WARM SPRINGS VALLEY
GROUND WATER USE INVENTORY
WATER YEAR 2006

Nevada Division of Water Resources
Office of the State Engineer

By: Michael J. Anderson, P.E.
Staff Engineer III

CONTENTS

		PAGE
I.	REPORT	1
II.	LEGEND	6
III.	FIGURES	
	A. ESTIMATED TOTAL WATER USE	2
	B. WATER PUMPED BY USE TYPE	3
	C. HYDROGRAPHS OF SELECTED WELLS	8
IV.	NUMERICAL LISTING AND SUMMARY OF WATER PUMPED	15
V.	SELECTED BIBLIOGRAPHY	23
VI.	BASIN MAP	24

PURPOSE AND SCOPE

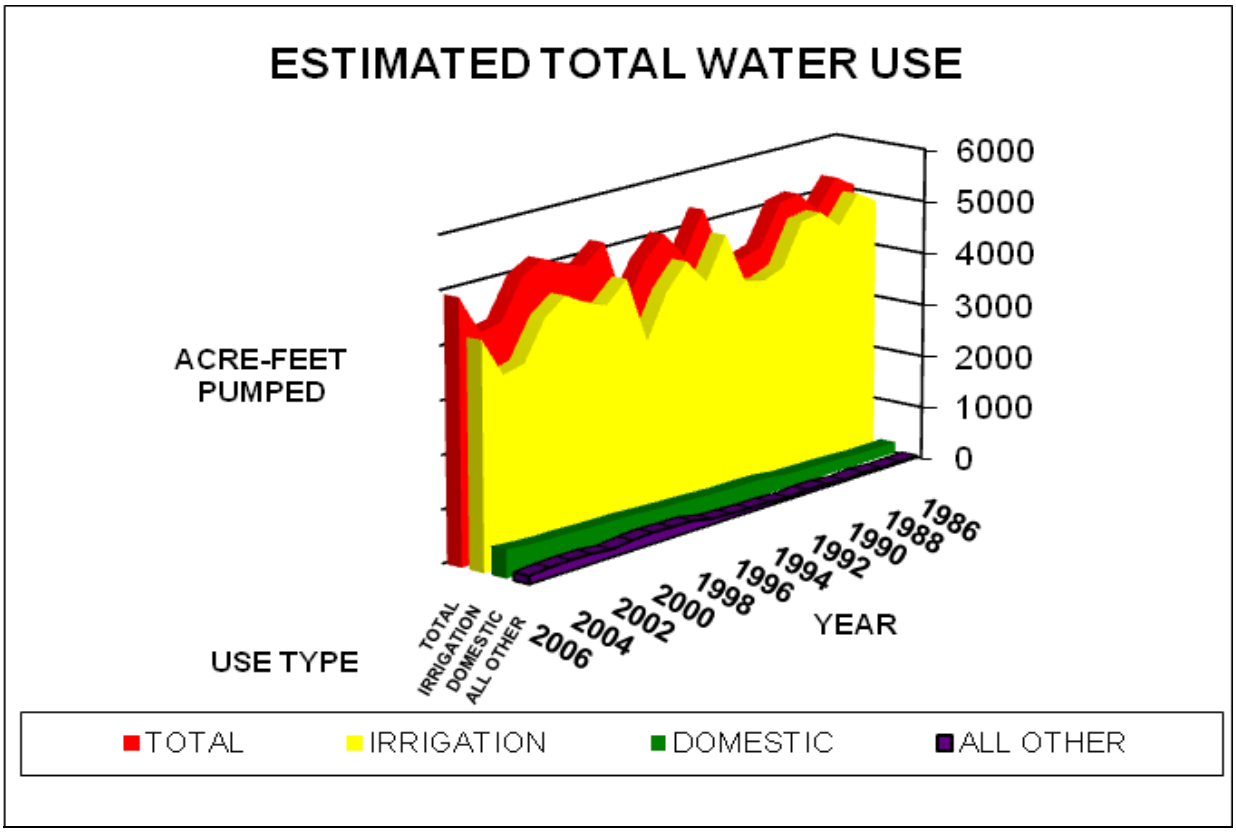
This document is intended to quantify groundwater use in Warm Springs Valley and inventory ground water resources allocated by the Nevada Division of Water Resources (Office of the State Engineer) for that period beginning October 1, 2005, and ending September 30, 2006 (hereinafter referred to as the 2006 water year).

Warm Springs Valley (AKA: Palomino Valley) lies north and east of the Reno-Sparks area approximately 12 miles along S.R. 445 (Pyramid Lake Highway) encompassing an area of about 250 square miles. Very little dependable surface water exists at the valley floor so underground sources provide the majority of the water placed to beneficial use. Warm Springs Creek from the north and Cottonwood Creek from the south drain into the valley from the surrounding mountains and are fully appropriated before they reach the valley floor. Mullen Creek intercepts drainage that overflows from Warm Springs Valley and conveys it to Pyramid Lake Valley on the northeast. Warm Springs and Cottonwood Creeks are perennial near the mountains but only reach the valley floor during periods of heavy runoff and, on rare occasion, overflow into Mullen Creek, an ephemeral stream. Several additional small named streams exist within the limits of Warm Springs Valley but none reach the valley floor on a regular basis.

PROCEDURES AND SUMMARY

The 2006 crop and water use inventory was conducted primarily during October and November of 2006. All permitted and certificated water rights were also field checked at least once during the growing season to verify culture and estimate of water use. Those areas under irrigation from multiple rights from the same well will have the total use pro-rated over the entire area under irrigation regardless of culture. This means that the water pumped is divided up amongst the valid permits and uniformly

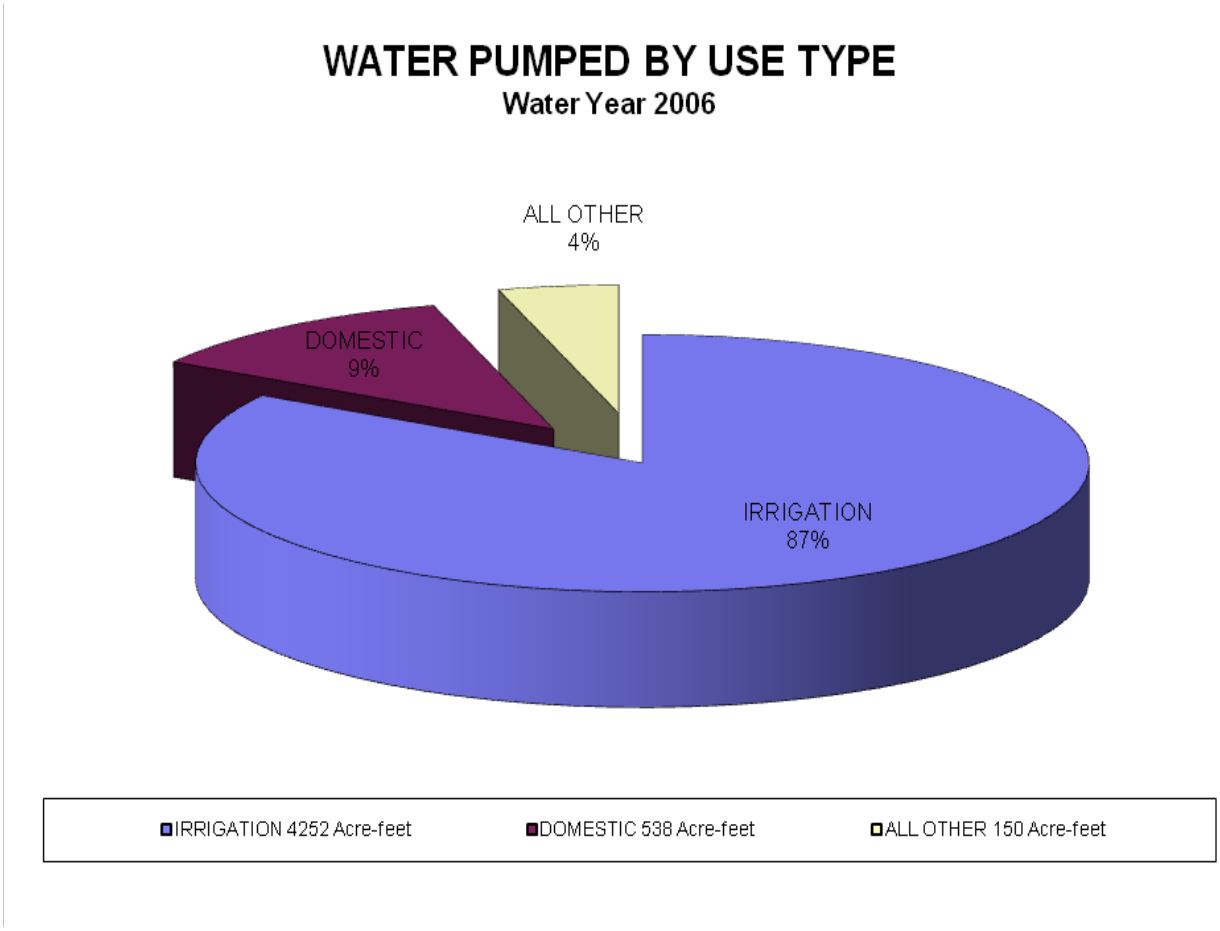
"spread out" over the place of use actually irrigated. This becomes complex when temporary rights enter the picture. In any event, the total water pumped will be as accurate as the meter readings allow.



Total use from all sources, including domestic wells, was estimated at **4940** acre-feet (see figures). This increase from the 2005 pumping volume reflects a return to normal water use patterns upon well repair by a major irrigator. The instances of pumping in excess of the allowed duty similarly increased by 68% in this water year with total water diverted still well below the total committed (permitted) duty. With two exceptions, the majority of over pumping cases were minor. The first exception involved a failed well that was pumped from an alternate source without benefit of a temporary permit (36% of the over pumped water total). The second exception involved two medium sized irrigators for which estimates of water use must be made due to lack of a meter at the well (60 % of the over pumped water total). Exclusion of these over pumping figures leads to a near

elimination of instances of over pumping (a mere 14 acre-feet).

Irrigation continues to represent the primary consumption of water with alfalfa, grass hay and turf as the major crops. An estimated **4252** acre-feet was pumped to this use. The greatest concentration of irrigated land lies east of the Pyramid Lake Highway on and near land formerly controlled by MCO Properties, Inc. The next largest area of irrigation is scattered along the Winnemucca Ranch Road north of Range Land Road and on the Winnemucca Ranch.



Additional irrigated land lies scattered about the valley in 0.5 to 20.0 acre fields usually accompanied by single-family dwellings.

Domestic use was estimated from a count of domestic wells drilled in the valley at **538** acre-feet. Since landscaping is minimal unless a water right (permit) is attendant, the annual duty was estimated based upon a diversion rate of 1000 gallons

per day. This yields an annual duty of 1.12 acre-feet annually per well in use. Verification has become possible through reading meters formerly associated with a water right. Metered wells utilized for domestic consumption from which a water right had been moved, allowed this verification.

Stock watering was estimated based upon the number of animals watered at **18** acre-feet.

Recreation accounted for about **3** acre-feet at the Washoe County Regional Shooting Facility and at the Air Sailing, Inc. glider strip.

Quasi-municipal use accounted for **69** acre-feet at the Reno-Sparks Indian Colony by Hungry Valley Utility District (H.V.U.D.), the volunteer fire station (T.M.F.P.D.) and Palomino Valley General Improvement District (P.V.G.I.D.).

Industrial and other uses accounted for **60** acre-feet with the major use being environmental remediation at the old Rocketdyne sites.

SUPPLEMENTAL RIGHTS

18.15 acres of the irrigated land on the Winnemucca Ranch are supplemental to Warm Springs Creek water in the amount of 64.60 acre-feet. Several underground rights are supplemental to other underground rights and are shown with a duty of “0.00” acre-feet.

RECHARGE

The State Engineer maintains neither snow courses nor precipitation gauges in the mountains surrounding Warm Springs Valley. Stream flow measurements are also not regularly performed. Subsequently, recharge to Warm Springs Valley has been estimated by empirical methods as described in Report 43. That estimate, by the Maxey-Eakin method, was placed at 6,000 acre-

feet annually[1].

Runoff was estimated by D. O. Moore in Report 43 as 14,000 acre-feet annually, primarily from Warm Springs Creek and Cottonwood Creek. Mullen Creek was estimated to drain the valley in the amount of about 70 acre-feet annually. No playa exists in Warm Springs Valley, which leads one to believe that the runoff figure is inflated, actual recharge from runoff may be somewhat higher than the Maxey-Eakin method would otherwise suggest, or the phreatophyte consumption is much higher than estimated.

Recharge from irrigation is not readily estimated and is dependent upon several variables: rate of water application, total depth of wetting, direct evapotranspiration rates, crop type and infiltration and percolation rates which are in turn dependent upon soil type and structure. Based upon Report 43 the rate of recharge from irrigation is likely minimal due to the application of water to the land by broadcast systems (sprinklers) as opposed to directly (flooding).

A water budget assumes that for a steady state condition the total input of water must equal the total draw on the water. Therefore, the actual recharge of the valley must not exceed the total draw on the groundwater of the valley in a steady state or "pre-development" condition. This assumption is the basis for any estimate of perennial yield from a given groundwater system. Using a water budget, Report 43 arrived at a perennial yield of **3000 acre-feet** annually due to the observed draws on the groundwater in Warm Springs Valley and the difficulty in capturing all of the water that is otherwise "lost" through natural evapotranspiration. This is the figure utilized by the State Engineer in water planning decisions.

A more recent series of studies have verified many of the assumptions that were made in Report 43 and confirmed that the methodology utilized was reasonably accurate[2].

---

[1] Please see entry (1) in the selected bibliography.
[2] Please see entries (2) & (3) in the selected bibliography.

LEGEND

A number of abbreviations are used in the tables of this report. The following two pages are a brief discussion of the columns of the report and definitions of abbreviations utilized.

APPEARING IN THE SUMMARY

COLUMN HEADING	DESCRIPTION
APP. NO.	Application number in the records of the State Engineer. If an application is issued this number becomes the permit number. AKA: File number.
STATUS	Status of the corresponding application at the end of the water year. See: Abbreviations.
DUTY	Amount of water requested in the application or allowed by the terms of the permit. All figures are in acre-feet annually (AFA).
USE	Type of beneficial use to which water is applied.
20**	Amount of water pumped in the given water year under the corresponding application number. Figures are in acre-feet annually (AFA).

OTHER ABBREVIATIONS UTILIZED

CER	Certificated.
#####	Number appearing in a "STATUS" column indicates a certificate with number #####.
PER	Permitted.
RFA	Application that is Ready For Action, i.e. protest period has expired.
REL	Relinquished water right.
APP	Application prior to expiration of the protest period.
ABR	Abrogated, i.e. changed by subsequent application.
T-ABR	Abrogated by a temporary application.
WDN	Application, permit or certificate Withdrawn by applicant, agent or successor in interest.
EXP	Expired temporary permit. If used in remarks column date on which a temporary expires.
REL	Permit or certificate Relinquished to the state.
T-PER	Temporary permit. Valid for no longer than one year from date of issue.
IRR	Irrigation use.
I&D	Irrigation and domestic use.

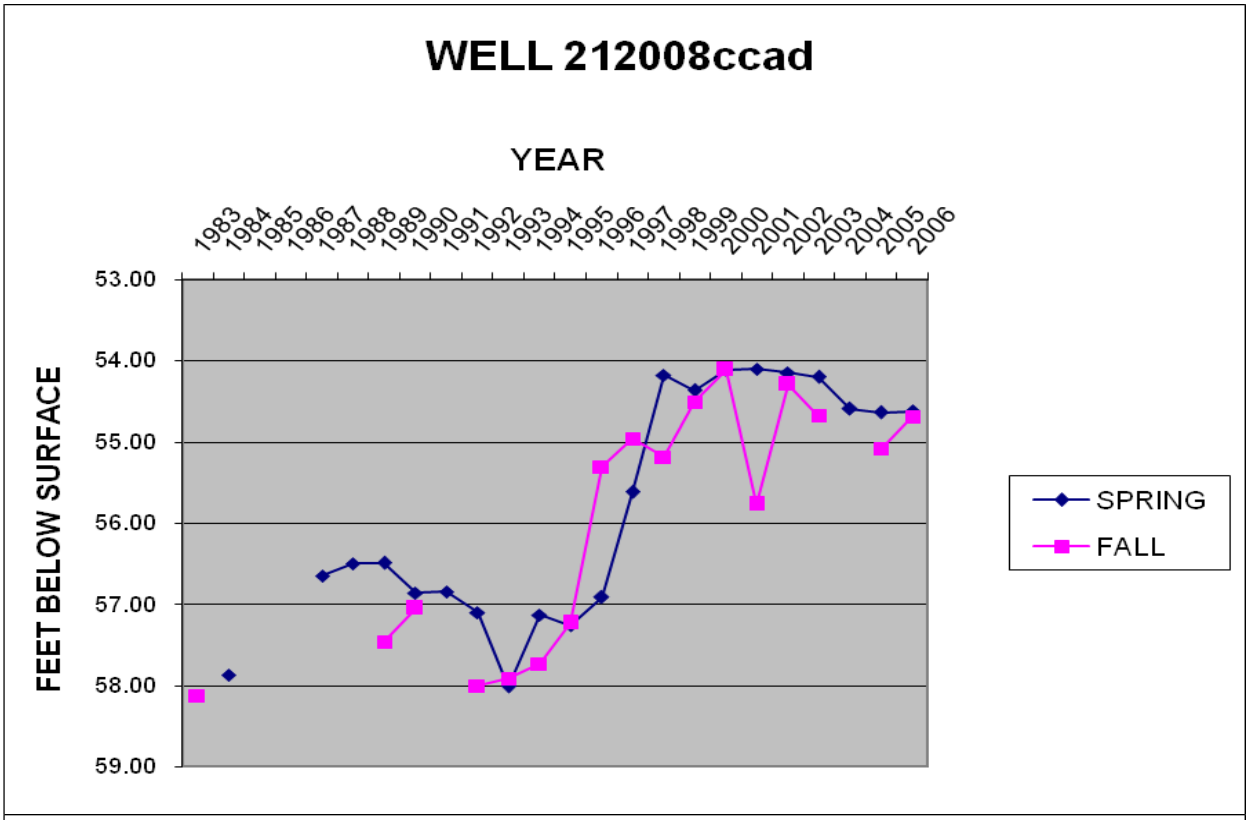
STK	Stock watering use.

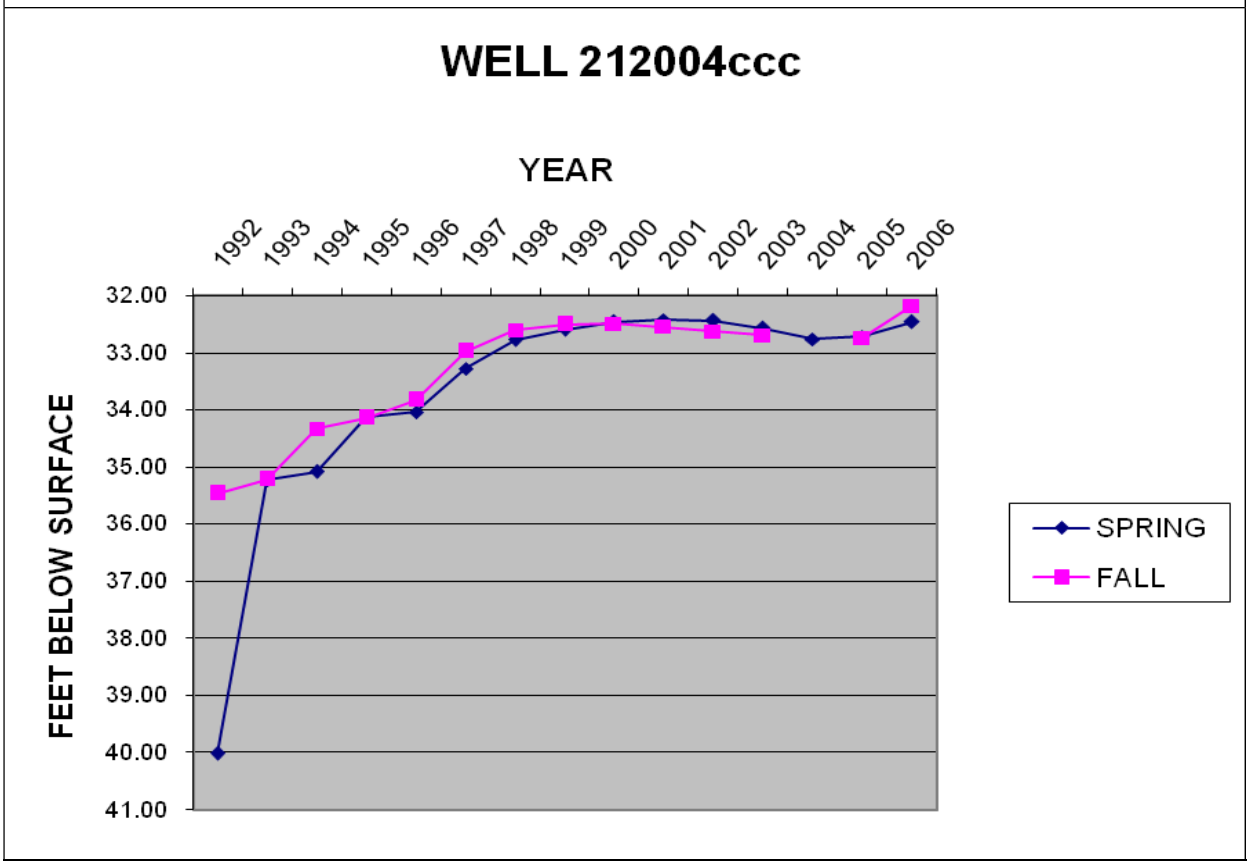
ABBREVIATIONS CONTINUED

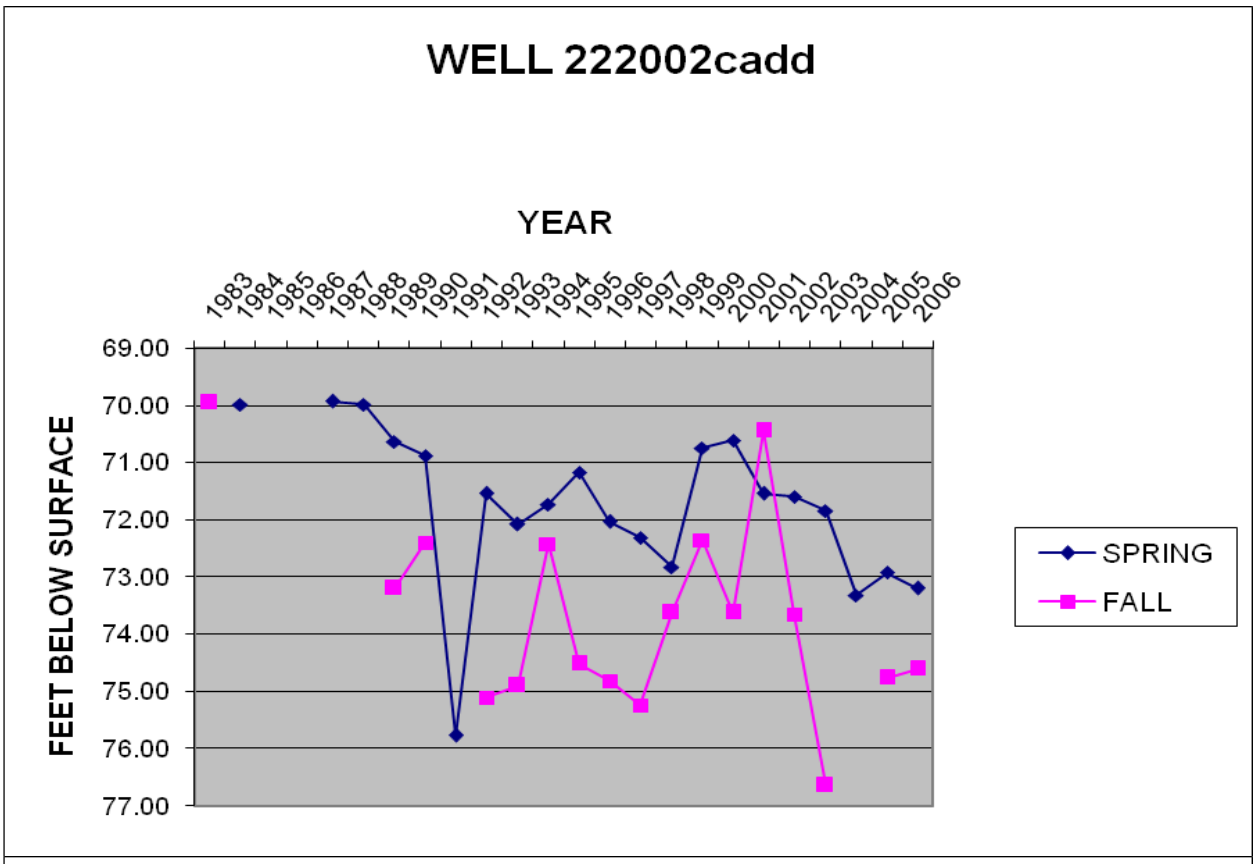
S&D	Stock watering and domestic use.
Q-M	Quasi-municipal use.
IND	Industrial use.
ENV	Environmental remediation use.
E-PER	Permitted for environmental remediation.
C-#####	Certificate number #####.
P-#####	Permit number #####.
POD	Point of diversion.
BLM	U.S.D.I. Bureau of Land Management.
GID	General Improvement District.
AF/ac.	Acre-feet per acre.
**	Quantity unable to fit format, usually extensive.

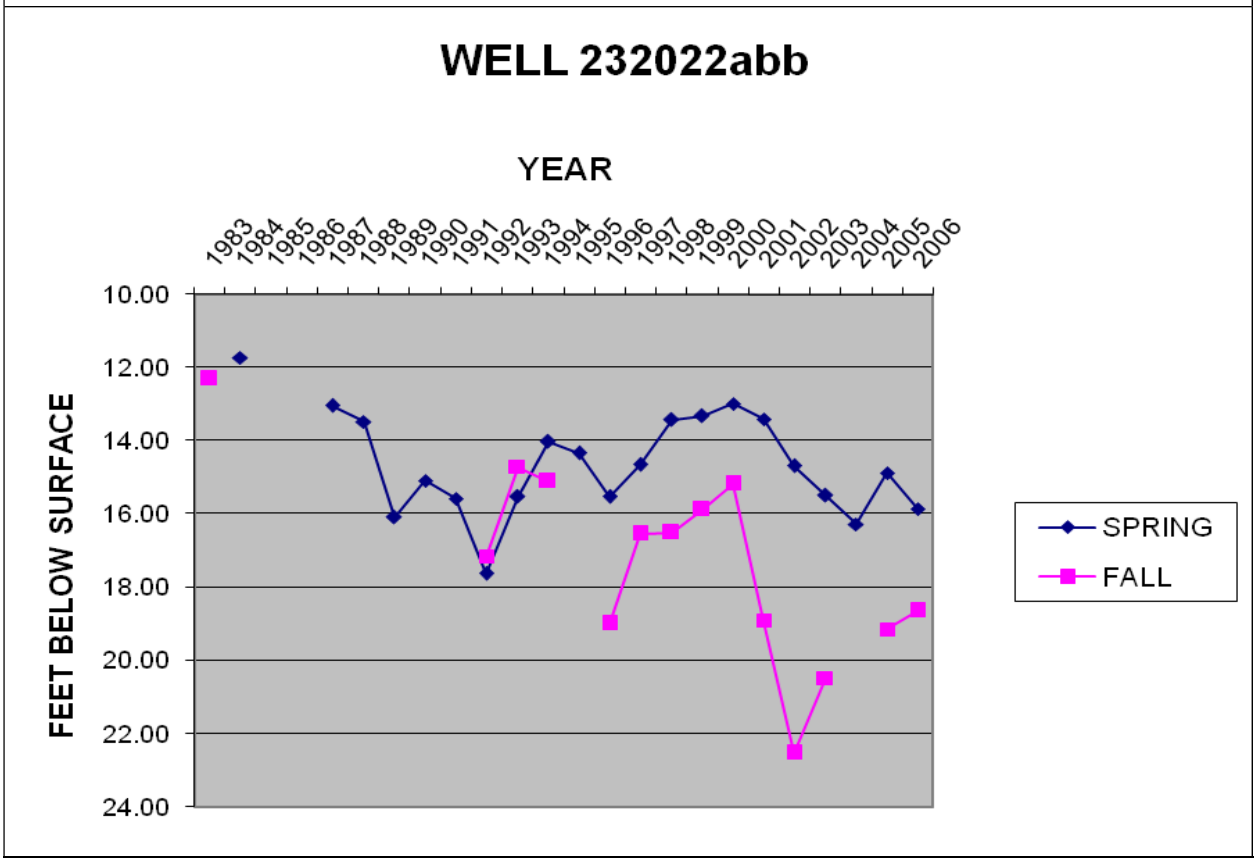
HYDROGRAPHS OF SELECTED WELLS

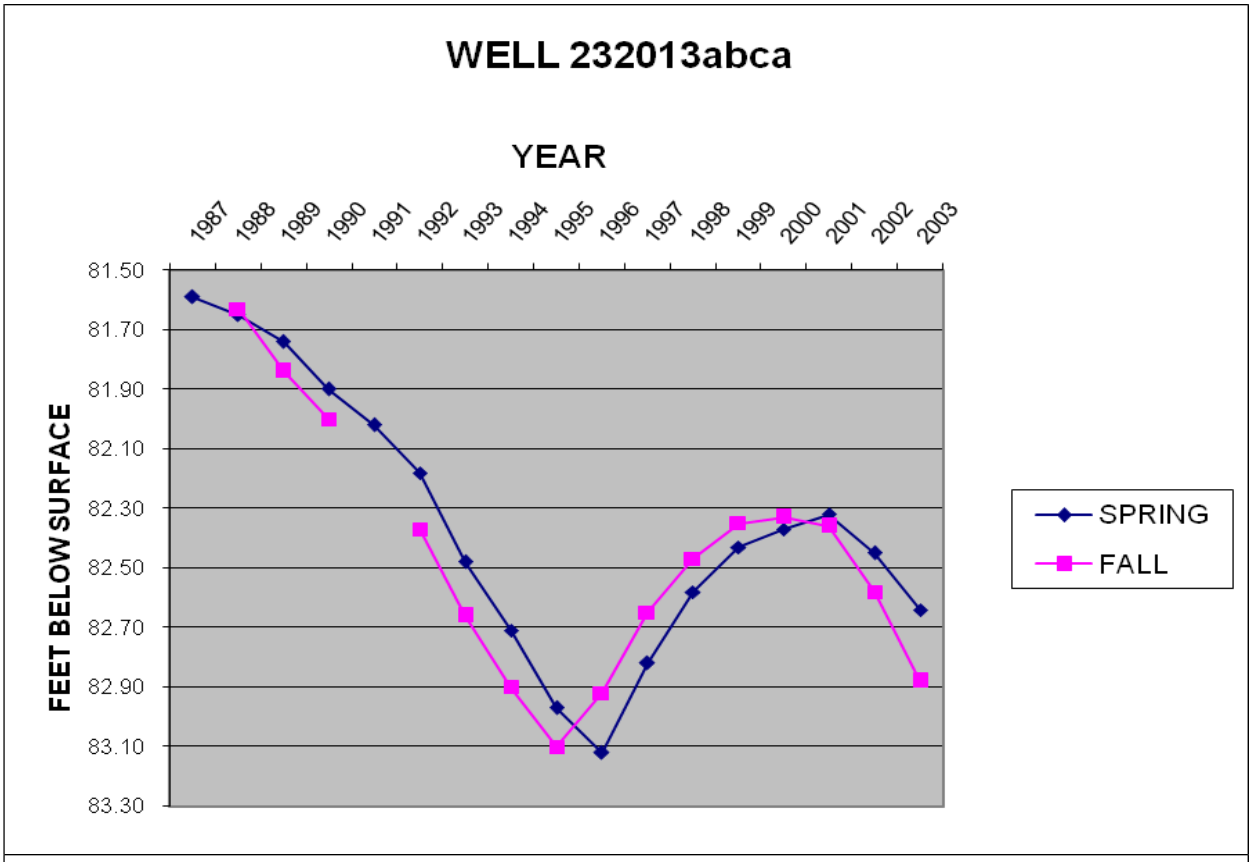
(1983 TO PRESENT)

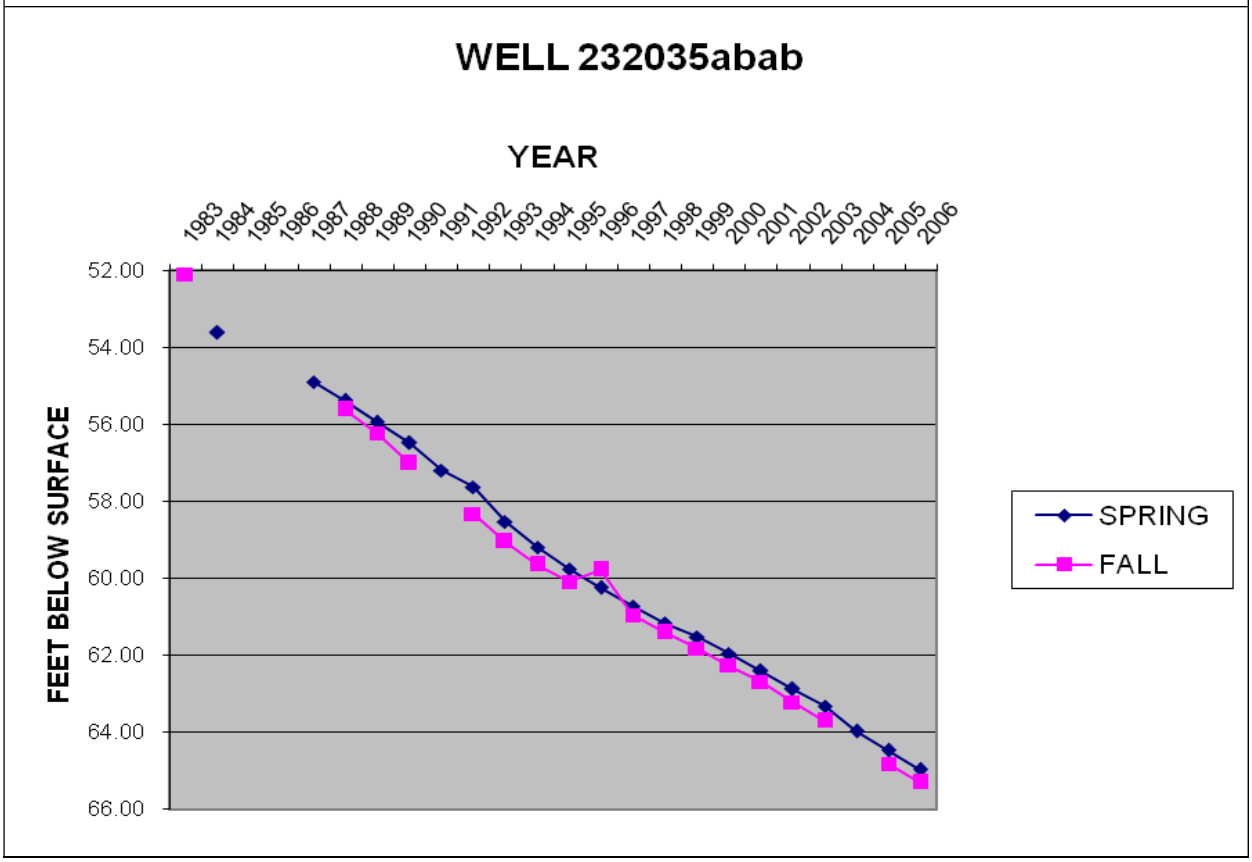

WELL 212008ccad
YEAR
1983
1984
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
FEET BELOW SURFACE
53.00
54.00
55.00
56.00
57.00
58.00
59.00
SPRING
FALL

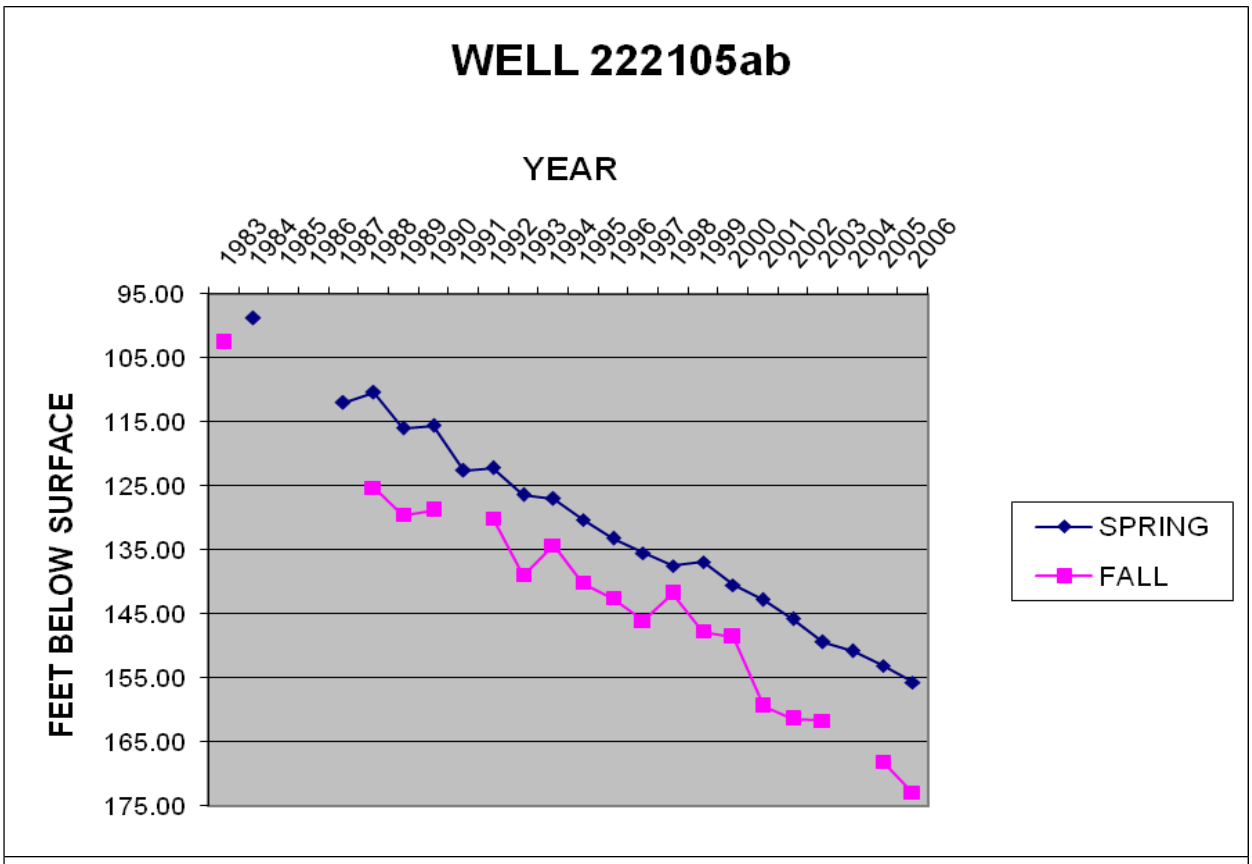

WELL 212004ccc
YEAR
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
FEET BELOW SURFACE
32.00
33.00
34.00
35.00
36.00
37.00
38.00
39.00
40.00
41.00
SPRING
FALL

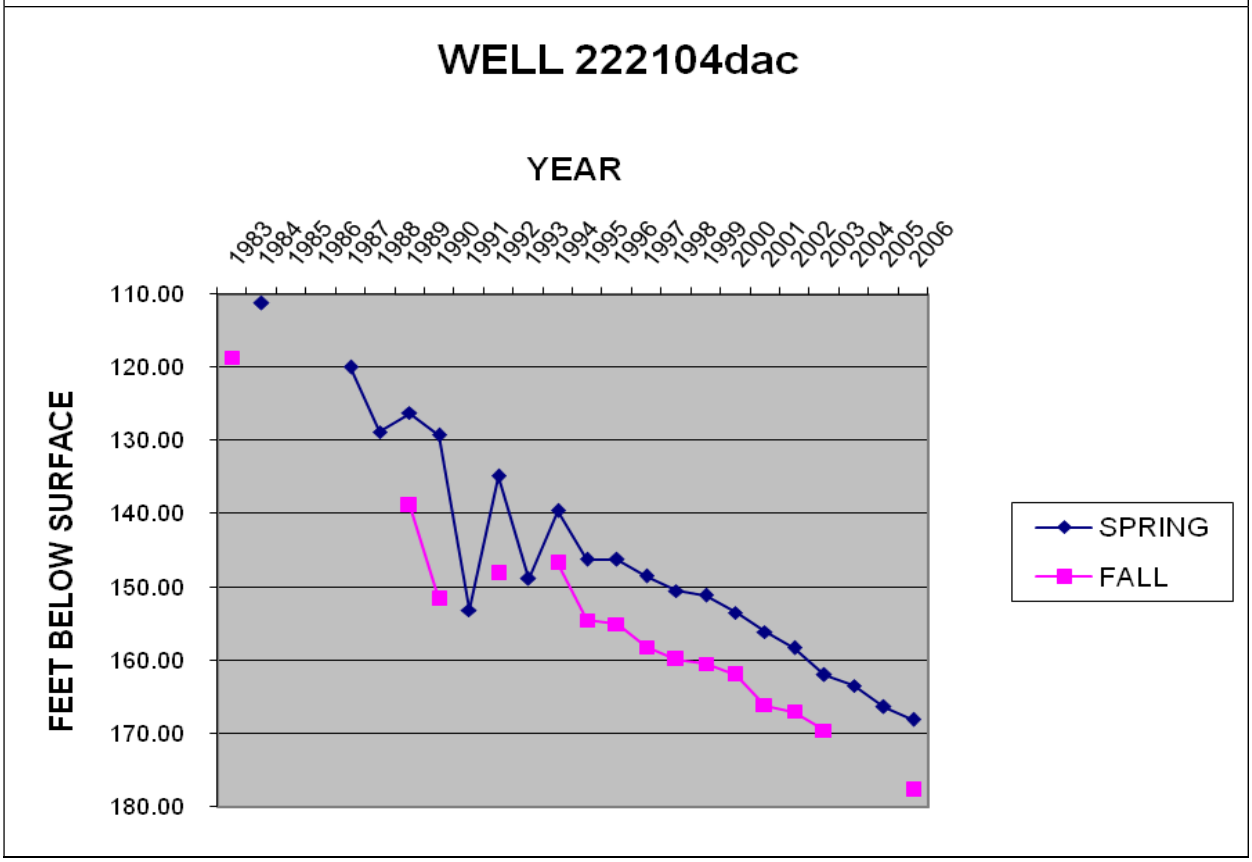

WELL 222002cadd
YEAR
1983
1984
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
FEET BELOW SURFACE
69.00
70.00
71.00
72.00
73.00
74.00
75.00
76.00
77.00
SPRING
FALL

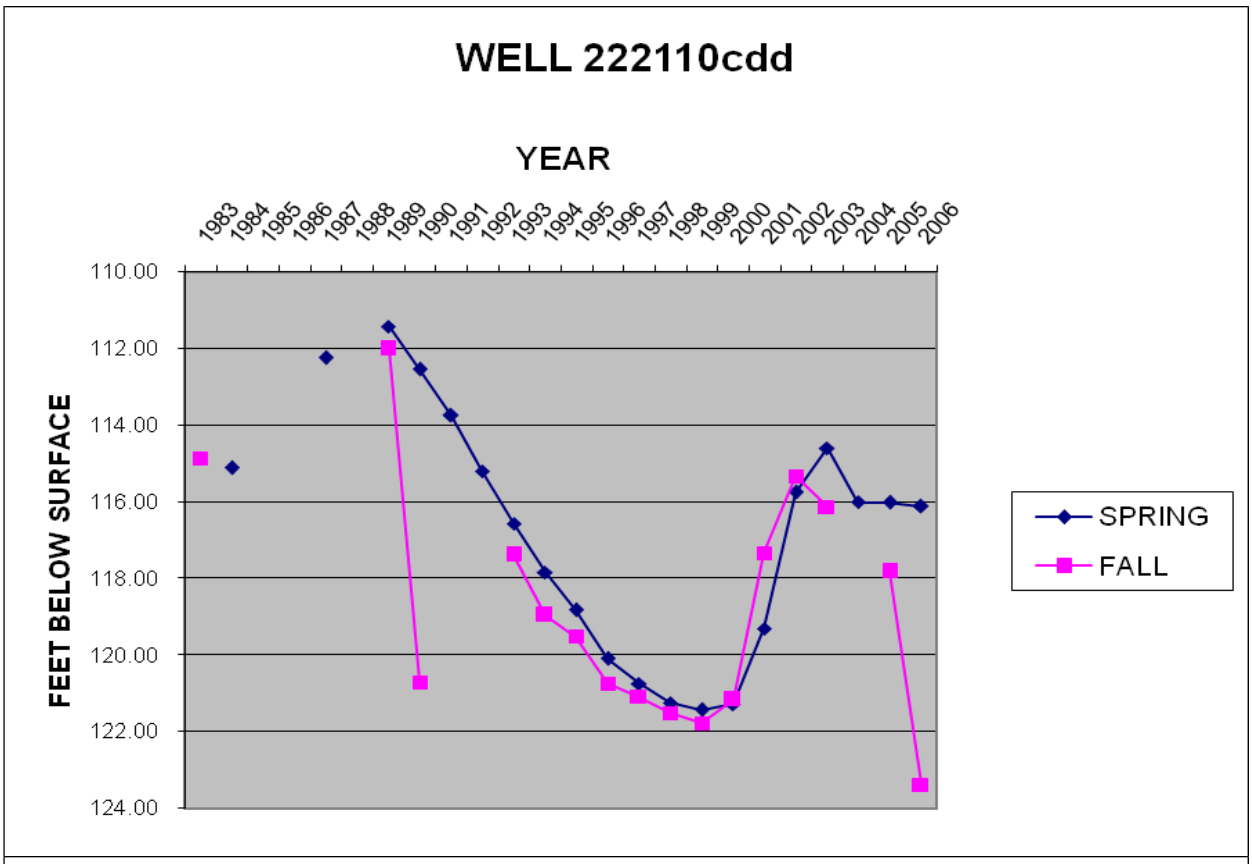

WELL 232022abb
YEAR
1983
1984
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
FEET BELOW SURFACE
10.00
12.00
14.00
16.00
18.00
20.00
22.00
24.00
SPRING
FALL

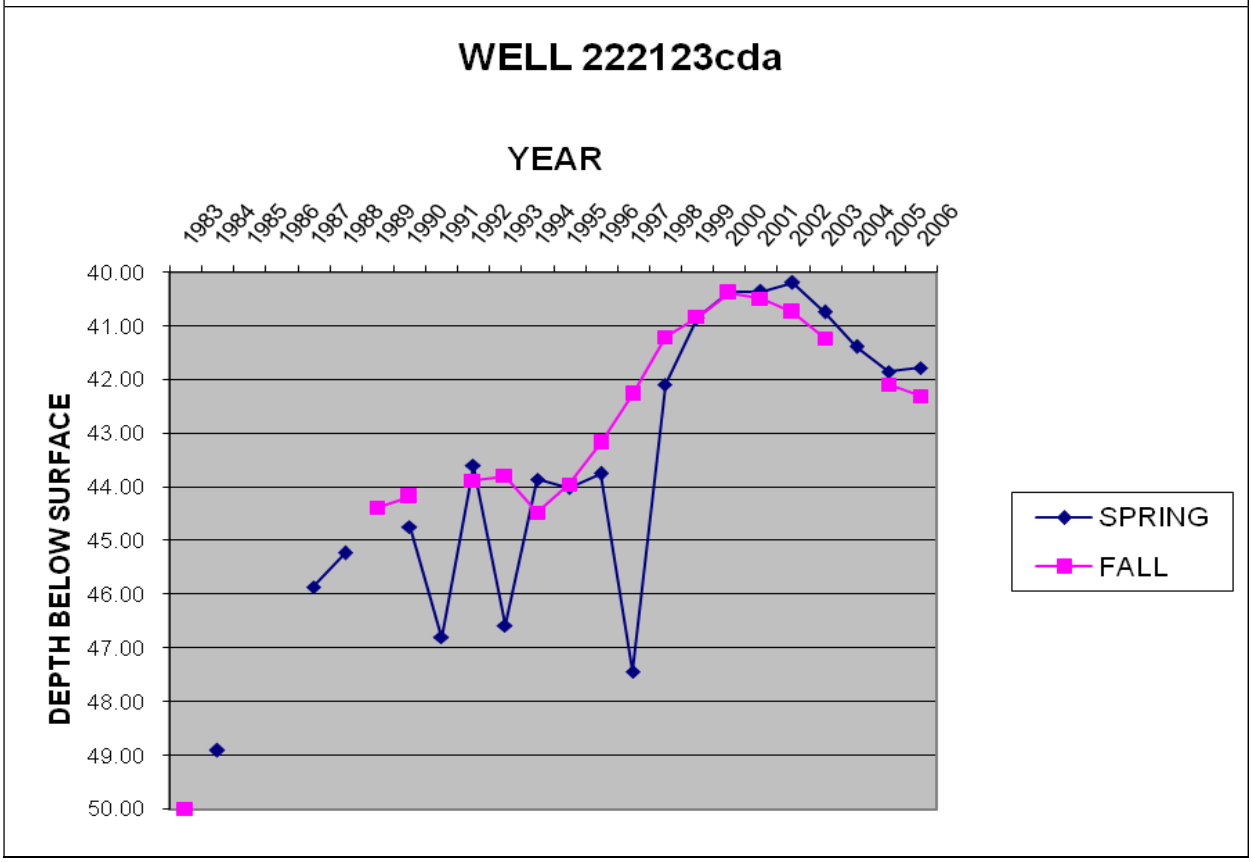

WELL 232013abca
YEAR
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
FEET BELOW SURFACE
81.50
81.70
81.90
82.10
82.30
82.50
82.70
82.90
83.10
83.30
SPRING
FALL

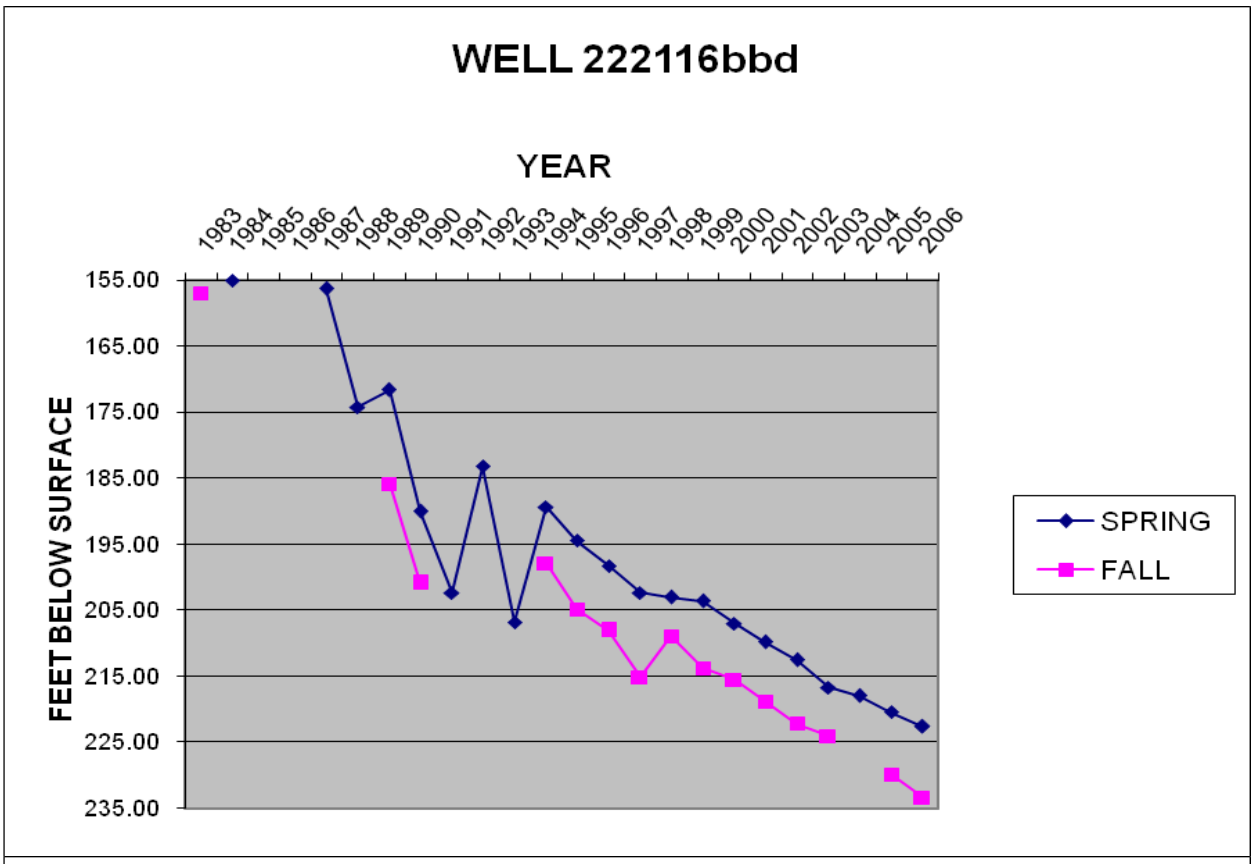

WELL 232035abab
YEAR
1983
1984
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
FEET BELOW SURFACE
52.00
54.00
56.00
58.00
60.00
62.00
64.00
66.00
SPRING
FALL

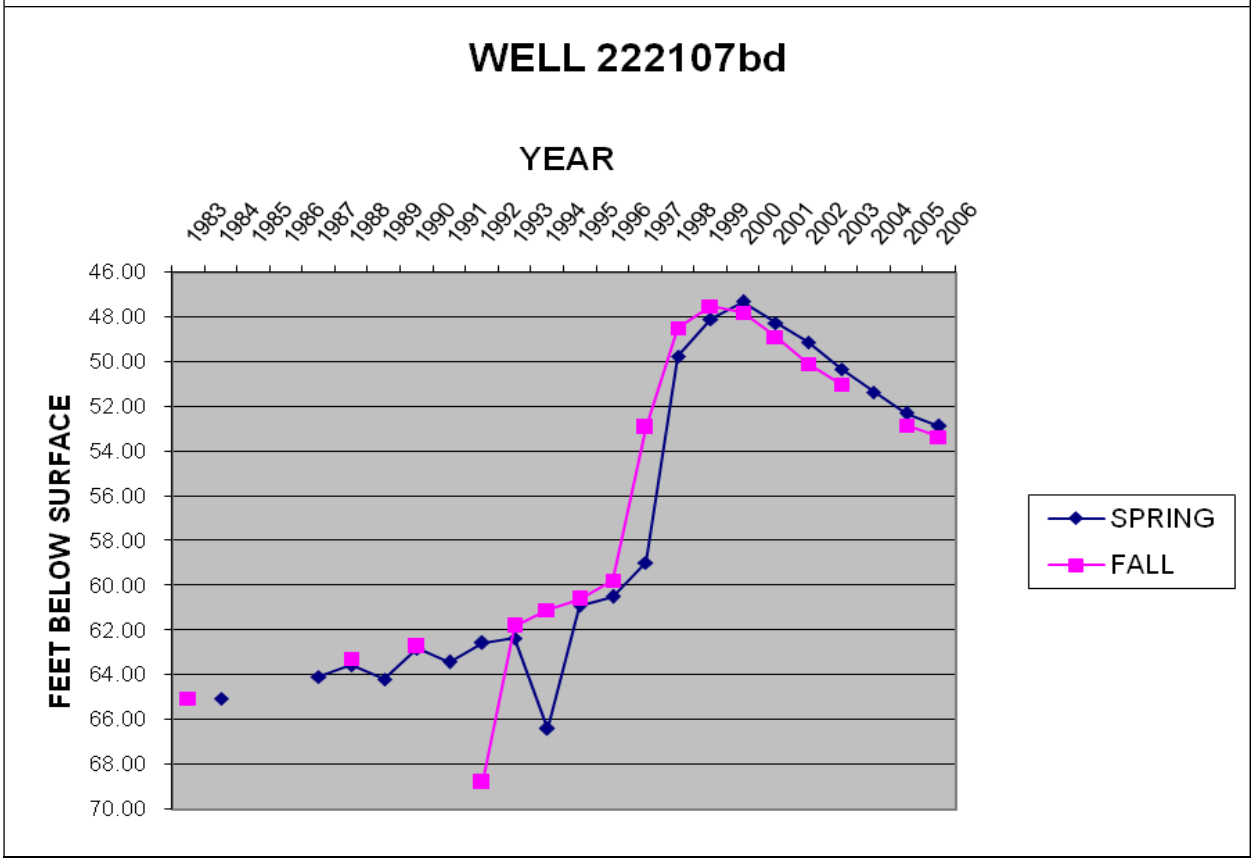

WELL 222105ab
YEAR
1983
1984
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
FEET BELOW SURFACE
95.00
105.00
115.00
125.00
135.00
145.00
155.00
165.00
175.00
SPRING
FALL


WELL 222104dac
YEAR
1983
1984
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
FEET BELOW SURFACE
110.00
120.00
130.00
140.00
150.00
160.00
170.00
180.00
SPRING
FALL


WELL 222110cdd
YEAR
1983
1984
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
FEET BELOW SURFACE
110.00
112.00
114.00
116.00
118.00
120.00
122.00
124.00
SPRING
FALL


WELL 222123cda
YEAR
1983
1984
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
DEPTH BELOW SURFACE
40.00
41.00
42.00
43.00
44.00
45.00
46.00
47.00
48.00
49.00
50.00
SPRING
FALL


WELL 222116bbd
YEAR
1983
1984
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
FEET BELOW SURFACE
155.00
165.00
175.00
185.00
195.00
205.00
215.00
225.00
235.00
SPRING
FALL


WELL 222107bd
YEAR
1983
1984
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
FEET BELOW SURFACE
46.00
48.00
50.00
52.00
54.00
56.00
58.00
60.00
62.00
64.00
66.00
68.00
70.00
SPRING
FALL

NUMERICAL LISTING BY
APPLICATION NUMBER
AND
SUMMARY OF WATER PUMPED

APP. NO.	STATUS 2006	DUTY (AFA)	USE	DUTY USED BY WATER YEAR 2001	2002	2003	2004	2005	2006
23888	8283	562.40	IRR	375.71	452.12	258.36	74.90	175.51	404.94
24099	7599	4.00	STK	3.76	3.34	3.02	2.39	2.67	2.06
27395	9317	8.01	REC	2.19	1.68	1.09	1.84	1.25	0.82
28071	RLP	2.50	IRR						
28076	RLP	7.50	I&D						
30108	RLP	8.00	IRR						
30109	RLP	5.00	IRR	0.00					
32363	12348	24.00	IRR	15.13	8.86	7.57	19.52	25.64	21.17
34668	10495	8.00	I&D	12.61	15.01	5.97	8.68	4.43	3.14
34670	9862	40.00	IRR	2.30	0.00	0.00	0.00	0.00	0.00
35486	10034	8.00	IRR	8.00	8.00	8.00	8.00	8.00	8.00
35565	11087	0.16	REC	0.87	0.25	0.24	0.03	0.55	0.30
39166	10496	80.00	IRR	9.20	0.00	0.00	0.00	0.00	0.00
39167	10457	152.00	IRR	168.66	202.23	167.60	162.67	167.20	210.00
39593	PER	64.60	I&D	7.39	54.38	22.15	0.00	0.00	0.00
39849	PER	20.00	REC	1.47	0.34	0.64	1.92	0.79	1.53
40587	11180	25.00	IRR	0.00	0.00	0.00	0.07	0.00	0.00
42403	11875	0.02	Q-M	0.01	0.02	0.02	0.01	0.01	0.01
43005	11238	80.00	IRR	0.00	0.00	0.00	0.00	0.00	0.00
43006	11181	8.00	I&D	3.00	8.00	6.00	3.00	3.00	2.00
45095	10798	8.00	I&D	8.65	7.82	6.50	9.16	4.84	7.17
46199	13137	159.50	IRR	16.83	10.44	147.90	227.93	65.87	140.70
47562	12057	16.00	I&D	18.94	18.23	11.48	17.37	13.35	15.10
47599	13820	2.00	IRR	1.01	0.98	0.30	0.89	0.26	0.38
48819	12354	5.20	STK	0.00	0.00	0.60	0.30	0.28	0.90
49445	13822	2.50	IRR	0.00	1.08	0.00	0.00	0.00	0.00
49669	11974	235.40	IRR	20.35	102.65	128.36	0.25	83.25	125.33
49670	11975	300.00	IRR	25.94	130.81	163.58	0.32	106.10	157.45
50021	13542	14.94	STK	28.10	24.94	22.55	17.82	19.91	15.37
50054	13051	10.00	I&D	17.44	11.57	4.39	4.37	3.81	8.48
50056	13610	4.00	I&D	0.00	0.00	0.00	0.00	0.00	0.00
50764	15254	24.00	I&D	0.00	0.00	0.00	0.00	0.01	1.80
51002	13241	12.00	I&D	12.98	11.73	9.74	13.75	7.26	4.77
51169	PER	8.00	I&D	3.14	6.90	4.35	9.54	6.37	5.12
51474	PER	7.00	I&D	2.78	6.03	3.80	8.35	5.57	4.48
51534	RLP	2.02	I&D						
51972	RLP	2.02	Q-M						
51973	RLP	2.02	Q-M						
51974	RLP	2.02	Q-M						

APP. NO.	STATUS 2006	DUTY (AFA)	USE	DUTY USED BY WATER YEAR 2001	2002	2003	2004	2005	2006
51975	RLP	2.02	Q-M						
51976	RLP	2.02	Q-M						
51977	RLP	2.02	Q-M						
52089	PER	18.37	Q-M	0.11	0.00	0.00	0.00	0.00	0.00
52202	13311	16.00	IRR	43.56	19.30	21.54	20.62	16.73	18.91
52842	13312	4.00	I&D	10.88	4.82	4.99	5.16	4.18	4.73
53242	PER	6.00	IRR	6.21	6.25	4.43	3.53	1.33	3.48
53275	14073	4.00	I&D	2.95	2.77	4.19	4.71	3.05	4.03
53278	PER	5.00	IRR	0.00	0.00	0.00	0.00	0.00	0.00
53303	12897	129.30	I&D	136.28	140.19	101.00	112.25	108.02	130.36
53304	12898	4.59	I&D	4.59	0.00	2.82	2.45	4.79	4.60
53305	12899	62.70	I&D	65.92	67.80	48.85	52.21	50.24	63.21
53306	12900	20.40	I&D	20.40	0.00	12.50	10.87	21.22	20.40
53307	12901	32.12	I&D	32.12	0.00	19.67	17.11	33.41	32.12
53308	12902	127.88	I&D	127.88	0.00	78.33	68.13	133.03	127.88
53313	PER	55.10	Q-M	34.49	21.58	24.89	27.25	31.61	10.99
53343	PER	16.00	I&D	0.32	0.32	0.32	1.79	0.61	0.84
53346	PER	4.00	IRR	3.38	2.70	2.98	2.07	1.47	1.76
53674	15949	4.00	IRR	0.00	0.00	0.00	0.00	0.00	0.00
53864	PER	4.00	IRR	2.94	1.80	1.17	1.44	0.81	1.02
53865	15261	20.00	IRR	0.00	0.00	0.00	0.00	0.00	0.00
54167	PER	8.00	IRR	0.00	0.00	0.00	0.00	0.00	0.00
54265	PER	1.00	I&D	0.00	0.00	0.00	0.00	0.00	0.00
54463	PER	6.00	IRR	0.00	0.00	0.00	0.00	0.00	0.00
54465	PER	16.00	IRR	0.00	0.00	0.00	0.00	0.00	0.00
54466	PER	12.00	IRR	0.00	0.00	0.00	0.00	0.00	0.00
54468	PER	16.00	IRR	0.00	0.00	0.00	0.00	0.00	0.00
54470	PER	16.00	IRR	0.00	0.00	0.00	0.00	0.00	0.00
54889	14080	10.00	IRR	9.53	9.50	8.12	9.01	8.86	9.00
55118	PER	7.50	IRR	0.00	0.00	0.00	0.00	0.00	0.00
55119	PER	3.50	IRR	0.00	0.00	0.00	0.00	0.00	0.00
55326	PER	8.00	IRR	0.00	0.00	0.00	0.00	0.00	0.00
55483	PER	4.00	IRR	1.00	0.87	0.57	0.75	1.03	0.61
55603	14068	180.00	IRR	204.53	241.47	217.95	152.86	132.76	87.88
55604	14069	43.36	IRR	54.09	58.17	52.50	36.79	34.95	21.15
55605	14070	11.72	IRR	13.32	15.72	14.19	9.95	8.64	5.72
55606	14071	304.68	IRR	346.20	408.73	368.91	258.75	224.73	148.76
55607	14072	4.24	IRR	4.82	5.69	5.13	3.64	3.16	2.09
55656	14987	4.00	IRR	6.52	6.00	3.52	4.43	3.41	4.21

APP. NO.	STATUS 2006	DUTY (AFA)	USE	DUTY USED BY WATER YEAR 2001	2002	2003	2004	2005	2006
55657	15950	4.00	I&D	0.15	0.27	0.28	0.12	0.00	0.00
55658	15951	28.00	IRR	1.05	1.87	1.97	0.87	0.01	1.31
55659	15952	4.00	IRR	0.15	0.27	0.28	0.12	0.00	0.00
56164	PER	2.50	I&D	0.00	0.00	0.00	0.00	0.00	0.00
56472	16173	4.00	IRR	2.95	2.77	4.19	4.71	3.05	4.03
56927	PER	5.00	IRR	0.00	0.00	0.00	0.00	0.00	0.00
56929	PER	20.00	IRR	3.13	3.90	3.40	4.49	4.00	7.00
56930	PER	1.20	IRR	0.00	0.00	0.00	0.00	0.00	0.00
56931	PER	7.20	IRR	0.00	0.00	0.00	0.00	0.00	0.00
56932	PER	12.50	IRR	0.00	0.00	0.00	0.00	0.00	0.00
56933	PER	17.50	IRR	0.00	0.00	0.00	0.00	0.00	0.00
56934	PER	3.60	IRR	0.00	0.00	0.00	0.00	0.00	0.00
56963	PER	8.00	IRR	0.00	0.00	0.00	0.00	0.00	0.00
57084	14031	409.48	IRR	396.12	402.15	317.29	402.75	300.23	362.43
57085	14078	92.52	IRR	93.54	96.22	69.32	77.05	59.31	90.48
57086	14032	112.40	IRR	113.64	116.89	84.22	93.60	72.06	109.92
57087	14033	0.00	IRR	0.00	0.00	0.00	0.00	0.00	0.00
57088	14034	9.08	IRR	9.18	9.44	6.80	7.56	5.82	8.88
57089	14035	0.00	IRR	0.00	0.00	0.00	0.00	0.00	0.00
57090	14036	57.32	IRR	55.45	56.29	44.42	56.38	42.03	50.73
57091	14037	0.00	IRR	0.00	0.00	0.00	0.00	0.00	0.00
57092	14038	68.80	IRR	66.56	67.57	53.31	67.67	50.44	60.90
57093	14039	86.00	IRR	83.19	84.46	66.64	84.59	63.06	76.12
57094	14040	150.60	IRR	145.69	147.90	116.70	148.13	110.42	133.30
57095	14041	127.60	IRR	31.50	112.02	95.60	106.26	81.80	124.78
57175	PER	4.00	IRR	0.00	0.00	0.00	0.00	0.00	0.00
57202	WDN	0.00	IRR	0.00	0.00	0.00	0.00	0.00	0.00
57444	15276	11.20	IRR	12.73	15.02	13.56	9.51	8.26	5.47
57445	15277	24.00	IRR	27.27	32.20	29.06	20.38	17.70	11.72
57446	15278	20.80	IRR	23.63	27.90	25.18	17.66	15.34	10.16
57447	15279	13.97	IRR	15.91	18.78	16.92	11.87	10.31	6.82
57448	15280	5.50	IRR	6.25	7.41	6.66	4.67	4.06	2.69
57526	PER	4.00	IRR	0.00	0.00	0.00	0.00	0.00	0.00
57664	15412	8.00	IRR	10.00	7.50	1.93	7.74	7.11	6.76
57983	PER	4.00	IRR	1.35	1.64	0.91	1.58	0.69	0.98
58057	PER	1.00	IRR	0.00	0.00	0.00	0.00	0.00	0.00
58359	PER	5.00	IRR	0.00	0.00	0.00	0.00	0.00	0.00
58507	14042	8.96	IRR	0.00	7.39	6.71	7.46	5.74	8.76
58508	14043	52.00	IRR	0.00	42.93	38.96	43.30	33.34	50.85

APP. NO.	STATUS 2006	DUTY (AFA)	USE	DUTY USED BY WATER YEAR 2001	2002	2003	2004	2005	2006
58509	14044	2.60	IRR	0.00	2.14	1.95	2.17	1.67	2.54
60214	PER	110.21	Q-M	29.00	28.59	33.98	27.28	23.91	8.59
60975	E-PER	16.13	ENV	0.40	0.40	0.46	0.31	0.17	0.00
62598	PER	8.00	IRR	0.00	0.00	0.00	0.00	0.00	0.00
62599	PER	8.00	IRR	0.00	0.00	0.00	0.00	0.00	0.00
62600	15946	8.00	IRR	0.00	0.00	0.00	0.00	0.00	0.00
62640	PER	2.00	IRR	0.00	0.00	0.00	0.00	0.00	0.00
62641	PER	5.50	IRR	0.00	0.00	0.00	0.00	0.00	0.00
62642	PER	2.00	IRR	0.00	0.00	0.00	0.00	0.00	0.00
62643	16543	5.00	IRR	2.94	4.51	6.09	0.30	4.20	5.01
62644	16544	10.00	IRR	5.89	9.02	12.19	0.60	8.40	10.03
62827	PER	1.00	I&D	5.52	3.72	3.38	4.48	1.67	1.39
62889	PER	80.00	IRR	115.03	110.43	55.01	68.65	57.60	63.85
62890	PER	540.00	IRR	776.45	745.41	371.32	463.40	388.77	430.98
62898	CAN	0.00	I&D	0.00	0.00	0.00	0.00	0.00	0.00
63064	15932	8.00	I&D	0.00	0.00	7.90	0.09	0.00	0.00
63065	15933	11.00	I&D	0.00	2.36	10.86	0.00	0.00	0.00
63070	E-PER	48.39	ENV	21.08	5.77	15.04	13.75	12.65	5.49
63071	E-PER	48.39	ENV	12.34	4.21	11.32	13.50	12.96	5.47
63072	15934	4.00	I&D	0.00	0.77	3.95	0.00	0.00	0.00
63074	15935	6.00	IRR	0.00	0.00	5.92	0.00	0.00	0.00
63139	PER	3.50	IRR	0.00	0.00	0.00	0.00	0.00	0.00
63221	PER	4.50	IRR	0.00	0.00	0.00	0.00	0.00	0.00
63456	15939	4.00	I&D	0.00	0.86	3.95	0.00	0.00	0.00
63515	ABR	0.00	Q-M	2.73	2.07	0.27	0.00	0.00	0.00
63518	15988	8.00	Q-M	14.11	8.24	7.94	11.35	7.70	7.31
63708	15940	10.00	IRR	0.00	2.14	9.87	0.00	0.00	0.00
64011	PER	8.00	IRR	5.67	8.94	5.49	5.36	3.16	4.23
64265	15941	8.00	I&D	0.00	0.00	7.90	0.00	0.00	0.00
64266	15942	4.00	I&D	0.00	0.86	3.95	0.00	0.00	0.00
64268	15943	4.00	I&D	0.00	0.86	3.95	0.00	0.00	0.00
64269	15944	8.50	I&D	0.00	1.46	8.39	0.00	0.00	0.00
64501	15947	13.20	I&D	0.00	0.00	4.36	0.00	0.00	0.00
64660	PER	4.00	I&D	2.97	2.94	1.94	1.59	0.14	0.00
64812	PER	7.00	I&D	0.00	0.00	0.00	0.00	0.00	0.00
65072	PER	39.00	I&D	0.00	0.00	0.00	0.00	0.00	0.00
65073	PER	0.00	I&D	0.00	0.00	0.00	0.00	0.00	0.00
65095	15989	1.00	Q-M	1.76	1.03	0.99	1.42	0.96	0.91
65500	PER	12.00	I&D	0.00	0.00	0.01	0.05	0.18	5.66

APP. NO.	STATUS 2006	DUTY (AFA)	USE	DUTY USED BY WATER YEAR 2001	2002	2003	2004	2005	2006
65570	E-PER	177.40	ENV	15.13	3.80	12.98	10.65	11.28	9.73
65571	E-PER	129.00	ENV	26.88	6.85	20.35	19.33	11.63	10.73
65572	E-PER	56.40	ENV	11.82	3.86	7.67	8.63	10.53	14.83
65573	E-PER	40.30	ENV	18.35	0.21	0.55	0.25	0.50	0.69
65680	PER	4.00	I&D	0.00	2.38	2.36	2.26	1.82	1.56
66410	16548	1.12	COM	0.49	1.05	1.00	0.77	0.63	0.62
66411	16549	3.84	COM	1.67	3.59	3.45	2.67	2.15	2.11
66859	PER	41.80	IRR	0.00	0.00	0.00	0.00	0.00	0.00
67629	PER	2.00	IRR		0.00	0.00	0.00	0.00	0.00
67630	PER	2.50	IRR		0.00	0.00	0.00	0.00	0.32
67631	PER	4.00	IRR		0.00	0.00	0.00	0.00	0.00
67632	PER	0.00	Q-M		0.00	0.00	0.37	1.72	3.90
67633	PER	0.00	Q-M		0.00	0.00	0.00	0.00	0.00
67732	PER	2.00	IRR		0.00	0.00	1.24	0.09	0.49
67875	PER	4.00	Q-M		4.12	3.97	5.68	3.85	3.66
67952	PER	20.00	IRR		0.00	0.00	0.00	0.00	0.00
67992	PER	9.50	IRR		4.00	8.46	6.00	4.28	4.99
68067	PER	40.00	IRR		21.39	36.31	5.58	18.91	90.91
68068	PER	30.00	IRR		16.04	27.23	4.19	14.18	68.18
68069	PER	20.00	I&D		10.70	18.15	2.79	9.45	45.45
68070	PER	20.00	I&D		10.70	18.15	2.79	9.45	45.45
68228	PER	192.00	IRR		5.44	498.68	314.65	297.82	124.05
68300	PER	4.00	IRR		0.00	8.42	1.20	0.83	4.86
68313	PER	6.00	IRR			0.00	1.56	14.00	7.89
68314	PER	6.00	I&D			0.00	2.99	9.50	3.93
68315	PER	4.00	I&D			0.00	2.73	4.10	1.86
68709	PER	52.00	IRR			0.00	0.00	0.00	0.00
68845	PER	52.00	I&D			58.31	55.58	65.01	52.00
68847	PER	28.00	I&D			31.40	29.93	35.00	28.00
68849	PER	20.00	I&D			22.43	21.38	25.00	20.00
68914	PER	5.00	I&D			1.11	1.50	1.04	6.07
68915	PER	5.20	IRR			1.13	1.56	1.08	6.32
68919	E-PER	24.18	ENV		0.14	6.35	7.58	6.72	0.77
68947	PER	2.00	I&D			0.00	0.00	0.00	0.00
69023	PER	5.00	IRR			0.00	0.00	1.11	0.00
69025	PER	8.00	IRR			0.00	0.00	0.00	5.47
69032	PER	40.00	I&D			0.00	0.00	0.00	0.00
69033	PER	60.00	IRR			0.00	0.00	0.00	0.00
69034	PER	13.16	IRR			0.00	0.00	0.00	0.00

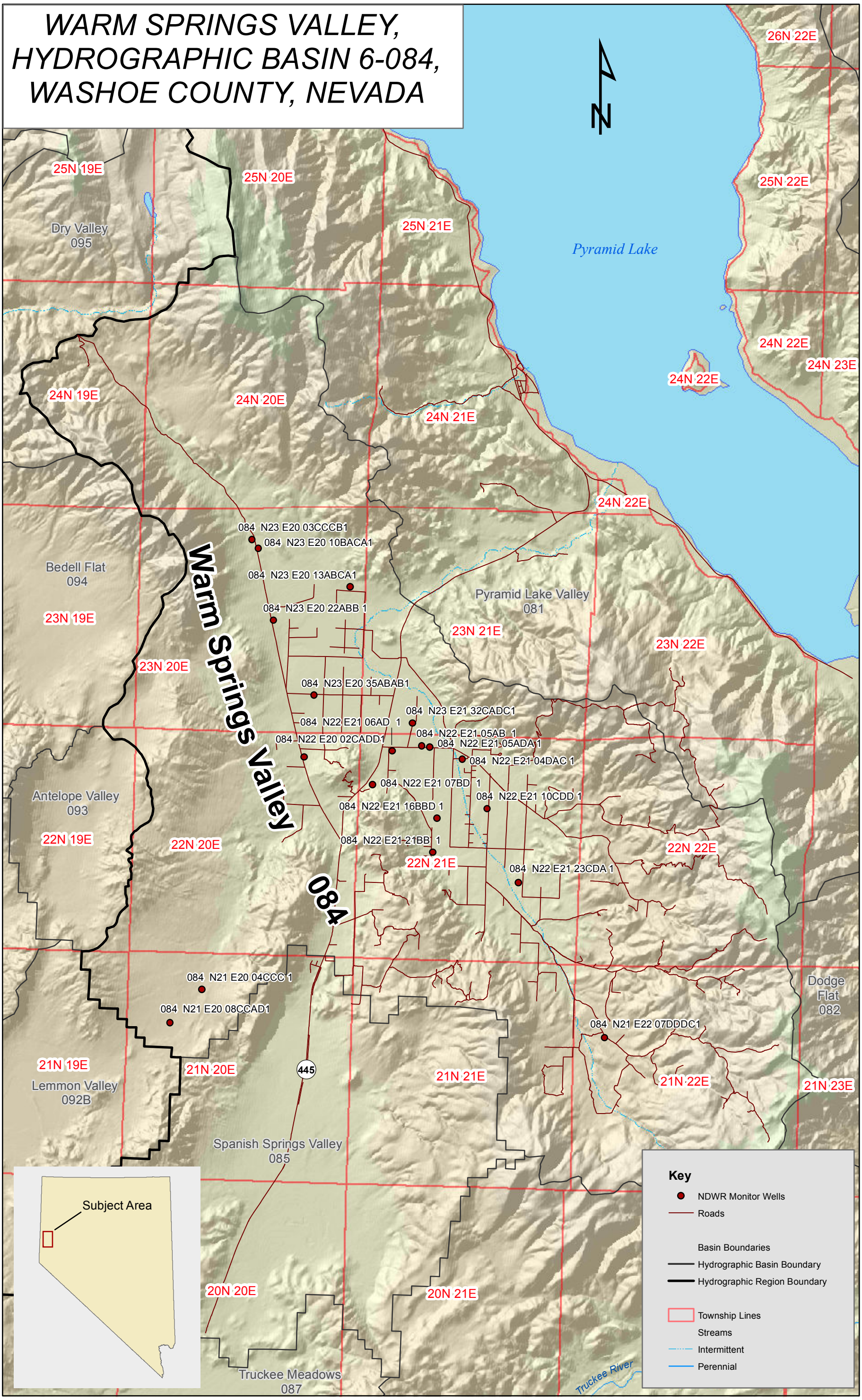
APP. NO.	STATUS 2006	DUTY (AFA)	USE	DUTY USED BY WATER YEAR 2001	2002	2003	2004	2005	2006
69035	PER	0.84	IRR			0.00	0.00	0.00	0.00
69036	PER	10.00	IRR			0.00	0.00	0.00	0.00
69037	PER	47.82	IRR			0.00	0.00	0.00	0.00
69038	PER	8.08	IRR			0.00	0.00	0.00	0.00
69159	PER	4.98	Q-M			4.94	7.07	4.79	4.55
69169	E-PER	16.07	ENV			0.25	0.34	0.45	0.44
69226	PER	12.00	I&D			8.23	8.04	4.74	6.34
69432	E-PER	16.07	ENV			0.31	0.58	0.39	0.36
69547	RFP		Q-M						
69580	PER	3.88	I&D				6.36	4.85	3.88
69582	PER	12.12	I&D				19.86	15.15	12.12
69584	PER	6.00	I&D				9.83	7.50	6.00
69586	PER	14.00	I&D				22.94	17.50	14.00
69708	PER	0.00	Q-M				0.86	4.39	8.93
69709	PER	0.00	Q-M				1.38	5.83	15.68
69780	PER	4.50	IRR				0.00	3.78	4.51
69781	PER	5.50	I&D					4.62	5.51
69798	E-PER	15.98	ENV			2.42	5.71	1.11	0.01
70223	E-PER	16.07	ENV				0.00	0.00	0.00
70233	RFP		Q-M						
70420	PER	6.00	IRR					0.00	0.00
70699	PER	2.50	Q-M				0.00	0.42	0.99
70762	PER	2.00	IRR						2.02
70763	PER	6.00	IRR						7.89
70856	PER	1.00	I&D					0.00	0.00
70857	PER	0.00	I&D					0.00	0.00
71589	PER	14.94	STK					0.00	0.00
71744	PER	4.80	I&D					0.00	0.00
71745	PER	3.00	IRR					0.00	0.00
71777	PER	1.00	I&D					0.00	0.87
71953	PER	19.00	I&D					23.76	45.57
71954	PER	20.00	I&D					25.01	47.97
71955	PER	20.00	I&D					25.01	47.97
71956	PER	12.00	I&D					15.00	28.78
71957	PER	12.50	I&D					15.63	29.98
72454	RFP		Q-M						
72455	RFP		Q-M						
72456	RFP		Q-M						
72457	RFP		Q-M						

APP. NO.	STATUS 2006	DUTY (AFA)	USE	DUTY USED BY WATER YEAR 2001	2002	2003	2004	2005	2006
72458	RFP		Q-M						
72459	RFP		Q-M						
72460	RFP		Q-M						
72461	RFP		Q-M						
72462	RFP		Q-M						
73117	E-PER	8.03	ENV						8.78
73154	PER	4.00	Q-M						3.66
73238	PER	6.00	IRR						0.00
73239	PER	4.00	I&D						0.00
73443	PER	20.00	I&D						0.00
73500	PER	20.00	I&D						0.00
73568	PER	12.50	I&D						0.00
73841	RFA		Q-M						
73995	RFA		I&D						
73996	RFA		I&D						
73997	RFA		I&D						
74087	RFA		I&D						
74437	APP		IRR						
74438	APP		I&D						
74439	APP		I&D						
74440	APP		IRR						
74441	APP		IRR						
74442	APP		IRR						

PERMITTED DUTY 7103.55 TOTAL PUMPED 4401.96

Note: The "Permitted Duty" shown corresponds to the amount available in the given water year.

SELECTED BIBLIOGRAPHY

1) Rush, E.F., and Glancy, P.A., 1967, Water resources Appraisal of the Warm Springs - Lemmon Valley Area, Washoe County, Nevada: Nevada Department of Conservation and Natural Resources, Water Resources - Reconnaissance Series Report 43.
2) Ross, W.C., 1997, Hydrology and Simulated Effects of Development in Warm Springs Valley, Washoe County, Nevada: Washoe County Department of Water Resources.
3) Katzer, T., 1997, Hydrogeology of Warm Springs Valley and Feasibility of Aquifer Recharge, Storage, and Recovery with Emphases (sic.) on the Marshall and Winnemucca Ranch Areas, Washoe County, Nevada: Prepared for Robert W. Marshall.

WARM SPRINGS VALLEY, HYDROGRAPHIC BASIN 6-084, WASHOE COUNTY, NEVADA