Interbasin Monitoring Zone (Zone) and require the collection of data to characterize the hydraulic gradient from Spring Valley to Snake Valley via Hamlin Valley HBs. In Fall 2007, the TRP selected six wells to be included in the Zone monitoring program. The network includes carbonate monitor well 184W502M, which was installed in 2006, and an additional five new well locations. The new locations include three carbonate and two basin-fill wells. Locations of the sites and Zone boundary are presented in [Figure 2-3](#). Location coordinates for the wells are presented in [Table 2-5](#).

Right-of-way applications for the SNWA well sites are currently being reviewed by BLM. The new 8-in. diameter wells are planned to be installed after BLM approval is obtained. The current target date for completion is Fall 2008. After completion of each well, a short-term aquifer test will be performed and water chemistry samples collected. After installation, the wells will be equipped with datalogger and pressure transducer instrumentation to collect continuous water-level data. A professional survey of location coordinates, ground surface, and top of casing measuring point elevations is planned to be performed after completion.

In addition to the SNWA monitor wells, four existing basin-fill wells, which are included in the existing well monitoring network, are also located in the Zone. One of the existing wells is scheduled to be equipped with instrumentation to collect continuous water-level data. Three additional new wells, one carbonate and two basin-fill, are planned to be constructed within the Zone in late 2008 as part of the Round 8 Southern Nevada Public Lands Management Act (SNPLMA) Program.

After completion of the SNWA and SNPLMA drilling programs and establishment of the existing well network, a total of 13 wells will be included in monitoring programs within the Zone.

2.3.2 Two Monitor Wells between the Zone and Closest Production Well

The SV3M Plan states that SNWA shall construct and equip two monitor wells in conjunction with the two SNWA production wells in Spring Valley HB that are proposed for construction closest to the Zone boundary, unless alternative sites are recommended by the TRP and approved by the Executive Committee.

The location of the two monitor wells will be determined after additional information is developed on the location of the two closest production wells to the Zone. After installation, the monitor wells will be equipped with datalogger and pressure transducer instrumentation to collect continuous water-level data.

2.3.3 Two Monitor Wells between Shoshone Ponds and Closest Production Well

The SV3M Plan states that SNWA shall construct and equip two monitor wells in the vicinity of Shoshone Ponds. The TRP is currently evaluating potential locations for the wells. The location and

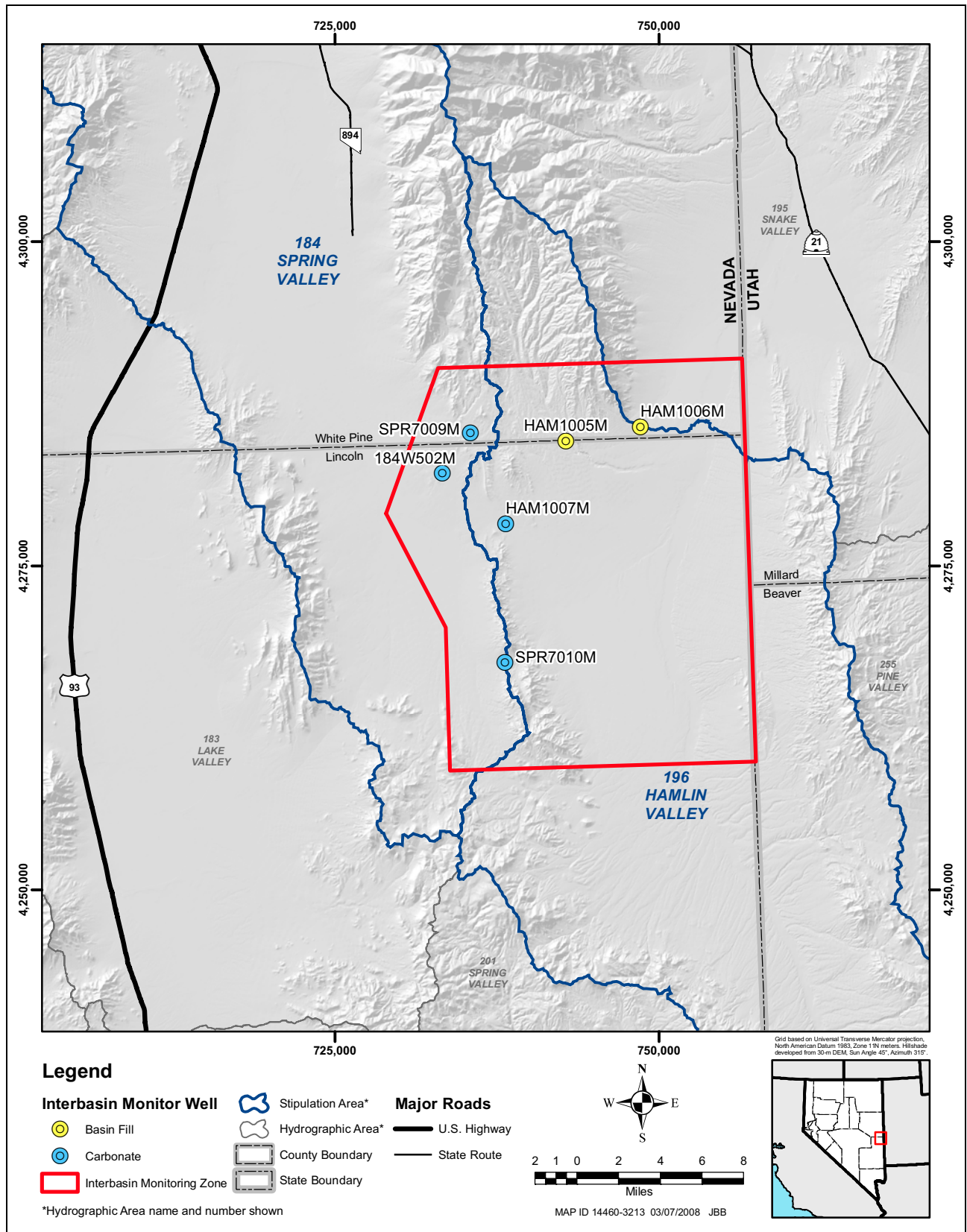


Figure 2-3
SNWA Interbasin Monitoring Zone Well Locations



**Table 2-5
Proposed Additional SNWA Interbasin Monitoring Zone Well Locations**

Well Identification	Well Local Number	UTM Northing (m)	UTM Easting (m)	Estimated Surface Elevation (ft-amsl)	Site Type
SPR7009M	184 N10 E68 36 ACC 1 North Carbonate Well	4,285,267	735,468	6,494	Basin Fill
HAM1005M	196 N10 E69 02 BBA 1 Wash Alluvial Well	4,284,588	742,840	6,397	Basin Fill
HAM1006M	196 N10 E70 32 AAD 1 Big Springs Well	4,285,699	748,554	5,797	Carbonate
HAM1007M	196 N09 E69 20 BCB 1 Troughs Carbonate Well	4,278,243	738,205	6,025	Carbonate
SPR7010M	184 N08 E69 29 CBB 1 Limestone Hills Well	4,267,545	738,113	6,458	Carbonate
184W502M ^a	184 N09 E68 11 BD 2 Deep Carbonate Well	4,282,117	733,293	6,188	Carbonate

^aExisting well

construction specifications are planned to be discussed at the next TRP meeting scheduled for April, 2008. After installation, the wells will be equipped with datalogger and pressure transducer instrumentation to collect continuous water-level data.

2.3.4 New Monitor Wells Located outside the Zone That are Adjacent to Federal Water Rights and Federal Resources

The SV3M Plan states that SNWA shall install, equip, and maintain at least one piezometer near 12 spring locations.

In 2007, the TRP in conjunction with the BWG reviewed and conducted a field visit of potential spring locations for monitoring. An additional spring was added to the monitoring list for a total of 13 sites. Spring monitoring locations are presented on [Figure 2-4](#). The springs are spatially distributed across Spring Valley and include locations on the valley floor, mountain block, and mountain-front areas of the valley. Spring location coordinates and surface elevation data are presented in [Table 2-6](#). A field report documenting network spring attributes including photos and maps was posted on the FTP site.

The locations were finalized in summer 2007 and permit applications were prepared and submitted to BLM for approval. The piezometers are planned to be installed after BLM access approval is received. At some locations, especially in the mountain block, it may be difficult for the piezometer to intersect the spring complex. SNWA will work with the TRP in developing alternative monitoring strategies at any site should problems be encountered with piezometer installation.

A professional survey of location coordinates, ground surface elevation, and top of casing reference measuring point elevation is planned to be performed for each piezometer after completion. After installation, the piezometers will be equipped with datalogger and pressure transducer instrumentation to collect continuous water-level data.

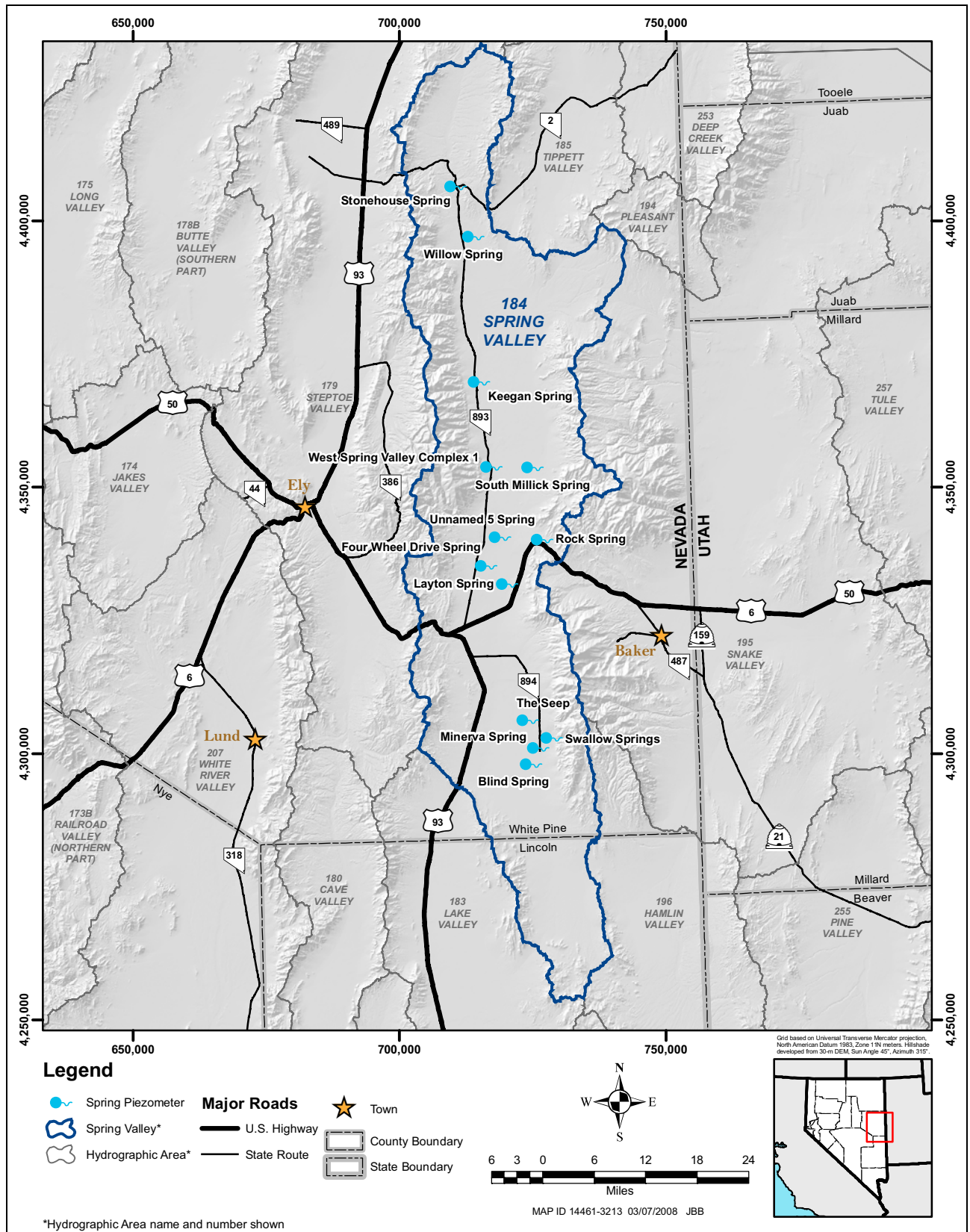


Figure 2-4
Spring Monitoring Network, Spring Valley, Nevada



**Table 2-6
Piezometer Locations for Spring Monitoring Network**

Spring Number	Spring Name	Spring Local Number	UTM Northing (m)	UTM Easting (m)	Elevation (ft-amsl)
1846401	Blind Spring	184 N11 E67 23DA	4,298,025	724,717	5,773
1847001	Four Wheel Drive Spring	184 N15 E67 30BD	4,335,256	716,255	5,754
1847101	Keegan Spring	184 N18 E66 01DC	4,369,756	714,906	5,617
1845901	Layton Spring	184 N14 E67 04DB	4,331,794	720,204	5,698
1847201	Minerva Spring	184 N11 E67 12DB	4,301,025	726,101	5,825
1847301	Rock Spring	184 N15 E68 08AC	4,340,204	726,798	6,364
1845702	South Millick Spring	184 N17 E67 25CD	4,353,754	725,031	5,593
1847401	Stonehouse Spring	184 N22 E66 17CA	4,406,507	710,511	6,256
1846201	Swallow Springs	184 N11 E68 05CA	4,302,920	728,597	6,080
1847501	The Seep	184 N12 E67 26AC	4,306,263	724,060	5,764
1847701	Unnamed 5 Spring	184 N15 E67 09BBB	4,340,641	718,911	5,645
1847601	West Spring Valley Complex 1	184 N17 E67 30CB	4,353,816	717,270	5,601
1845501	Willow Spring	184 N21 E66 15BC	4,397,068	713,830	5,986

Hydrologic and field chemistry data collected at the springs included in the spring monitoring network and related hydrographs are presented in [Appendix D](#).

2.4 Part 2 Section E: Constant-Rate Tests

The SV3M Plan requires two constant-rate tests to be performed in Spring Valley, at the closest production well completed in basin-fill and carbonate aquifers located nearest to the Zone.

To date, five constant-rate tests have been performed in Spring Valley. One additional 120-hour constant-rate test is planned at test well SPR7005X (184W111) located at Cooper Canyon in April, 2008. A 72-hour constant-rate test was performed at test well 184W101 located in the Zone. Additional tests are planned for the closest carbonate and basin-fill production wells to the Zone once they are drilled and constructed.

2.5 Part 2 Section F: Water-Chemistry Sampling Program

The SV3M Plan states that SNWA shall collect and analyze water-chemistry samples for specific parameters at 40 locations selected from monitoring network wells, springs, and streams. Three rounds of samples will be collected at 6-month intervals for chemical analysis.

Sample locations will be determined by the TRP after the establishment of the monitoring networks. It is currently estimated that locations will be selected and sampling program initiated in 2009.

2.6 Part 2 Section G: Spring and Stream Discharge Measurements

Discharge Sites at Big Spring Creek and Cleve Creek

The SV3M Plan states that SNWA shall directly, or through funding of a third party, operate and maintain a discharge monitoring site on Big Spring Creek and Cleve Creek ([Figure 2-5](#)). These sites are included as part of a Cooperative Funding Agreement between SNWA, USGS and Nevada Division of Water Resources. Discharge data for the Big Spring Creek and Cleve Creek is presented in [Appendix E](#). Data is also available through the National Water Information System (USGS, 2008).

Synoptic-Discharge Study of Big Springs Creek and Lake Creek

The Plan states that SNWA shall collect or fund the collection of at least two sets of synoptic-discharge measurements for the Big Springs Creek surface-water system from the spring orifice to Preuss Lake. Data would be collected during irrigation and non-irrigation seasons at least 1 year prior to groundwater withdrawals by SNWA. This would be repeated every 5 years after withdrawals begin.

SNWA is currently preparing a work plan for the study including technical approach, methodology, access, and logistics. The work plan is currently projected to be completed and reviewed by the TRP in 2008 and the study performed in 2009.

Relationship Between Big Springs and Basin-Fill and Carbonate Aquifers

The Plan states that SNWA shall work with the TRP to collect data in order to investigate the relationship between discharge at Big Springs and hydraulic head in the basin-fill and regional carbonate-rock aquifers.

The TRP will accomplish this task by utilizing hydrologic and water chemistry data collected from the spring and new monitor wells installed in the Zone by SNWA and through SNPLMA funding.

2.7 Part 2 Section H: Precipitation Stations

The Plan states that the TRP shall review coverage of existing precipitation stations. Locations of existing high-altitude and valley precipitation stations are presented in [Figure 2-6](#).

2.8 Part 2 Section I: Elevation Control

A survey of location coordinates, ground surface elevation, and top of casing reference measuring point elevation for monitor and test wells is planned to be performed for each existing well used in the plan in 2008. The survey will be performed under the direction of a Nevada licensed Professional Land Surveyor. Future wells will be surveyed after installation.

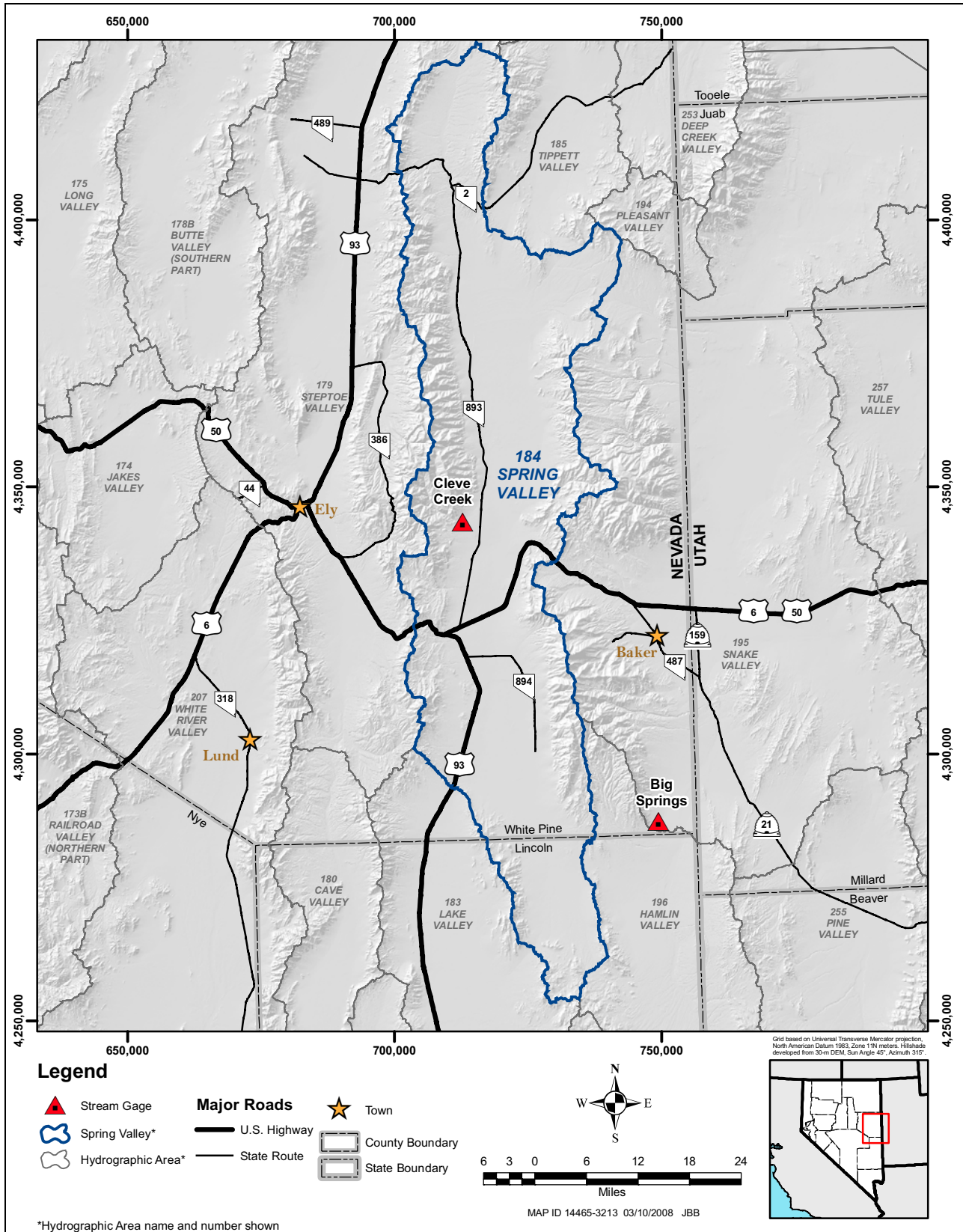


Figure 2-5
Cleve Creek and Big Springs Discharge Gaging Stations

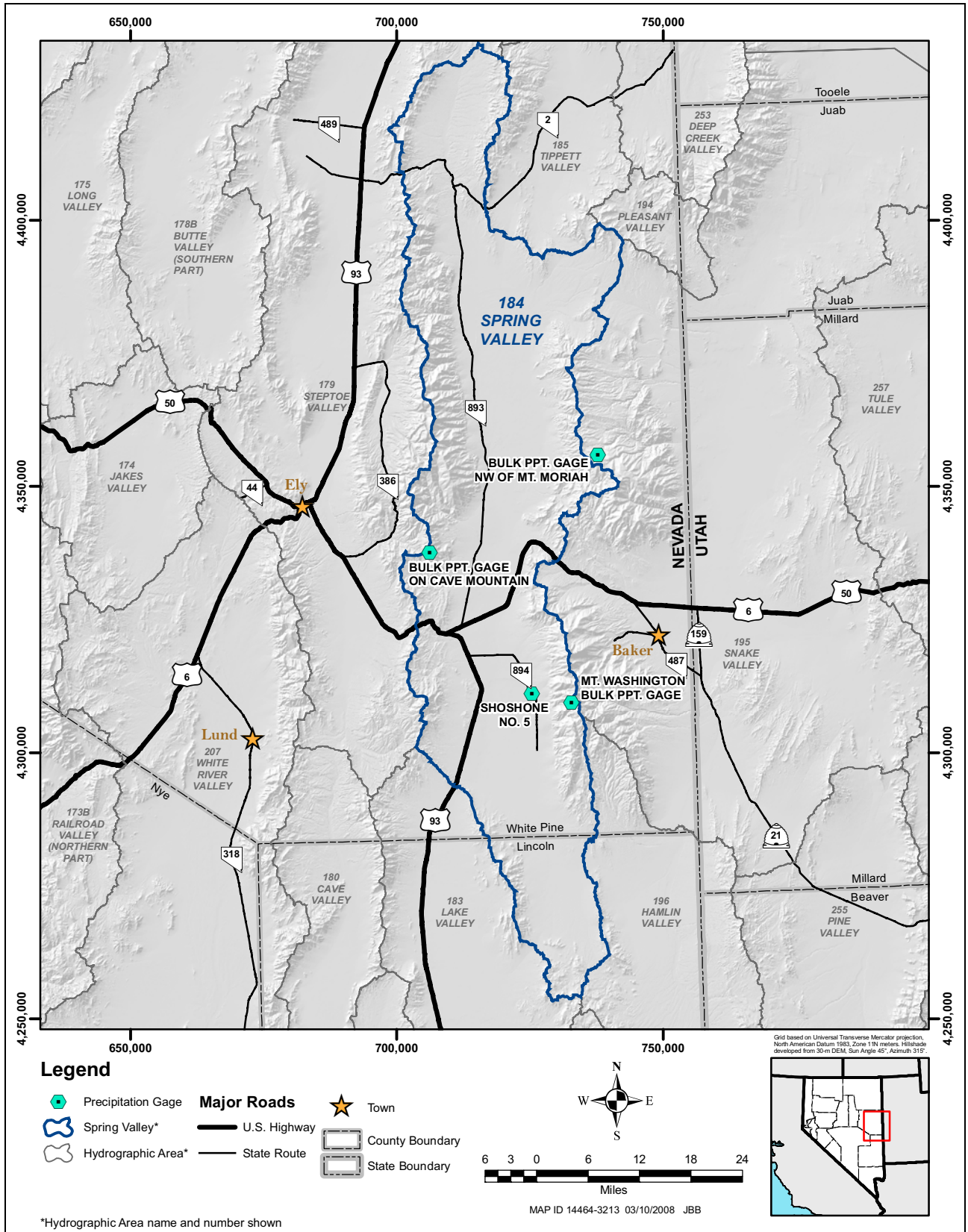


Figure 2-6
Existing Precipitation Stations in Spring Valley, Nevada



2.9 Part 2 Section K: Reporting

A Web Exchange Site accessible by Executive Committee, TRP, and BWG members is planned to be implemented by April, 2008. The Web Exchange will replace the existing FTP site. It will contain project reports, monitoring network data, and TRP logistical information. The Web Exchange will be used to distribute Plan monitoring data within 90 days of collection.

2.10 Proposed Schedule of Groundwater Withdrawals

No groundwater production is scheduled for the next two years with the exception of short term development, well performance testing, and aquifer testing of new test wells. Duration of well performance tests are usually one day. Duration of constant-rate aquifer testing is usually under one week.

3.0 SNWA PLANNED ACTIVITIES IN 2008

TRP and SV3M Plan related activities anticipated to be performed by SNWA in 2008 are summarized below. However, some activities are contingent upon private or BLM access or TRP approval.

- Complete appropriate agreements to obtain access to selected sites included in the existing well monitoring network. Equip selected wells with continuous water level measurement pressure transducer and datalogger instrumentation.
- Install and test the five wells to be completed in the Zone. Equip each well with continuous water-level measurement pressure transducer and datalogger instrumentation.
- Complete the installation of 13 piezometers at the spring monitoring network locations. Consult with the TRP to develop alternative monitoring strategies for locations where hydrologic connection of the piezometer with the spring complex is not established. Equip each piezometer with continuous water level measurement pressure transducer and datalogger instrumentation.
- Perform a professional survey of location coordinates, ground surface elevation, and measurement reference point elevation at monitoring network wells and piezometers.
- Continue to collect required quarterly and continuous water-level measurements at appropriate locations. Data will reported to the TRP within 90 days of collection through the SNWA Web Exchange site. Data will also be included in the annual data report planned to be submitted in March, 2009.
- Prepare a work plan for performing the synoptic-discharge study at Big Springs Creek and Lake Creek.
- SNWA will work with the TRP to coordinate activities and share data with the SNPLMA study conducted in Spring, Hamlin, and Snake valleys.
- SNWA will meet with the TRP in April 2008 to finalize the location of the two monitor wells near Shoshone Ponds and discuss the SV3M Plan status and activities.
- Prepare a proposed work plan for the water chemistry sampling program including sample locations, methodology and final parameter list. Plan will be prepared after establishment of the network. Target date for implementation of the sampling program is 2009.



- SNWA will continue to participate in the Cooperative Funding Agreement with USGS and Nevada Division of Water Resources to support the operation and maintenance of discharge gaging stations on Cleve and Big Springs Creeks.

4.0 REFERENCES

Nevada State Engineer (The office of the State Engineer of The State Nevada), 2007, The ruling (#5726) In the matter of applications 54003 through 54021, inclusive, filed to appropriate the underground waters of the Spring Valley hydrographic basin (184), White Pine County, Nevada.

SNWA, see Southern Nevada Water Authority.

Southern Nevada Water Authority, 2006, Water Resources Assessment for Spring Valley. Las Vegas, Nevada.

U.S. Geological Survey, 2008, National Water Information System (NWIS-Web) data available on the World Wide Web, accessed March 11, 2008, at URL <http://waterdata.usgs.gov/nwis/>.



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Appendix A

Discrete Water-Level Measurements and Hydrographs for Exploratory and Test Wells Not Included in Appendix B

**Table A.1-1
Water-Level Measurements Collected at SNWA Exploratory
and Test Wells not included in Appendix B**

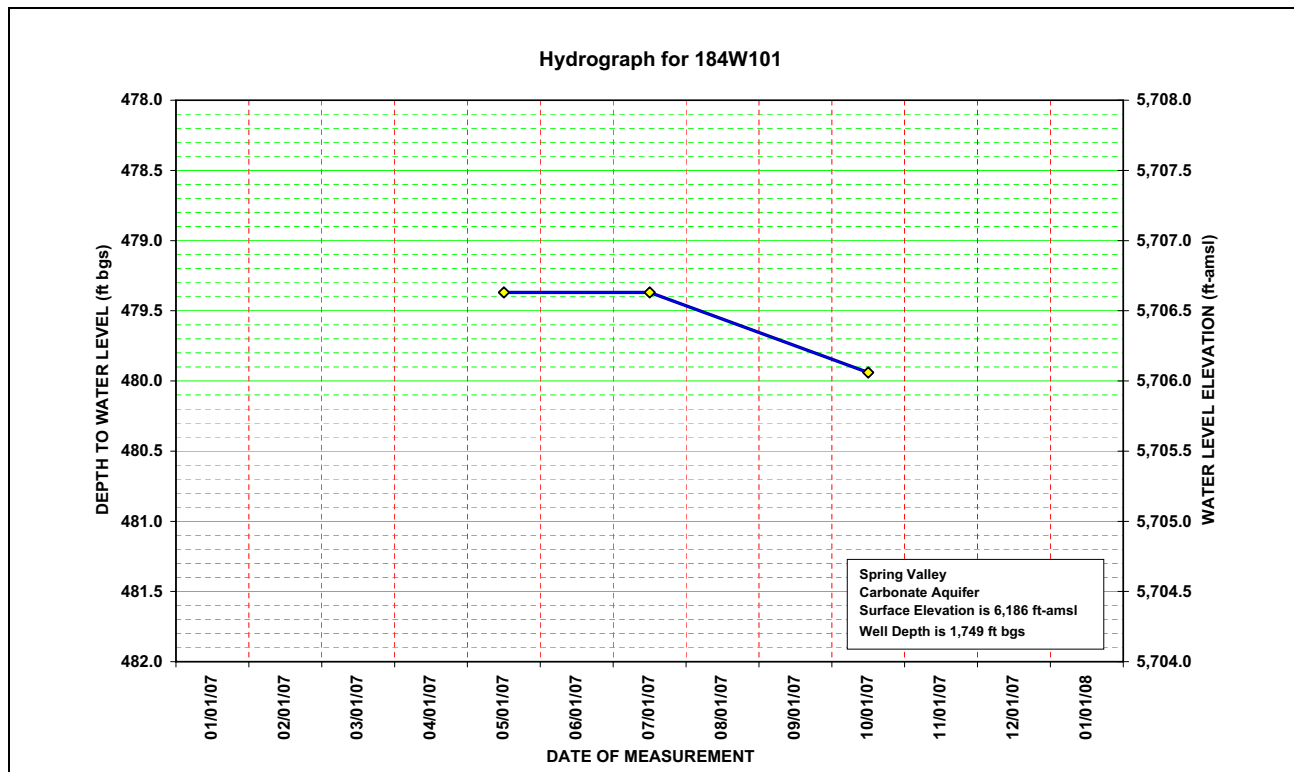
Well Identification	Owner	Well Depth	Surface Elevation (ft-amsl) ^a	Water Level			
				Date	Depth (ft-bgs)	Site Status ^b	Measurement Method ^c
184W101	SNWA	1,749	6,186	5/15/2007	479.37		T
				7/23/2007	479.37		T
				10/24/2007	479.94		T
184W103	SNWA	1,017	5,910	1/10/2007	98.95		T
				1/23/2007	96.93		T
				4/3/2007	97.49		T
				5/15/2007	97.26		T
				7/26/2007	97.38		T
				10/23/2007	97.61		T
				184W105	SNWA	1,135	5,996
1/10/2007	208.86		T				
1/23/2007	208.14		T				
2/27/2007	251.15	P	T				
4/3/2007	208.40		T				
5/15/2007	208.29		T				
7/26/2007	208.25		T				
10/23/2007	208.35		T				
184W514M	SNWA	1,700	6,520	10/19/2007	768.05		T

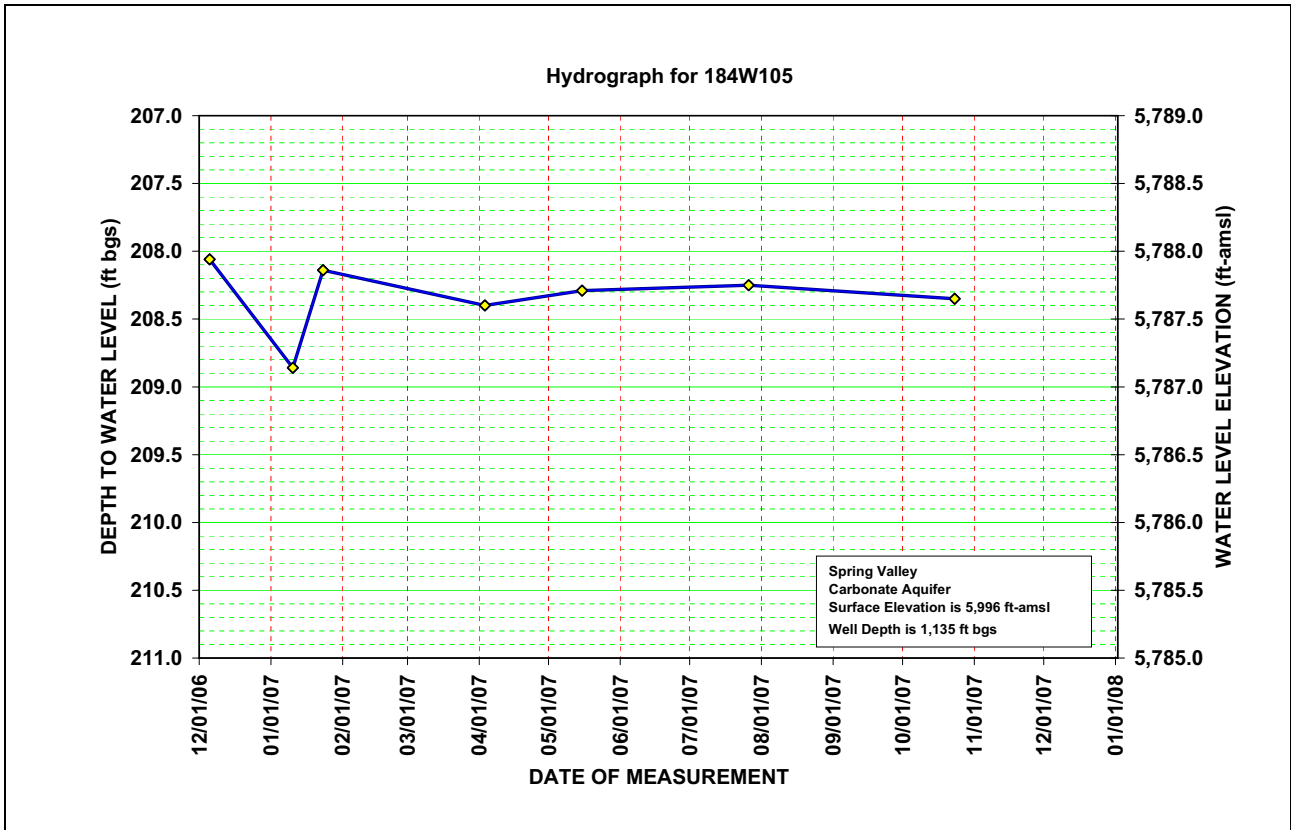
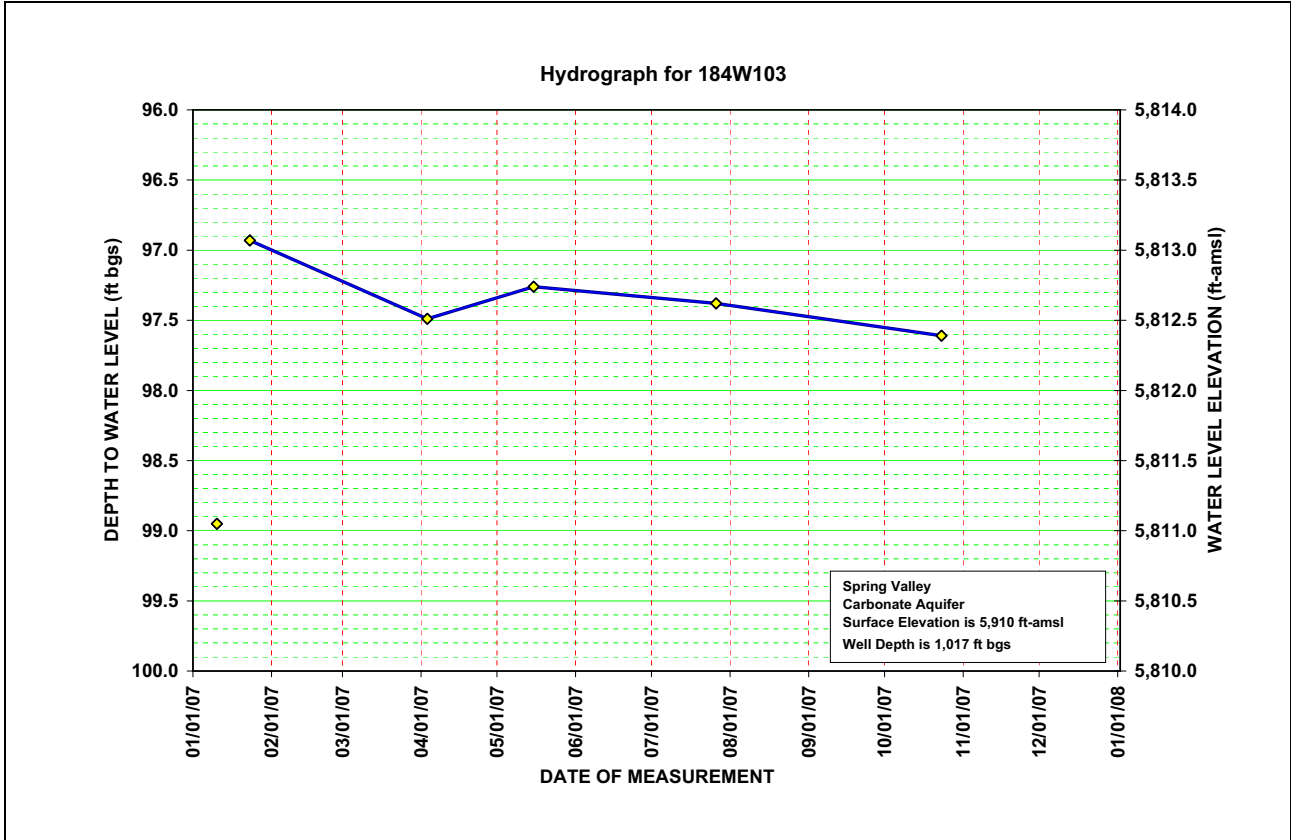
^a Measurement point reference elevation will be provided after professional survey.

^b P = Measurement collected during pumping

If no status is indicated, reported water-level represents static level

^c T = Electric tape measurement





Appendix B

Discrete Water-Level Measurement Data from the Spring Valley Existing Well Monitoring Network

Table B.1-1
SNWA Water-level Measurements for Existing Wells in Spring Valley
 (Page 1 of 4)

Monitoring Plan Map Identification Number	Local Well Number	Well Identification	Well Depth (ft-bgs)	Surface Elevation (ft-amsl) ^a	Water Level			
					Date	Depth-to-Water (ft-bgs)	Well Status	Measurement Method
20	184 N08 E68 14A 1	383351114180201	495	6,182	7/18/1997	408.28		T
					7/13/1998	407.76		T
					7/12/1999	408.60		T
					8/6/2001	414.56	R	S
					7/18/2002	409.64		S
					8/6/2003	408.46		T
					7/27/2004	407.05		T
					7/27/2005	408.00		S
					8/14/2006	406.88		T
					9/6/2007	406.92		T
					10/24/2007	406.49		T
12/12/2007	406.67		T					
213	196 N08 E69 15B 1	383325114134901	110	5,732	8/2/2005	73.90		T
					8/14/2006	71.15		S
					5/7/2007	70.80		T
					9/6/2007	70.64		T
					10/24/2007	69.53		T
					12/12/2007	69.58		T
215	196 N08 E69 35DC 2	383023114115302	435	5,779	8/2/2005	178.78		T
					5/7/2007	171.72	N	T
					9/6/2007	171.81		T
					10/24/2007	172.02		T
					12/12/2007	172.41		T
218	196 N08 E70 06B 1	383533114102901	164	5,674	8/14/2006	90.10		S
					5/7/2007	90.10		T
					9/6/2007	90.08		T
					10/24/2007	89.75		T
					12/12/2007	89.76		T
225	--	184W508M	1,160	6,055	1/30/2007	277.73		T
					4/3/2007	275.48		T
					5/15/2007	276.34		T
					7/23/2007	276.34		T
					9/6/2007	276.42		T
					10/24/2007	276.54		T
					12/12/2007	276.61		T
222	--	184W502M	1800.04	6,188	7/23/2007	478.30		T
					9/6/2007	478.35		T
					10/24/2007	478.91		T
					12/12/2007	479.32		T
22	184 N09 E68 30AAAB 1	383704114225001	679	6,003	7/27/2005	225.36		S
					8/15/2006	225.12		T
					9/6/2007	225.07		T
					10/24/2007	225.01		T
					12/12/2007	225.12		T
28	184 N10 E67 22AA 1	384310114261401	100	5,857	7/16/1996	65.12		T
					7/14/1997	65.62		T
					8/15/2006	64.56		T
					9/6/2007	64.60		T
					10/24/2007	64.55		T
					12/12/2007	64.65		T



Table B.1-1
SNWA Water-level Measurements for Existing Wells in Spring Valley
 (Page 2 of 4)

Monitoring Plan Map Identification Number	Local Well Number	Well Identification	Well Depth (ft-bgs)	Surface Elevation (ft-amsl) ^a	Water Level			
					Date	Depth-to-Water (ft-bgs)	Well Status	Measurement Method
32	184 N10 E68 31CD 1	384039114232701	150	5,913	8/15/2006	118.58		T
					5/7/2007	118.53		T
					9/6/2007	118.57		T
					10/25/2007	118.58		T
					12/26/2007	118.46		T
35	184 N11 E66 23AB 1	384831114314301	102	5,843	7/15/1996	47.01		T
					7/17/1997	47.63		T
					7/12/1999	49.72		T
					8/6/2001	50.40		T
					7/17/2002	47.11		T
					8/7/2003	47.82		T
					7/27/2004	47.76		T
					7/28/2005	47.24		T
					8/15/2006	46.47		T
					5/8/2007	46.75		T
					9/6/2007	46.18		T
					10/24/2007	46.93		T
12/11/2007	46.90		T					
52	184 N11 E68 19DCDC 1	384745114224401	200	5,899	8/16/2006	95.86		T
					5/8/2007	96.10		T
					9/6/2007	96.73		T
					10/24/2007	97.00		T
					12/11/2007	97.17		T
223	--	184W504M	1,020	5,919	12/5/2006	102.39		T
					1/10/2007	100.51		T
					1/23/2007	99.21		T
					4/3/2007	99.69		T
					5/15/2007	99.46		T
					7/26/2007	99.48		T
					9/6/2007	99.57		T
					10/23/2007	99.50		T
12/11/2007	99.57		T					
226	--	SPR7007M (184W519M)	1,020	6,070	9/4/2007	152.04		T
					9/5/2007	152.17		T
					9/6/2007	152.12		T
					10/24/2007	153.44		T
					12/11/2007	154.93		T
55	184 N12 E66 21CD 1	184 N12 E66 21CD 1	633	6,397	5/8/2007	567.38		T
					9/6/2007	567.75		T
					12/11/2007	568.23		T
224	--	184W506M	1,140	6,002	10/31/2006	217.86		T
					12/5/2006	214.63		T
					12/13/2006	217.12		T
					1/10/2007	217.03		T
					1/23/2007	214.69		T
					4/3/2007	215.11		T
					5/15/2007	214.88		T
					7/26/2007	214.85		T
9/6/2007	214.90		T					

Table B.1-1
SNWA Water-level Measurements for Existing Wells in Spring Valley
 (Page 3 of 4)

Monitoring Plan Map Identification Number	Local Well Number	Well Identification	Well Depth (ft-bgs)	Surface Elevation (ft-amsl) ^a	Water Level			
					Date	Depth-to-Water (ft-bgs)	Well Status	Measurement Method
224	--	184W506M	1,140	6,002	10/23/2007	215.01		T
					12/11/2007	214.98		T
113	184 N13 E67 33DDA 1	385636114265501	6	5,770	7/13/1998	7.65		T
					7/12/1999	8.69		T
					8/6/2001	12.10		T
					7/17/2002	9.95		T
					8/7/2003	11.06		T
					7/27/2004		D	
					7/27/2005	7.38		T
					8/16/2006	5.42		T
					5/8/2007	5.85		T
					9/6/2007	7.15		T
					10/24/2007	7.52		T
					12/11/2007	7.50		T
					227	--	SPR7005M (184W512M)	1406
12/18/2007	491.92		T					
1/17/2008	491.86		T					
122	184 N14 E66 24BDDD 1	390352114305401	160	5,844	8/14/2006	39.53		T
					5/8/2007	38.47		T
					9/6/2007	38.52		T
					10/25/2007	38.88		T
					12/11/2007	38.54		T
145	184 N15 E67 26CA 1	390803114251001	200	5,719	7/15/1996	38.21		T
					7/17/1997	38.30		T
					7/14/1998	40.72		T
					7/12/1999	40.69		T
					7/17/2002	38.57		T
					8/6/2003	41.23		T
					7/27/2004	41.42		T
					7/27/2005	39.38		T
					8/15/2006	38.88		T
					5/8/2007	45.18		T
					9/6/2007	43.03		T
					10/24/2007	42.60		T
					12/11/2007	42.11		T
228	--	SPR7008M (184W521M)	946	5,740	9/6/2007	12.37		T
					12/11/2007	13.21		T
152	184 N16 E66 36DBAD 1	391224114293601	--	5,862	7/17/1997	211.70		S
					7/13/1998	207.88		S
					8/7/2001	209.80		S
					7/17/2002	209.24		S
					8/7/2003	209.78		S
					7/26/2004	200.88		S
					7/27/2005	208.07		S
					8/14/2006	206.67		S



Table B.1-1
SNWA Water-level Measurements for Existing Wells in Spring Valley
 (Page 4 of 4)

Monitoring Plan Map Identification Number	Local Well Number	Well Identification	Well Depth (ft-bgs)	Surface Elevation (ft-amsl) ^a	Water Level			
					Date	Depth-to-Water (ft-bgs)	Well Status	Measurement Method
152	--				5/8/2007	200.74		S
					9/6/2007	207.68		S
					10/25/2007	208.14		S
					12/11/2007	207.98		S
176	184 N18 E67 01CCAA 1	392703114230501	42	5,591	7/15/1996	36.10		T
					7/17/1997	34.83		T
176	184 N18 E67 01CCAA 1	392703114230501	42	5,591	7/14/1998	37.10	R	T
					7/12/1999	36.96		T
					8/7/2001	63.60		S
					8/6/2003	42.85	P	T
					7/27/2004	37.33		T
					7/27/2005	34.51		T
					8/15/2006	35.54		T
					5/8/2007	34.70		T
					9/6/2007	35.58		T
					10/24/2007	35.44		T
					12/11/2007	35.13		T
179	184 N19 E66 11B 1	393211114320701	400	5,762	9/6/2007	38.88		T
					10/24/2007	39.81		T
					12/11/2007	40.45		T
182	184 N20 E66 13AB 1	184 N20 E66 13AB 1	296	5,771	7/25/2000	128.02		S
					8/15/2006	122.88		S
					5/8/2007	126.73		T
					9/6/2007	127.28		T
					10/24/2007	127.72		T
188	184 N20 E67 26ABBD 1	393442114231801	130	5,709	7/15/1996	117.64		S
					7/17/1997	117.94		S
					7/14/1998	118.05		T
					7/12/1999	117.80		S
					8/7/2001	122.16		S
					7/17/2002	117.71		S
					8/6/2003	119.00		S
					7/27/2004	119.15		T
					7/27/2005	120.85		S
					8/15/2006	118.09		T
					5/8/2007	117.99		T
					9/6/2007	117.93		T
					10/24/2007	117.86		T

^aMeasurement point reference elevation will be provided after professional survey.

Well Status

D = The site was dry

P = Well was being pumped

If no status indicated, reported water-level represents static level

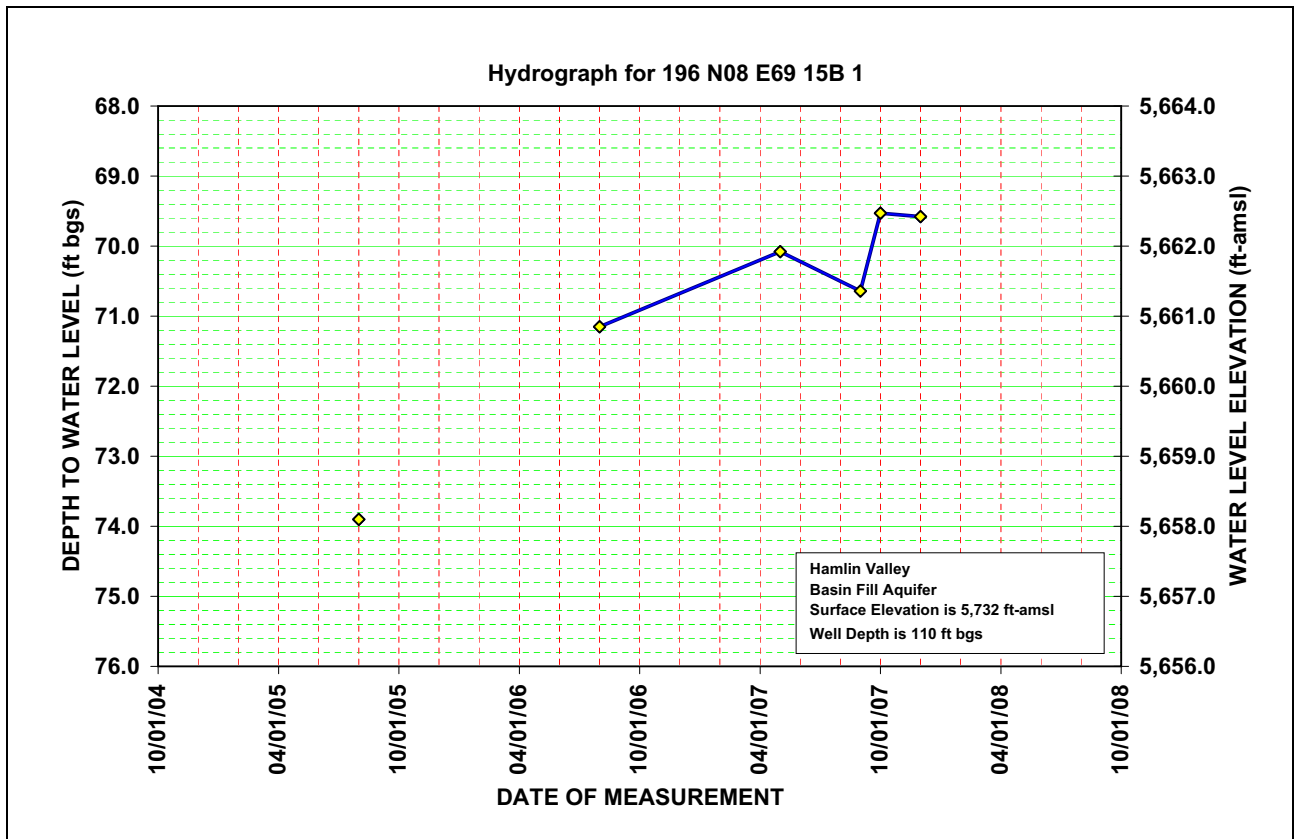
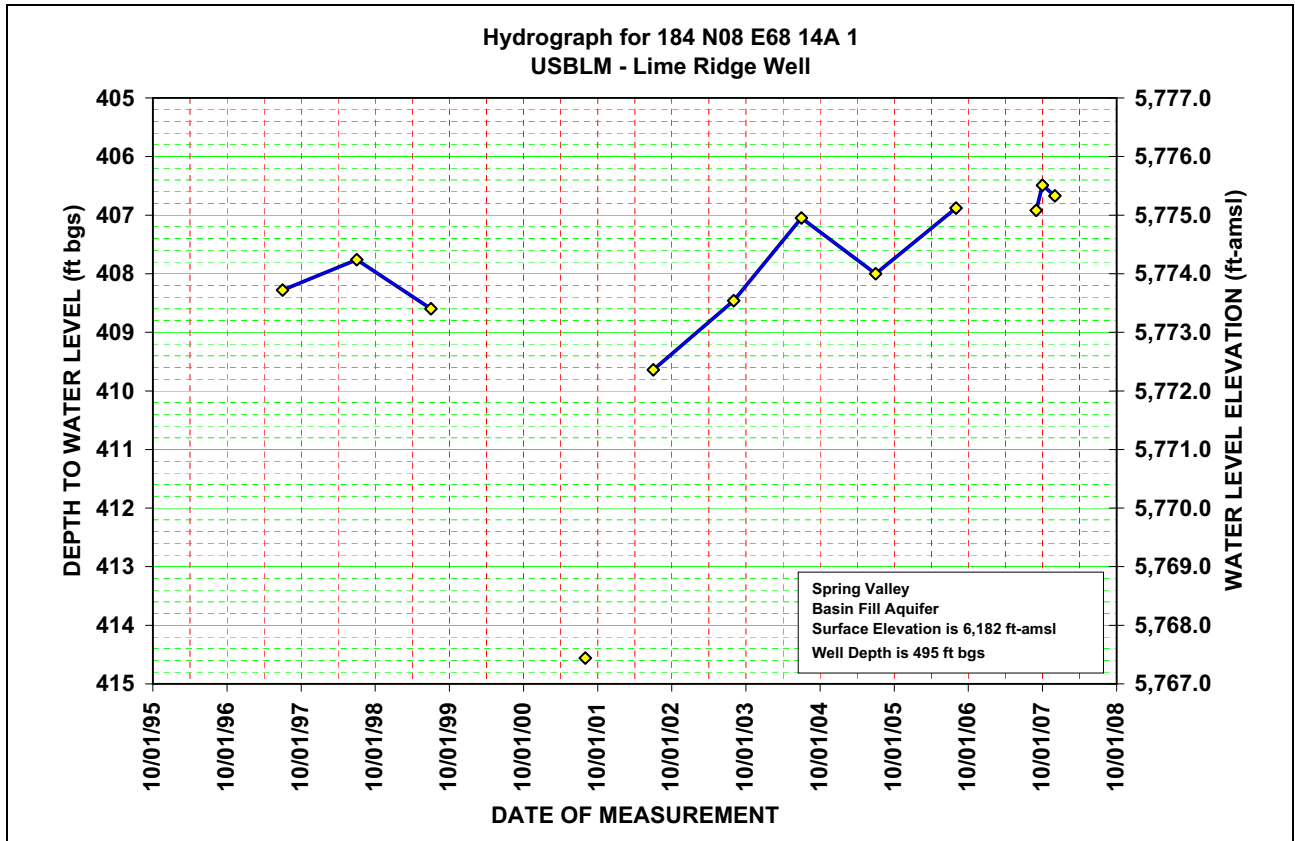
N= Nearby Pumping

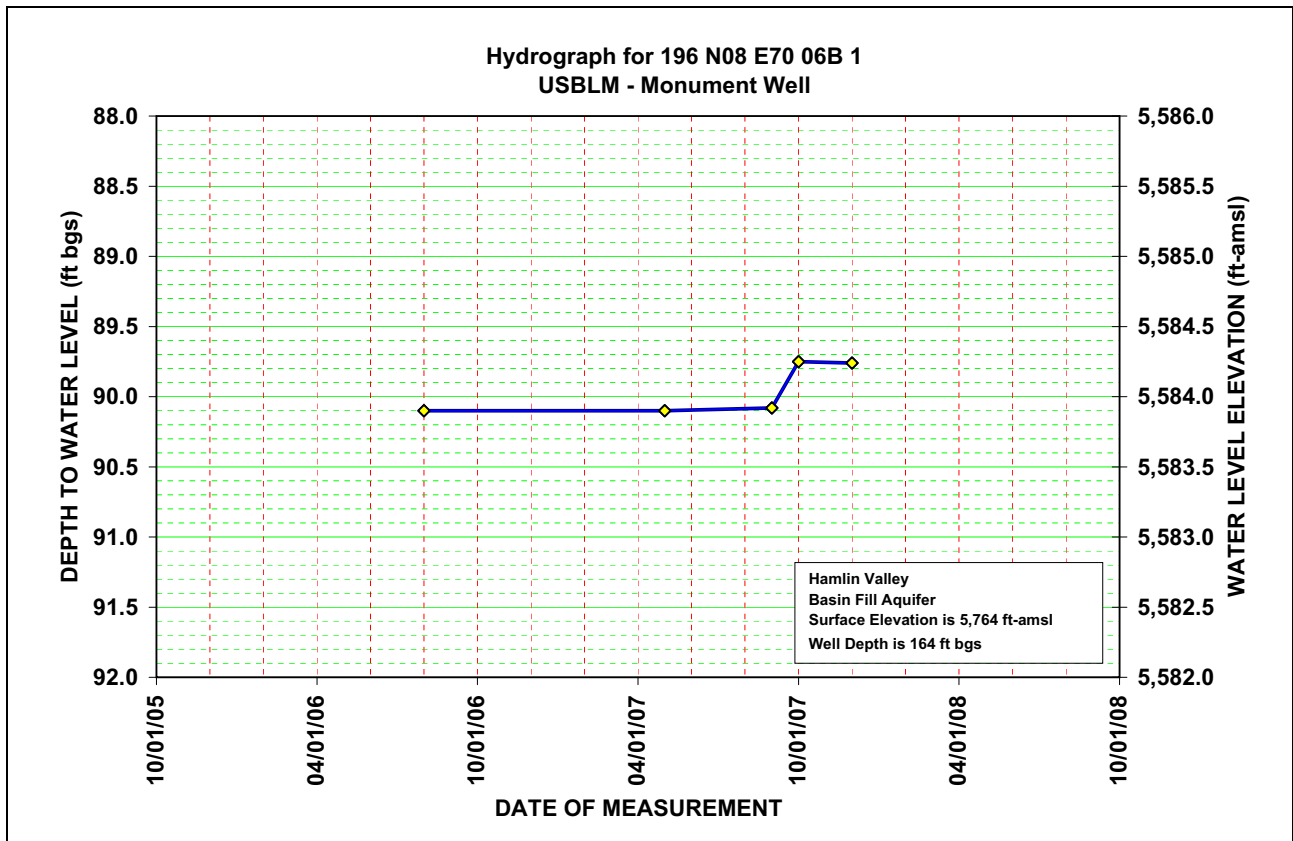
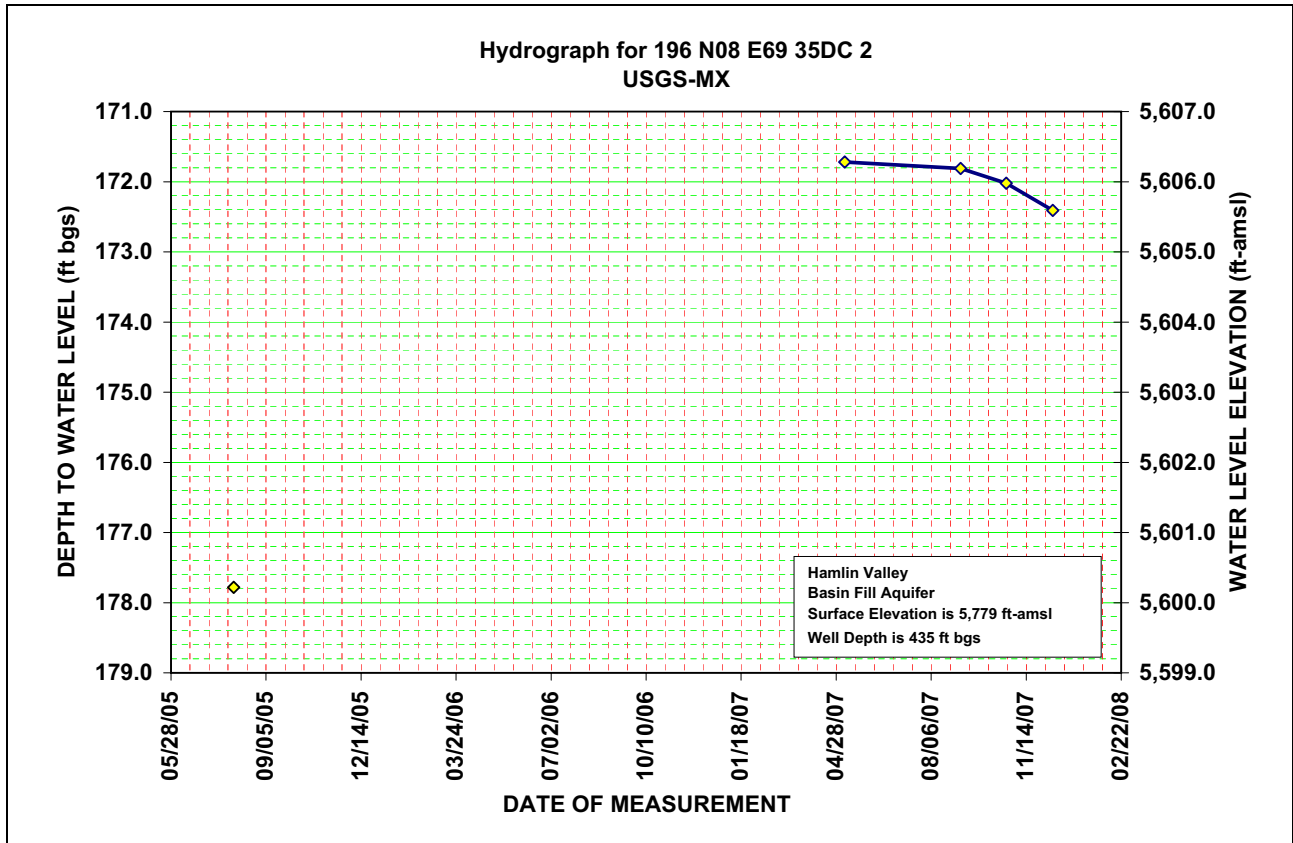
R = Well had been pumped recently

Measurement Method

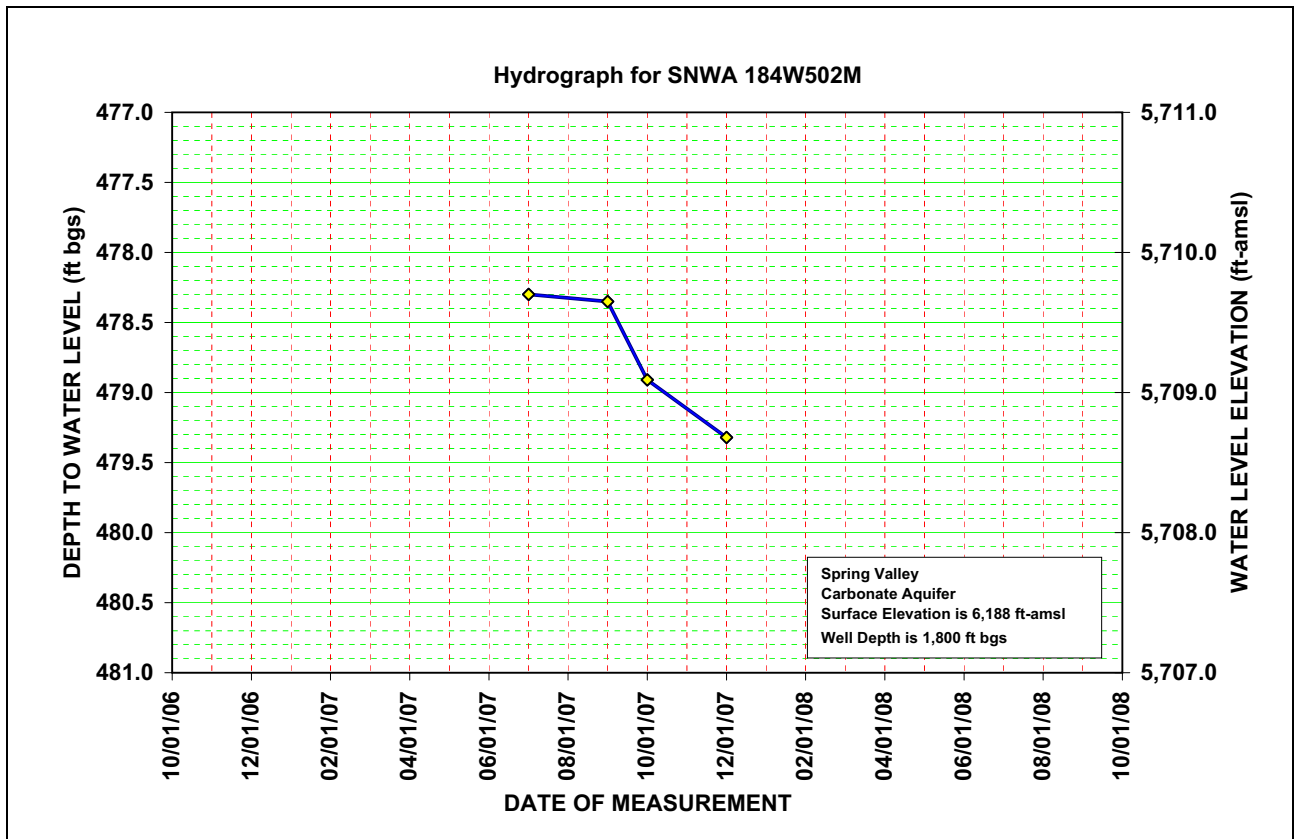
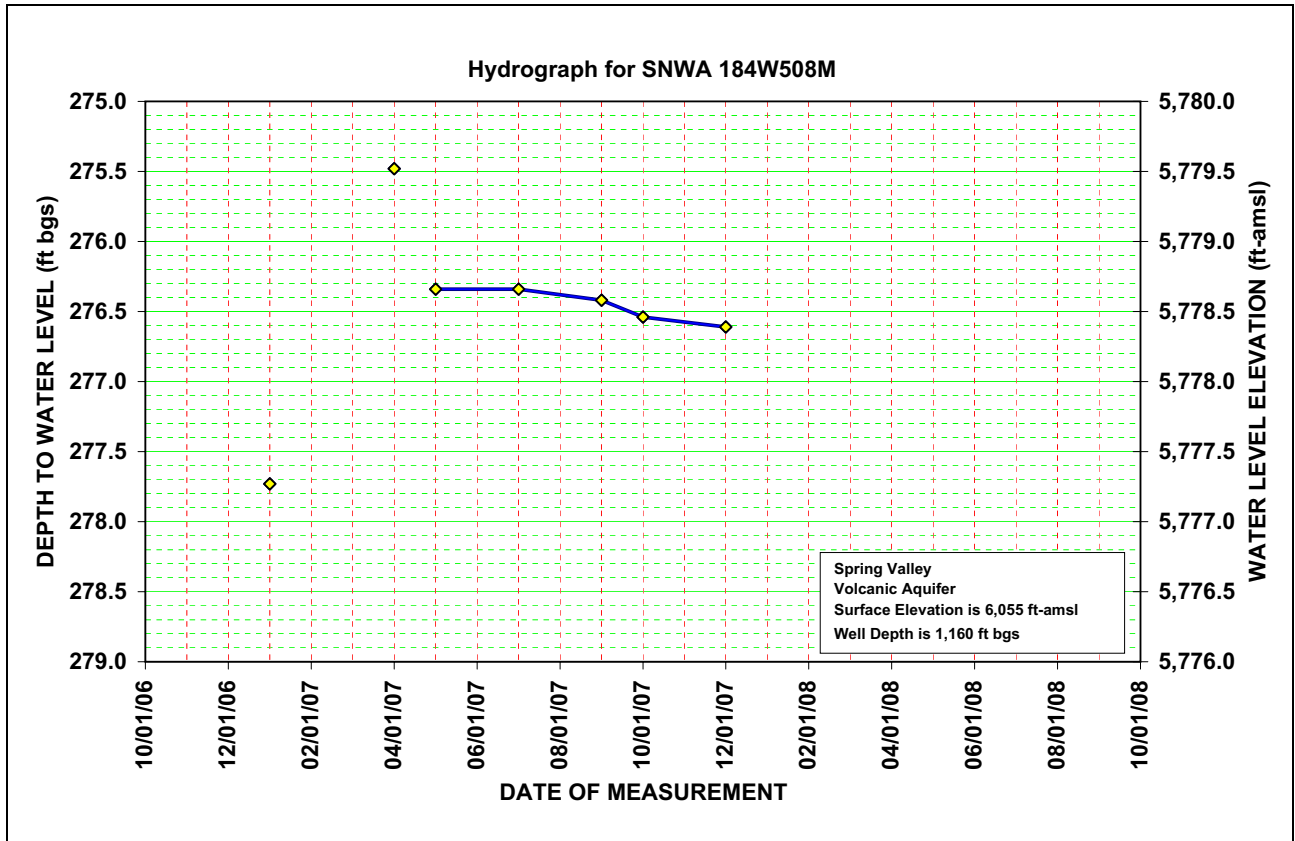
S = Steel tape measurement

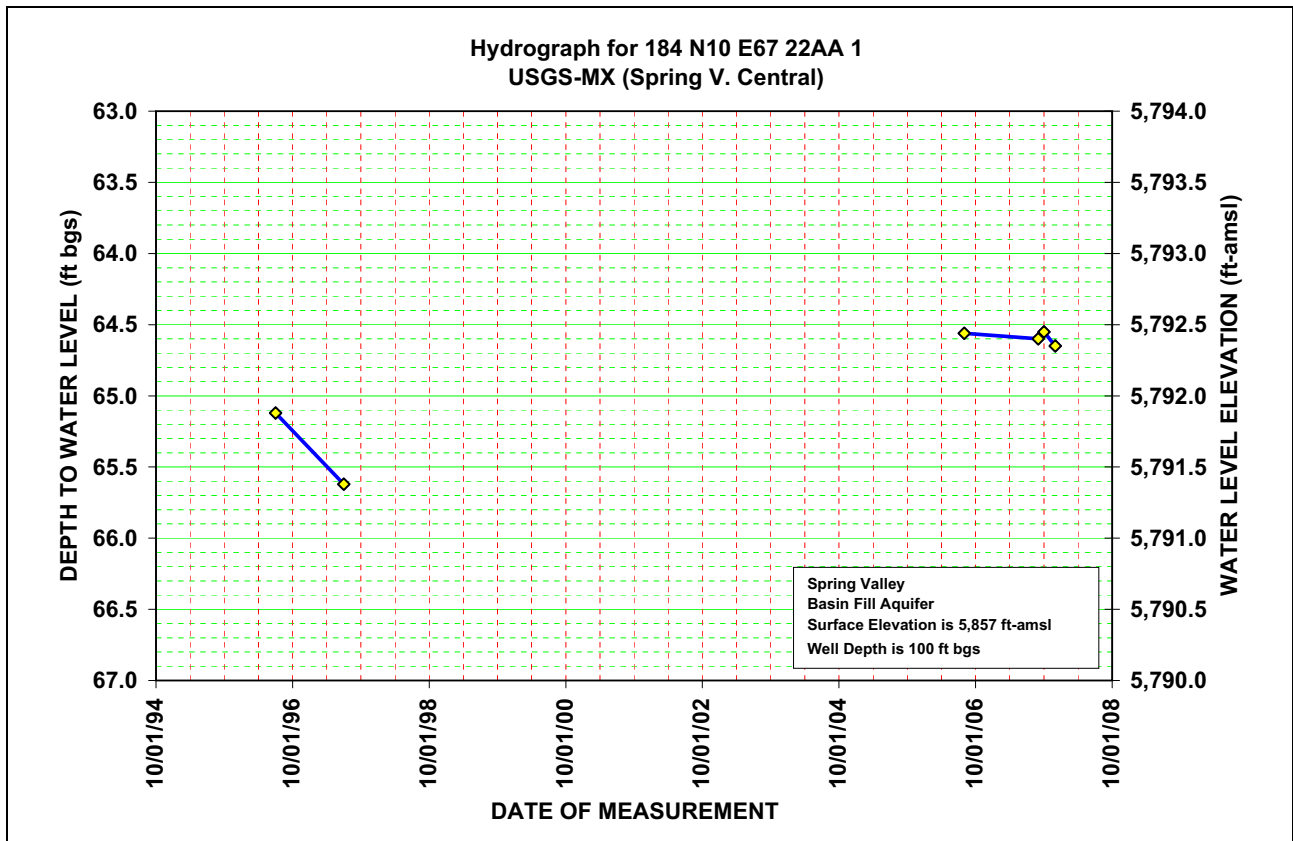
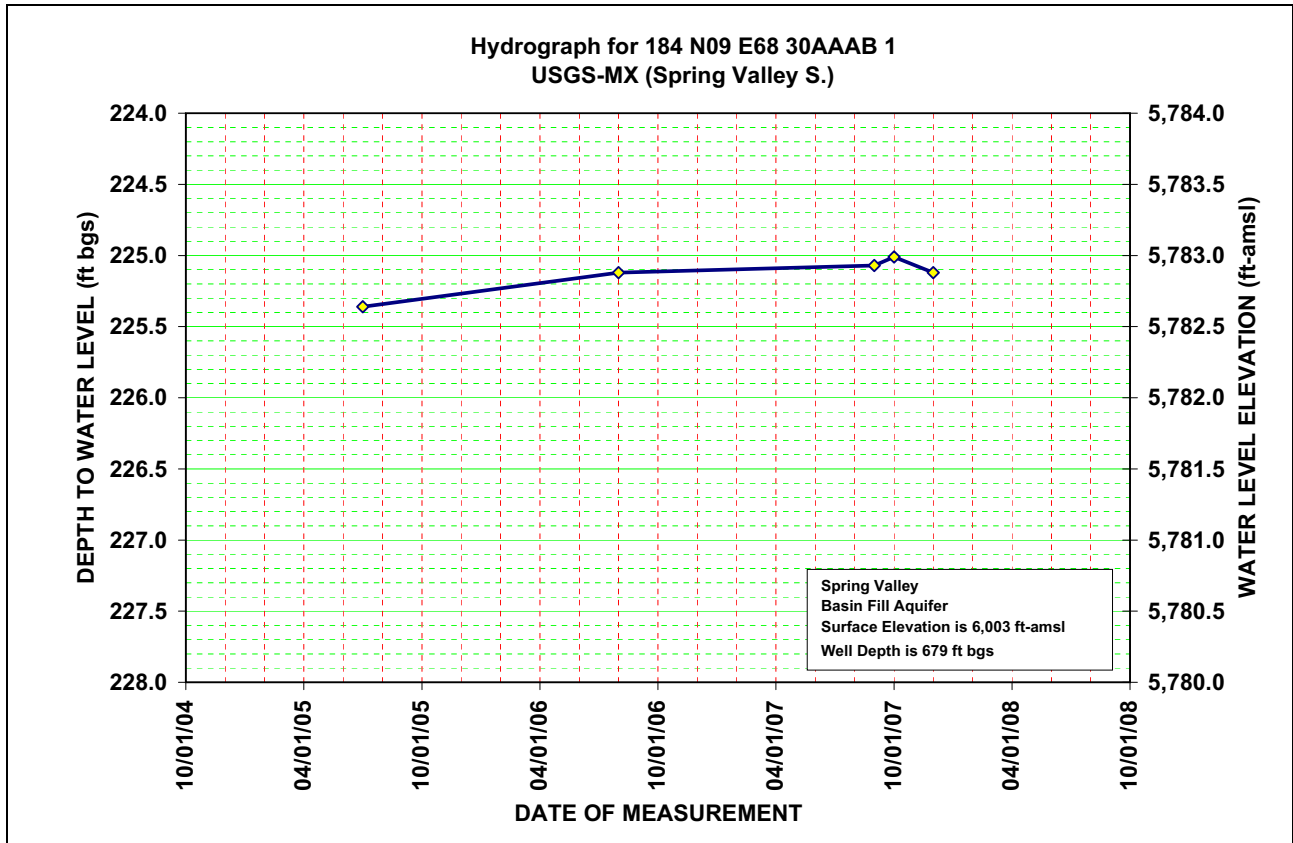
T = Electric tape measurement

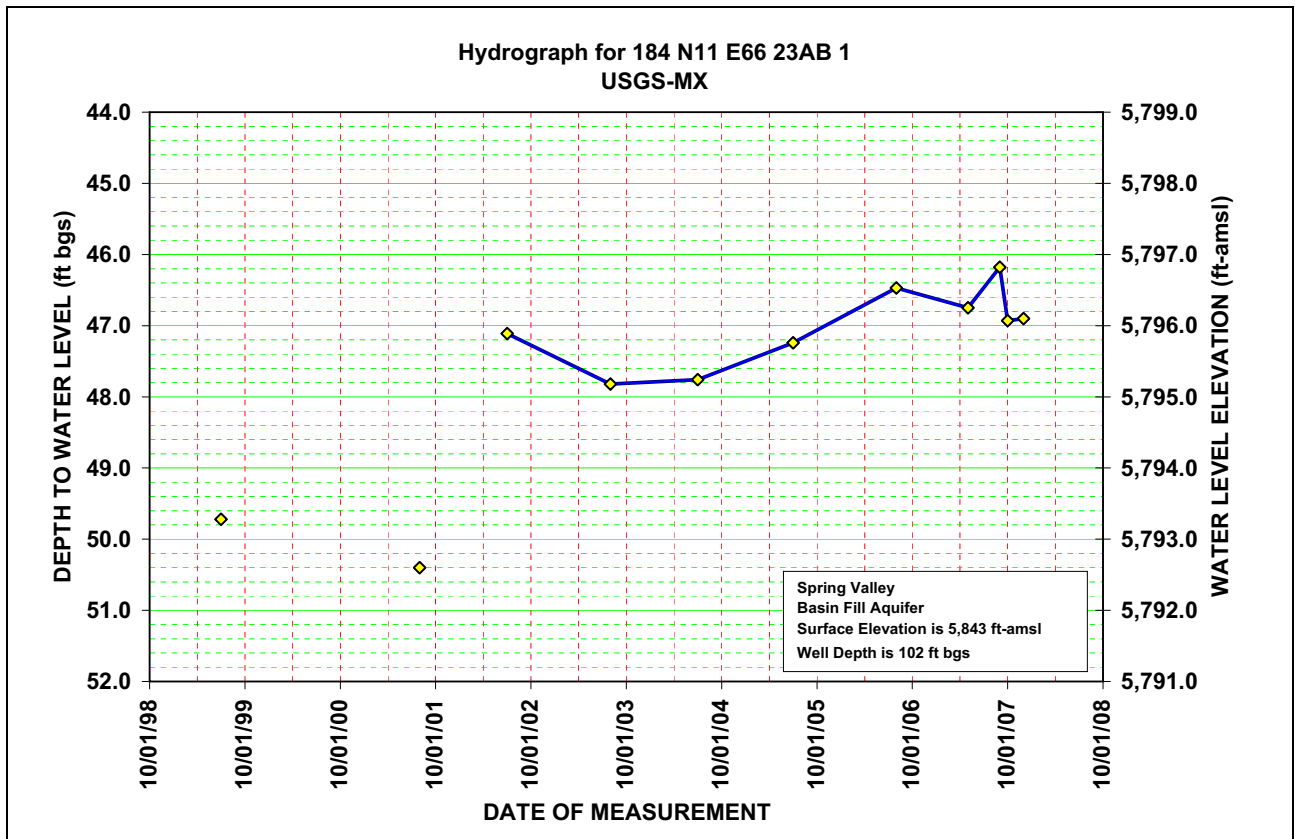
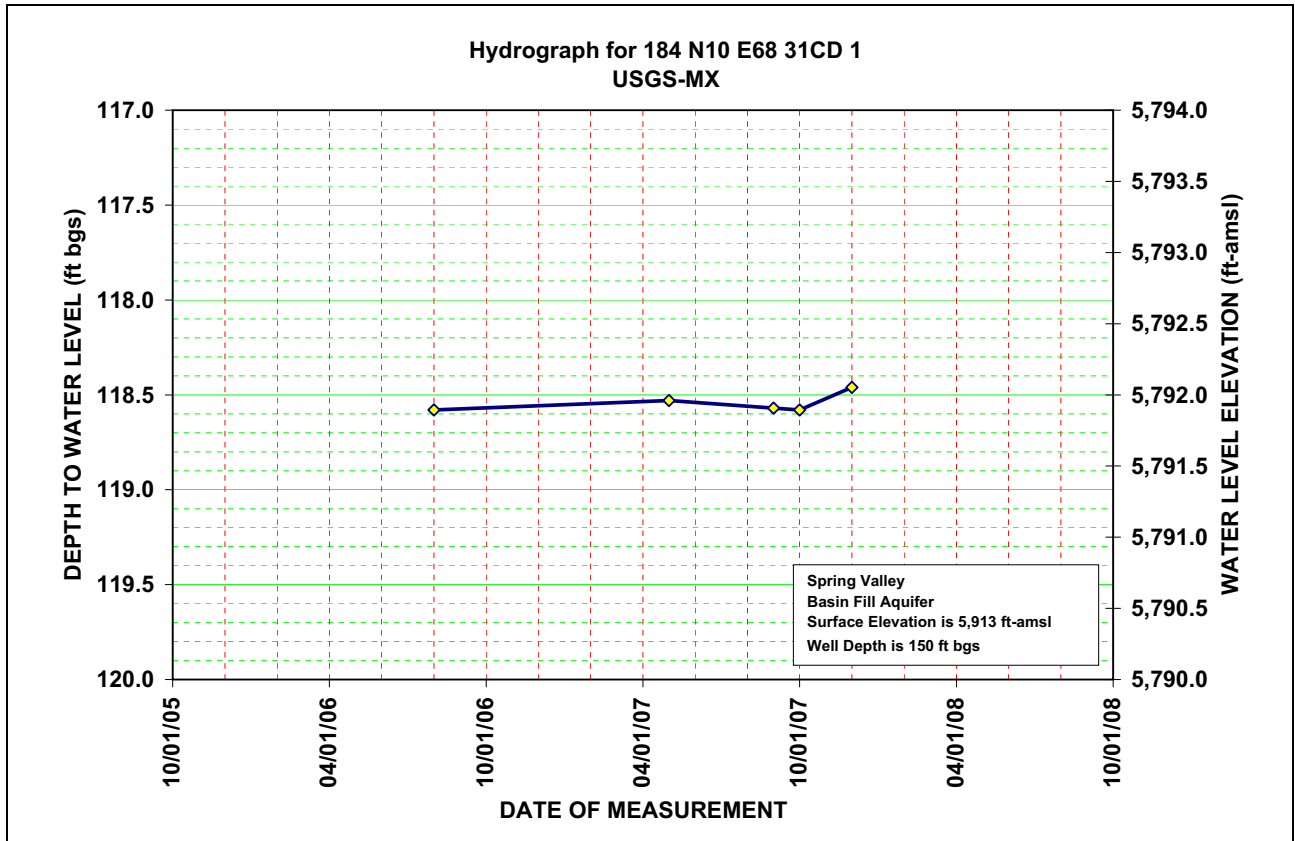


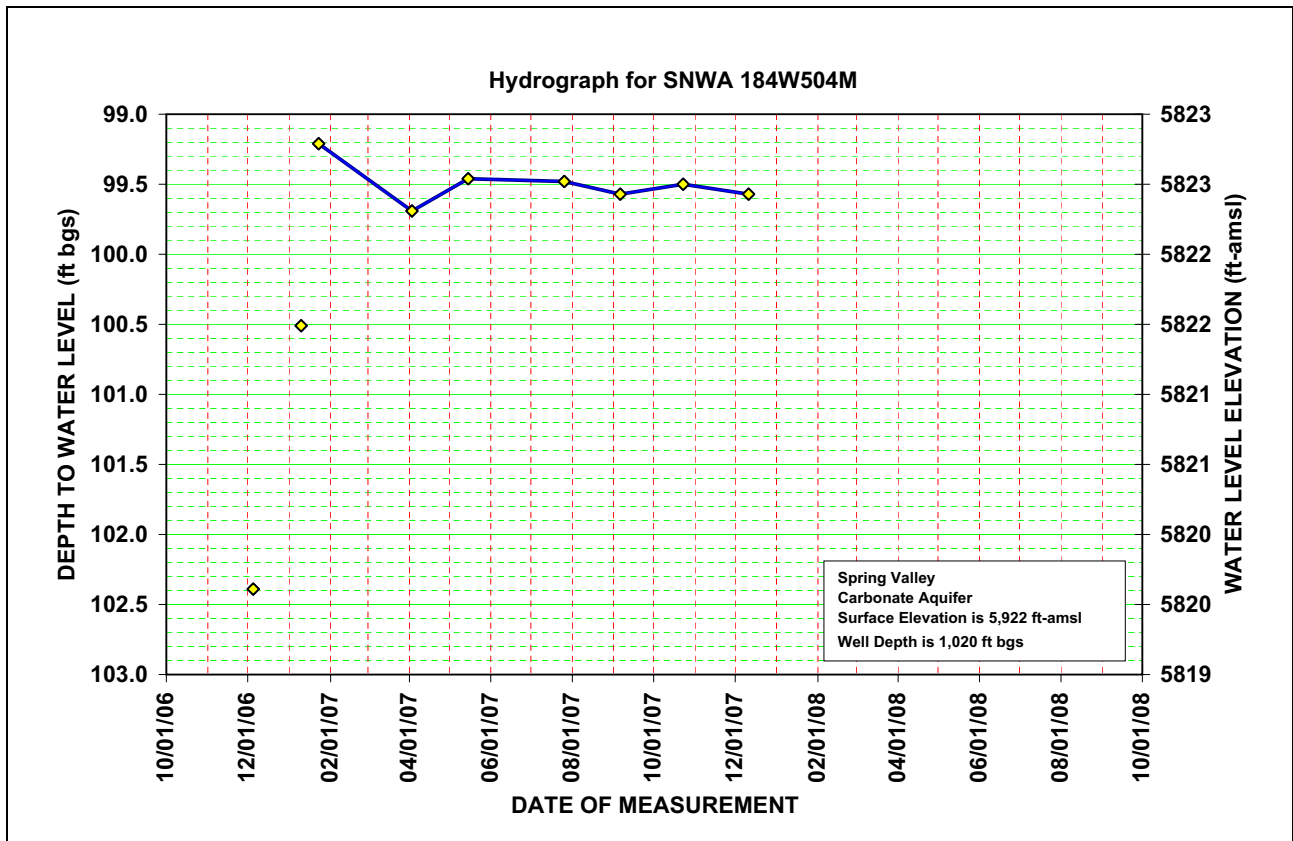
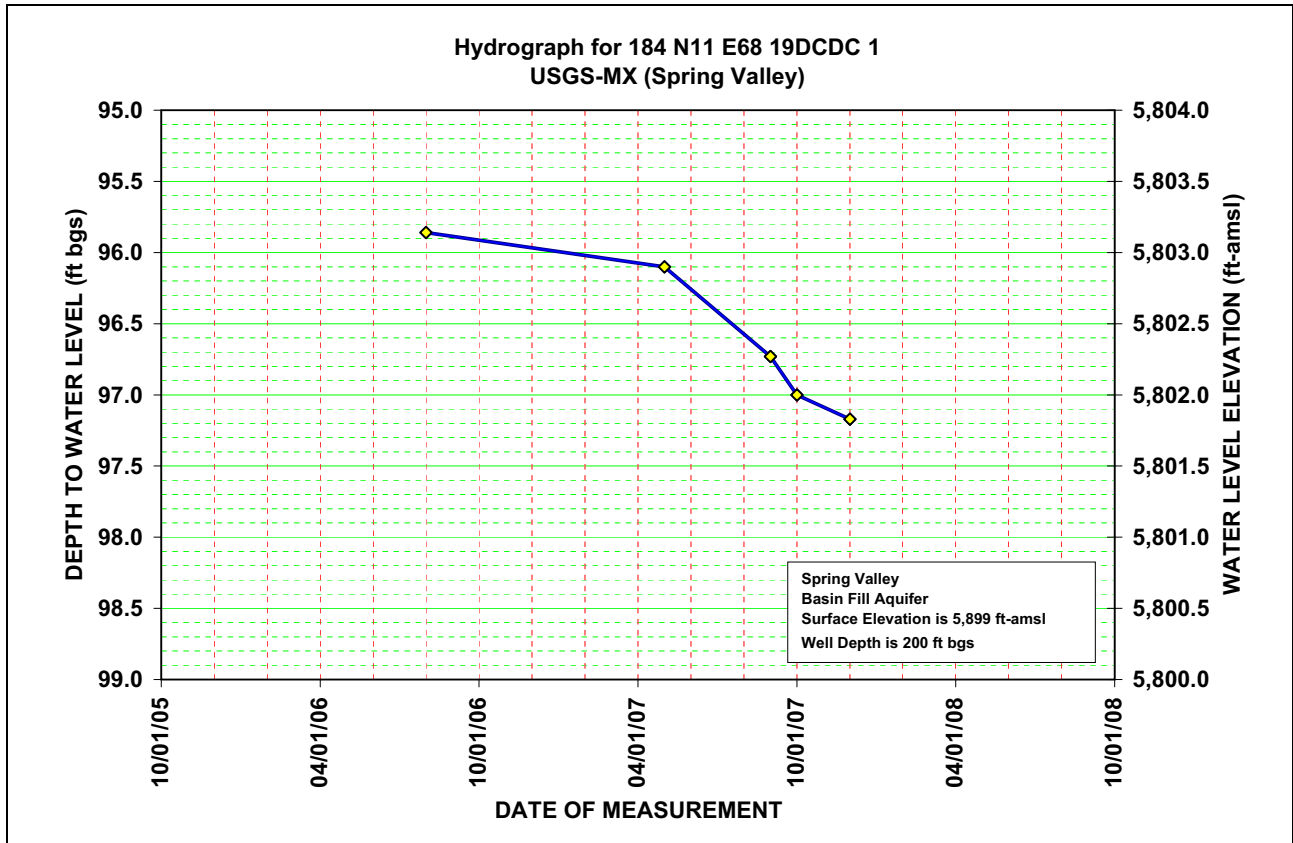


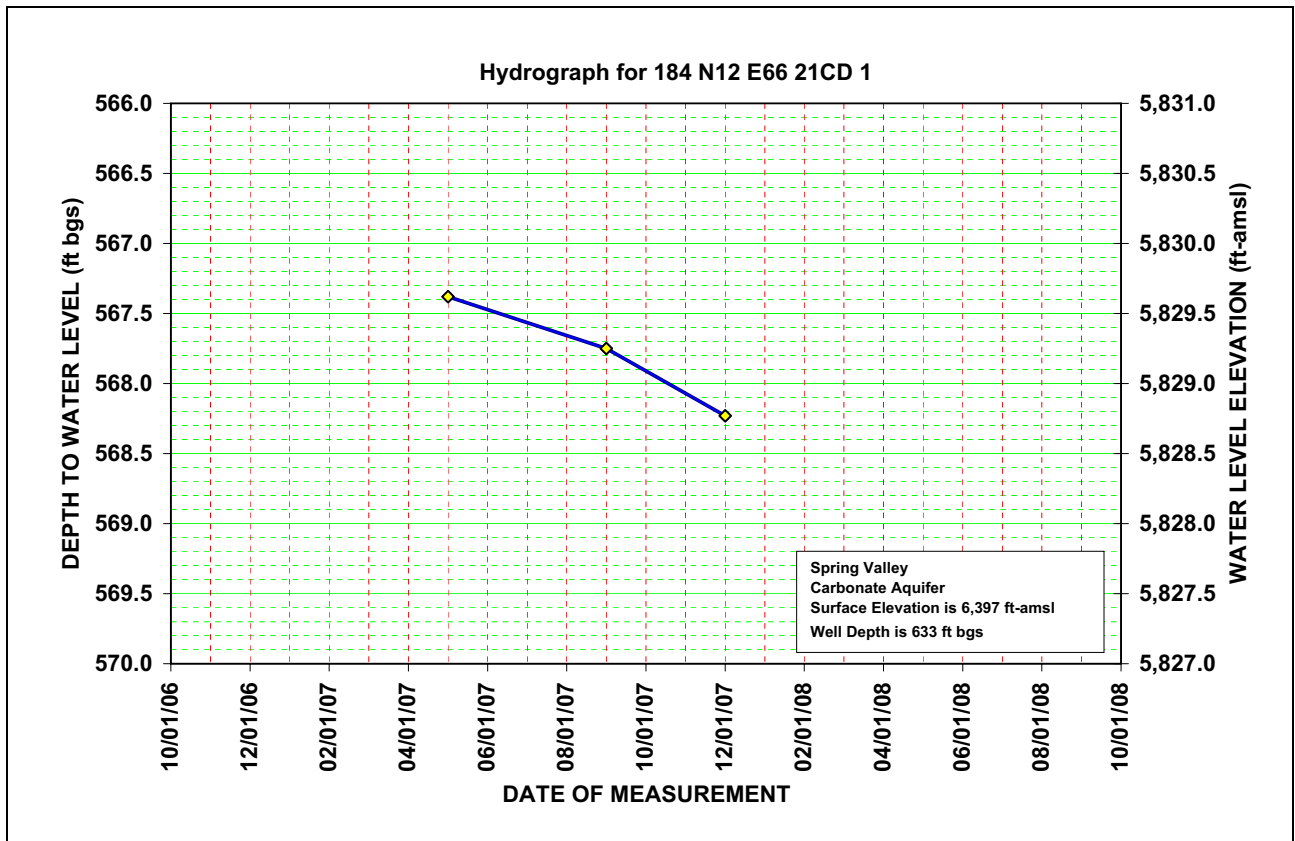
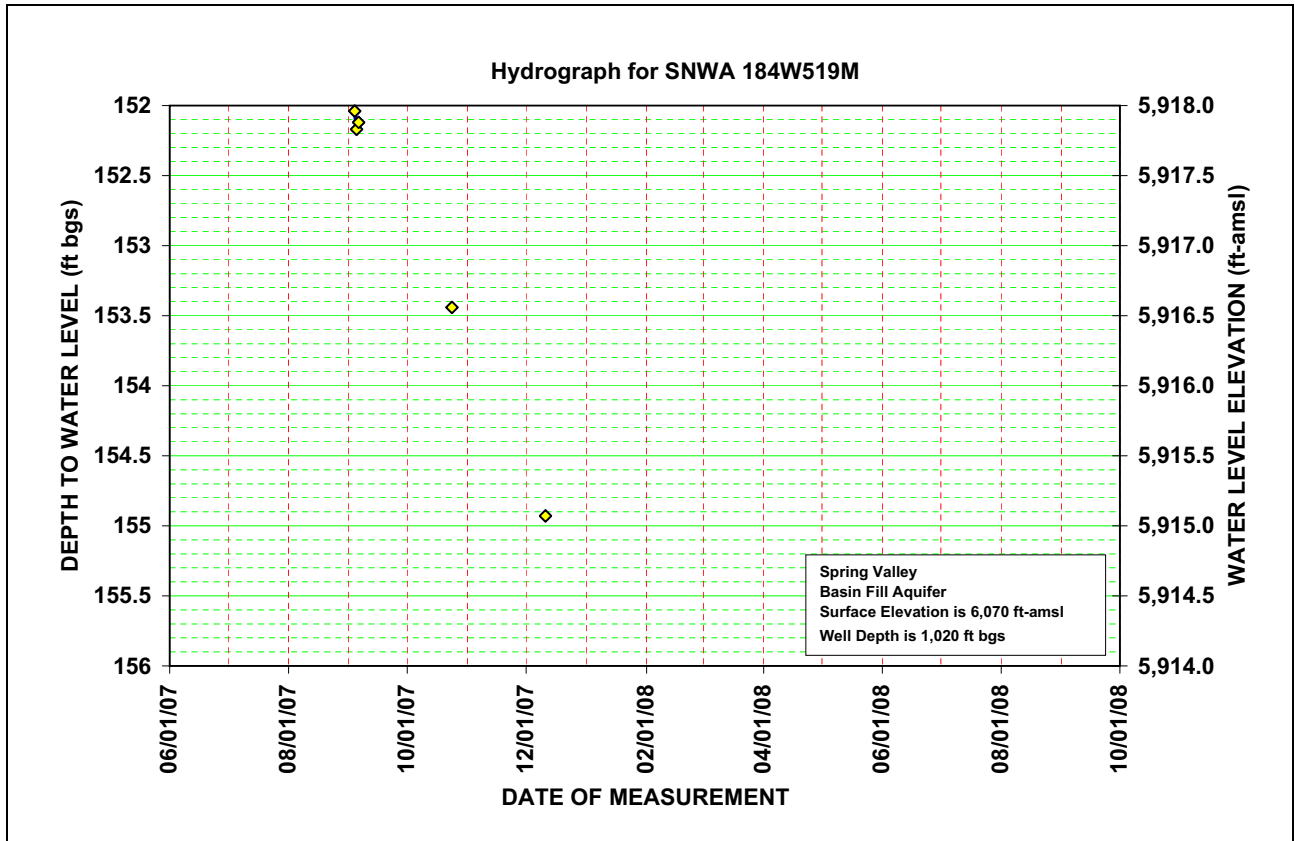
Spring Valley Stipulation Agreement Hydrologic Monitoring Plan Status and Data Report

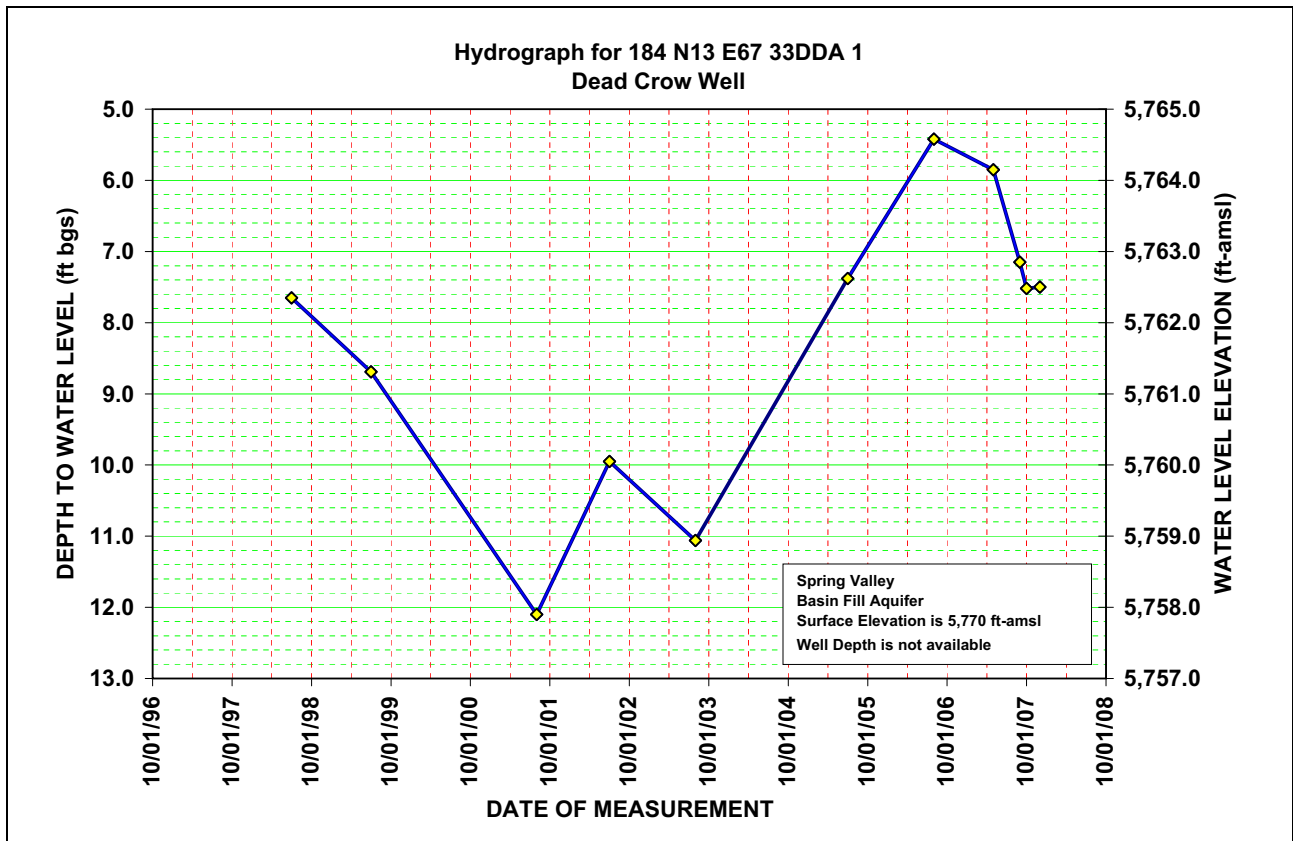
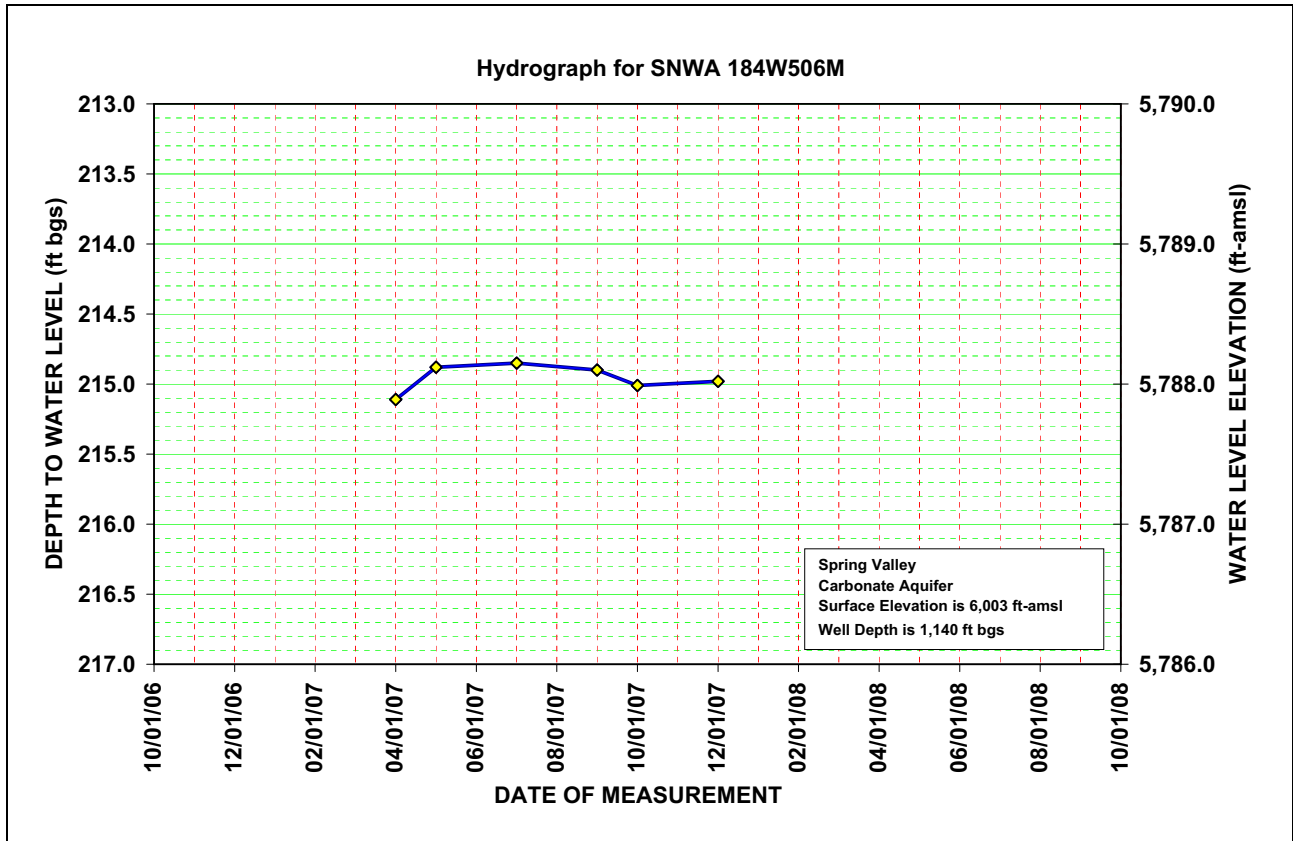


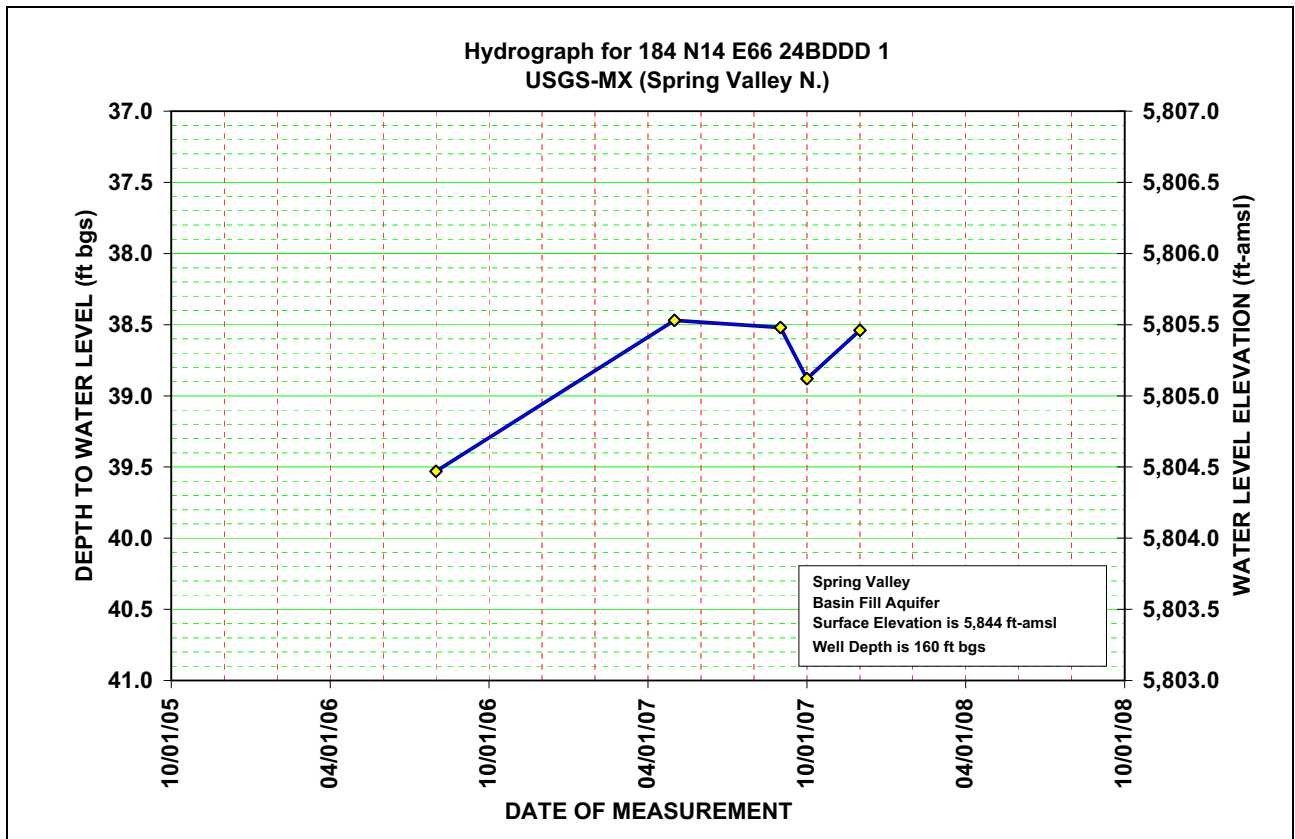
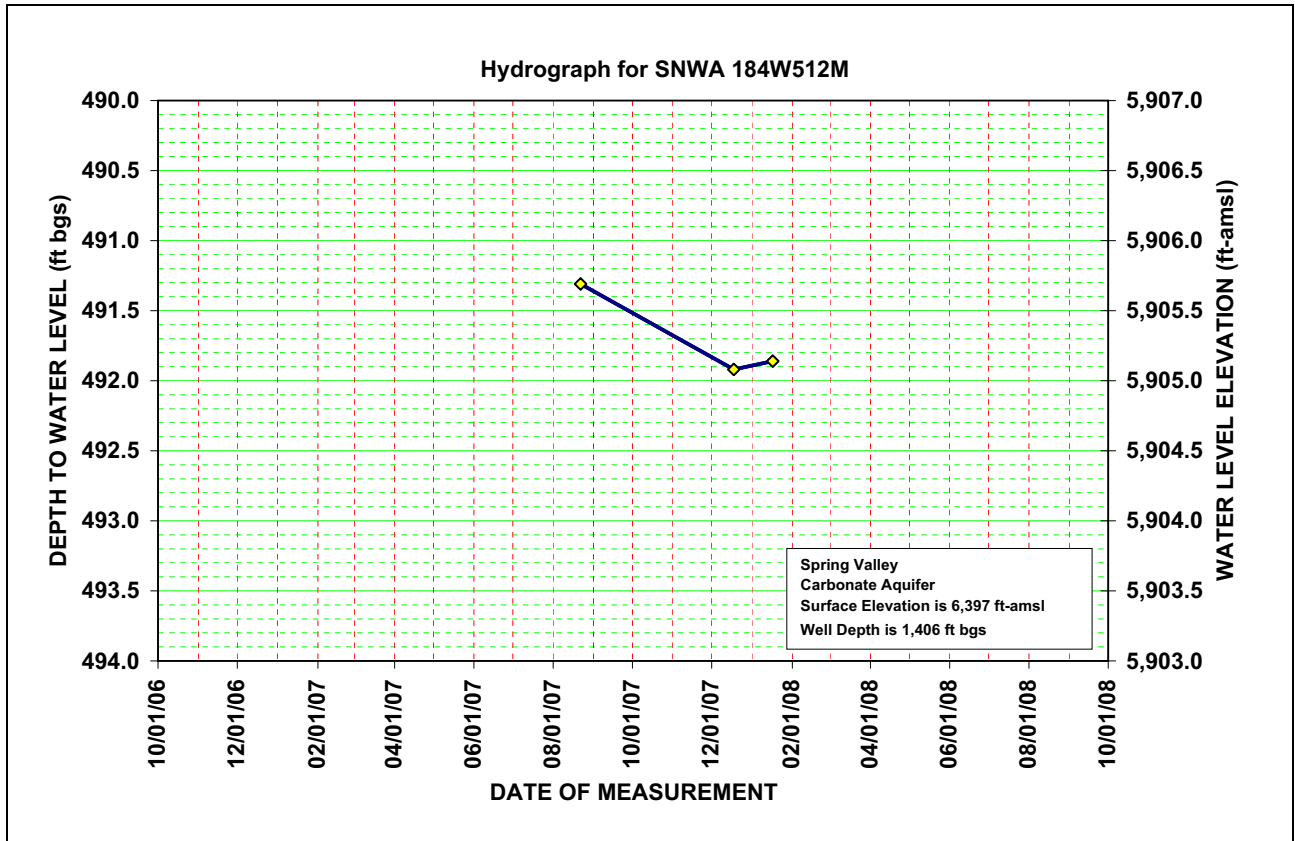


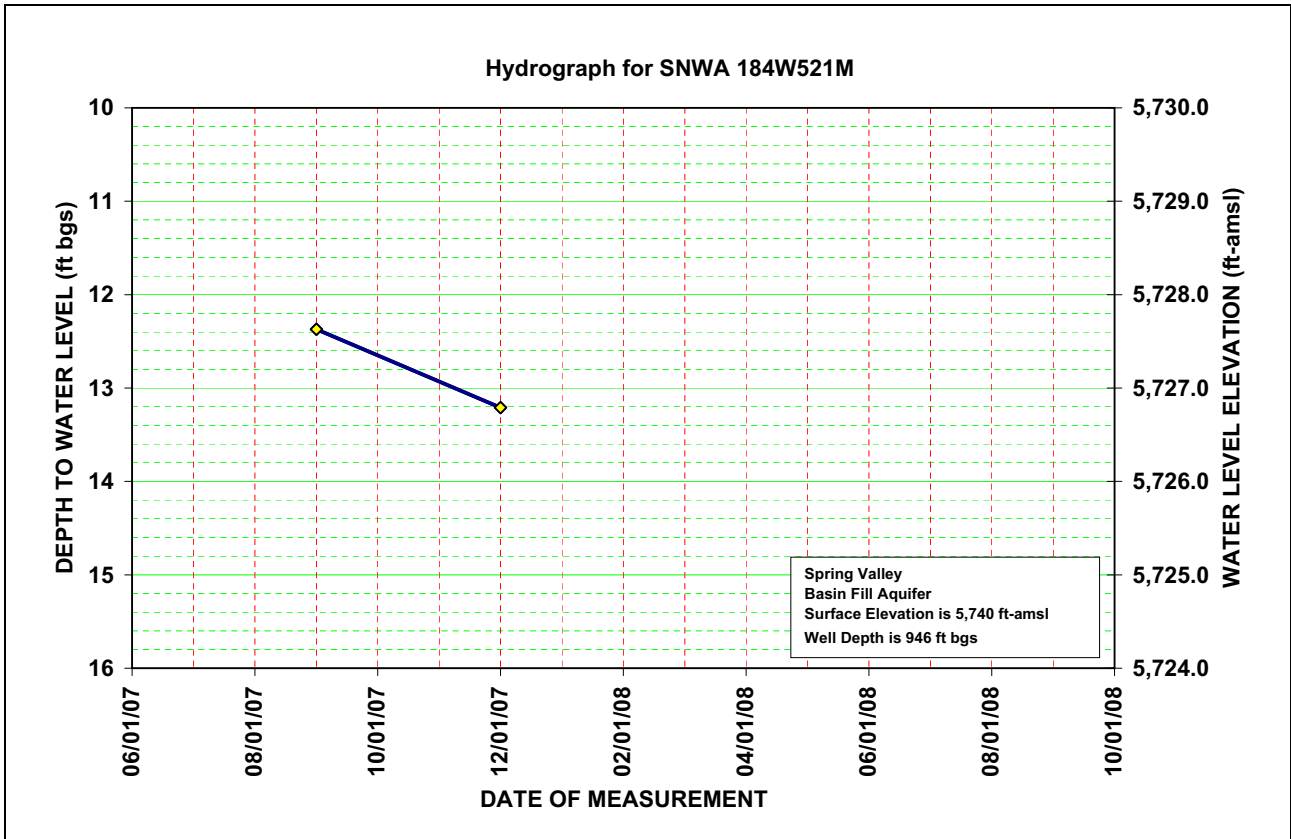
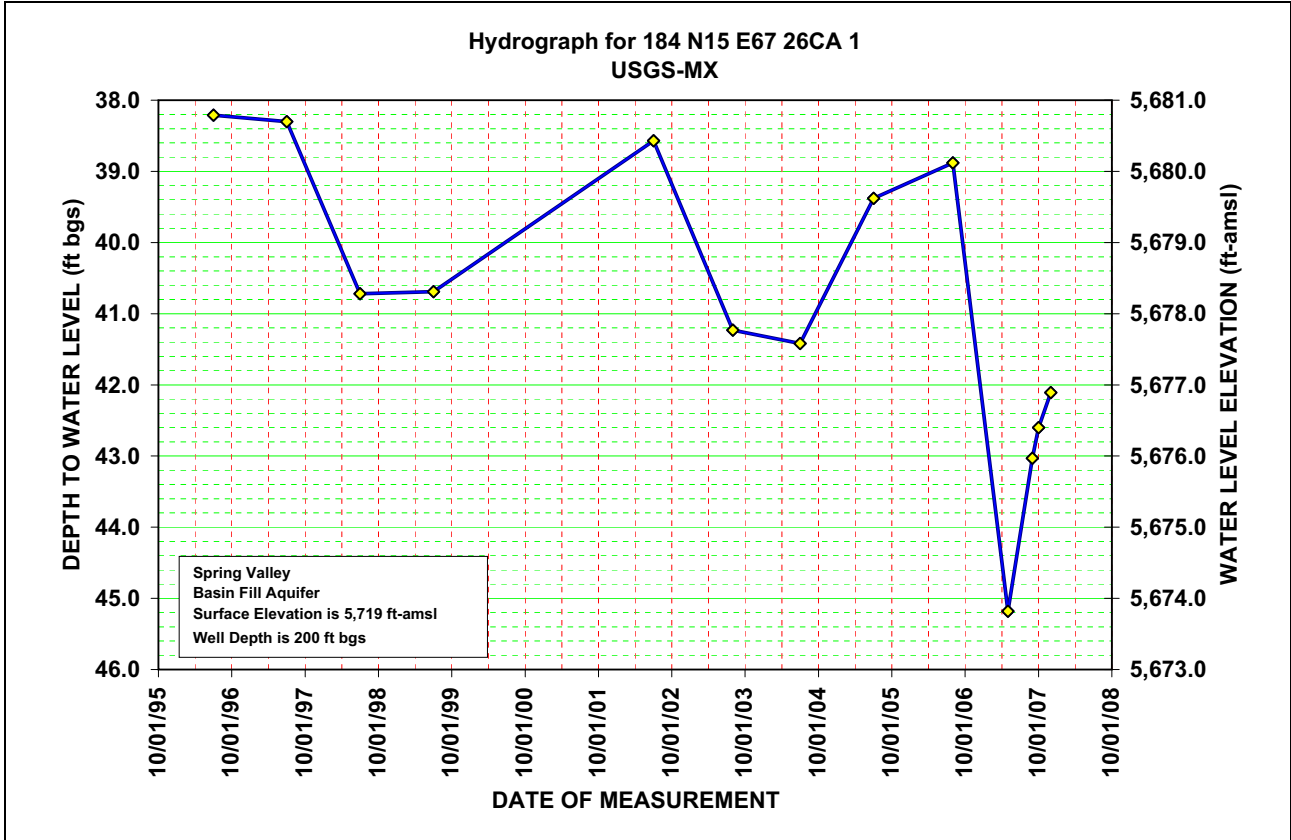


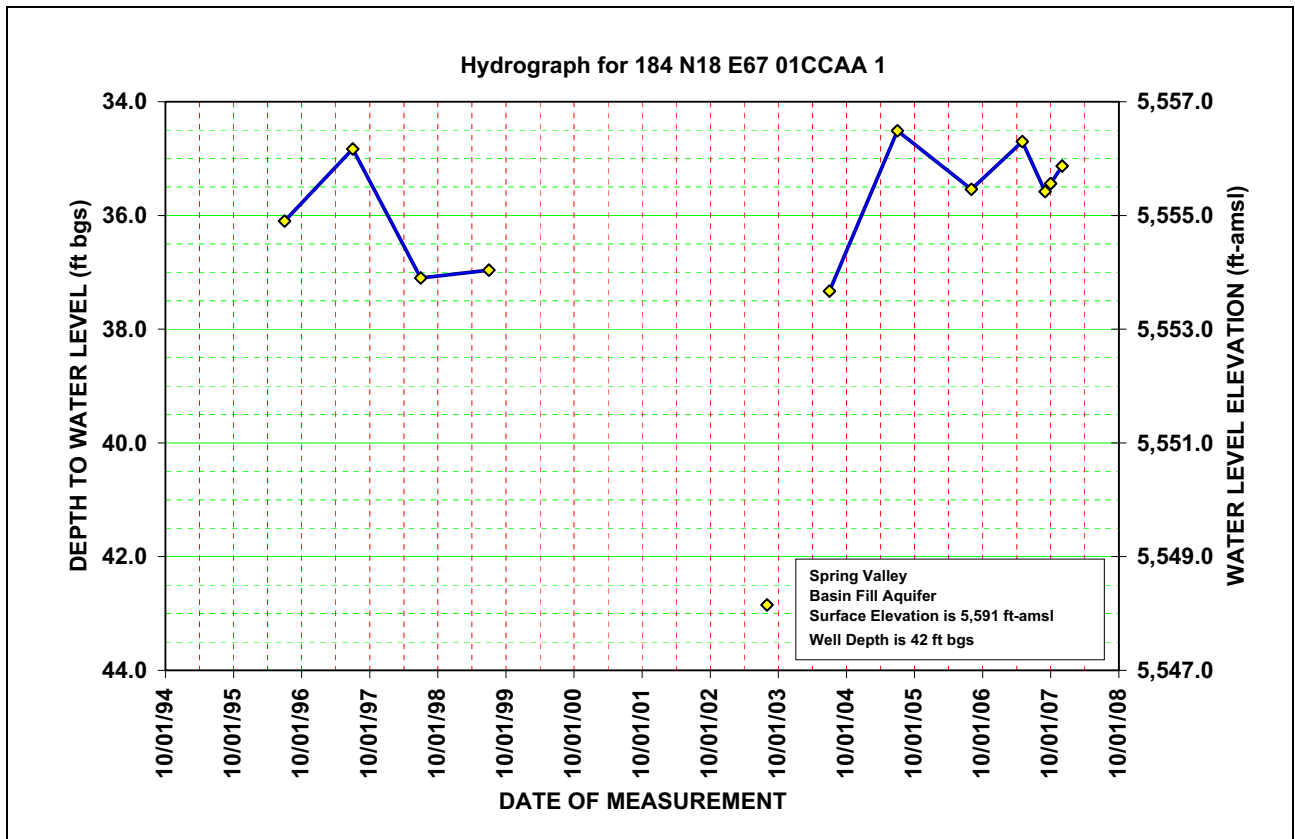
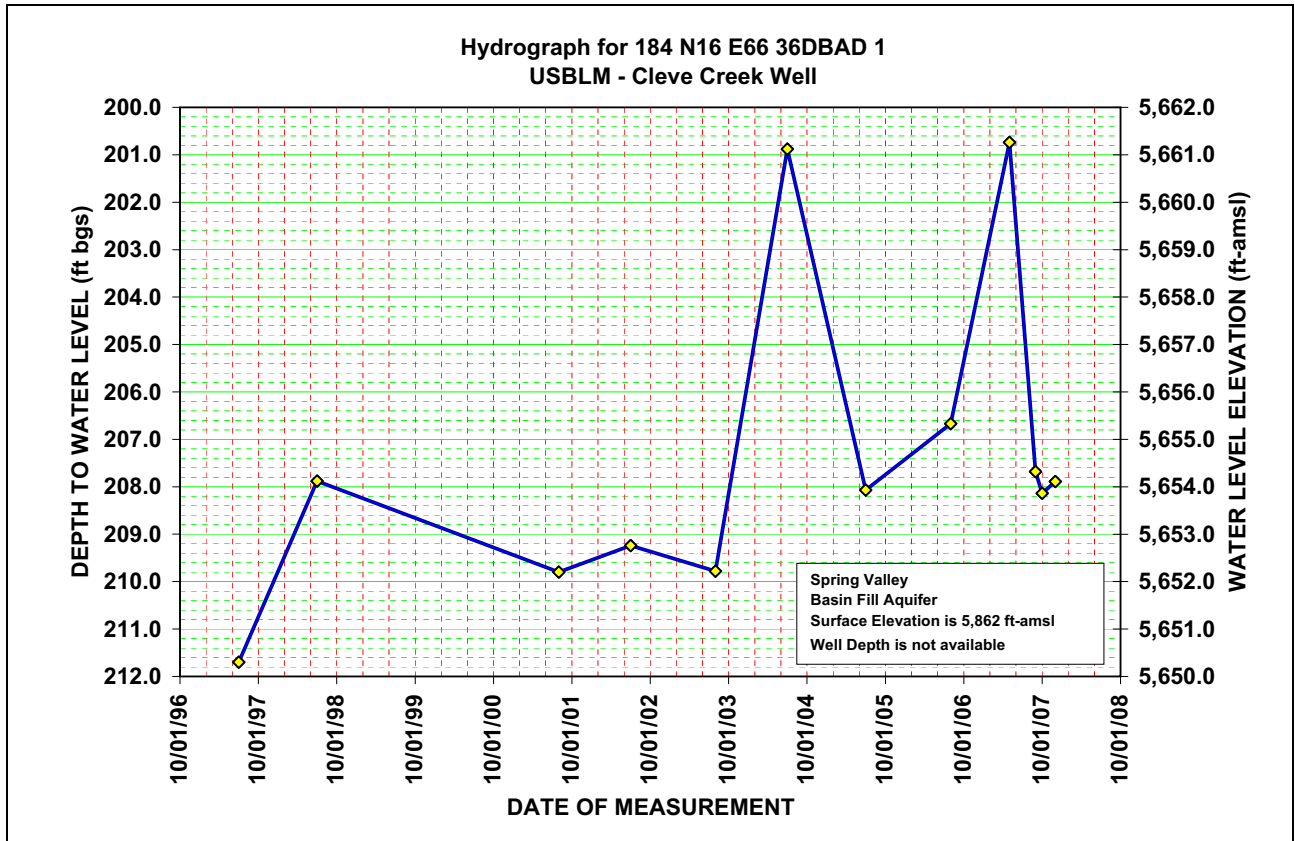


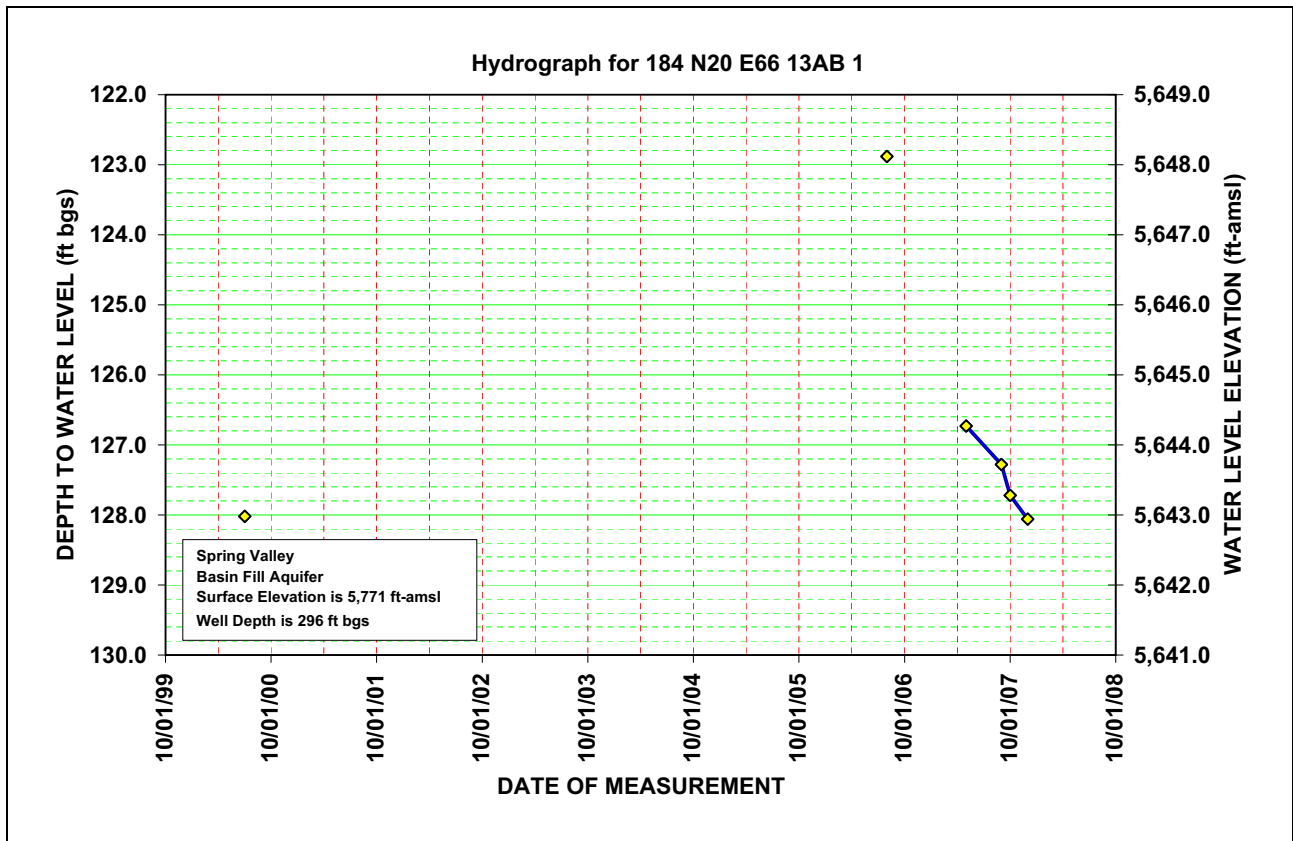
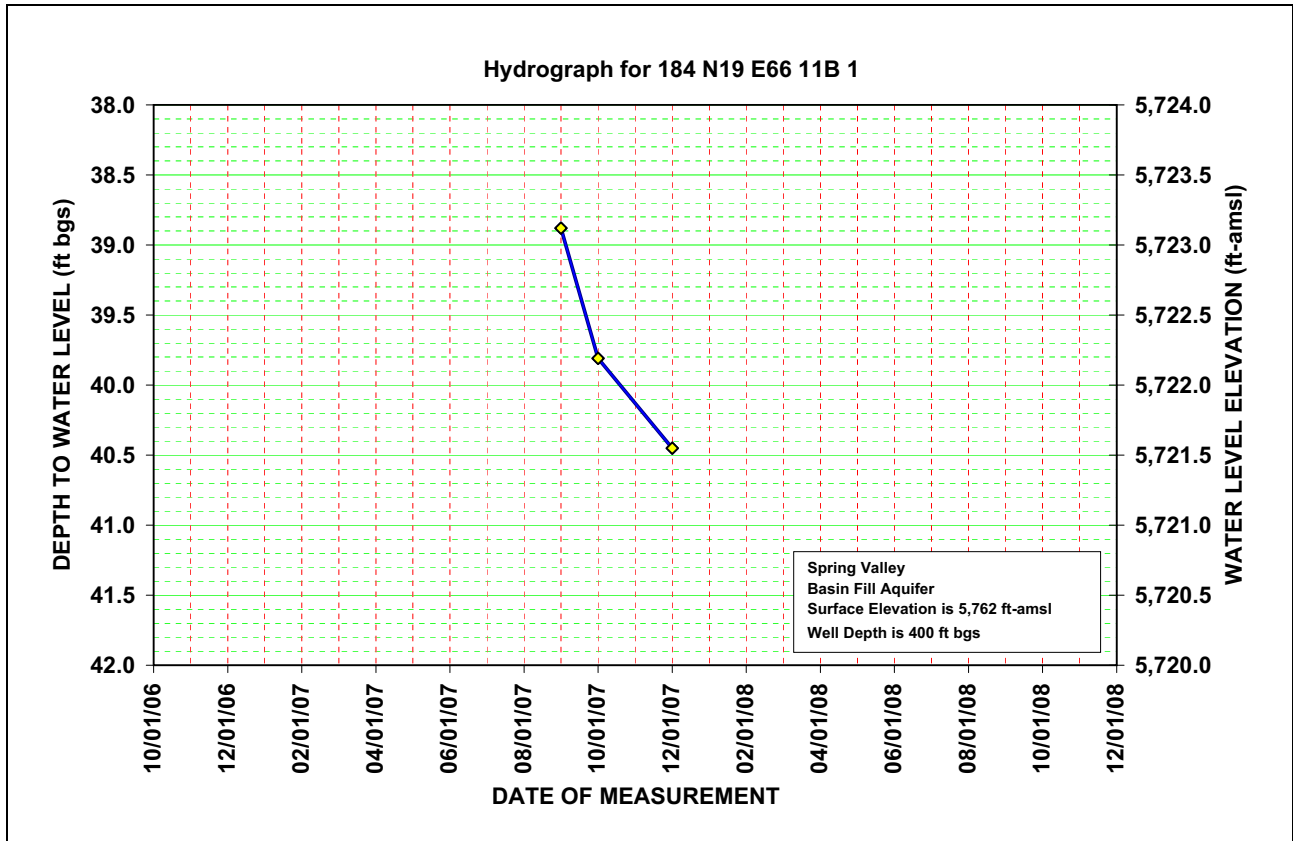


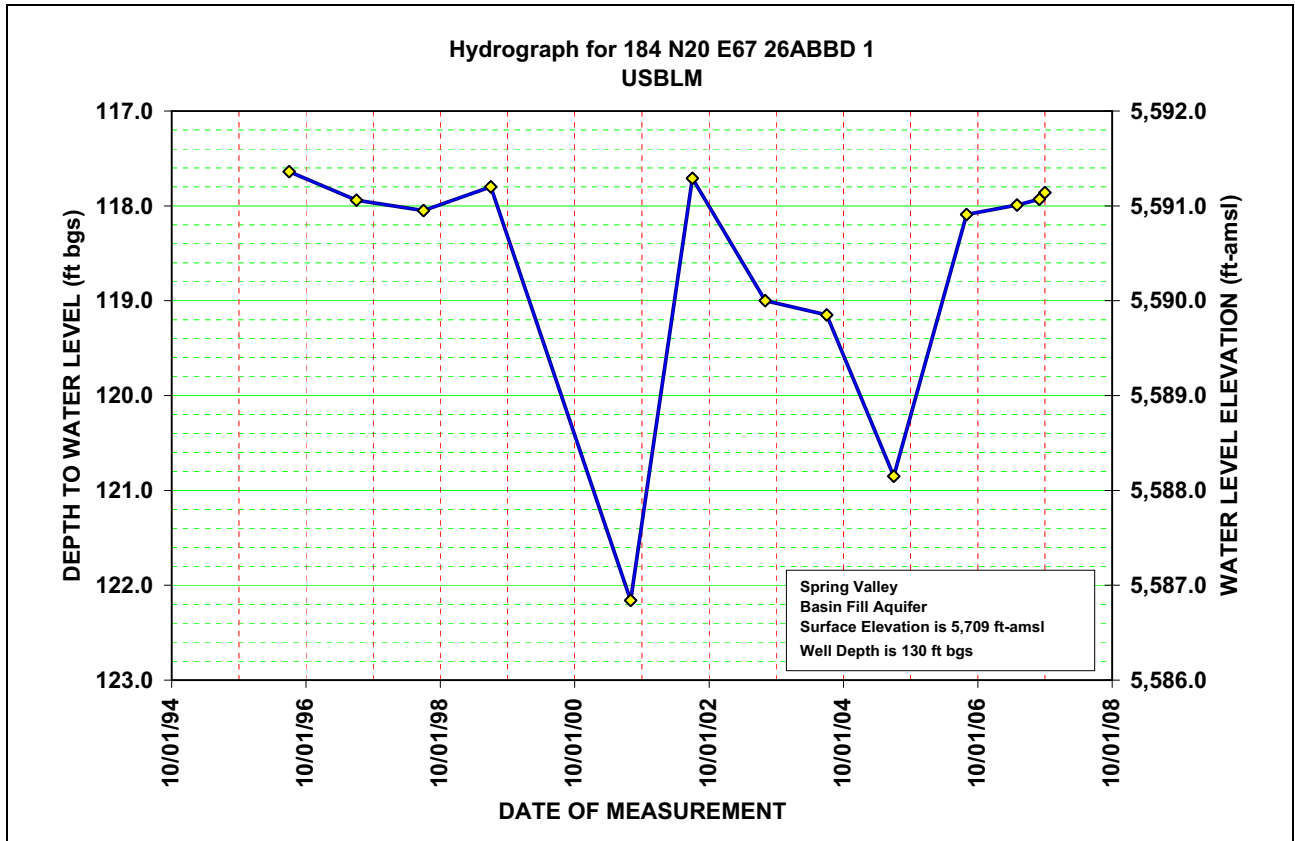














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Appendix C

Continuous Water-level Measurement Data from the Spring Valley Existing Well Monitoring Network

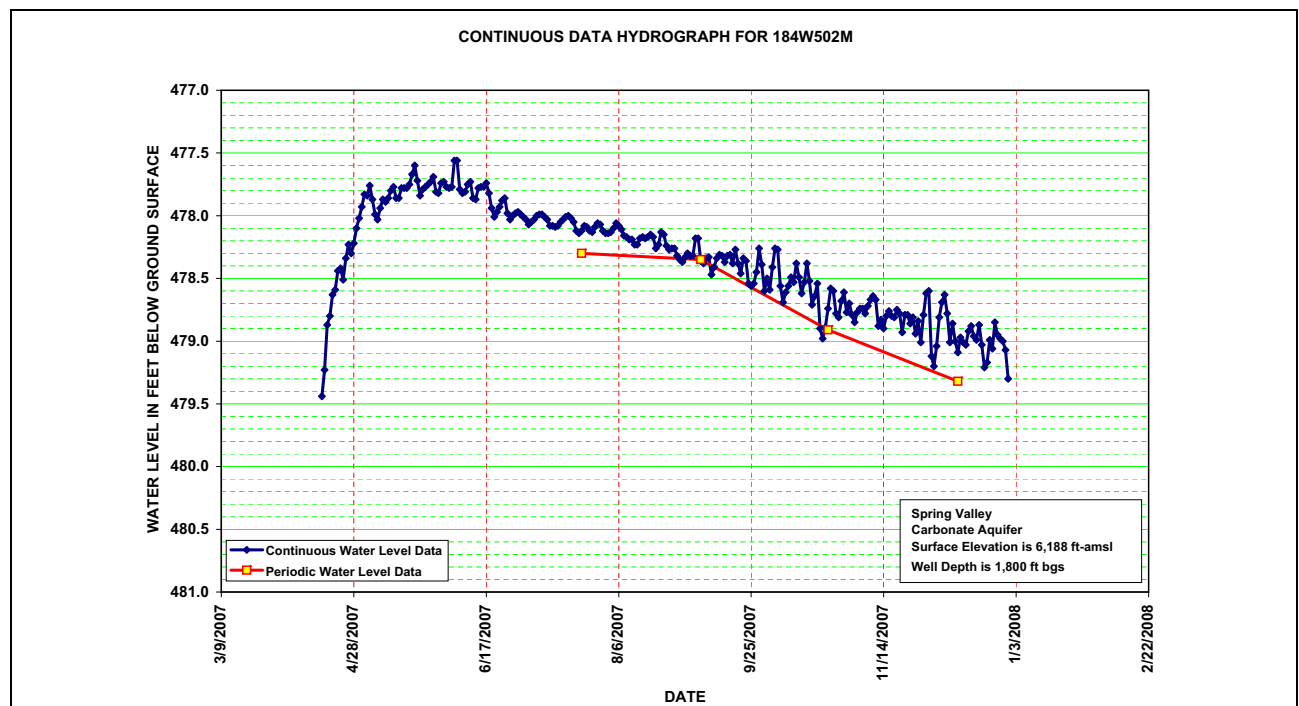
**Table C.1-1
Well 184W502M Calendar Year 2007
Water-level Data, Daily Mean Values**

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	--	--	--	--	477.93	477.73	478.01	478.14	478.30	478.50	478.70	478.60
2	--	--	--	--	477.83	477.77	478.03	478.14	478.32	478.59	478.79	479.12
3	--	--	--	--	477.84	477.78	478.07	478.13	478.32	478.41	478.85	479.20
4	--	--	--	--	477.76	477.77	478.05	478.10	478.18	478.26	478.77	479.04
5	--	--	--	--	477.87	477.56	478.03	478.06	478.18	478.27	478.74	478.81
6	--	--	--	--	477.99	477.56	478.00	478.08	478.36	478.56	478.74	478.69
7	--	--	--	--	478.03	477.79	477.99	478.11	478.38	478.69	478.78	478.63
8	--	--	--	--	477.94	477.82	477.99	478.16	478.34	478.61	478.72	478.78
9	--	--	--	--	477.87	477.81	478.01	478.17	478.33	478.56	478.67	479.01
10	--	--	--	--	477.89	477.75	478.03	478.19	478.47	478.49	478.64	478.86
11	--	--	--	--	477.86	477.73	478.08	478.19	478.41	478.53	478.67	479.00
12	--	--	--	--	477.80	477.86	478.08	478.23	478.34	478.38	478.88	479.12
13	--	--	--	--	477.77	477.87	478.09	478.23	478.31	478.49	478.83	478.97
14	--	--	--	--	477.86	477.78	478.08	478.18	478.32	478.62	478.90	479.01
15	--	--	--	--	477.86	477.77	478.05	478.17	478.37	478.53	478.80	479.03
16	--	--	--	479.44	477.78	477.77	478.03	478.18	478.32	478.38	478.76	478.92
17	--	--	--	479.23	477.78	477.74	478.01	478.17	478.31	478.52	478.80	478.88
18	--	--	--	478.87	477.78	477.82	478.00	478.15	478.38	478.71	478.81	478.96
19	--	--	--	478.80	477.75	477.94	478.02	478.17	478.27	478.64	478.75	478.99
20	--	--	--	478.63	477.67	478.01	478.05	478.26	478.38	478.54	478.78	478.87
21	--	--	--	478.59	477.60	477.97	478.12	478.23	478.46	478.90	478.93	479.03
22	--	--	--	478.44	477.72	477.93	478.14	478.13	478.34	478.98	478.79	479.21
23	--	--	--	478.42	477.84	477.88	478.12	478.15	478.36	478.89	478.79	479.17
24	--	--	--	478.51	477.79	477.86	478.08	478.24	478.54	478.74	478.86	478.99
25	--	--	--	478.34	477.77	477.98	478.09	478.27	478.56	478.58	478.81	479.06
26	--	--	--	478.23	477.75	478.03	478.12	478.26	478.54	478.60	478.94	478.85
27	--	--	--	478.30	477.73	478.00	478.13	478.26	478.45	478.78	478.84	478.95
28	--	--	--	478.22	477.69	477.98	478.09	478.32	478.26	478.81	479.01	478.98
29	--	--	--	478.10	477.81	477.97	478.06	478.35	478.39	478.68	478.79	479.00
30	--	--	--	478.02	477.82	477.99	478.07	478.37	478.60	478.61	478.62	479.07
31	--	--	--	--	477.74	--	478.12	478.33	--	478.77	--	479.30
Max	--	--	--	479.44	478.03	478.03	478.14	478.37	478.60	478.98	479.01	479.30
Min	--	--	--	478.02	477.60	477.56	477.99	478.06	478.18	478.26	478.62	478.60

Year 2007 Year Totals

Year Max 479.44
Year Min 477.56

Note: Depth below ground surface. Reference elevation on hydrograph is approximate and will be surveyed in 2008.





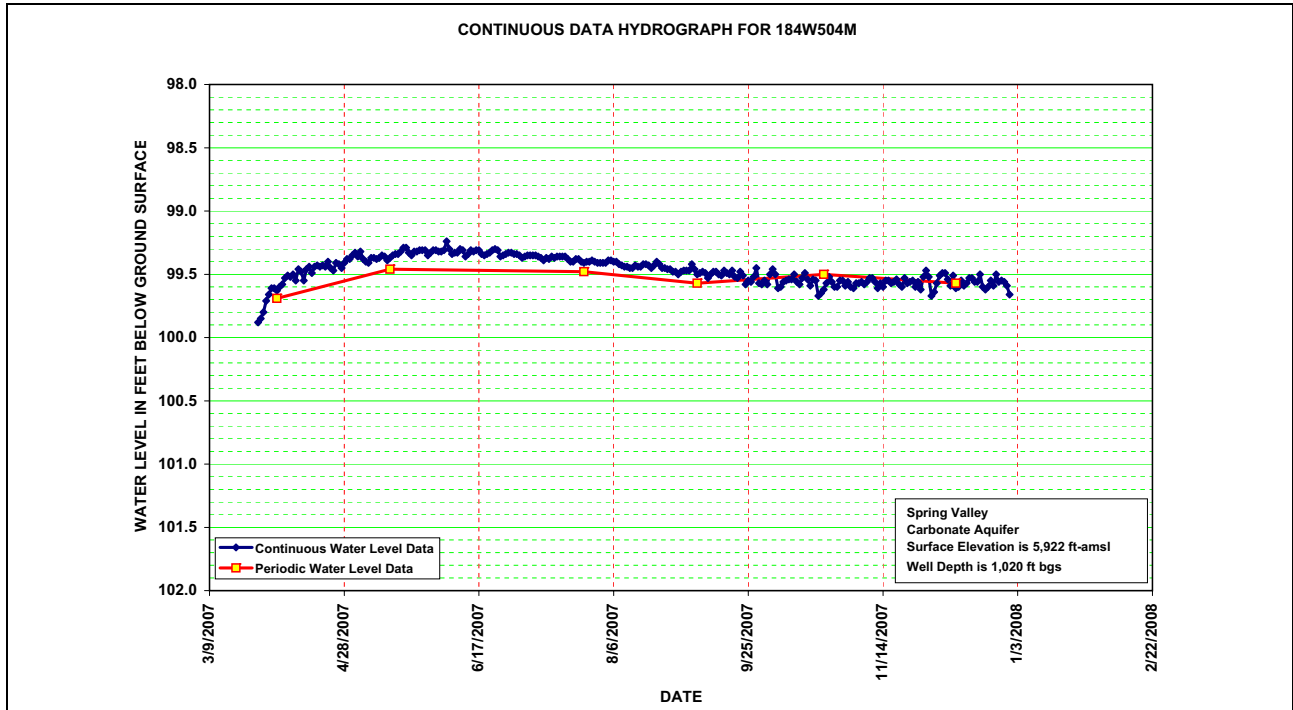
**Table C.1-2
Well 184W504M Calendar Year 2007
Water-level Data, Daily Mean Values**

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	--	--	--	99.61	99.35	99.31	99.34	99.41	99.47	99.55	99.56	99.52
2	--	--	--	99.61	99.33	99.32	99.35	99.41	99.47	99.58	99.60	99.67
3	--	--	--	99.63	99.36	99.32	99.37	99.41	99.47	99.50	99.61	99.64
4	--	--	--	99.60	99.32	99.31	99.36	99.39	99.42	99.46	99.57	99.57
5	--	--	--	99.58	99.38	99.24	99.35	99.39	99.46	99.49	99.57	99.51
6	--	--	--	99.53	99.40	99.30	99.35	99.40	99.50	99.60	99.56	99.49
7	--	--	--	99.51	99.41	99.34	99.35	99.40	99.49	99.60	99.58	99.49
8	--	--	--	99.52	99.37	99.33	99.35	99.42	99.48	99.56	99.56	99.54
9	--	--	--	99.50	99.37	99.33	99.36	99.43	99.49	99.55	99.53	99.59
10	--	--	--	99.55	99.38	99.30	99.37	99.44	99.53	99.54	99.53	99.51
11	--	--	--	99.46	99.37	99.31	99.39	99.44	99.50	99.54	99.56	99.61
12	--	--	--	99.48	99.35	99.36	99.37	99.45	99.48	99.50	99.61	99.60
13	--	--	--	99.55	99.36	99.34	99.38	99.45	99.48	99.56	99.57	99.55
14	--	--	--	99.46	99.39	99.31	99.36	99.43	99.50	99.58	99.60	99.59
15	--	--	--	99.44	99.37	99.32	99.37	99.44	99.51	99.53	99.55	99.57
16	--	--	--	99.49	99.35	99.31	99.36	99.44	99.47	99.49	99.55	99.53
17	--	--	--	99.44	99.34	99.31	99.36	99.42	99.49	99.54	99.57	99.53
18	--	--	--	99.43	99.34	99.34	99.36	99.42	99.50	99.59	99.56	99.56
19	--	--	--	99.44	99.32	99.35	99.36	99.43	99.47	99.54	99.54	99.56
20	--	--	--	99.43	99.29	99.34	99.38	99.45	99.52	99.55	99.58	99.50
21	--	--	--	99.44	99.29	99.33	99.40	99.43	99.53	99.67	99.60	99.60
22	--	--	--	99.40	99.33	99.31	99.40	99.40	99.48	99.65	99.53	99.62
23	--	--	--	99.45	99.35	99.30	99.38	99.42	99.51	99.62	99.57	99.60
24	--	--	--	99.47	99.32	99.31	99.38	99.45	99.58	99.57	99.56	99.55
25	--	--	--	99.41	99.32	99.36	99.40	99.45	99.55	99.52	99.55	99.59
26	--	--	--	99.42	99.31	99.35	99.41	99.46	99.56	99.56	99.60	99.50
27	--	--	99.88	99.45	99.31	99.34	99.40	99.46	99.52	99.60	99.56	99.56
28	--	--	99.85	99.41	99.31	99.33	99.40	99.48	99.45	99.60	99.62	99.55
29	--	--	99.80	99.38	99.35	99.33	99.39	99.48	99.57	99.55	99.52	99.56
30	--	--	99.71	99.38	99.33	99.34	99.40	99.50	99.58	99.55	99.47	99.59
31	--	--	99.66	--	99.31	--	99.41	99.48	--	99.59	--	99.66
Max	--	--	99.88	99.63	99.41	99.36	99.41	99.50	99.58	99.67	99.62	99.67
Min	--	--	99.66	99.38	99.29	99.24	99.34	99.39	99.42	99.46	99.47	99.49

Year 2007 Year Totals

Year Max 99.88
Year Min 99.24

Note: Depth below ground surface. Reference elevation on hydrograph is approximate and will be surveyed in 2008.



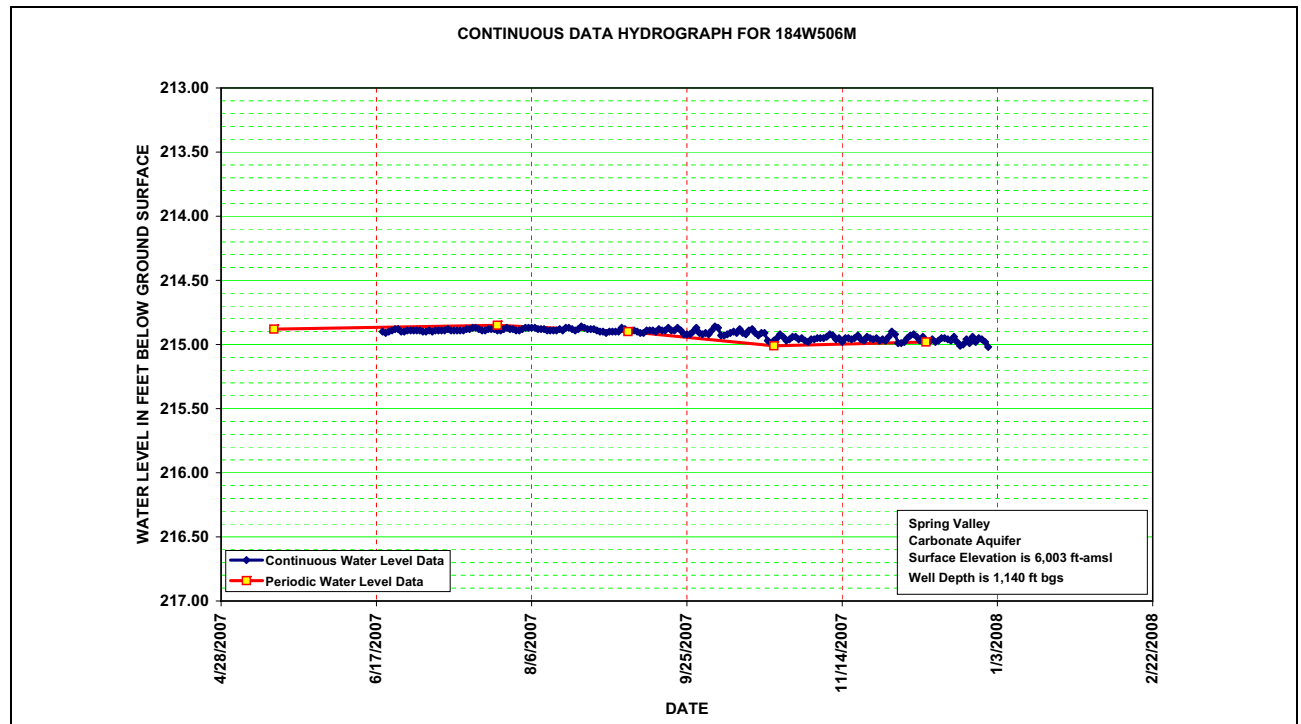
**Table C.1-3
Well 184W506M Calendar Year 2007
Water-level Data, Daily Mean Values**

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	--	--	--	--	--	--	214.94	214.94	214.95	214.91	214.95	214.92
2	--	--	--	--	--	--	214.95	214.94	214.95	214.92	214.97	214.99
3	--	--	--	--	--	--	214.95	214.93	214.95	214.89	214.98	214.99
4	--	--	--	--	--	--	214.94	214.92	214.92	214.86	214.96	214.98
5	--	--	--	--	--	--	214.95	214.92	214.93	214.87	214.96	214.95
6	--	--	--	--	--	--	214.94	214.92	214.95	214.93	214.95	214.93
7	--	--	--	--	--	--	214.94	214.92	214.95	214.93	214.95	214.92
8	--	--	--	--	--	--	214.94	214.93	214.94	214.92	214.95	214.94
9	--	--	--	--	--	--	214.94	214.93	214.95	214.91	214.94	214.97
10	--	--	--	--	--	--	214.93	214.93	214.96	214.90	214.92	214.94
11	--	--	--	--	--	--	214.94	214.94	214.96	214.91	214.93	214.98
12	--	--	--	--	--	--	214.94	214.94	214.94	214.88	214.96	214.98
13	--	--	--	--	--	--	214.94	214.94	214.94	214.91	214.95	214.96
14	--	--	--	--	--	--	214.94	214.94	214.94	214.92	214.98	214.98
15	--	--	--	--	--	--	214.94	214.93	214.95	214.89	214.95	214.97
16	--	--	--	--	--	--	214.93	214.94	214.93	214.88	214.95	214.95
17	--	--	--	--	--	--	214.93	214.92	214.94	214.91	214.96	214.95
18	--	--	--	--	--	--	214.92	214.92	214.94	214.93	214.95	214.96
19	--	--	--	--	--	214.95	214.92	214.93	214.92	214.91	214.93	214.97
20	--	--	--	--	--	214.96	214.93	214.94	214.94	214.91	214.96	214.94
21	--	--	--	--	--	214.95	214.94	214.93	214.94	214.97	214.97	214.98
22	--	--	--	--	--	214.94	214.94	214.91	214.92	214.99	214.94	215.01
23	--	--	--	--	--	214.93	214.93	214.92	214.94	214.97	214.95	215.00
24	--	--	--	--	--	214.93	214.93	214.93	214.97	214.95	214.96	214.96
25	--	--	--	--	--	214.95	214.93	214.93	214.97	214.92	214.95	214.99
26	--	--	--	--	--	214.95	214.94	214.93	214.97	214.94	214.97	214.94
27	--	--	--	--	--	214.94	214.94	214.94	214.95	214.97	214.96	214.98
28	--	--	--	--	--	214.94	214.93	214.95	214.92	214.96	214.97	214.95
29	--	--	--	--	--	214.94	214.92	214.95	214.96	214.94	214.94	214.96
30	--	--	--	--	--	214.94	214.93	214.96	214.97	214.94	214.90	214.98
31	--	--	--	--	--	--	214.93	214.95	--	214.96	--	215.02
Max	--	--	--	--	--	214.96	214.95	214.96	214.97	214.99	214.98	215.02
Min	--	--	--	--	--	214.93	214.92	214.91	214.92	214.86	214.90	214.92

Year 2007 Year Totals

Year Max 215.02
Year Min 214.86

Note: Depth below ground surface. Reference elevation on hydrograph is approximate and will be surveyed in 2008.





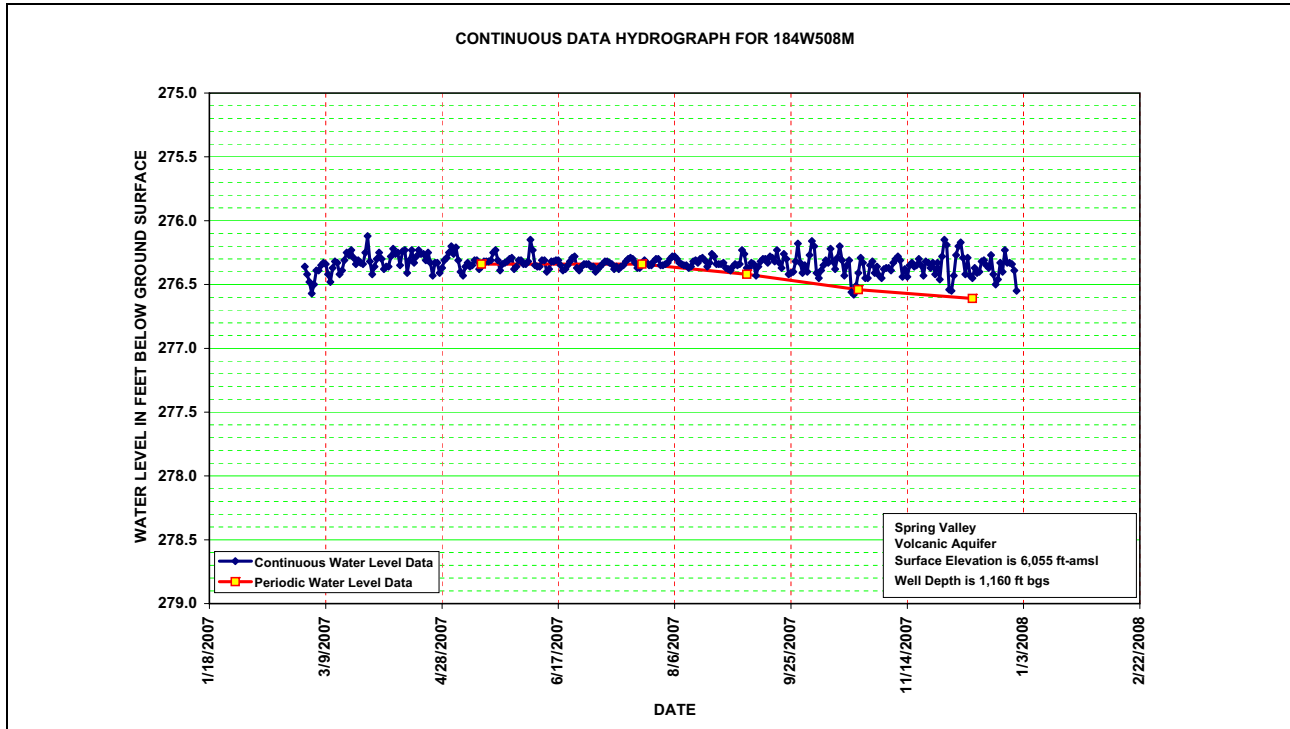
**Table C.1-4
Well 184W508M Calendar Year 2007
Water-level Data, Daily Mean Values**

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	--	--	276.42	276.25	276.25	276.31	276.36	276.35	276.34	276.35	276.36	276.19
2	--	--	276.48	276.30	276.20	276.34	276.36	276.34	276.35	276.4	276.43	276.54
3	--	--	276.57	276.38	276.26	276.34	276.40	276.33	276.34	276.27	276.45	276.55
4	--	--	276.50	276.36	276.21	276.32	276.38	276.30	276.23	276.16	276.38	276.43
5	--	--	276.39	276.36	276.31	276.15	276.36	276.28	276.26	276.2	276.37	276.27
6	--	--	276.39	276.28	276.40	276.23	276.34	276.28	276.37	276.41	276.37	276.20
7	--	--	276.35	276.22	276.43	276.35	276.32	276.30	276.37	276.45	276.39	276.17
8	--	--	276.33	276.26	276.36	276.36	276.32	276.33	276.33	276.39	276.33	276.29
9	--	--	276.34	276.25	276.33	276.36	276.33	276.34	276.34	276.35	276.3	276.42
10	--	--	276.42	276.35	276.36	276.31	276.34	276.35	276.43	276.31	276.28	276.29
11	--	--	276.48	276.24	276.35	276.31	276.38	276.35	276.36	276.33	276.31	276.43
12	--	--	276.37	276.23	276.31	276.40	276.36	276.37	276.32	276.22	276.44	276.45
13	--	--	276.32	276.41	276.31	276.38	276.38	276.36	276.30	276.32	276.38	276.37
14	--	--	276.33	276.31	276.38	276.32	276.36	276.32	276.30	276.38	276.44	276.41
15	--	--	276.42	276.23	276.36	276.32	276.35	276.31	276.33	276.29	276.35	276.40
16	--	--	276.39	276.33	276.32	276.31	276.32	276.33	276.28	276.2	276.33	276.32
17	--	--	276.31	276.28	276.32	276.31	276.30	276.30	276.29	276.31	276.36	276.31
18	--	--	276.25	276.23	276.32	276.35	276.29	276.29	276.32	276.43	276.35	276.35
19	--	--	276.27	276.26	276.31	276.39	276.30	276.31	276.23	276.35	276.3	276.37
20	--	--	276.23	276.26	276.25	276.38	276.33	276.36	276.33	276.31	276.35	276.27
21	--	--	276.29	276.31	276.23	276.35	276.37	276.33	276.37	276.56	276.43	276.42
22	--	--	276.34	276.25	276.31	276.32	276.37	276.26	276.26	276.58	276.32	276.50
23	--	--	276.31	276.33	276.39	276.29	276.33	276.28	276.30	276.51	276.33	276.46
24	--	--	276.33	276.43	276.34	276.28	276.31	276.34	276.42	276.41	276.37	276.33
25	--	--	276.34	276.33	276.33	276.37	276.33	276.34	276.41	276.29	276.33	276.40
26	--	--	276.25	276.33	276.32	276.39	276.35	276.34	276.40	276.33	276.42	276.23
27	--	--	276.12	276.41	276.30	276.36	276.35	276.33	276.32	276.45	276.33	276.33
28	--	276.36	276.32	276.37	276.29	276.34	276.32	276.37	276.18	276.45	276.46	276.33
29	--	--	276.42	276.31	276.38	276.34	276.30	276.38	276.33	276.35	276.28	276.34
30	--	--	276.36	276.29	276.36	276.34	276.30	276.39	276.41	276.32	276.15	276.39
31	--	--	276.30	--	276.31	--	276.35	276.36	--	276.41	--	276.55
Max	--	277.76	276.57	276.43	276.43	276.40	276.40	276.39	276.43	276.58	276.46	276.55
Min	--	277.76	276.12	276.22	276.20	276.15	276.29	276.26	276.18	276.16	276.15	276.17

Year 2007 Year Totals

Year Max 277.76
Year Min 276.12

Note: Depth below ground surface. Reference elevation on hydrograph is approximate and will be surveyed in 2008.



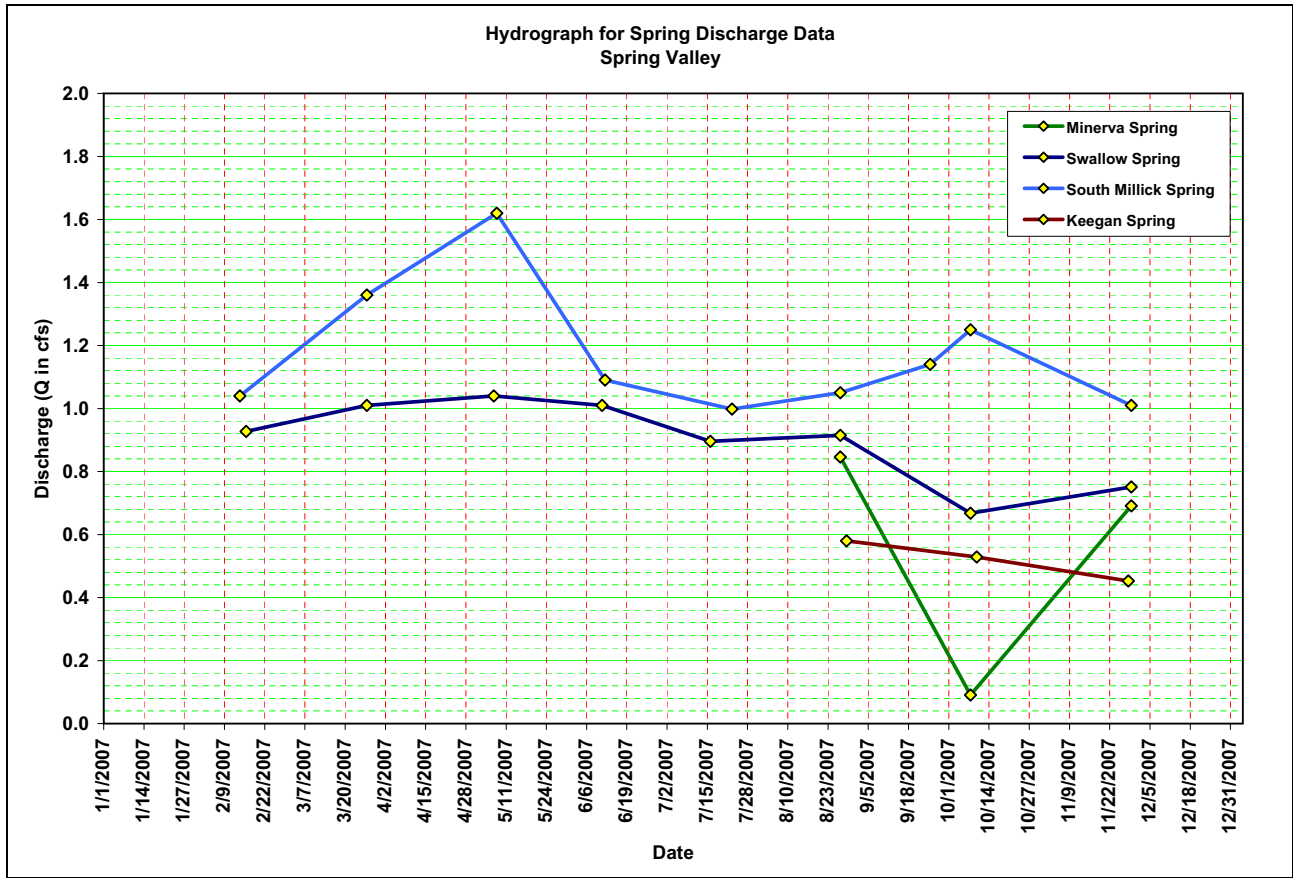
Appendix D

Spring Monitoring Program Hydrologic and Field Chemistry Data

Table D.1-1
Spring Valley Miscellaneous Data

Spring Number	Spring Name	Date	Time	Discharge (gpm)	Discharge (cfs)	Measurement Rated as (E, G, F, P) ^a	Method ^b	Water Temp. (°C)	EC	pH	Remarks	Data Source
1847201	Minerva Spring	11/29/2007	9:28	310	0.691	F	--	--	--	--	--	SNWA
		2/16/2007	8:58	416	0.927	F	--	--	--	--	North = 0.095 cfs, South = 0.832 cfs; Measured North with 3-in. Modified Parshall Flume and South with Pygmy Meter.	SNWA
		3/27/2007	10:00	453	1.01	G	--	--	--	--	North = 0.117 cfs, South = 0.889 cfs; Measured North with 3-in. Modified Parshall Flume and South with Pygmy Meter.	SNWA
		5/7/2007	12:15	467	1.04	G	--	--	--	--	North = 0.117 cfs, South = 0.918 cfs; Measured North with 3-in. Modified Parshall Flume and South with Pygmy Meter.	SNWA
1846201	Swallow Spring	6/11/2007	13:43	371	1.01	F	--	--	--	--	North = 0.179 cfs, South = 0.827 cfs; Measured North with 3-in. Modified Parshall Flume and South with Pygmy Meter.	SNWA
		7/16/2007	14:26	402	0.896	F	--	--	--	--	North = 0.095 cfs, South = 0.801 cfs; Measured North with 3-in. Modified Parshall Flume and South with Pygmy Meter.	SNWA
		8/27/2007	13:15	411	0.915	P	--	--	--	--	North = 0.155 cfs, South = 0.760 cfs; Measured North by float estimate, and South with Pygmy Meter.	SNWA
		10/8/2007	13:45	300	0.668	F	--	--	--	--	North = 0.069 cfs, South = 0.599 cfs; Measured North with 3-in. Modified Parshall Flume and South with Pygmy Meter. 12.5 (South), 12.0 (North)	SNWA
		11/29/2007	10:15	337	0.751	F	--	--	--	--	North = 0.117 cfs, South = 0.889 cfs; Measured North with 3-in. Modified Parshall Flume and South with Pygmy Meter.	SNWA
1845901	Layton Spring	3/27/2007	13:00	1	0.002	E	V	--	215 µS/cm	--	--	SNWA
		8/27/2007	15:21	0.3	0.001	E	V	--	295 µS/cm	8.12	--	SNWA
		10/8/2007	12:34	0.5	0.001	E	V	--	303 µS/cm	8.10	Discharging from 2 in. pipe	SNWA
		11/26/2007	16:35	0.6	0.001	E	V	--	315 µS/cm	7.38	--	SNWA
1845702	South Millick Spring	2/14/2007	16:46	467	1.04	P	C	--	366 µS/cm	7.68	--	SNWA
		3/27/2007	15:00	610	1.36	F	C	--	342 µS/cm	--	--	SNWA
		5/8/2007	16:43	727	1.62	G	C	--	390 µS/cm	--	--	SNWA
		6/12/2007	17:06	489	1.09	P	C	--	369 µS/cm	7.57	--	SNWA
		7/23/2007	13:25	448	0.998	P	C	--	368 µS/cm	7.40	--	SNWA
		8/27/2007	16:51	471	1.05	P	C	--	431 µS/cm	--	--	SNWA
		9/25/2007	17:35	512	1.14	F	C	--	--	--	--	SNWA
		10/8/2007	16:40	561	1.25	F	C	--	467 µS/cm	7.70	--	SNWA
		11/29/2007	16:51	453	1.01	F	C	--	468 µS/cm	7.93	--	SNWA
1847101	Keegan Spring	8/29/2007	12:54	260	0.58	P	C	--	69.2 µS/cm	7.68	--	SNWA
		10/10/2007	10:41	237	0.529	P	C	--	76.0 µS/cm	--	Very windy, blowing water upstream	SNWA
		11/28/2007	16:56	203	0.453	F	C	--	82.3 µS/cm	7.2	--	SNWA
		8/28/2007	11:00	4	0.009	G	F	--	403 µS/cm	--	--	SNWA
1845501	Willow Spring	10/9/2007	8:55	4	0.009	E	F	--	482 µS/cm	7.73	--	SNWA
		11/27/2007	11:15	7	0.015	E	F	--	415 µS/cm	7.42	--	SNWA
1847301	Rock Spring	8/27/2007	14:00	12	0.026	E	F	--	579 µS/cm	--	--	SNWA
		10/8/2007	13:00	14	0.031	E	F	--	639 µS/cm	--	--	SNWA
		11/30/2007	8:32	16	0.035	E	F	--	694 µS/cm	--	--	SNWA

^aE = Excellent; F = Fair; G = Good; P = Poor
^bMeasurement Method: C = Current; F = Flume; V = Volumetric



Appendix E

USGS Discharge Measurements and Hydrographs for Cleve Creek and Big Springs Creek

**Table E.1-1
10243700-Cleve Creek near Ely, NV Discharge Measurements**

SNWA Station Number	USGS Station Number	Station Name	Date	Time	Discharge (cfs)	Measurement Rated as: (E, G, F, P) ^a	Method ^b	Remarks	Data Source ^c
1841611	10243700	Cleve Creek near Ely, NV	10/5/2006	15:06	8.12	F	R	--	USGS-NWIS
1841611	10243700	Cleve Creek near Ely, NV	10/10/2006	8:33	8.32	P	R	--	SNWA
1841611	10243700	Cleve Creek near Ely, NV	11/15/2006	10:30	8.61	F	R	--	USGS-NWIS
1841611	10243700	Cleve Creek near Ely, NV	1/17/2007	15:30	9.66	F	R	--	USGS-NWIS
1841611	10243700	Cleve Creek near Ely, NV	2/12/2007	14:30	6.74	G	C	--	SNWA
1841611	10243700	Cleve Creek near Ely, NV	3/6/2007	9:46	7.98	G	R	--	USGS-NWIS
1841611	10243700	Cleve Creek near Ely, NV	3/26/2007	13:36	7.94	F	C	--	SNWA
1841611	10243700	Cleve Creek near Ely, NV	4/26/2007	15:27	8.92	F	R	--	USGS-NWIS
1841611	10243700	Cleve Creek near Ely, NV	5/7/2007	12:54	13.2	G	C	--	SNWA
1841611	10243700	Cleve Creek near Ely, NV	6/7/2007	10:00	8.75	F	C	--	USGS-NWIS
1841611	10243700	Cleve Creek near Ely, NV	6/7/2007	10:00	9.18	F	R	--	USGS-NWIS
1841611	10243700	Cleve Creek near Ely, NV	6/15/2007	9:09	6.88	F	C	--	SNWA
1841611	10243700	Cleve Creek near Ely, NV	7/20/2007	8:35	6.36	G	C	--	SNWA
1841611	10243700	Cleve Creek near Ely, NV	7/20/2007	11:30	6.58	F	R	--	USGS-NWIS
1841611	10243700	Cleve Creek near Ely, NV	7/20/2007	12:00	6.58	F	R	--	USGS-NWIS
1841611	10243700	Cleve Creek near Ely, NV	8/28/2007	15:05	6.65	F	C	Recent rain within one hour	SNWA
1841611	10243700	Cleve Creek near Ely, NV	9/6/2007	15:45	5.90	F	R	--	USGS-NWIS
1841611	10243700	Cleve Creek near Ely, NV	10/9/2007	13:50	5.65	F	C	--	SNWA
1841611	10243700	Cleve Creek near Ely, NV	10/18/2007	11:30	6.15	F	R	--	USGS-NWIS
1841611	10243700	Cleve Creek near Ely, NV	11/27/2007	14:15	5.52	G	C	Ice along banks.	SNWA
1841611	10243700	Cleve Creek near Ely, NV	11/27/2007	12:17	5.67	G	C	Ice along banks.	SNWA
1841611	10243700	Cleve Creek near Ely, NV	12/5/2007	11:04	5.57	F	R	--	USGS-NWIS
1841611	10243700	Cleve Creek near Ely, NV	12/7/2007	10:22	5.96	G	C	Snowed in the area last night	SNWA

^aE = Excellent; F = Fair; G = Good; P = Poor

^bMeasurement Method: A = Acoustic; C = Current meter; R = Reported

^cUSGS_NWIS data is preliminary



Table E.1-2
Big Springs Creek near Baker, NV (Combined Discharge)
 (Page 1 of 2)

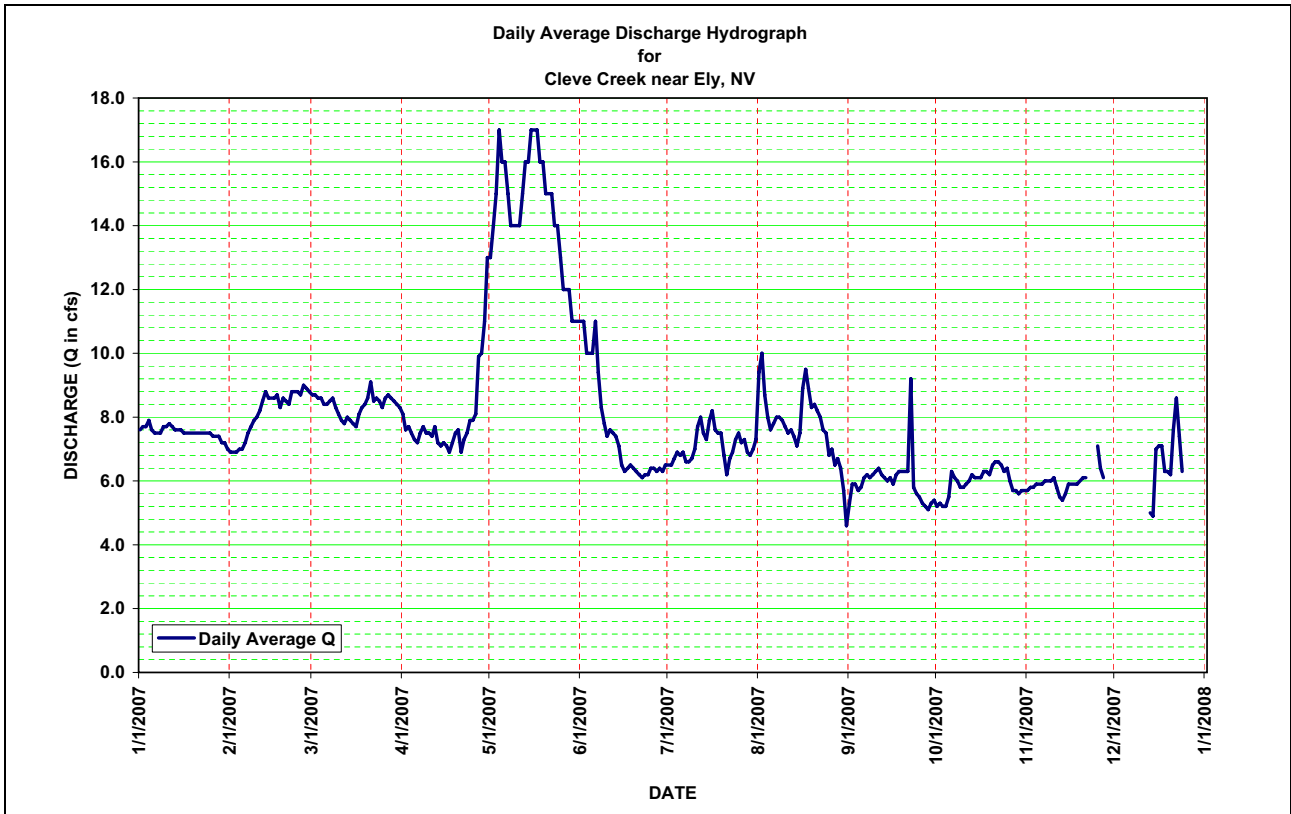
SNWA Station Number	USGS Station Number	Station Name	Date	Time	Discharge (gpm)	Discharge (cfs)	Measurement Rated as: (E, G, F, P) ^a	Method ^b	Remarks	Data Source
SNWA Discharge Measurements at Big Springs Creek (Combined Discharge of North and South Channels)										
1951901	--	Big Springs Creek near Baker, NV (Combined Discharge)	10/9/2006	13:32	4,668	10.4	G	A	South channel Q = 7.00 cfs, North channel Q = 3.42 cfs	SNWA
1951901	--	Big Springs Creek near Baker, NV (Combined Discharge)	3/29/2007	10:45	5,072	11.3	F	C	South channel Q = 6.51 cfs, North channel Q = 4.75 cfs	SNWA
1951901	--	Big Springs Creek near Baker, NV (Combined Discharge)	5/15/2007	9:38	4,663	10.4	F	C	South channel Q = 6.39 cfs, North channel Q = 4.00 cfs. North fork had a lot of vegetation (moss), next to corral with manure.	SNWA
1951901	--	Big Springs Creek near Baker, NV (Combined Discharge)	6/18/2007	12:45	4,802.5	10.7	P	C	South channel Q = 6.47 cfs, North channel Q = 4.23 cfs	SNWA
1951901	--	Big Springs Creek near Baker, NV (Combined Discharge)	7/24/2007	9:04	4,623.0	10.3	F	C	South channel Q = 6.07 cfs, North channel Q = 4.21 cfs.	SNWA
1951901	--	Big Springs Creek near Baker, NV (Combined Discharge)	8/30/2007	9:30	4,667.8	10.4	P	C	South channel Q = 6.77 cfs, North channel Q = 3.65 cfs	SNWA
1951901	--	Big Springs Creek near Baker, NV (Combined Discharge)	10/10/2007	9:15	4,465.6	9.95	P	C	South channel Q = 6.10 cfs, North channel Q = 3.85 cfs	SNWA
1951901	--	Big Springs Creek near Baker, NV (Combined Discharge)	12/6/2007	9:00	3,837.2	8.55	F	C	South channel Q = 4.78 cfs, North channel Q = 3.77 cfs	SNWA
USGS Discharge Measurements at Big Springs Creek South Channel										
1951903	10243224	Big Springs Creek South Channel	1/18/2007	10:09	2,917.5	6.50	G	R	--	USGS-NWIS
1951903	10243224	Big Springs Creek South Channel	1/18/2007	10:45	2,939.9	6.55	G	R	--	USGS-NWIS
1951903	10243224	Big Springs Creek South Channel	3/6/2007	12:52	2,639.2	5.88	F	R	--	USGS-NWIS
1951903	10243224	Big Springs Creek South Channel	4/26/2007	8:22	2,895.0	6.45	G	R	--	USGS-NWIS
1951903	10243224	Big Springs Creek South Channel	6/5/2007	12:55	2,841.2	6.33	F	R	--	USGS-NWIS
1951903	10243224	Big Springs Creek South Channel	6/5/2007	13:00	2,823.2	6.29	G	R	--	USGS-NWIS
1951903	10243224	Big Springs Creek South Channel	7/19/2007	12:30	2,908.5	6.48	G	R	--	USGS-NWIS
1951903	10243224	Big Springs Creek South Channel	9/6/2007	9:00	2,962.3	6.6	F	R	--	USGS-NWIS
1951903	10243224	Big Springs Creek South Channel	10/18/2007	15:42	2,724.5	6.07	G	R	--	USGS-NWIS
1951903	10243224	Big Springs Creek South Channel	12/5/2007	15:00	2,926.4	6.52	G	R	--	USGS-NWIS
USGS Discharge Measurements at Big Springs Creek North Channel										
1951904	102432241	Big Springs Creek North Channel	1/18/2007	11:56	1,741.5	3.88	F	R	--	USGS-NWIS
1951904	102432241	Big Springs Creek North Channel	1/18/2007	12:29	1,979.4	4.41	F	R	--	USGS-NWIS
1951904	102432241	Big Springs Creek North Channel	3/6/2007	13:28	1,413.8	3.15	F	R	--	USGS-NWIS

Table E.1-2
Big Springs Creek near Baker, NV (Combined Discharge)
 (Page 2 of 2)

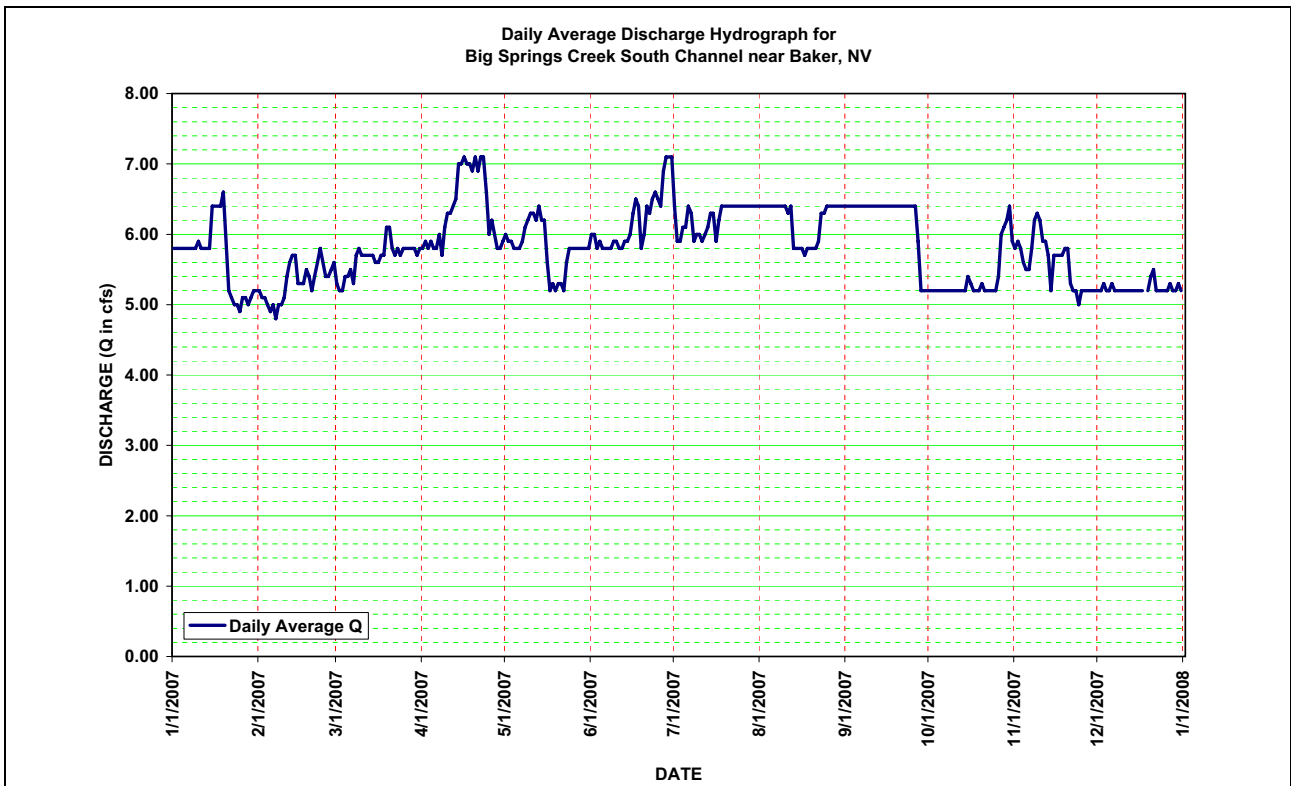
SNWA Station Number	USGS Station Number	Station Name	Date	Time	Discharge (gpm)	Discharge (cfs)	Measurement Rated as: (E, G, F, P) ^a	Method ^b	Remarks	Data Source
1951904	102432241	Big Springs Creek North Channel	3/6/2007	14:00	1,517.1	3.38	F	R	--	USGS-NWIS
1951904	102432241	Big Springs Creek North Channel	4/26/2007	11:00	1,840.2	4.1	F	R	--	USGS-NWIS
1951904	102432241	Big Springs Creek North Channel	6/5/2007	13:46	1,849.2	4.12	F	R	--	USGS-NWIS
1951904	102432241	Big Springs Creek North Channel	6/5/2007	15:00	1,849.2	4.12	F	R	--	USGS-NWIS
1951904	102432241	Big Springs Creek North Channel	7/19/2007	13:30	1,965.9	4.38	F	R	--	USGS-NWIS
1951904	102432241	Big Springs Creek North Channel	7/19/2007	14:00	1,956.9	4.36	G	R	--	USGS-NWIS
1951904	102432241	Big Springs Creek North Channel	8/16/2007	20:15	1,777.4	3.96	F	R	--	USGS-NWIS
1951904	102432241	Big Springs Creek North Channel	8/16/2007	20:45	1,710.1	3.81	F	R	--	USGS-NWIS
1951904	102432241	Big Springs Creek North Channel	9/6/2007	9:45	1,781.9	3.97	F	R	--	USGS-NWIS
1951904	102432241	Big Springs Creek North Channel	9/6/2007	10:30	1,781.9	3.97	G	R	--	USGS-NWIS
1951904	102432241	Big Springs Creek North Channel	10/18/2007	16:15	1,813.3	4.04	F	R	--	USGS-NWIS
1951904	102432241	Big Springs Creek North Channel	12/5/2007	15:49	1,683.2	3.75	F	R	--	USGS-NWIS

^aE = Excellent; F = Fair; G = Good; P = Poor

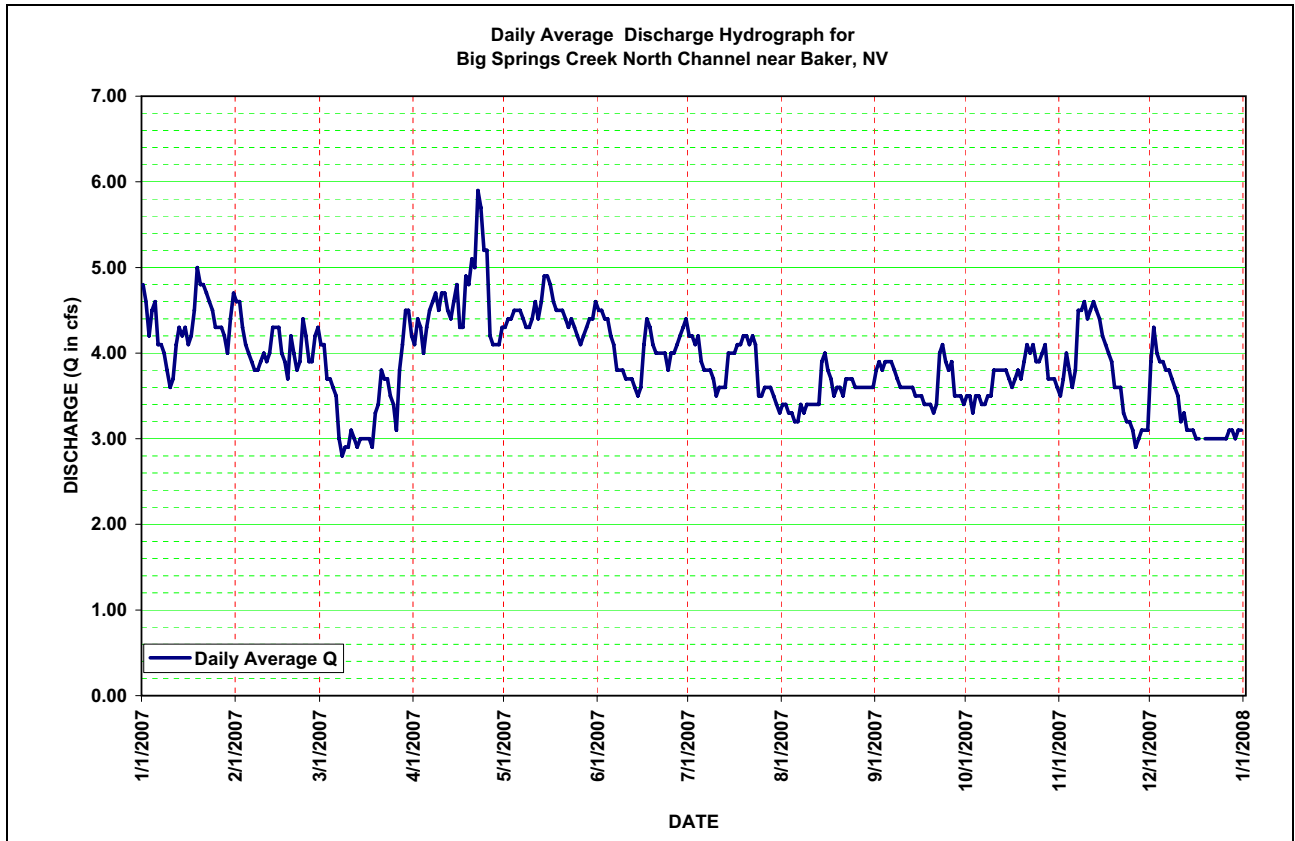
^bMeasurement Method: R=Reported; C = Current meter



Note: Preliminary data, courtesy of USGS.



Note: Preliminary data, courtesy of USGS.



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References

U.S. Geological Survey, 2008, National Water Information System (NWIS-Web) data available on the World Wide Web, accessed March 11, 2008, at URL <http://waterdata.usgs.gov/nwis/>.