

CPB EXH-001
CORPORATION OF THE PRESIDING BISHOP
OF THE CHURCH OF JESUS CHRIST
OF LATTER-DAY SAINTS,
A UTAH CORPORATION, SOLE

Water Rights, Land & Water Resources Report
for North Spring Valley, Nevada

July 1, 2011

Prepared For:

KIRTON AND MCCONKIE

60 East South Temple, Suite 1800
Salt Lake City, Utah 84145-0120

Prepared By:



RESOURCE CONCEPTS, INC.

340 N. Minnesota Street
Carson City, Nevada 89703-4152

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SECTION 1.0 – WATER RIGHTS IN NORTH SPRING VALLEY

Corporation of the Presiding Bishop of The Church of Jesus Christ of Latter-Day Saints, a Utah corporation, sole (“CPB”) owns a substantial amount of private property, grazing permits on three public land grazing allotments, and a multitude of water rights in north Spring Valley, Nevada. The deeded land, permitted public grazing allotments, and water is used to sustain a large livestock production operation that is managed by Delamar Valley Livestock (“DVL”), an entity of CPB. DVL is a major producer of beef for the LDS Church Welfare Program. The primary goal of DVL is to maximize production of cattle on the Cleveland and Rogers Ranch in White Pine County, Nevada. This resource produces approximately 1,400 head of beef annually. Approximately 35% of the beef production needs for the Church Welfare Program is provided by DVL and its operations in Spring Valley. These food supplies are distributed to the poor and needy through the Church Welfare Program. Appendix 1 contains all mapping pertinent to this section, and Map 1.1 “CPB Holdings and Critical Water Sources in North Spring Valley, Nevada” shows all private property and public land grazing allotments held by CPB, as well as critical water sources. This section discusses the water rights and critical water resources held by CPB.

CPB holds numerous water rights and claims of vested water rights in north Spring Valley. These rights are used primarily for irrigation and livestock watering. Table 1.1 shows a summary of these rights. These water rights have been acquired via purchases of properties associated with the Cleveland and Rogers Ranches and include claims of vested right (VST), permits that have been issued (PER), permits that have been applied for but not yet issued (RFA or RFP) and certificated water rights (CER).

There are several water rights that remain under the name of previous owners associated with the Rogers Ranch and CPB’s permitted grazing allotments. CPB and its predecessors in interest have maintained these rights, and CPB intends on filing Report of Conveyance documents for assignment of those rights or claims into CPB’s ownership. There also exist several critical water sources with yet unfiled claims of vested right. CPB intends on filing Proofs for water from these sources. Based upon the fact that CPB has pending applications before the State Engineer, and in light of any other factual changes concerning ranch operations of use of water related thereto, CPB hereby reserves its right to supplement this report with more recent factual information should it become available prior to the hearing on the pending applications of the Southern Nevada Water Authority (“SNWA”).

At present, CPB operates primarily on surface water sources in north Spring Valley. However, several of the permits and applications for permit are for underground water. Below is a description of the water rights associated with CPB’s deeded lands and permitted public lands for each of the critical water sources used in north Spring Valley. This section also includes a brief overview and discussion of water rights held by others that may have some bearing on the activities of CPB.

CPB has concern over the proposed SNWA groundwater export program for north Spring Valley. CPB has protested the application for several of the groundwater production wells to the west of the Cleveland Ranch for fear that pumping along the alluvial fan would negatively impact the water rights they currently hold. CPB has also protested the applications for groundwater production wells in or adjacent to their permitted grazing allotments for fear that groundwater pumping could negatively impact water sources that are critical to livestock operations, including existing rights and yet unclaimed vested rights.

CPB opposes the SNWA applications due to potential impacts on its senior surface and groundwater rights on both deeded lands and within permitted grazing allotments. Although surface and groundwater rights may be inventoried by the State Engineer separately, both types of water right are interrelated and the State Engineer should consider the impact on senior surface rights as well as stand-alone and

supplemental groundwater rights. The State Engineer in Ruling 5726 cited NRS 533.370(5), which provides that the State Engineer shall reject any application where the proposed use conflicts with existing rights. The Ruling goes on to explain that water rights that could potentially be adversely affected by the proposed applications “include both ground-water rights and surface-water rights originating as springs on the valley floor or valley margins.”

1.1 Existing Water Rights Associated with the Cleveland Ranch

1.1.1 Cleveland Creek

CPB holds two unadjudicated claims of vested right (V00790 and V01217) and one certificated water right (902) under Permit 2852 for the water from Cleveland Creek.

V00790 was originally filed in 1910 with an amendment filed in 1963. The priority date for the claim is 1873. The claim is for all water from Cleveland Creek as well as water from Indian Creek, Freehill Creek and Stephens Creek. The claim is for domestic use, some stock watering and irrigation of up to 3,500 acres of grain, alfalfa, hay, timothy, vegetables and pasture at a duty of 4 acre-feet per acre with a season of use from April 1 to October 1. The State Engineer’s abstract for this right shows a total duty balance of 10,847.70 acre-feet annually.

V01217 was filed in 1913 with a priority date of 1873. The claim is for water from Cleveland Creek, Freehill Creek, Indian Creek and numerous springs within the Cleveland Ranch holdings. The claim is for year round irrigation of up to 3,000 acres of wild hay, pasture, oats, wheat, timothy, alfalfa, sugar beets, garden and orchard. The State Engineer’s abstract shows a duty balance of 12,000.00 acre-feet annually, which would be for the entire 3,000 acres at a duty of 4 acre-feet per acre.

Certificate 902 under Permit 2852 was issued in 1923. The certificate is for irrigation of 802.16 acres of grass and brush for winter irrigation with water from Cleveland Creek. The certificate is for a total of 2,406.48 acre-feet seasonally between October 1 and April 1 at a duty of 3 acre-feet per acre.

The annual yield of Cleveland Creek can be estimated based on 38 years of data collected by the US Geological Survey. For those 38 years, the average annual yield is 7,732 acre-feet annually, 2,626 acre-feet seasonally in the winter (October 1 – April 1), and 5,106 acre-feet seasonally in the summer (April 1 – October 1).

1.1.2 Indian and Freehill Creeks

The use of water from both Indian and Freehill Creeks is included in the claims of vested right V00790 and V01217. These claims do not specify the amount of water used from each source. Waters from Cleveland, Indian and Freehill Creeks are shown on the supporting map as being commingled with spring water from Cleveland Ranch. There is no easily accessible monitoring data for these creeks, but field investigations have revealed significantly lower flows than those from Cleveland Creek.

1.1.3 Stephens Creek

The use of water from Stephens Creek is included in the claim of vested right V00790. This claim does not distinguish the amount of water used from Stephens Creek from other creeks or springs on Cleveland Ranch. Water from Stephens Creek is shown as being commingled with water from Cleveland, Indian and Freehill Creeks as well as water from a multitude of springs on the Cleveland Ranch.

CPB also holds a claim of vested right for Stephens Creek V01218 with a priority date of 1873. V01218 was filed in 1913. The claim is for water from Stephens Creek and numerous springs within the

Cleveland Ranch holdings. It is for irrigation of up to 1,200 acres of wild hay, oats and plowed land. The State Engineer's abstract shows the total duty balance of 4,800 acre-feet annually.

SNWA estimated the average annual yield of Stephens Creek to be 720-773 acre-feet annually. These numbers were estimated in two separate reports based on limited field data for Stephens Creek in comparison to data from Cleveland Creek.

1.1.4 Springs on the Cleveland Ranch

There are a multitude of springs on the Cleveland Ranch that are used to irrigate the eastern portions of the ranch. The use of these springs is included in claims of vested right made on Cleveland, Indian, Freehill and Stephen Creeks under V00790 and V01217. These claims do not distinguish the amount of water used from each source, only that the water is commingled throughout the Cleveland Ranch.

CPB also holds a series of claims of vested right V02817 – V02828 filed in 1973 with a priority date of 1885. These claims are for water from Murphy Spring and Big Reservoir Springs No. 1 – No. 11. The location of each spring is listed by quarter section, and in nearly every case the quarter section contains multiple and often many springs. Each claim indicates that the water from the spring in the claim is commingled with water from a multitude of other springs. All claims are for year round irrigation with a duty of 4 acre-feet per acre for use on 2,400 acres for a total duty of 9,600 acre-feet annually. There are no estimations as to the yield of these springs, which would be nearly impossible to determine.

1.1.5 Groundwater

Presently there is one irrigation well on the Cleveland Ranch that was drilled in the fall of 2010. Permits 54204 and 54205 were approved in December 2007 for groundwater that would supplement surface water rights on Cleveland Creek. As approved, the water can only be used to supplement irrigation of 694.10 acres within the Place of Use as defined in the applications. The Point of Diversion for Permit 54205 is near the Upper Cleveland Reservoir and could be used to pump into the reservoir for diversion into any of the areas allowed under the permit where Cleveland Creek water is used. The new irrigation well was drilled and a pump test completed, but has not been equipped with a pump at the time of this report. The Place of Use for both permits is the same, as is the duty of 3 acre-feet per acre and the total duty of 2,082.30 acre-feet annually.

1.1.6 Water Rights Discussion – Cleveland Ranch

Most of the irrigation water used on the Cleveland Ranch is surface water, which includes extensive spring sources CPB holds under claims of vested right. This includes water from Cleveland, Indian, Freehill and Stephens Creeks as well as a multitude of springs on the ranch property. Nearly all of the claims indicated that the water from these sources is commingled. The claims of vested right on Cleveland and Stephens Creek exceed the measured or estimated average annual yields for each creek, but that does not take into consideration the contributions of the commingled waters from Indian Creek, Freehill Creek and the multitude of springs on the Cleveland Ranch. Ranch Managers have indicated that during the late summer irrigation months, the amount of water delivered to the ranch is sometimes not sufficient to adequately water all pasture, despite installation of water conservation measures such as pivots and sprinklers. Even in good water years, ranch managers are able to utilize most if not all of the flows provided by all creeks and springs for much of the irrigation season. As a result, CPB has actively pursued developing two approved permits for supplemental ground water on areas of the ranch irrigated by Cleveland Creek, and has completed the development of one well already in Section 19, T 16.N, R 67.E.

1.2 Existing Water Rights Associated with the Rogers Ranch

1.2.1 Negro Creek

CPB holds three certificated water rights (Permit 3186, Certificate 567, Permit 8393, Certificate 3213, and Permit 10417, Certificate 5042) waters from Negro Creek for irrigation on the Rogers Ranch. There are also two pending applications for supplemental groundwater (69726 and 69726).

Permit 3186, Certificate 567 is for the irrigation of 160 acres from April 1 to October 1 at a duty of 4 acre-feet per acre, totaling 640 acre-feet of use seasonally.

Permit 8393, Certificate 3213 is for the irrigation of 151.20 acres from October 1 to April 1 (winter use only) at a duty of 3.6 acre-feet per acre, totaling 544.86 acre-feet seasonally.

Permit 10417, Certificate 5042 is for the irrigation of 287.3 acres year round at a duty of 4 acre-feet per acre, totaling 1,149.20 acre-feet annually.

SNWA has estimated the annual yield of Negro Creek to be 1,872 – 2,200 acre-feet per year based on limited field data taken near the Negro Creek Homestead. Based on measurements taken during 2008, RCI developed an extremely preliminary estimate of the annual yield near the Negro Creek Homestead to be 2,460 acre-feet annually. The summer seasonal yield (April 1 through October 1) was estimated to be 1,980 acre-feet and the winter seasonal yield (October 1 through April 1) was estimated to be 480 acre-feet. Estimated yields at the Rogers Ranch based on measurements taken during the summer of 2008 were approximately 560 acre-feet. Anecdotally from Ranch Managers and per observations during 2008, usable flows are typically present during the spring and early summer months with significantly reduced flows during the late summer, fall and winter months.

1.2.2 Springs on the Rogers Ranch

There are several springs on the Rogers Ranch that are used for livestock watering. At present, there are no water rights of record with the State Engineer for any of the springs on the Rogers Ranch.

1.2.3 Groundwater

Applications 69726 and 69726 are supplemental requests for groundwater for irrigation of 560 acres at a duty of 4 acre-feet per acre totaling 2,240 acre-feet annually. The proposed place of use is supplemental to the 160-acre place of use under Permit 3186, Certificate 567 and includes new lands not under a Place of Use for other existing water rights. The proposed Place of Use is the same for both permits and is shown on the water rights mapping. The State Engineer shows the status of the permit as RFA – Ready for Action, Not Protested. Once a development plan is established for the ranch, a determination can be made as to how these pending applications should be handled.

There is one other pending Application to Appropriate associated with the Roger's Ranch. Application 67333 was filed by Vidler Water Company, Inc. in March of 2001 for underground water to irrigate 280 acres at a duty of 4 acre-feet per acre year round, totaling 1,120 acre-feet annually. This application is listed by the State Engineer as "Ready for Action – Protested". A Report of Conveyance was filed with the Division of Water Resources in June of 2006 to transfer ownership of this water right to Alan and Shelly Johnson. However, CPB now owns the property on which the Place of Use for this water is located.

1.2.4 Water Rights Discussion – Rogers Ranch

The Rogers Ranch is currently being irrigated solely by water from Negro Creek under three certificated water rights: one for year-round use, one for summer use and one for winter use. Very preliminary yield

estimates suggest that the three certificated water rights include the complete yield of Negro Creek as delivered at the western edge of the Negro Creek Homestead, and far exceed the much-reduced amount of water delivered to the actual place of use at the Rogers Ranch.

There are three pending groundwater applications: one under protest that is not currently under CPB's ownership, and two that are not under protest and which are under CPB's ownership. If permitted, these applications could greatly supplement the water resources at the Rogers Ranch, but the timing and outcome of the applications is uncertain at this point.

DVL has expressed a desire to expand the amount of irrigated acreage on the Rogers Ranch. To do so will require increased water delivery at the Ranch. CPB is currently working with the BLM to secure approvals to install a pipeline from the Negro Creek Homestead to the Rogers Ranch. Applications for Change in Point of Diversion, Place of Use, and Manner of Use have been filed with the State Engineer in an overall effort to improve water usage efficiencies at the Rogers Ranch.

1.3 Existing Water Rights Associated with Irrigation of Other Deeded Property

1.3.1 North Cleveland Unit

There are currently no water rights associated with the 160-acre North Cleveland Unit. The only water source on this parcel is the North Cleveland Unit Spring that is used for livestock watering.

1.3.2 Four Mile Springs

CPB owns an 80-acre parcel at Four Mile Springs. There are two certificated water rights for this area, Permit 3927, Certificate 469 and Permit 5028, Certificate 1541. Certificate 469 is for the irrigation of 10 acres at a duty of 4 acre-feet per acre year round, totaling 40 acre-feet annually. Certificate 1541 is for the irrigation of 6.60 acres at a duty of 4 acre-feet per acre from April 1 to September 30, totaling 24 acre-feet seasonally. Both rights were originally filed for irrigation of small plots of alfalfa and potatoes by diverting water out of a small reservoir below the series of springs known as Four Mile Springs.

1.3.3 Negro Creek Homestead

CPB owns approximately 400 acres around the original Negro Creek Homestead. There is an adjudicated right established by District Court decree (V01080) in this area for the purpose of irrigating 93 acres of crops with additional use for domestic and stock watering purposes. The State Engineer only recognized 66.63 acres of use area. The duty for this water is 4.0 acre-feet per acre from April 1 to November 1, totaling 266.52 acre-feet seasonally. The homestead is no longer occupied. There are still cattle grazing in this area as part of the Negro Creek Allotment including the irrigated portions of the Homestead. CPB has filed for a change in a portion of this right to transfer the place of use to the Rogers Ranch in an overall effort to improve efficiency of ranch operations.

1.3.4 Chokecherry Spring

There is an existing certificated water right (Permit 3793, Certificate 2377) for Chokecherry Spring for irrigation of 10.22 acres for a total balance of 50 acre-feet seasonally from March 15 through November 15th. This water was diverted by a small reservoir to irrigate a small bench. This right is still held under the name of Rogers, the previous owner.

1.3.5 Water Rights Discussion – Other Deeded Property

Four Mile Springs is isolated from the core of the Cleveland and Rogers Ranches, although it is within the Negro Creek Allotment. Four Mile Springs provides good forage and water for livestock.

The Negro Creek Homestead area is relatively isolated from the core of the Rogers and Cleveland Ranches. The broad flood plain along Negro Creek has been planted and irrigated from water out of Negro Creek, and that portion of the place of use on the upper bench is pending a request to move the place of use to the Rogers Ranch to improve overall efficiency in ranch operations.

1.4 Existing Water Rights Associated with Livestock Permits on Federal Public Lands

CPB holds permits for livestock grazing on three BLM administered public lands grazing allotments. These allotments are operated in conjunction with the Cleveland and Rogers Ranches as well as other deeded properties held by CPB. CPB holds two water rights of record on these allotments.

Permit 1724, Certificate 184 is for stockwater from Six Mile Spring, located in the northeastern portion of the Negro Creek Allotment. Permit 8721, Certificate 2509 is for stockwater from South Millick Spring in the northwestern portion of the Negro Creek Allotment.

There are several permitted springs that are still of record under previous owner's names:

- Permit 3926, Certificate 1475, still held by Rogers, is a stockwater right on Smudge Spring located on the Toiyabe Forest on the western edge of the Negro Creek Allotment.
- Permit 5713, Certificate 797, still held by Rogers, is a stockwater right on Granite Spring located on the eastern edge of the Negro Creek Allotment.
- Permit 3973, Certificate 5993, held in Rogers name, is a stockwater right for Mud Springs located on the western boundary of the Negro Creek Allotment just south of the Rogers Ranch. These springs are easily accessible by cattle.

DVL also uses water from the Cleveland Well within the Cleveland Creek Allotment as well as the Ferra Well within the Negro Creek Allotment and various other springs throughout the allotments.

1.4.1 Water Rights Discussion – Federal Public Lands

The natural springs throughout the three grazing allotments are critical to the public lands grazing operation. The existing certificated rights that are in place have been maintained. There are several water rights that remain under the name of previous owners. CPB and its predecessors in interest have maintained these rights, and CPB intends on filing Report of Conveyance documents for assignment of those rights or claims into CPB's ownership. There are also several critical water sources with yet unfiled claims of vested right. CPB intends on filing Proofs for water from these sources, and therefore reserves the right to update this report as necessary to account for any new information that becomes available.

1.5 Existing Water Rights Held by Others

1.5.1 Federal Reserved Waters

The Bureau of Land Management holds claims of reserved right under executive order of 4-17-26 PWR 107 for the following springs located on allotments operated by DVL:

- R05295 – Unnamed Spring in the northeast quarter of the northwest quarter of Section 25, T.67E., R.16N., within the Negro Creek Grazing Allotment. Delamar Valley Livestock did not denote the spring as a critical to their operations. The right is for 7.95 acre-feet annually for a use defined as “other”, and holds a priority date of April 17, 1926.
- R05293 – Unnamed Spring immediately west of the South Cleveland Unit property boundary within the Cleveland Ranch Allotment that flows into the South Cleveland Unit. The right is

for 7.95 acre-feet annually for a use defined as “other” and holds a priority date of April 17, 1926.

- R05294 – Unnamed Spring #1 as mapped on the “Delamar Valley Livestock Water Rights Map” within the Cleveland Ranch Allotment. The right is for 7.95 acre-feet annually for a use defined as “other” and holds a priority date of April 17, 1926.
- R05292 – Unnamed Spring #3 as mapped on the “Delamar Valley Livestock Water Rights Map” within the Cleveland Ranch Allotment, and may be located on a deeded parcel held by SNWA within the allotment. The right is for 7.95 acre-feet annually for a use defined as “other” and holds a priority date of April 17, 1926.
- R05279 – Unnamed Spring #3 as mapped on the “Delamar Valley Livestock Water Rights Map” within the Negro Creek Allotment. The right is for 7.95 acre-feet annually for a use defined as “other” and holds a priority date of April 17, 1926.
- R05280 – Unnamed Spring #4 as mapped on the “Delamar Valley Livestock Water Rights Map” within the Negro Creek Allotment, and located within a deeded parcel held by SNWA within the allotment. The right is for 7.95 acre-feet annually for a use defined as “other” and holds a priority date of April 17, 1926.

There are several more clusters of reserved claims held by the BLM on springs to the west of the Cleveland Ranch and on other public lands throughout north Spring Valley.

1.5.2 Other Adjacent Landowners

According to record searches through the Nevada Division of Water Resources, there are several adjacent landowners that own water rights on sources that are used by DVL. These water rights are as listed below:

Permit 3203, Certificate 2645 is held by George Eldridge and Sons for the Deep Springs Slough. This is an irrigation right for their deeded parcel located in Section 9, T.16N., R. 67E. Deep Spring is located in the extreme southwest corner of Section 10 of the same township and range. The spring itself is outside of the allotments held by CPB; however the place of use is located immediately east of the Cleveland Ranch. Tail water from Cleveland Creek and various springs within the Cleveland Ranch run through the ranch as well. However, no records were located which indicate any water rights for tail water on that particular parcel of land.

Permit 5691, Certificate 1325 is held by George Eldridge and Sons for a “slough in Spring Valley.” This is an irrigation right for their deeded parcel located immediately west and adjacent to the Rogers Ranch. It appears that the slough referenced in the application may be fed by tail water from the Cleveland Ranch.

George Eldridge and Sons hold both Permit 10921, Certificate 3375 for irrigation water from South Millick Spring and Permit 10993, Certificate 3376 for irrigation water from North Millick Springs. The place of use for this water is for the Eldridge’s deeded property located adjacent to the northeastern boundary of the Rogers Ranch. CPB holds a stockwater right on South Millick Spring (Permit 8721, Certificate 2509) for stock water and also uses North Millick Spring extensively for stock water. It should also be noted that the stream leading from South Millick Spring to the Eldridge’s property runs through the middle of the 240-acre parcel that makes up the extreme northeastern corner of the Rogers Ranch.

Permit 10993, Certificate 5202 is held by the Moriah Ranches for irrigation water from the Big Meadow Slough. The place of use for this water is on the Moriah Ranch located several miles northeast of the Cleveland Ranch and approximately one mile northwest of the Rogers Ranch. According to the mapping filed with the State Engineer, it would appear that this water is tail water from the Cleveland Ranch.

Table 1.1: CPB - Existing Water Rights Summary Table

Place of Use	Owner	Type of Use	Permit #	Certificate #	File Date	Priority Date	Status	Source Type	Source Name	Point of Diversion					Diverion Rate (cfs)	Duty (AF / Acre)	Duty Balance (AF)	Season of Use
										QQ	Q	Sec	Twn	Rng				
Cleveland Ranch	CPB	IRR	2852	902	12/01/1913	1913	CER	STR	Cleveland Creek	NW	NW	25	16N	66E	8.0216	3.00	2,406.48	10/01 - 04/01
Cleveland Ranch	CPB	IRR	V00790	NA	06/01/1910	1873	VST	STR	Cleveland Creek	NW	NW	25	16N	66E	2.5000	3.00	10,847.70	04/01 - 10/01
Cleveland Ranch	CPB	IRR	V01217	NA	02/01/1913	1873	VST	STR	Cleveland Creek	SE	NW	24	16N	66E	-	4.00	12,000.00	Annual
Cleveland Ranch	CPB	IRR	V01218	NA	01/27/1913	1873	VST	STR	Stephens Creek	NE	NW	06	16N	67E	-	4.00	4,800.00	Annual
Cleveland Ranch	CPB	IRR	V02817	NA	01/16/1973	1885	VST	SPR	Murphy Springs	SE	NW	18	16N	67E	-	-	-	-
Cleveland Ranch	CPB	IRR	V02818	NA	01/16/1973	1885	VST	SPR	Big Reservoir Springs No. 1	NW	SE	18	16N	67E	-	-	-	-
Cleveland Ranch	CPB	IRR	V02819	NA	01/16/1973	1885	VST	SPR	Big Reservoir Springs No. 2	NE	SE	18	16N	67E	-	-	-	-
Cleveland Ranch	CPB	IRR	V02820	NA	01/16/1973	1885	VST	SPR	Big Reservoir Springs No. 3	SE	SE	18	16N	67E	-	-	-	-
Cleveland Ranch	CPB	IRR	V02821	NA	01/16/1973	1885	VST	SPR	Big Reservoir Springs No. 4	NE	NE	19	16N	67E	-	-	-	-
Cleveland Ranch	CPB	IRR	V02822	NA	01/16/1973	1885	VST	SPR	Big Reservoir Springs No. 5	SW	SW	17	16N	67E	10.0000	4.00	9,600.00	Annual
Cleveland Ranch	CPB	IRR	V02823	NA	01/16/1973	1885	VST	SPR	Big Reservoir Springs No. 6	NW	NW	20	16N	67E	-	-	-	-
Cleveland Ranch	CPB	IRR	V02824	NA	01/16/1973	1885	VST	SPR	Big Reservoir Springs No. 7	NE	SE	19	16N	67E	-	-	-	-
Cleveland Ranch	CPB	IRR	V02825	NA	01/16/1973	1885	VST	SPR	Big Reservoir Springs No. 8	SE	NE	19	16N	67E	-	-	-	-
Cleveland Ranch	CPB	IRR	V02826	NA	01/16/1973	1885	VST	SPR	Big Reservoir Springs No. 9	SW	NW	20	16N	67E	-	-	-	-
Cleveland Ranch	CPB	IRR	V02827	NA	01/16/1973	1885	VST	SPR	Big Reservoir Springs No. 10	NW	SW	20	16N	67E	-	-	-	-
Cleveland Ranch	CPB	IRR	V02828	NA	01/16/1973	1885	VST	SPR	Big Reservoir Springs No. 11	SE	NW	20	16N	67E	-	-	-	-
Cleveland Ranch	CPB	IRR	54204	NA	12/01/1989	1989	PER	UG	Ground Water	NW	NE	19	16N	67E	3.0000	3.00	2,082.30	Annual - Supplemental
Cleveland Ranch	CPB	IRR	54205	NA	12/01/1989	1989	PER	UG	Ground Water	SE	SW	13	16N	66E	-	-	-	-
Rogers Ranch	CPB	IRR	3186	567	11/27/1914	1914	CER	STR	Negro Creek	NE	SW	35	17N	67E	1.6000	4.00	640.00	04/01 - 10/01
Rogers Ranch	CPB	IRR	8393	3213	11/18/1927	1927	CER	STR	Negro Creek	SE	NE	02	16N	67E	1.5120	3.60	544.86	10/01 - 04/01
Rogers Ranch	CPB	IRR	10487	5042	04/08/1940	1940	CER	STR	Negro Creek	NE	NE	02	16N	67E	2.8730	4.00	1,149.20	Annual
Rogers Ranch	Johnson	IRR	67333	NA	03/12/2001	2001	RFP	UG	Ground Water	SW	SE	34	17N	67E	4.7000	4.00	1,120.00	Annual
Rogers Ranch	CPB	IRR	69726	NA	03/12/2003	1960	RFA	UG	Ground Water	SE	SW	35	17N	67E	4.0000	4.00	2,240.00	Annual - Supplemental
Rogers Ranch	CPB	IRR	69727	NA	03/12/2003	1960	RFA	UG	Ground Water	NW	SE	35	17N	67E	-	-	-	-
Negro Creek Homestead	CPB	IRR	V01080	31	03/30/1912	1887	DEC	STR	Negro Creek	NW	NE	16	16N	68E	-	4.00	266.52	04/01 - 11/01
Negro Creek Allotment	CPB	STK	1724	184	06/15/1910	1910	CER	SPR	Six Mile Spring	SE	NW	15	17N	68E	0.0100	Stock & Dom	7.21	Annual
Negro Creek Allotment	CPB	IRR	3927	469	04/24/1916	1916	CER	SPR	Four Mile Springs	SW	NW	27	17N	68E	0.1000	4.00	40.00	Annual
Negro Creek Allotment	Rogers	STK	3973	5993	05/13/1916	1916	CER	SPR	Mud Springs 1, 2 and 3	SW	NW	10	16N	67E	0.0078	300 Cattle	5.65	Annual
Negro Creek Allotment	CPB	IRR	5028	1541	04/26/1918	1918	CER	SPR	Four Mile Springs	SE	NW	27	17N	68E	0.0660	3.60	24.00	04/01 - 09/30
Negro Creek Allotment	Rogers	STK	5713	797	09/05/1919	1919	CER	SPR	Granite Spring	NW	NW	32	16N	68E	0.0060	1,000 S, 25 C	3.65	03/01 - 12/31
Negro Creek Allotment	CPB	STK	8721	2509	10/13/1928	1928	CER	SPR	South Millick Spring	SE	SW	25	17N	67E	0.0200	3,000 S, 50 C	14.49	Annual
Bastian Creek Allotment	NV L&R Co	STK	18841	5673	5/13/1960	1960	CER	UG	Ground Water	NW	SE	20	15N	67E	0.0111	400 Cattle	8.96	Annual
Bastian Creek Allotment	NV L&R Co	STK	18842	5674	5/13/1960	1960	CER	UG	Ground Water	NW	NE	32	15N	67E	0.0125	400 Cattle	8.96	Annual
Bastian Creek Allotment	NV L&R Co	STK	18843	5675	5/13/1960	1960	CER	UG	Ground Water	SW	NE	29	15N	67E	0.0125	400 Cattle	8.96	Annual
Forest Service	ROGERS	IRR	3793	2377	12/11/1915	1915	CER	SPR	Choke Cherry Spring	SE	SW	15	16N	68E	0.1022	-	50.00	03/15 - 11/15
Forest Service	ROGERS	STK	3926	1475	04/24/1916	1916	CER	SPR	Smudge Spring	NW	NE	21	16N	68E	0.0250	Stock Watering	18.08	Annual

- Notes:**
- This data is shown as it appears on the State Engineer's abstracts posted on the Nevada Division of Water Resources' website.
 - Some of the information has been supplemented with items from original applications.
 - Highlighted items are those water rights that should have been transferred to the Corporation following the purchase of properties in North Spring Valley, but are still listed under previous owners. The CPB and its predecessors in interest have maintained these rights, and the CPB intends on filing Report of Conveyance documents for assignment of those rights or claims into the CPB's ownership.
 - Support information and mapping for Cleveland Creek water rights shows intermingling of water from Indian, Freehill and Stephens Creeks as well as various springs within the Cleveland Ranch.
 - Applications 80453 - 80456 to Change the Point of Diversion, Manner and Place of Use of Permits 3186, 8393, 10487, and V01080 are on file with DWR, current status is RFP.
 - There are several critical water sources with yet unfiled claims of vested right. The CPB intends on filing Proofs for water from these sources, and therefore reserves the right to update this report as necessary to account for any new information that becomes available.

Abbreviations:
Header: QQ - Quarter, Quarter of a Section (40 Acres), Q - Quarter of a Section (160 Acres), Sec - Section (640 Acres), Twn - Township, Rng - Range, cfs - Cubic Feet per Second, AF - Acre-foot
Type of Use: IRR - Irrigation, STK - Stockwater
Status: CER - Certificated Water Right, PER - Water Right Permit, VST - Claim of Vested Right, RFP - Application Ready Pending Protest, RFA - Application Ready for Action
Source Type: STR - Stream, UG - Underground, SPR - Spring

SECTION 2.0 – LAND AND WATER RESOURCES

CPB owns a substantial amount of private property, grazing permits on three public land grazing allotments, and a multitude of water rights in north Spring Valley, Nevada. The deeded land, permitted public grazing allotments, and water is used to sustain a large livestock production operation that is managed by DVL. DVL produces cattle for the LDS Church's Welfare Program, so the primary goal of DVL's operation is to maximize production of cattle. Appendix 1 contains all mapping pertinent to this section, and Map 1.1 "CPB Holdings and Critical Water Sources in North Spring Valley, Nevada" shows all private property and public land grazing allotments held by CPB, as well as critical water sources. This section discusses the overall land and water resources associated with these properties.

2.1 Cleveland Ranch

Located along State Route 893 on the west side of Spring Valley, the Cleveland Ranch is CPB's largest private property holding consisting of approximately 4,760 deeded acres. Water rights records indicate that irrigation began on the ranch around 1873, and crops since that time have consisted of everything from timothy and meadow grasses to alfalfa and grain crops to potatoes and orchard. The Cleveland Ranch currently produces a large amount of forage in the form of irrigated and sub-irrigated pasture. The ranch also serves as the base of operations for DVL in north Spring Valley. The ranch headquarters, shops, corrals, and employee housing are located on the Cleveland Ranch. There is a relatively small, 200 acre, parcel located at the southeast corner of the main Cleveland Ranch that will be referred to as the South Cleveland Unit. The South Cleveland Unit is included in the 4,760 acre Cleveland Ranch, but is unique in that it is the one portion of the ranch that does not show any record of having been irrigated in the past. There are several large springs located within the South Cleveland Unit.

2.1.1 Cleveland Ranch - Existing Land and Water Resources

The Cleveland Ranch is composed of a variety of upland, irrigated and sub-irrigated pastures, and wetlands totaling approximately 4,760 deeded acres. Map 1.2 "Cleveland Ranch Pastures, Infrastructure, and Water Delivery" shows the overall layout of the Cleveland Ranch along with the existing infrastructure. Elevations at the Cleveland Ranch range from 5650 feet along the western boundary of the ranch to 5565 feet at the northeast corner of the ranch. The upper elevations of the ranch along the western edge are currently sprinkler or flood irrigated. The lower elevations of the ranch located in the center, eastern, and northeastern portions of the ranch are sub-irrigated, and do not require irrigation improvements such as sprinklers or pivots. These areas are primarily sub-irrigated meadows and wetlands with stringers of flood irrigated area. The southern portion of the ranch is not typically irrigated during the summer, aside from limited flood irrigation and sub-irrigation by natural springs. However, water from Cleveland Creek is spread across this area during the winter months. The South Cleveland Unit is not currently irrigated and past records indicated that this area has not been irrigated in the past, aside from the channels leading from the springs and sub-irrigation from these sources that typically form wetlands. As such, the natural springs that occur in this unit are likely not to be influenced by irrigation as are the majority of the springs on the Cleveland Ranch.

Surface water on the ranch is supplied by several streams that flow onto the Ranch, as well as a multitude of naturally occurring springs within the deeded property. Creek flows originate in the Schell Creek Range to the west and generally flow easterly or north easterly across the Ranch. Water from the streams is used to irrigate the western portion of the ranch, and tail water from the upper pastures is collected and commingled to flood or sub-irrigate the eastern portion of the ranch.

Cleveland Creek is the primary source of irrigation water on the Cleveland Ranch. Water from Cleveland Creek is diverted at the Winter Ditch Diversion to the southern portion of the Ranch, the South Four-mile

Pasture in particular, during winter months. During the growing season, all of the Cleveland Creek water is directed to the Upper Cleveland Reservoir where it can be diverted to a multitude of areas. Cleveland Creek water is commingled in the Upper Cleveland Reservoir with water from Indian Creek, a much smaller perennial stream. Map 1.3, "Irrigation of the Cleveland Ranch by Cleveland and Indian Creek" located in Appendix 1, shows the current place of use and estimated acreage for each type of irrigation for the water from these two perennial streams.

The average annual yield of Cleveland Creek is 7,540 acre-feet as measured at the United States Geological Survey (USGS) Gauging Station in Section 34, T 16.N, R 66.E (see Section 4 for existing baseline information available for Cleveland Creek). Figure 2.1 shows the long-term average monthly yield of Cleveland Creek and compares it with the 2008 monthly yield.

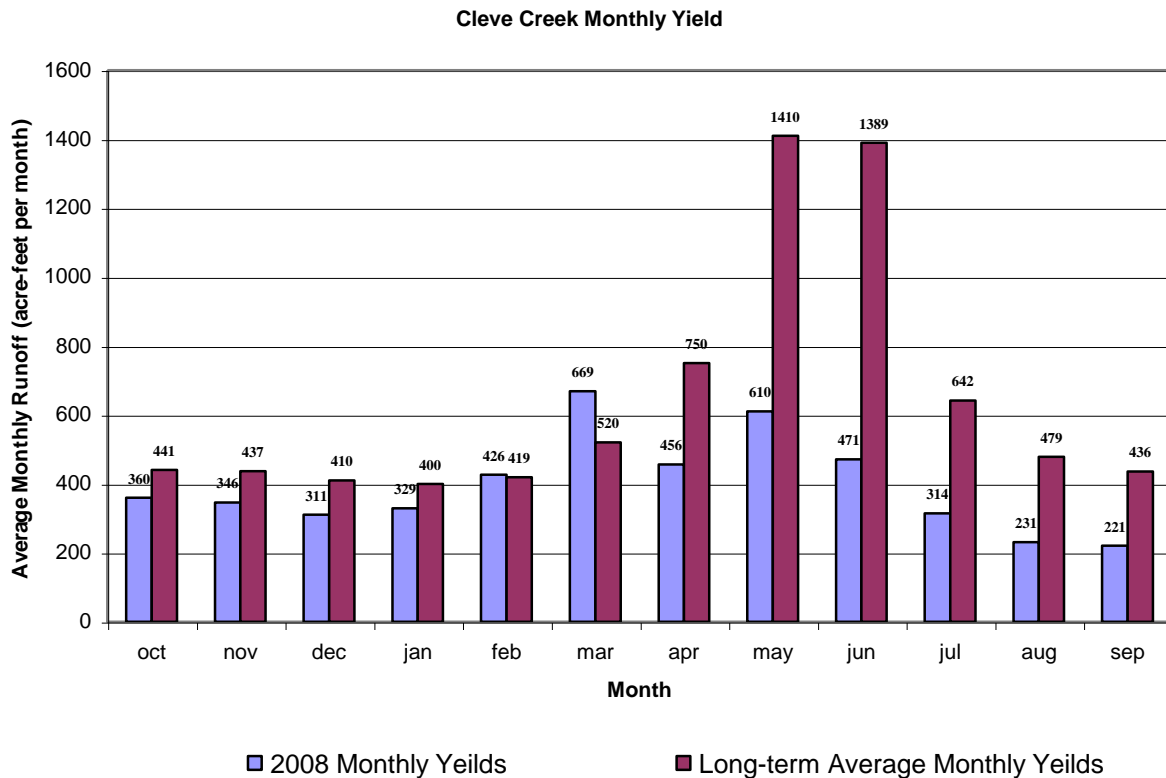


Figure 2.1: Average monthly yields from Cleveland Creek as measured at the USGS Gauging Station. Long-term average monthly yields are based on the 38 years of verified records collected by the USGS.

Figure 2.1 shows that water availability from Cleveland Creek is generally good in April, May, and June during the spring runoff period. However, the water yield in July, August, and September drop off sharply resulting in a major reduction in the number of acres that can be irrigated during the latter portion of the growing season. Figure 2.1 also shows that the 2008 yields were substantially below normal, resulting in a reduction in the number of acres that were irrigated during the 2008 growing season. Correspondence with ranch personnel have indicated that even in normal years the flows in August and September are not adequate to irrigate all critical pastures to the desired extent. It should be noted that yields from Indian Creek are not known, and the yield of Cleveland Creek at the Upper Cleveland Reservoir is much lower than the yields measured at the USGS Gauging Station due to infiltration between the two locations approximately three miles apart.

The Winter Ditch Diversion on Cleveland Creek is located approximately 1.6 miles downstream of the USGS Gauging Station. At this location water is diverted either into the Winter Ditch to the east or to the Upper Cleveland Reservoir 1.3 miles to the north. It is believed that the annual yield at the Winter Ditch Diversion is much lower than the yield at the USGS Gauging Station and the yield at the Upper Cleveland Reservoir is even less. Although formal measurements have not been taken to quantify the infiltration losses, accounts of past and present Ranch Managers indicate that when water is turned from the Winter Ditch Diversion towards the Upper Cleveland Reservoir in the early spring, it takes several days for the water to even reach the Reservoir. Infiltration of water from Cleveland Creek that occurs across the three miles of alluvial fan between the USGS Gauging Station and the Reservoir is believed to recharge many of the springs in the southern portion of the Cleveland Ranch, as they are directly down-gradient from this section of the creek.

Freehill Creek is a seasonal stream that flows onto the northern portion of the Cleveland Ranch. The yield of Freehill Creek has not been measured or estimated. Overland flows from Freehill Creek can be diverted via irrigation ditch and used for flood irrigation of the Buck and Doe pastures. However, these flows are typically minimal. Freehill Creek contributes more to sub-irrigation of pastures in this area and recharge of springs.

Flows from Stephens Creek are diverted into a pipe approximately three quarters of a mile west of the Cleveland Ranch for irrigation delivery. SNWA estimated the annual yield of Stephens Creek to be 720-773 acre-feet; however, this estimation was based on extremely limited flow data from Stephens Creek as a proportion to Cleveland Creek flows (SNWA 2003 and SNWA 2006). The piped water is delivered for sprinkler irrigation of the North and South Stephens pastures, which consist of 74 acres combined. Tailwater flows are collected in a series of irrigation ditches and used to irrigate many of the pastures in the northeastern corner of the Cleveland Ranch. This is the low point on the ranch and is a boggy area, to the point of being inaccessible by vehicle for a portion of the year. Map 1.4 "Irrigation of the Cleveland Ranch by Stephens Creek" shows the current irrigation area of this water.

There are a multitude of springs located throughout the Cleveland Ranch. These springs are likely recharged by annual runoff from the Schell Creek Range via Cleveland, Indian, Freehill, and Stephens Creeks. There is no yield, flow, or water chemistry data available for any of these springs to substantiate the connectivity between creeks from the Schell Creek Range. The USGS defined the general geological setting of the springs within the Cleveland Ranch as "Unconsolidated Sediments: Unconsolidated deposits, including basin-fill on valley floors and valley margins, alluvial fans, and high altitude deposits" (USGS 2006). This mapping and classification was conducted based on a mapping exercise, and field measurements were not taken on these springs. As such, it remains unclear whether these springs are strictly linked to the basin-fill aquifer or if there is some level of influence and connectivity with the carbonate aquifer.

A series of ditches have been developed over the years to capture water from these springs for distribution and irrigation across the ranch. For the most part, spring water commingled with tailwater from Cleveland, Indian, and Stephens Creeks is used to irrigate the central and eastern portions of the Cleveland Ranch. The southern portion of the Cleveland Ranch and the South Cleveland Unit are almost exclusively watered or sub-irrigated by spring water. While some of the springs in the southern portion of the Cleveland Ranch are influenced and recharged as a result of winter flood irrigation from Cleveland Creek, the springs in the South Cleveland Unit are likely to be the only springs on the ranch that are not influenced by irrigation manipulations. Map 1.5, "Irrigation of the Cleveland Ranch by Various Springs", shows the current place and type of use for these springs.

In the past a variety of different crops have been planted on the Cleveland Ranch. However, the present focus on production of livestock forage has resulted in the majority of the pastures being composed of naturally occurring meadow or wetland grasses, rushes, and sedges. The composition of each pasture varies as to the level of sub-irrigation that is occurring. Seeded species such as winter wheat, timothy, and clover persist in some pastures, particularly in sprinkled or flood-irrigated areas on the western portion of the ranch. Wet soil species and large areas of wetland inclusions persist on the flood and sub-irrigated pastures in the central and eastern portions of the ranch. The eastern portion of the ranch contains an intertwined series of wetlands that have been proliferated and maintained as a result of the active irrigation manipulations conducted by the ranch.

In order to maximize livestock forage on the Cleveland Ranch, a rotational grazing system is currently employed. At present none of the pastures are harvested for hay. Cattle are either turned out onto the grazing allotments for the winter months or feed is hauled to the Cleveland Ranch for winter-feeding. As such, production can be estimated by animal unit months (AUM); however, AUM records are limited.

Wetlands are among the most biologically productive and diverse natural ecosystems in the world (EPA 2001). Wetlands represent slightly more than one percent of the land area in Nevada but support the highest levels of species diversity of both flora and fauna (DCNR no date). CPB values the wetland habitats for their ecological benefits, for their high productivity, and for the potential economic diversification opportunities they provide. Many of the intrinsic values of the wetland habitats are portrayed by the presence of breeding pairs of greater sandhill crane (*Grus canadensis tabida*) that are summer residents on the Cleveland Ranch and were seen during wetland reconnaissance and mapping in July 2008. Armbruster (1987) found the permanence of water, the percent of the area in wetlands, the type of wetlands, and the size of a "disturbance-free" zone as the most important factors for identifying suitable sandhill crane habitat. Northern leopard frog (*Rana pipiens*) were also seen on the Cleveland Ranch during July 2008 which are considered by many scientists to be indicative of good ecosystem health (Wikipedia 2008).

RCI conducted an initial reconnaissance survey of wetland habitats on the Cleveland Ranch during July 2008. Wetland Determination Data Points were taken following the US Army Corps of Engineers (ACOE) Wetland Delineation Manual (1987) to identify wetland areas that would be jurisdictional under Section 404 of the Clean Water Act. Several natural springs, seeps, and spring brooks meet the ACOE jurisdictional criteria.

An important feature in the ACOE definition of wetlands is that they support a prevalence of vegetation typically adapted for life in saturated soil conditions, i.e. a shallow water table. The ACOE Wetland Delineation Manual (1987) and the recent Interim Regional Supplement for the Arid West (2006) uses hydrophytic vegetation as one of three parameters required for wetland delineation. The ACOE three-parameter approach requires that a site have hydrophytic vegetation, hydric soils, and wetland hydrology to be delineated as a wetland.

Irrigated agricultural lands and sub-irrigated meadows have greatly expanded wetland habitat acreage and diversity that otherwise would not exist. The variety of wetland/aquatic habitats on the ranch includes seeps, springs, spring brooks, ponds, stringer meadows, and shallow water marshes. The irrigated and sub-irrigated agricultural ranchland provides stable and reliable habitat values that are less affected by drought conditions than smaller aquatic systems. Irrigation practices expand and prolong soil saturation and shallow water ponding throughout the growing season.

Bio-West, Inc. conducted a study of nineteen aquatic systems in Spring Valley between 2004 and 2006 on behalf of SNWA. Eight of these study sites are in close proximity to the Cleveland Ranch. The aquatic systems included in the Bio-West study were spring complexes that are fed by alluvial groundwater, or shallow groundwater. The Bio-West study showed that there was a wide diversity of aquatic systems in Spring Valley in terms of water quality, vegetation associations, fish populations, amphibians, and micro invertebrates (Bio-West 2006). If the wetland habitats on the Cleveland Ranch were included, the range of diversity would be expanded even further.

CPB has reason to be concerned with the long-term viability of the wetlands and the sub-irrigated meadows on the Cleveland Ranch, given the uncertainty of potential impacts associated with the SNWA groundwater pumping and export project. The sub-irrigated meadows are maintained by both natural and augmented groundwater. The sub-irrigated pastures are topographically lower than the actively irrigated pastures and receive supplemental groundwater from irrigation. Active irrigation offsets some of the annual fluctuations of groundwater delivered to sub-irrigated pastures, which are dependent on groundwater during the growing season for forage production and wildlife habitat.

2.1.2 Cleveland Ranch - Land and Water Resources Discussion and Alternatives

Table 2.1 summarizes the estimated annual and seasonal yield of each water source that serves the Cleveland Ranch, as compared to documented water rights.

This table shows that the documented water rights for the Cleveland Ranch far exceed the average or estimated annual yield of the stream sources. There is not any data available on Indian and Freehill Creeks, but the yields are much lower than that of Cleveland Creek and likely do not come close to making up the difference between the water right duty-balance and the actual yield. The annual yield of the springs is also unknown and would be extremely difficult to estimate or measure.

Table 2.1: Documented Water Rights Volumes Versus Surface Water Resource Yields

Water Source	Existing Water Rights Duty Balance (acre-feet)			
	Summer	Winter	Annual	Total
Cleveland Creek ¹	10,847.70	2,406.48	12,000.00	25,254.18
Cleveland Creek ²	10,424.70	2,399.10	8,144.00	20,967.80
Indian Creek	Commingled with Cleveland Creek Rights			
Freehill Creek	Commingled with Cleveland Creek Rights			
Stephens Creek ¹	0.00	0.00	4,800.00	4,800.00
Stephens Creek ²	0.00	0.00	820.00	820.00
Spring Sources	0.00	0.00	9,600.00	9,600.00
Negro Creek – Rogers Ranch	640.00	544.86	1,149.20	2,334.06
Negro Creek – Homestead	266.52	0.00	0.00	266.52
Water Source	Estimated Yield of Surface Water Resources (acre-feet)			
	Summer	Winter	Annual	
Cleveland Creek ³	5,106	2,626	7,732	
Indian Creek	Unknown			
Freehill Creek	Unknown			
Stephens Creek ⁴	493	254	747	
Spring Sources	Unknown			
Negro Creek ⁵	1,345	691	2,036	

^{1/} Duty balance as shown by State Engineer's abstract.

^{2/} Duty balance as adjusted to reflect subsequent place of use mapping.

^{3/} Yield is the average from 38 years of verified records at the USGS Stream Gauge.

^{4/} Annual estimated yield is the average of two SNWA estimations (2003 and 2006).

Seasonal yield assumes the same seasonal percentage as Cleveland Creek.

^{5/} Annual estimated yield is the average of two SNWA estimations (2003 and 2006) taken at Negro Creek Homestead. Seasonal yield assumes the same seasonal percentage as Cleveland Creek.

Table 2.2 below summarizes the estimated acreage watered by each water source that serves the Cleveland Ranch, as compared to documented place of use mapping.

Table 2.2: Documented Versus Current Irrigated Acreage

Water Source	Documented Acres Irrigated per Water Rights Place of Use Mapping				
	Summer	Winter	Annual	Total	
Cleveland Creek	3,474.90 ¹	799.7 ²	2,036.00 ³	6,310.60 ⁹	
Indian Creek	Commingled with Cleveland Creek Rights				
Freehill Creek	Commingled with Cleveland Creek Rights				
Stephens Creek	0.00	0.00	205.00 ⁴	205.00	
Spring Sources	0.00	0.00	2,400.00 ⁵	2,500.00	
Negro Creek – Rogers Ranch	160.00 ⁶	151.20 ⁷	287.30 ⁸	598.50 ¹⁰	
Negro Creek – Homestead	66.63	0.00	0.00	66.63 ¹¹	
Water Source	Estimated Current Irrigation Acreage ¹²				
	Sprinkler Irrigated	Summer Flood	Winter Flood	Sub-Irrigated	Total
Cleveland Creek	355.00	220.00	592.00	2,338.00 ¹³	3,505.00
Indian Creek	Commingled with Cleveland Creek Rights				
Freehill Creek	Commingled with Cleveland Creek Rights				
Stephens Creek	73.00	0.00	0.00	1,020.00	1,093.00
Spring Sources	0.00	807.00	0.00	2,490.00	3,297.00
Negro Creek	0.00	160.00	0.00	0.00	160.00

^{1/} Per V0790 mapping provided in 1963 showing water from Cleveland Creek commingled with water from Indian, Freehill, Stephens Creek, and numerous springs.

^{2/} Per Permit 2852, Certificate 902 mapping provided in 1921.

^{3/} Per V01217 mapping provided in 1919 showing water from Cleveland Creek commingled with water from Indian, Freehill, Stephens Creek, and numerous springs.

^{4/} Per V01218 mapping provided in 1912 showing water from Stephens Creek commingled with water from numerous springs.

^{5/} Per V02817 - V02828 with no mapping on record. Per application, water from each spring is commingled with other spring sources to irrigate 2,500 acres + or -. POU mapping only shows 2,400 acres, which is shown by SE.

^{6/} Per Permit 3186, Certificate 567 mapping provided in 1921.

^{7/} Per Permit 8393, Certificate 3213 mapping provided in 1942.

^{8/} Per Permit 10487, Certificate 5042 mapping provided in 1960.

^{9/} V0790, V01217 and V02817 through V02828 have significant overlap in place of use.

^{10/} Permit 10487 (annual use) completely overlaps the place of use for Permit 8393 (winter use). Permit 3186 (summer use) is not overlapped by either of the other two permits.

^{11/} Per State Engineer's Abstract and notes on original application.

^{12/} Estimated by RCI and DVL based on current irrigation regimes, aerial mapping, and topography.

^{13/} This includes the entire South Four-mile Pasture, including South Cleveland Unit and approximately 280 acres outside of deeded property on Rogers Ranch Allotment

It should be noted that the irrigated acres listed in Table 2.2 are maximum acres that could be irrigated on above average or exceptional water years. Water yields in most years may not be sufficient to irrigate all of the areas listed. As such, in average or below average water years only the areas with the highest productivity are intensely watered. These areas tend to be those equipped for sprinkler or flood irrigation. Sub-irrigated areas are those that are irrigated either directly by tail water and natural seeps and springs or those areas that are irrigated as a result of high water tables created by direct irrigation or naturally occurring springs and seeps.

Table 2.2 shows that the place of use mapping for Cleveland Creek is substantially more than what is currently being irrigated. However, this is somewhat misleading in that nearly the entire place of use mapping for the summer irrigation water right overlap that of the annual water right. The actual amount of irrigated acreage from water from Cleveland Creek is very similar to that of the summer seasonal claim of vested right. The majority of this irrigation occurs on the eastern portion of the ranch after Cleveland Creek water has commingled with water from the various springs and other sources.

The irrigation regime currently employed at the Cleveland Ranch fully utilizes the available flows from Cleveland and Indian Creeks. Ranch Managers have indicated a necessity for additional water in August and September during below average water years to irrigate pastures presently irrigated by water from Indian and Cleveland Creeks. CPB has moved forward with development of a well near the Upper pivots to serve as a supplemental source of irrigation water.

The water rights filings by SNWA raise some serious concerns in terms of potential impacts to critical water resources at the Cleveland Ranch. The primary concern centers on applications for groundwater pumping on the alluvial fan near Cleveland Creek immediately west of the Ranch. In Ruling #5726, the State Engineer denied previous applications "...on the grounds that approval will conflict with existing rights and would threaten to prove detrimental to public interest." CPB remains concerned that pumping from proposed points of diversion could result in adverse impacts to water and land resources at the Cleveland Ranch.

2.2 Rogers Ranch

Located in the central part of Spring Valley, approximately 1.5 miles east of the northern edge of the Cleveland Ranch, the Rogers Ranch is CPB's second largest private property holding consisting of approximately 1,480 acres. The Rogers Ranch produces less forage due to limited water availability. There are currently limited facilities on the Rogers Ranch consisting of a small cabin and several corrals. At present, the Rogers Ranch is utilized for cattle grazing in conjunction with the Negro Creek Allotment.

2.2.1 Rogers Ranch - Existing Land and Water Resources

The Rogers Ranch is composed of several flood irrigated fields and open range. Approximately 160 acres of pasture are flood irrigated with water from Negro Creek. Most of the perimeter of the Rogers Ranch is not fenced, and both the cultivated and range areas are grazed in conjunction with the Negro Creek Allotment. The central portion of the deeded property is currently irrigated and grazed. None of the fields are harvested for hay or other crops. The southwestern portion of the ranch was treated with a Lawson Aerator and seeded several years ago in an attempt to establish more native grasses and forage on the unit. The seeding had limited success due to a dry spring season following the planting, and insufficient flows from Negro Creek to irrigate. The remaining portions of the deeded property are not currently in production as water deliveries from Negro Creek are not sufficient to maintain consistent production. The northern and eastern portions are more or less open range, but there are more springs in this area that provide some degree of sub-irrigation. There are several spring sources scattered around the ranch, primarily in the northern portion. These springs are currently used for stockwater, but not for irrigation.

The Rogers Ranch is relatively water poor. Presently, the primary source of irrigation water is Negro Creek. It is important to note that Negro Creek flows approximately 3 miles across an extremely porous alluvial fan between the Negro Creek Homestead and the Rogers Ranch. Figure 2.2 shows the average monthly yield for Negro Creek during the summer of 2008 at the east side of the Negro Creek Homestead as compared to the amount of flow at the point of diversion entering the Rogers Ranch.

2008 Negro Creek Estimated Monthly Yield (acre-feet per month)

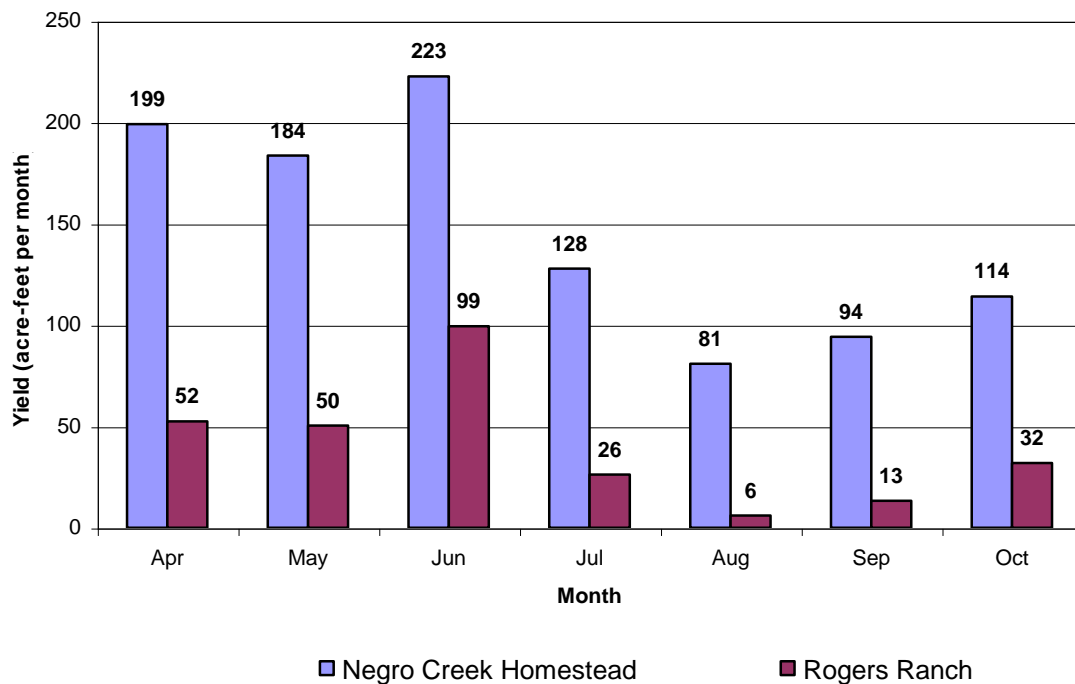


Figure 2.2: Estimated monthly yield in acre-feet per month of Negro Creek at the Negro Creek Homestead and Rogers Ranch based on measurements taken between April and October 2008.

The data shown in Figure 2.2 was estimated based on weekly measurements taken during the spring and summer of 2008. Depth measurements were taken at two existing culverts where flows could be estimated using the Manning's equation based on culvert diameter, Manning's Coefficient, and slope. The monitoring shows a significant loss of flow between the two monitoring points. The water being delivered to the Rogers Ranch is substantially less than the yield at the Negro Creek Homestead, resulting in a limited amount of irrigated acreage on the ranch.

2.2.2 Rogers Ranch - Land and Water Resources Discussion and Alternatives

SNWA estimated the annual yield of Negro Creek near the Negro Creek Homestead to be 1,872-2,200 acre-feet based on limited miscellaneous flow measurements. Based on this estimate, CPB holds water rights (2,600.58 acre-feet combined for Rogers Ranch and Negro Creek Homestead) for more water than Negro Creek yields (Table 2.1). However, DVL currently irrigates substantially less acreage (~160 acres) on the Rogers Ranch as is shown in place of use mapping (447.3 acres excluding 151.20 acres of winter use that overlaps with existing year-round place of use) for Negro Creek water rights (Table 2.2). The reason for this is that the water needed for irrigation is not being delivered to the Rogers Ranch as a result

of infiltration as Negro Creek crosses a long alluvial fan between the Negro Creek Homestead and the Rogers Ranch.

At the present time, the Rogers Ranch has open land available for development and increased production with the limiting factor being the amount of water actually delivered to the ranch. CPB has been working cooperatively with the Bureau of Land Management to develop a right-of-way that would allow for the installation of a pipeline that would convey water from their deeded property at the Negro Creek Homestead to their deeded property at the Rogers Ranch. At the same time, CPB has submitted applications to change the place of use, point of diversion and manner of use for irrigation rights on the Rogers Ranch and Negro Creek Homestead. This project is intended to improve both water delivery and irrigation efficiency to more completely utilize the water rights held by CPB.

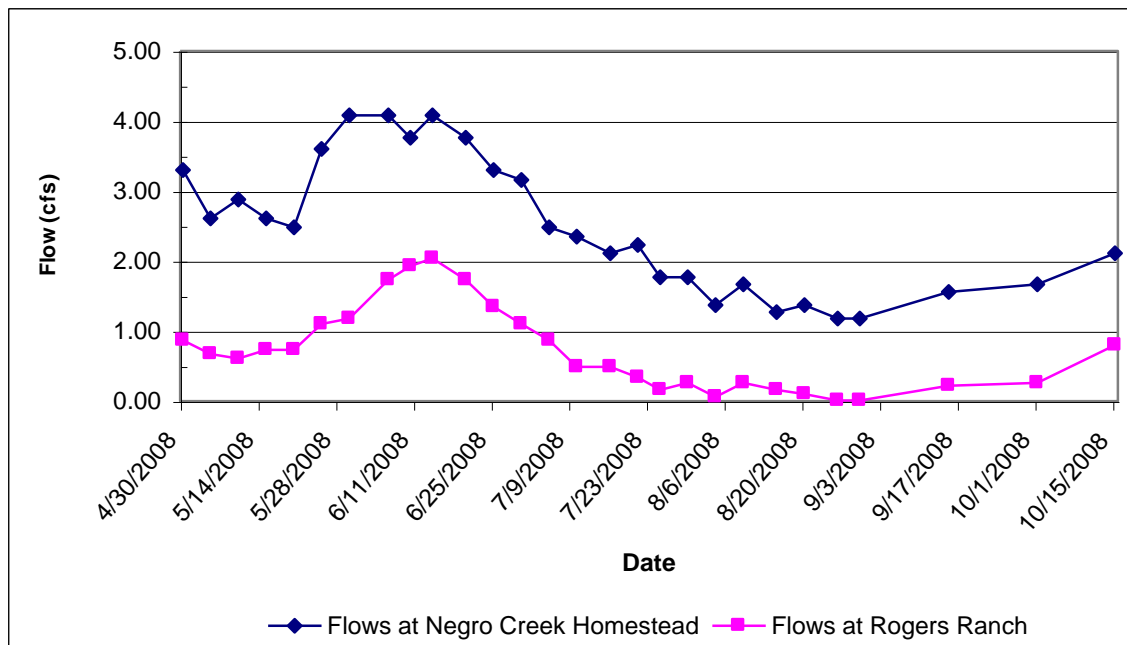


Figure 2.3: Estimated flows in cubic feet per second of Negro Creek at the Negro Creek Homestead and Rogers Ranch based on measurements taken between April and October 2008.

2.3 Other Private Parcels

CPB owns three other private holdings in north Spring Valley. All three are substantially smaller than the Cleveland and Rogers Ranches. All three are relatively isolated from the core of the DVL operations at the Cleveland and Rogers Ranches.

2.3.1 North Cleveland Unit - Existing Land and Water Resources

The North Cleveland Unit is located approximately two miles north of the northern boundary of the main Cleveland Ranch. The North Cleveland Unit is composed of 160 acres, and is almost entirely surrounded by other private holdings. The unit does not border any of the public land grazing allotments held by CPB. The parcel consists primarily of brush and perennial bunch grasses. Several years ago the area was treated with a Lawson Aerator and seeded with bunch grasses in hopes of increasing the overall feed production on the unit. Due to a dry spring following the seeding, production has not increased as hoped. The only water located on the unit is a small natural spring that is used to water cattle when they are grazing on the unit. However, according to ranch personnel the spring production only allows for grazing of up to 80 head of cattle at any one time. As such, this unit is typically only grazed for short periods of time by small groups of cattle.

2.3.2 Four Mile Springs Unit - Existing Land and Water Resources

The Four Mile Springs Unit is located approximately 3.5 miles east of the Rogers Ranch at the western toe of the Snake Mountain Ranch. CPB owns 80 acres that is surrounded on all sides by public lands within the Negro Creek Allotment, for which CPB holds a grazing permit. A series of springheads is located at the upper east side of the property. A small stream of water runs from the spring sources to the west. At one time, a small earthen dam was built in order to irrigate small alfalfa fields. CPB currently owns certificated irrigation water rights for these spring sources. The upper eastern portion of the property consists of a meadow complex, while the lower western portion of the property consists of tall brush and a narrow riparian ribbon. Currently the Four Mile Spring Unit is used for cattle grazing as part of the greater Negro Creek Allotment.

2.3.3 Negro Creek Homestead - Existing Land and Water Resources

The Negro Creek Homestead is located approximately five miles east of the Cleveland Ranch and 3 miles southeast of the Rogers Ranch at the mouth of Dry Canyon on the eastern toe of the Snake Mountain Range. CPB owns 400 acres that is surrounded on all sides by public lands within the Negro Creek Allotment for which CPB holds a grazing permit. The property includes several buildings and cabins that were part of the original settlement. The homestead is located along Negro Creek adjacent to a large spring source and sits within a large stand of trees. At one time the area had a small orchard, irrigated meadows, and also produced other crops such as alfalfa and potatoes.

Negro Creek flows through the middle of the property for its entire length, and CPB holds a claim of vested right for the irrigation of up to 66.63 acres for various crops from April 1 to November 1. Presently, irrigation at the Homestead is isolated to those alluvial fan areas along Negro Creek as irrigation infrastructure is dated and the water in Negro Creek has been prioritized for the Rogers Ranch downstream. CPB has a pending application to change a portion of the place of use from the Negro Creek Homestead to the Rogers Ranch in an effort to increase overall ranch operations.

2.4 Federal Public Lands Grazing Allotments

CPB holds grazing permits on three BLM grazing allotments in north Spring Valley. The Negro Creek Allotment consists of 13,527 acres located along the eastern side of north Spring Valley at the toe of the Snake Mountain Range. The allotment completely surrounds the Negro Creek Homestead and the North Four Mile Unit as well as most of the Rogers Ranch. The Cleveland Ranch Allotment consists of 13,216 acres located on the western side of north Spring Valley, primarily west and south of the Cleveland Ranch. There is a portion of the allotment located adjacent to the Cleveland Ranch that is operated as part of the ranch itself. The Bastian Creek Allotment consists of 13,445 acres located in the center of north Spring Valley and is bound by the Negro Creek Allotment on the north and U.S. Highway 50 on the south. An environmental assessment (NV-040-06-014) for these three allotments was issued in May of

2008 for these three allotments. Subsequently a Finding of No Significant Impact was signed on August 25, 2008 and a proposed decision issued on September 15, 2008. The documents show that the standards for upland and riparian / wetland areas have been met, while the habitat standards have not been met due to circumstances outside of the control of CPB. Table 2.3 below shows the conditions of proposed permit #2700015, which would be in effect from 2008 through 2018.

Table 2.3: CPB Held Grazing Permit Information

Allotment Name and Number	Livestock Number and Type	Grazing Period	AUMs
Bastian Creek #10121	148 Cattle	03/01 to 02/28	1,778
Negro Creek #00120	317 Cattle	03/01 to 02/28	3,727
Cleveland Ranch #10119	85 Cattle	03/01 to 02/28	1,021

The three allotments shall be managed as a deferred rest rotation grazing system with each allotment being deferred from livestock grazing one of every three years during the critical spring growing season. Utilization for each allotment is set at 50% for key native species including Indian ricegrass, Squirreltail, Needleandthread and Shadscale. It should also be noted that there are no suspended AUMs on any of the allotments.

All three allotments have water in some areas, and a lack of water in others. The Negro Creek Allotment is likely the best watered of the three allotments; however, ranch managers have indicated a desire for a new water source in the southeastern portion of the allotment. Furthermore, Unknown Spring #4 is located on a private parcel now owned by the SNWA. This spring provides a substantial amount of feed and water in the southwestern portion of the allotment. The Fera Well, which provides groundwater in the central portion of the allotment has been in place since 1934. The Cleveland Ranch Allotment is relatively well watered with the exception of the upper bench on the western portion of the allotment. The Cleveland Well provides water in this area. The Bastian Creek Allotment is the most limited allotment in terms of water availability. There is no water available in the northeastern portion of the allotment, and water in the southern portion of the allotment is limited to Layton Spring, which stopped flowing in July of 2008.

All three allotments may be subject to serious land disturbing activities within the next ten years. Approved SNWA groundwater wells are located in the southern portion of the Negro Creek Allotment and the northern portion of the Bastian Creek Allotment. The development of production wells and associated infrastructure is likely to have an impact on both allotments. CPB and DVL are cognizant of the environmental impact statements that are being prepared for these activities and will take an active role in reviewing and providing comment on these documents. The Spring Valley Wind Project is under construction within the Bastian Creek Allotment. CPB and DVL have been actively engaged in project planning and development in an effort to minimize impacts to the grazing allotment and overall ranching operations.

In addition to land disturbing activities, SNWA water exportation could affect critical water sources within these allotments.

SECTION 3.0 – EXISTING BASELINE DATA

3.1 Surface Water

3.1.1 Streams

Cleveland Creek is the only gauged stream in north Spring Valley. Stream flow information is available on the web at <http://waterdata.usgs.gov/nv/nwis>. General information about the Cleveland Creek gauging station is summarized below and in Table 3-1.

USGS Gauge 10243700 Cleveland Creek Near Ely, NV:

- Location: Central Nevada Desert Basins Spring - Steptoe Valleys Sub-basin
Lat 39°12'59.68", long 114°31'46.7" referenced to North American Datum of 1983, in SE ¼ SE ¼ sec. 27, T.16 N., R.66 E., White Pine County, NV, Hydrologic Unit 16060008, on right bank, 2.3 miles downstream from North Fork, 4 miles southwest of Cleveland Ranch headquarters, and 18 miles east of Ely.
- Drainage Area: 31.8 square miles.
- Period of Record: 37 total years of data used for annual statistics:
 - > Jun 1914 to Dec 1916 (published as Cleveland Creek near Osceola)
 - > Oct 1959 to Sep 1967
 - > Crest-stage partial-record station Oct 1967 to Sep 1976 (not used in statistical analyses)
 - > Oct 1976 to Sep 1981
 - > Dec 1982 to Sep 1987
 - > Mar 1990 to current year
- Gauge and Site Information: Water-stage recorder datum has moved over the years, but this has been corrected in the USGS data. According to the USGS website, records are considered fair, except for estimated daily discharges, which are poor¹. There are no diversions above this station. Cleveland Ranch below the station diverts nearly the entire flow for irrigation.

¹ "Excellent" indicates that about 95 percent of the daily discharges are within 5 percent of the true value; "good" within 10 percent; and "fair," within 15 percent. "Poor" indicates that daily discharges have less than "fair" accuracy.

Table 3-1: Cleveland Creek Discharge Summary Statistics from USGS Stream Gauge No. 10243700

	Water Year 2007¹	Water Years² 1914 – 2007
Annual total ³	3,013.8 cfs	na
Annual mean ⁴	8.26 cfs	10.4 cfs
Highest annual mean	na	22.2 cfs 1984
Lowest annual mean	na	5.15 cfs 1960
Highest daily mean	17 cfs May 4	280 cfs May 30, 1983
Lowest daily mean	4.6 cfs Aug 31	2.7 cfs Dec 22, 1990
Annual seven-day minimum ⁵	5.3 cfs Sep 24	3.4 cfs Dec 18, 1990
Maximum peak flow	19 cfs May 16	440 cfs May 30, 1983
Maximum peak stage	1.44 feet May 16	2.75 feet May 24, 2005
Annual runoff ⁶	5,980 acre-feet	7,540 acre-feet

^{1/} A water year is from Oct. 1 to Sept. 30

^{2/} This 93-year time frame includes only 37 total water years of complete data.

^{3/} Annual total: The sum of the daily mean values of discharge for the year.

^{4/} Annual mean: The arithmetic mean for the individual daily mean discharges for the year noted or for the designated period. Based on 37 years of data.

^{5/} Annual 7-day minimum. The lowest mean discharge for 7 consecutive days for a calendar year or a water year. Note that most low-flow frequency analyses of annual 7-day minimum flows use a climatic year (April 1-March 31). The date shown in the summary statistics table is the initial date of the 7-day period. This value should not be confused with the 7-day, 10-year low-flow statistic.

^{6/} Annual runoff indicates the total quantity of water in runoff for the drainage area for the year. An acre-foot (AC-FT) is the quantity of water required to cover 1 acre to a depth of 1 foot and is equivalent to 43,560 cubic feet or about 326,000 gallons or 1,233 cubic meters. Based on 37 years of data.

Other streams of interest to DVL have very limited baseline information. RCI could not locate any records for Indian or Freehill Creek. SNWA provided two reports to the State Engineers office for the Spring Valley Water Rights Hearing. One report was published in 2003 and the second in 2006. Both reports included annual yield estimates for Stephens and Negro Creeks. The estimates are based on very limited field flow measurements from each creek that were then correlated back to flows from Cleveland Creek. These estimates should be considered as preliminary based on the limited flow data collected. The 2003 report estimated the annual yield of Stephens Creek to be 720 acre-feet annually, while the 2006 report estimated the annual yield of Stephens Creek to be 773 acre-feet annually. Both reports estimated the yield from Negro Creek near the Negro Creek Homestead. The 2003 report estimated the annual yield of Negro Creek to be 2,200 acre-feet annually, while the 2006 report estimated the annual yield of Negro Creek to be 1,872 acre-feet annually.

3.1.2 Springs

In 2007, nine springs in north Spring Valley were proposed by SNWA to be monitored using piezometers with data logger and pressure transducer instrumentation. Field visits to these springs revealed that some of the piezometers and data loggers have been installed. In fact, some of the springs not identified for monitoring in the initial monitoring report were also equipped with piezometers and data loggers. Piezometric elevation data for spring heads was requested from SNWA but was not provided (SNWA, 2007).

3.2 Groundwater and Water Chemistry

There are two primary aquifers in north Spring Valley: 1) a basin-fill aquifer, which is composed of gravel, sand, silt, and clay and 2) a carbonate-rock aquifer, which underlies the basin-fill aquifer. Both types of aquifers underlie the Cleveland and Rogers Ranches as well as the three grazing allotments permitted to DVL.

The USGS has identified eleven wells completed within the basin-fill aquifer in north Spring Valley. There are no known wells in north Spring Valley completed within the deeper carbonate aquifer. It is important to note, however, that four wells, although not actually completed within the carbonate aquifer, were considered to be representative of regional groundwater flow by the USGS investigators (USGS, 2007a).

The USGS evaluated the groundwater quality, recharge areas, residence time, flow paths, water ages, travel times, and velocities for the entire 13,500 square mile Basin and Range Carbonate-Rock Aquifer System (BARCAS) (USGS 2007b). Several wells were analyzed within north Spring Valley, although none were in the vicinity of the Cleveland and Rogers Ranches. A summary of pertinent conclusions is presented below.

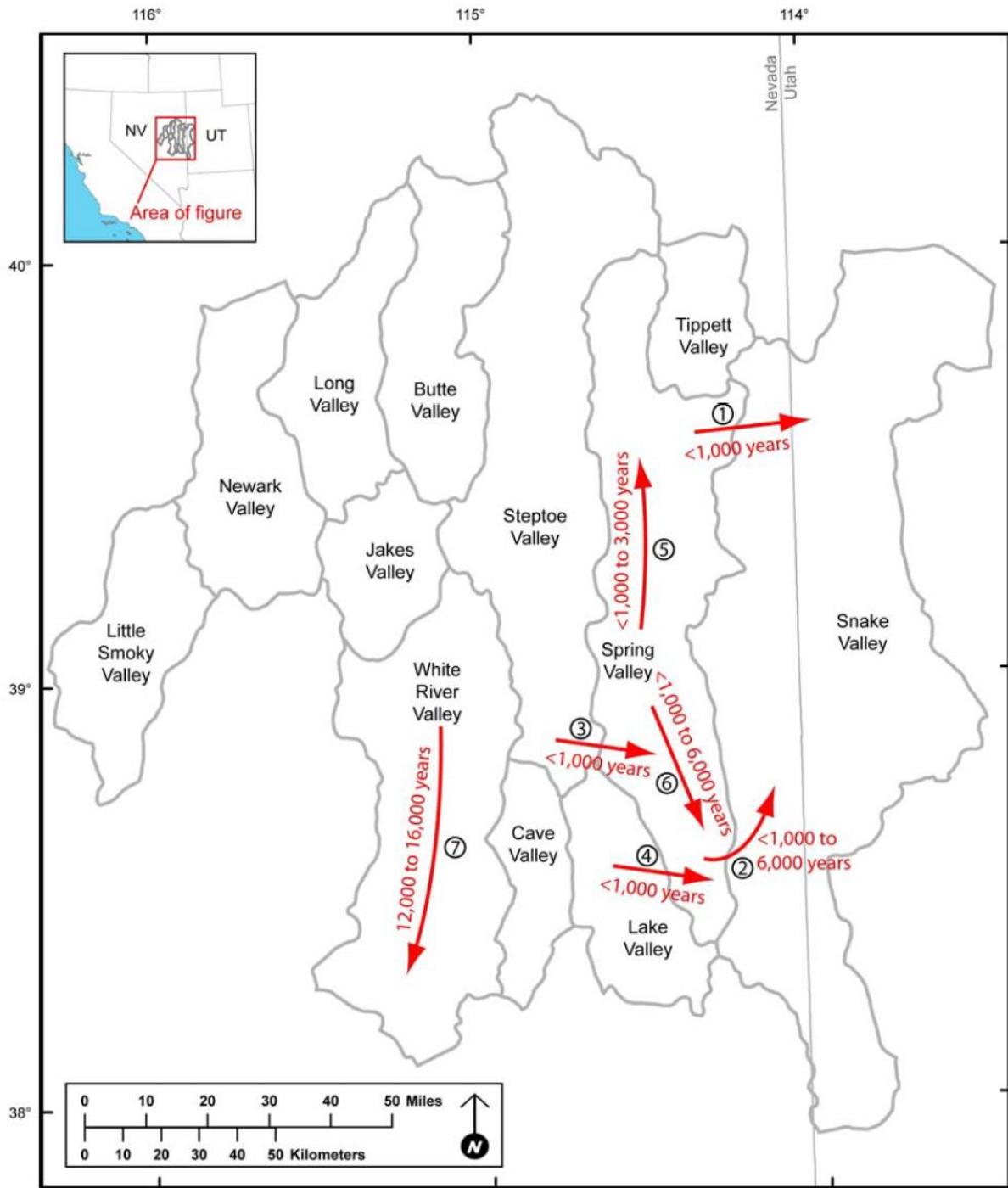
- The dominant water-bearing units in the area are the carbonate-rock aquifer (upper and lower carbonate rock units shown as blue and pink in Figure 3-1) and the basin-fill aquifer (coarse-grained younger sedimentary rock unit shown as yellow in Figure 3-1). The volcanic rocks and the siliciclastic rocks (shown as brown and gray in Figure 3-1) have lower hydraulic conductivities and lower porosities (USGS 2007b and 2007c).
- Regional groundwater flow within Spring Valley is more complex than the simple point-to-point flow paths tested by the USGS (2007b). Very little to no mountain recharge appears to be from the lower siliciclastic rock units which dominate the mountains to the west of Cleveland Ranch.
- There is an intrabasin bedrock high between north and south Spring Valley. Flow is possible between these two sub-basins. However, the USGS models indicate that from the bedrock high, the regional groundwater flow within north Spring Valley is to the north at a rate of 100 to 200 feet per year. Regional groundwater flow within south Spring Valley is to the south at a rate of 20 to 100 feet per year (see Figure 3-2, USGS 2007b). A plot of the depth to groundwater using the USGS wells in Figure 3-3 indicates a groundwater gradient through northern Spring Valley of 0.003 ft/ft.
- The groundwater in the flowpath from central Spring Valley to north Spring Valley is recharged from 0 to 100 percent by valley groundwater and 40 to 60 percent by surrounding recharge (USGS 2007b).
- The USGS reports that the groundwater and spring water quality in north Spring Valley is of good quality compared to federal and state drinking water standards and is suitable for human consumption.
- The detailed and comprehensive water chemistry included temperature, pH, electrical conductivity, dissolved oxygen, alkalinity, eleven major ions (Ca, Mg, Na, K, Cl, SO₄, HCO₃, SiO₂, F, Br, NO₃), 37 trace ions, oxygen and hydrogen isotopes, as well as dissolved organic and inorganic carbon. The majority of the information was used to determine groundwater flow-paths, ages, travel times, and velocities. Figure 3-4 illustrates the groundwater chemistry sampling locations in Spring Valley.

INSERT FIGURE 3-1

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Figure 3-1: Hydrogeologic Map of North Spring Valley Area.

Figure 3-2: Groundwater Flow Directions and Rates



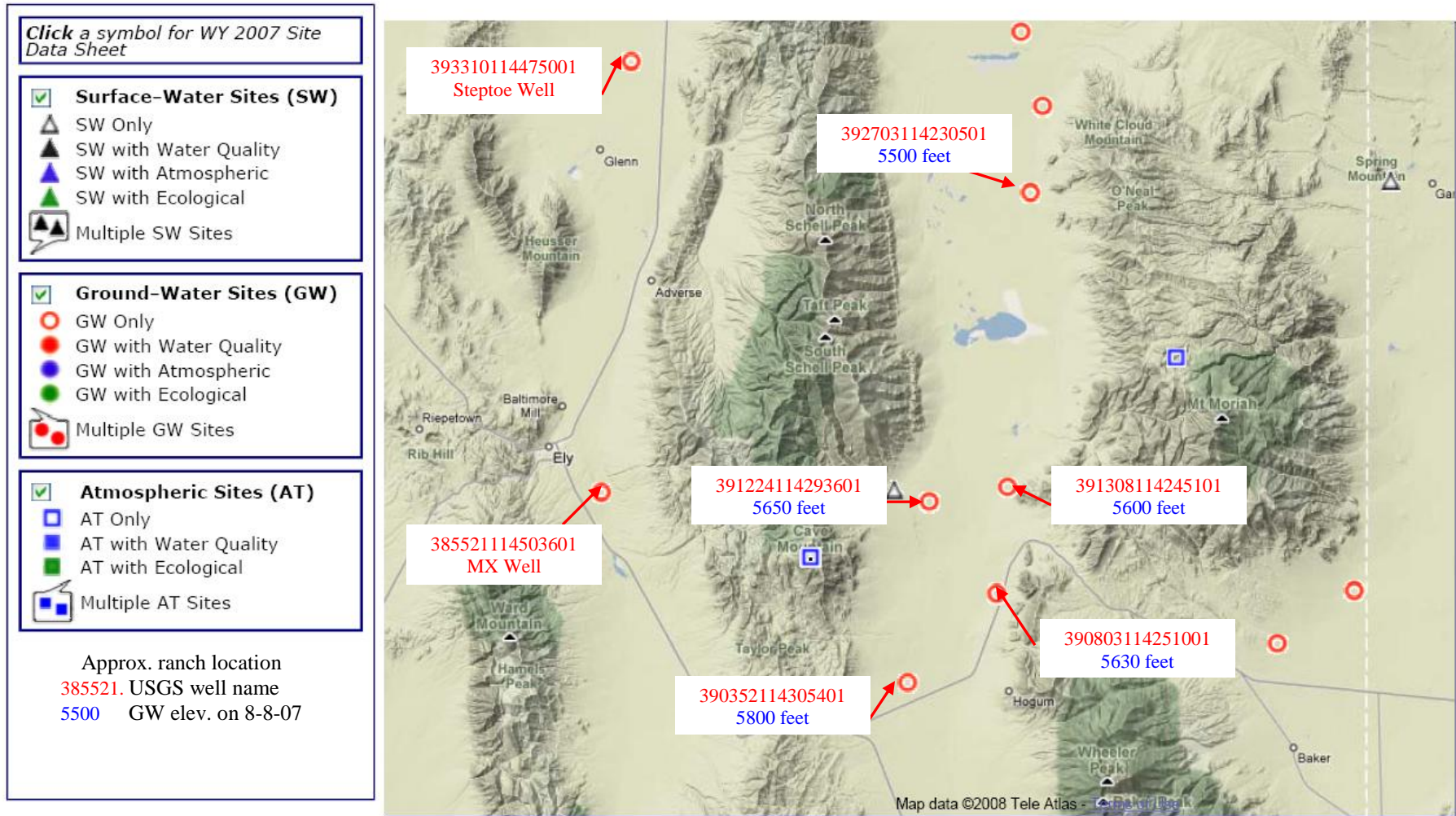
Legend

① Flowpath number

Flowpath and dissolved inorganic carbon ¹⁴C ground-water travel time

After Figure 34 in USGS 2007b

Figure 3-3: USGS Wells in the Vicinity of North Spring Valley



Source: <http://wdr.water.usgs.gov/adrgmap/index.html> Accessed 8-26-08

*Open circles represent groundwater sampling locations and
closed circles represent spring sampling locations.*

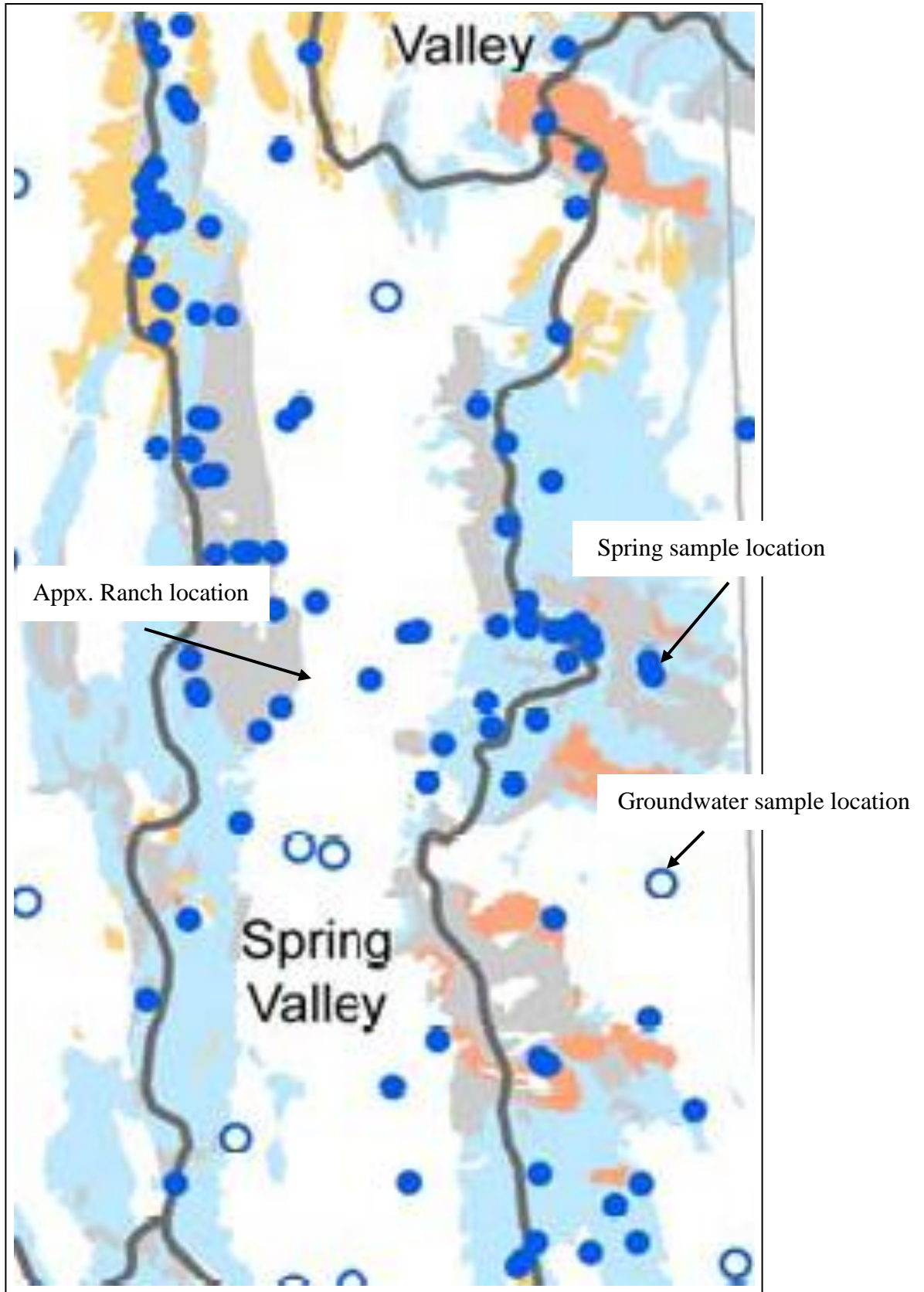


Figure 3-4: Springs and wells sampled in Northern Spring Valley by the USGS

There are several existing wells in the north Spring Valley watershed that have been monitored one or two times per year since 2006. Figure 3-3 illustrates the locations of several wells monitored by the USGS in the area. The data obtained from the monitoring of two wells in the adjacent Steptoe Valley (by the USGS) shows that basin-fill aquifer groundwater elevations fluctuate seasonally from year to year. Figures 3-5, 3-6, and 3-7 illustrate these seasonal fluctuations and annual groundwater elevation fluctuations. The groundwater fluctuations in north Spring Valley could be similar to those in Steptoe Valley, but at this point there is insufficient monitoring in place to show the correlation.

In addition to the wells described by the USGS, the Cleveland Well, within the Cleveland Ranch Allotment, is identified by SNWA for quarterly monitoring.

3.3 Climate and Weather

There are several precipitation gauges located in the vicinity of the north Spring Valley. Table 3-2 summarizes the gauges closest to the Ranch. These gauges are maintained by the following entities:

- Natural Resources Conservation Service (NRCS) and the National Weather and Climatic Center (NWCC). These stations are called SNOTEL sites. Detailed data is available at <http://www3.wcc.nrcs.usda.gov/nwcc/sntlsites.jsp?state=NV>. These sites contain the following information:
 - > Cumulative Precipitation
 - > Snow Depth
 - > Snow Water Equivalent (SWE)
 - > Maximum, minimum, and average daily air temperature
- USGS gauges. Several sites are located on their water mapping web page at <http://wdr.water.usgs.gov/adrgmap/index.html> Bulk precipitation is available but not accessible via the internet.
- National Climatic Data Center (NCDC) and the National Weather Service (NWS) Cooperative Network. Detailed data is available at: <http://www.wrcc.dri.edu/summary/Climsmnv.html>

Table 3-2: Precipitation Stations Closest to Delamar Ranch in North Spring Valley

Station Name	Distance from Delamar Ranch	Start Dates	Data Quality	Operator
Berry Creek	13 km to the northwest	1981	Good	NRCS
Ward Mountain	42 km to the southwest	1981	Good	NRCS
Cave Mountain	15 km to the southwest	1983	Unknown at this time	USGS
Unnamed Peak Northwest of Mt. Moriah	22 km to the northeast	1983	Unknown at this time	USGS
Ely COOP	35 km to the west	1893 to 1912 1939 to present	1893 to 1912 - Poor, many missing dates 1938 to present - Good	NCDC

Figure 3-5. Steptoe Well # 393310114475001 Depth to Groundwater

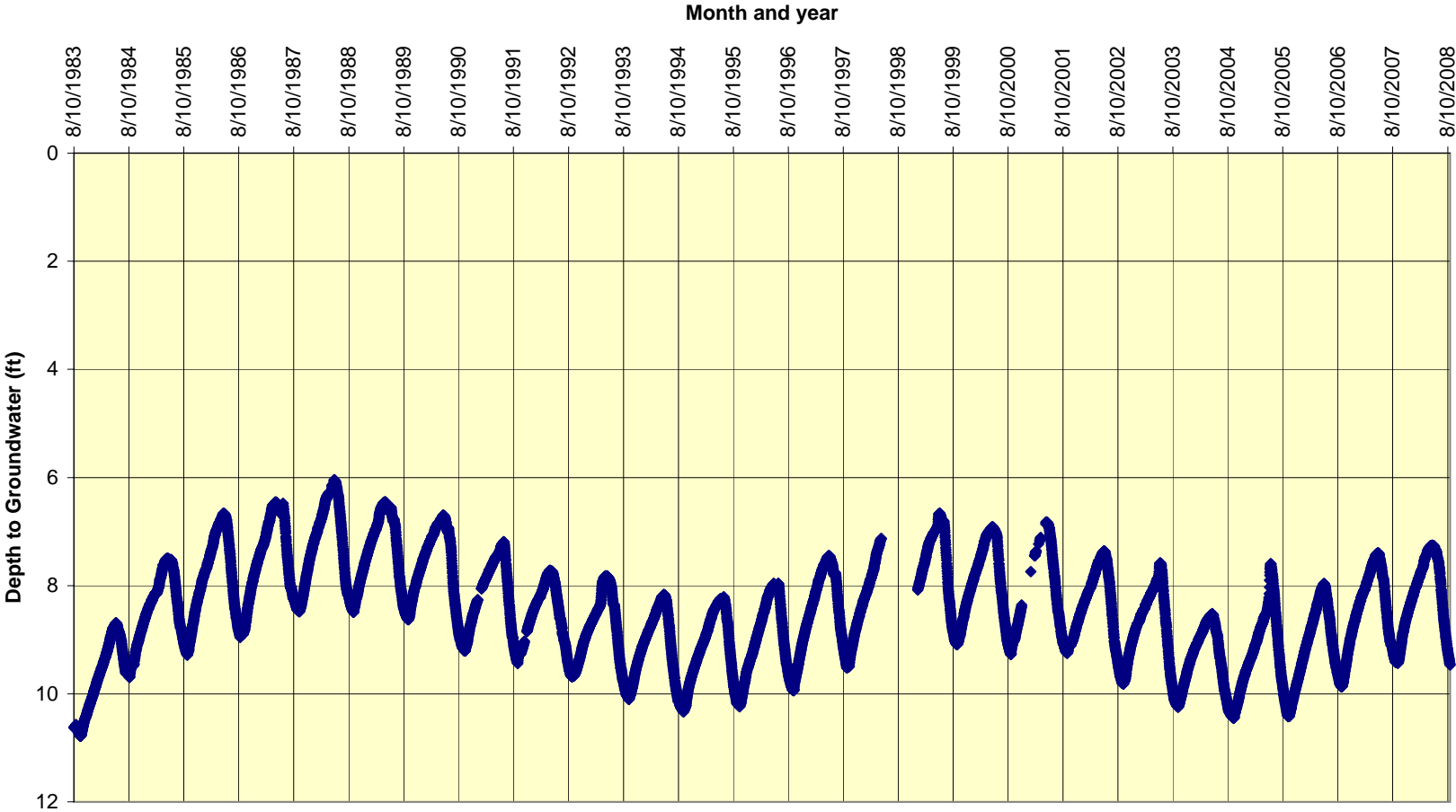


Figure 3-6. MX Well #38552114503601 Depth to Groundwater

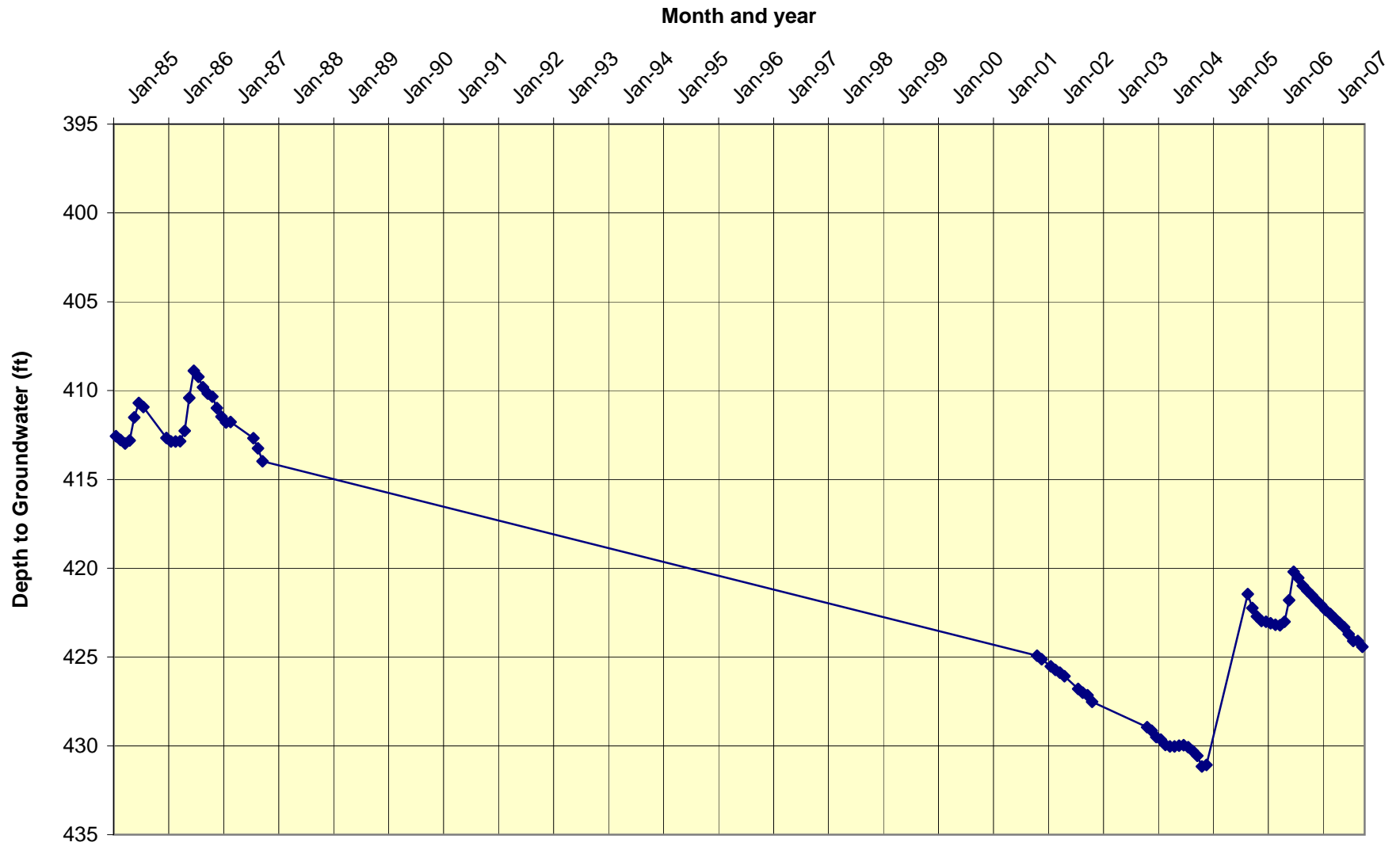
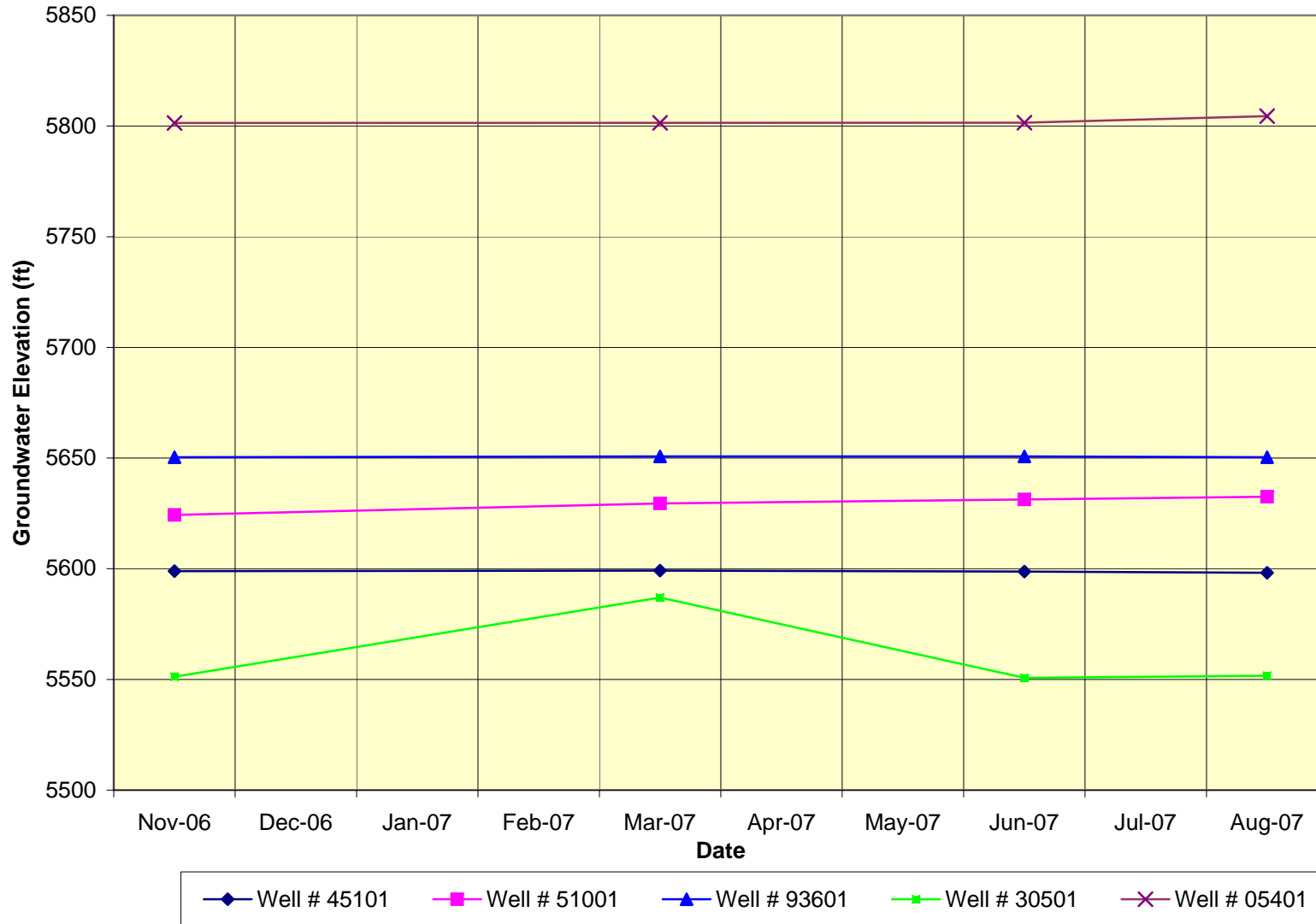


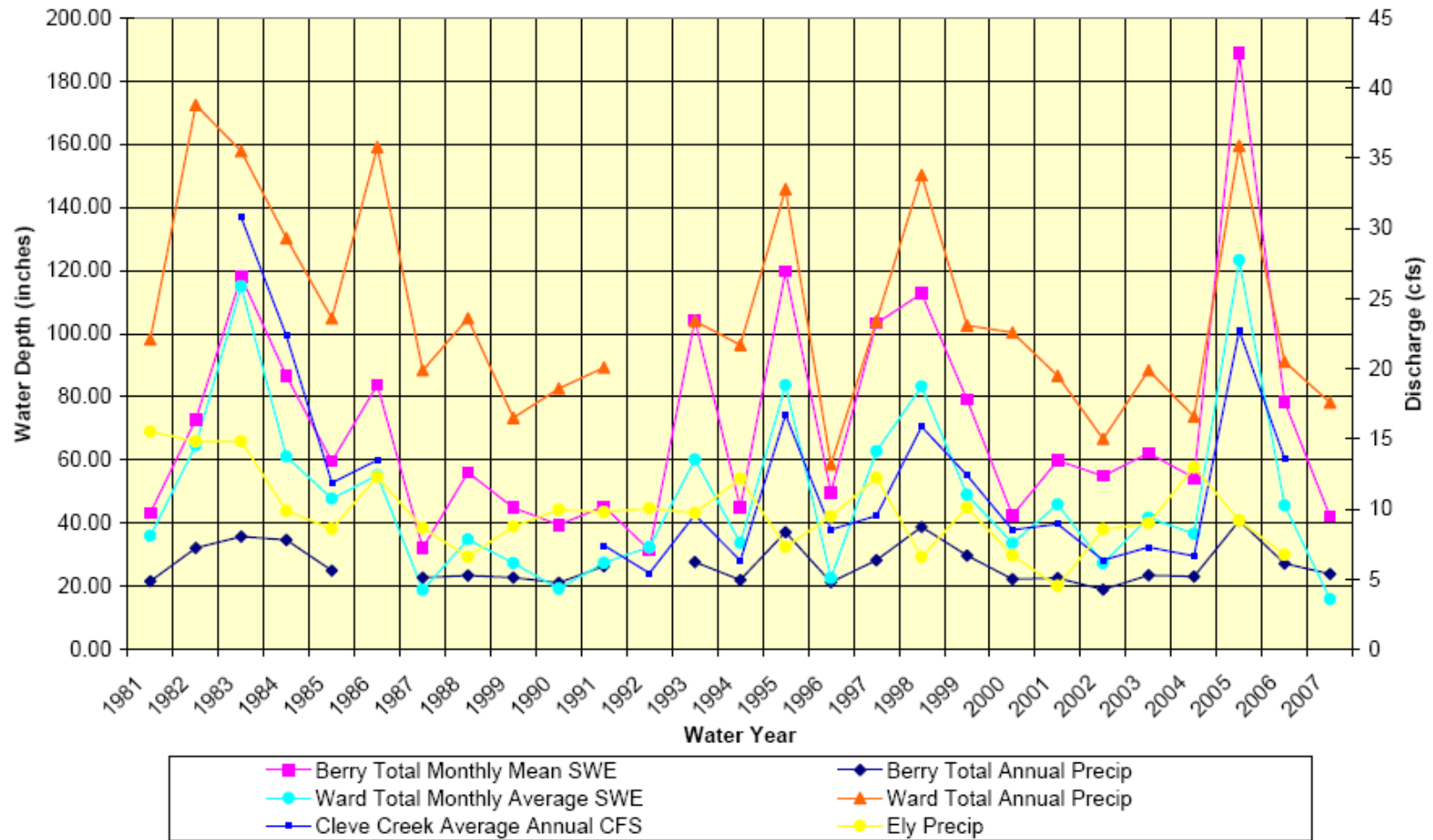
Figure 3-7. USGS Well Groundwater Elevations



The precipitation data was graphed in several different ways to observe the relationship with Cleveland Creek discharge. Water years were used for all of these calculations (from October to September, with the year of the ending month naming the water year). Water year values are illustrated by Figure 3-8. Figure 3-9 illustrates the rolling three-year average of each component. This type of comparison evens-out the extreme high or low water years. Both of the graphs illustrate a very good correlation between Cleveland Creek discharge and the precipitation and snow water equivalent (SWE) values for all sites, with the exception of the Ely precipitation gauge.

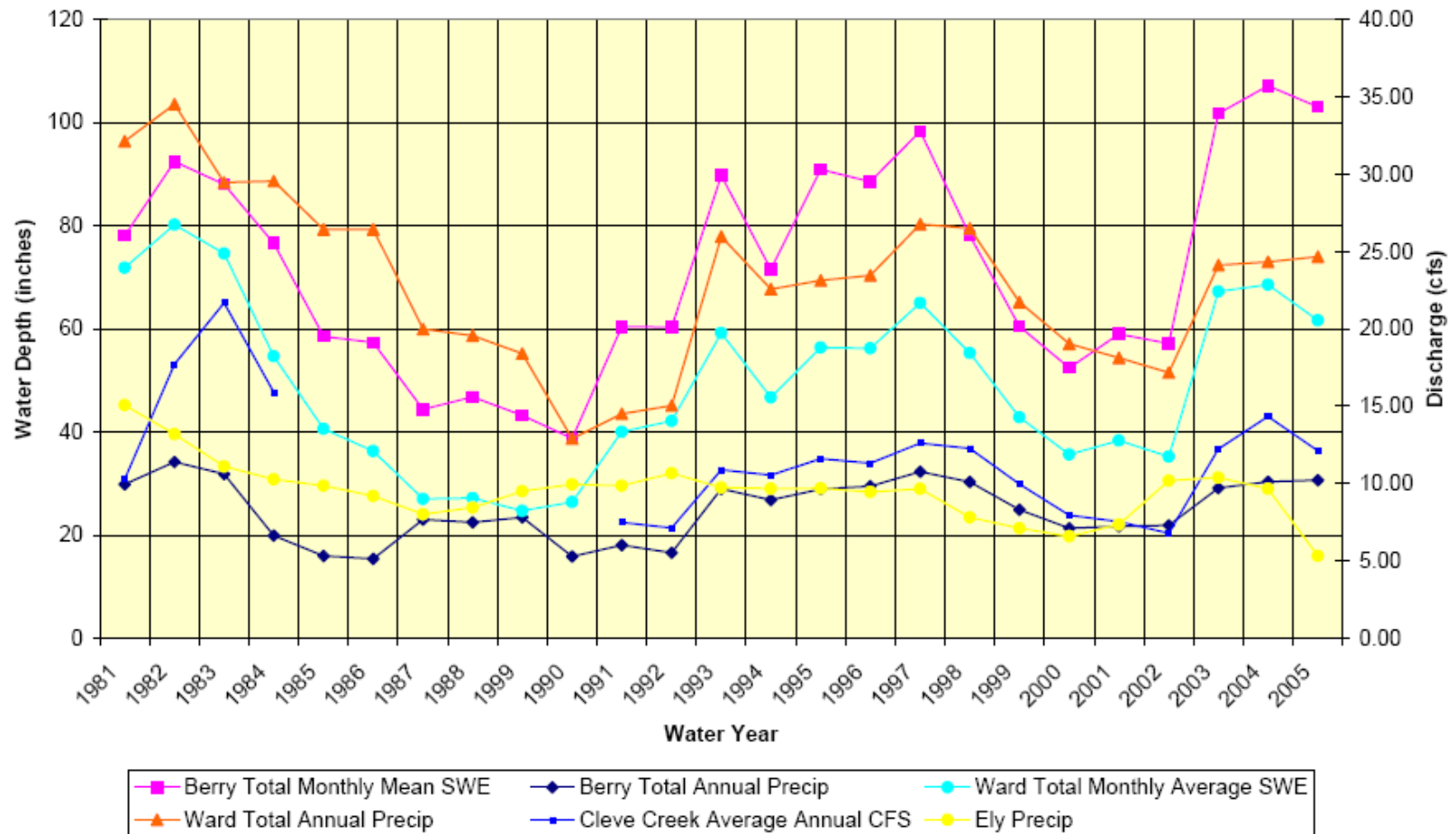
Daily temperature data is available from the Berry Creek and Ward Mountain sites. Figure 3-10 illustrates the Berry Creek site annual mean monthly temperature for June and December. The data suggest that since 1990 mean monthly temperatures in June and December have increased slightly.

Figure 3-8: Berry & Ward Total Cumulative Precipitation and Total Average Monthly Mean SWE with Cleveland Creek Average Annual Discharge



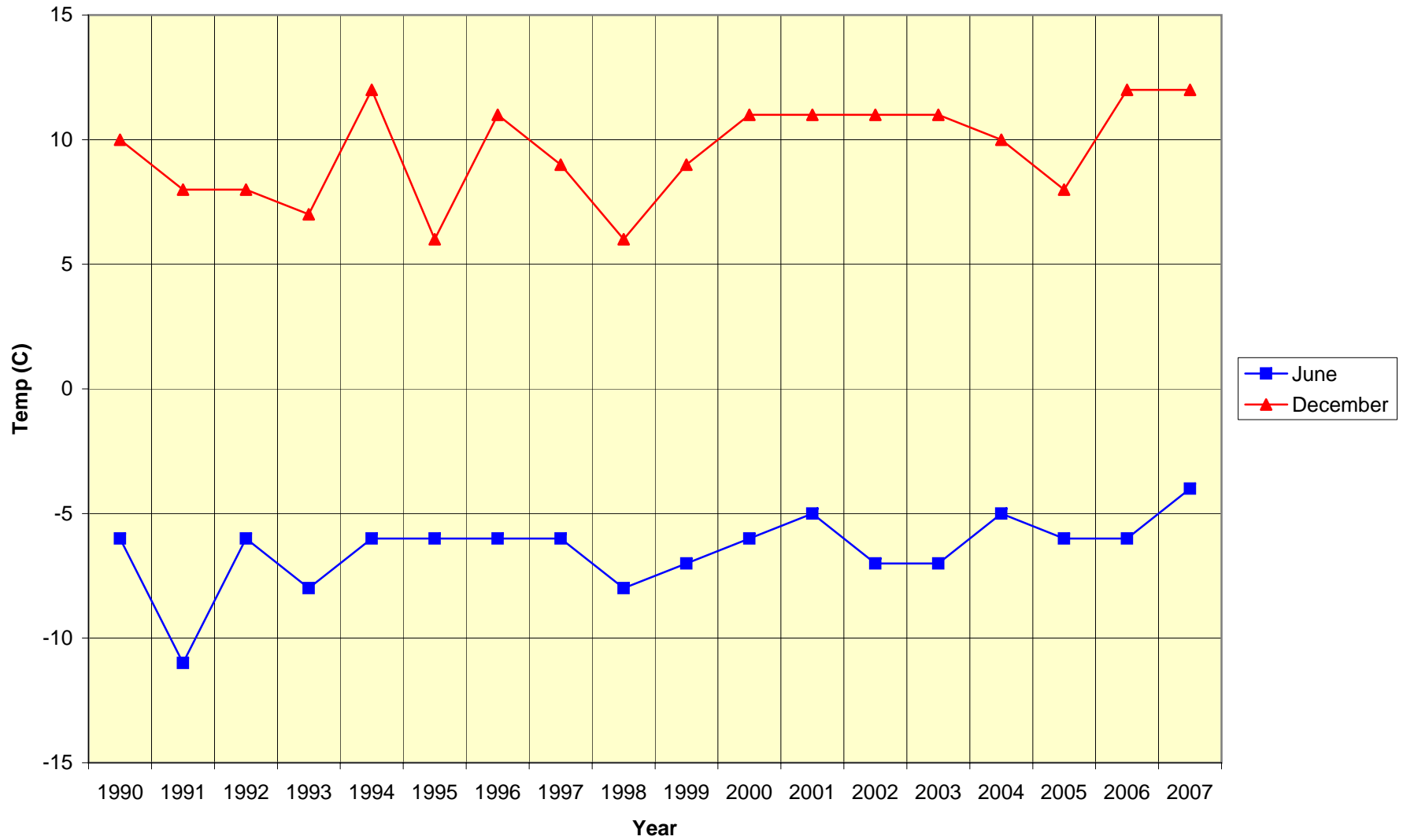
Precipitation values were calculated using the total cumulative precipitation. SWE values were calculated using the average of the monthly mean SWE values. Discharge values are the average of the monthly means.

Figure 3-9: Berry & Ward Total Precipitation & Total Average SWE with Cleveland Average Annual Creek Discharge Three-Year Rolling Average



Precipitation values were calculated using the total cumulative precipitation. SWE values were calculated using the average of the monthly mean SWE values. Discharge values are the average of the monthly means.

Figure 3-10. Berry Creek Annual Mean Temperature for December and June



SECTION 4.0 – REFERENCES

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SECTION 5.0 – SIGNATURE PAGE

Respectfully Submitted

Date: June 30, 2011

By: Resource Concepts, Inc.

Name:  **Title:** EI/ Resource Specialist
Jeremy Drew Engineer EI, Resource Specialist

APPENDICES

Appendix 1

Mapping for Land and Water Resources, Baseline Information and Monitoring Alternatives and Recommendations:

- > Map 1.1 Delamar Valley Livestock Land and Water Resources
- > Map 1.2 Cleveland Ranch Pastures, Infrastructure, and Water Delivery
- > Map 1.3 Irrigation of the Cleveland Ranch by Cleveland and Indian Creek
- > Map 1.4 Irrigation of the Cleveland Ranch by Stephens Creek
- > Map 1.5 Irrigation of the Cleveland Ranch by Various Springs

INSERT MAPS

- Large Map 1.1, insert pocket for folded map
- Maps 1.2 – 1.5 are all in 11x17 PDF format