



Cave Valley

Hydrographic Basin 10-180

NRS § 533.364 Inventory



Prepared by the
Nevada Division of Water Resources
Jason King, P.E.
State Engineer

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SUMMARY

Nevada Revised Statute (NRS) § 533.364 requires that before approving an application for an interbasin export of more than 250 acre-feet of groundwater from a basin, an inventory of the groundwater basin must be conducted. This report meets the specific requirements of NRS § 533.364 for Cave Valley, being the inclusion of (a) the total amount of surface water and groundwater appropriated in accordance with a decreed, certificated or permitted right; (b) an estimate of the amount and location of all surface water and groundwater that is available for appropriation; and (c) the name of each owner of record set forth in the records of the Office of the State Engineer for each decreed, certificated or permitted right.

NRS § 533.364(1)(a): The total amount of surface water appropriated under a decreed, certificated or permitted right is 887 acre-feet annually (AFA). The total amount of groundwater appropriated under a decreed, certificated or permitted right is 47 AFA (Table 1).

NRS § 533.364(1)(b): The amount of surface water that is available for appropriation is estimated to be 1,414 AFA, after consideration of all rights and claims, including claims of pre-statutory vested water rights and public water reserves. Pertinent data relating to individual surface water sources, their location, and available water are shown in Appendix A. The annual groundwater supply is known as the perennial yield, which is 5,000 acre-feet, of which 4,950 AFA is available for appropriation. Groundwater is managed by the State Engineer on a basin-wide scale, and can be developed anywhere in the basin, with certain practical considerations such as accessibility, the location of aquifers or existing rights.

NRS § 533.364(1)(c): The name of each owner of record in the Office of the State Engineer for each decreed, certificated or permitted right is listed in Appendix B.

Table 1. Surface water and groundwater appropriated in Cave Valley (AFA)

Source	Status					Total	
	Permit	Certificate	Decreed	Vested	Reserved	w/o Vested or Reserved	w/ Vested and Reserved
Spring	80	531	0	264	7	611	882
Stream	0	276	0	210	0	276	486
Total Surface Water	80	807	0	474	7	887	1,368
Total Groundwater	11	35	0	0	0	47	47

INVENTORY

This report is for the Cave Valley Hydrographic Basin (10-180). Surface water estimates are based on field measurements from a variety of sources and review of records of the Office of the State Engineer, and include measurements reported by owners of record in their filing of Proof of Beneficial Use. Groundwater estimates are based on the records of the Office of the State Engineer and currently accepted values for perennial yield. The information in this report is limited to the data and records available to the State Engineer at the time of conducting the inventory. NRS § 533.364(2) provides that the State Engineer is not required to make a determination of rights or to conduct an adjudication, and with respect to claims of pre-statutory vested water rights and public water reserves, the information contained thereon is taken at face value for the purpose of this inventory.

Existing Appropriations: NRS § 533.364(1)(a)

The total amount of surface water and groundwater appropriated in accordance with decreed, certificated or permitted rights is listed in Appendix A. Table A1 lists Stream Availability, Table A2 lists Spring Availability and Table A3 lists Groundwater Rights. The stream and spring rights are sorted by source to facilitate tabulation of total appropriation of each source. Claims of vested water rights and public water reserves are also shown in these tables. While not intended to adjudicate the waters of this basin, it was deemed necessary to identify the possible claims on each source before estimating the amount available for future appropriation.

Duties (total quantities appropriated) for all decreed, certificated or permitted rights were taken directly from the files of the State Engineer. For claims of vested water rights and public water reserves, duties in the State Engineer's files often are shown as zero, and in these cases a duty was computed based on the information provided by the claimant on the Proof of Appropriation filed.

In Cave Valley, the only surface water appropriations are from spring and stream sources. There are an estimated 276 AFA of stream rights and 611 AFA of spring rights that are certificated or permitted. Groundwater rights total 47 AFA. There are no decreed rights in the basin.

Water Available for Appropriation: NRS § 533.364(1)(b)

Estimates of the amount and location of surface water and groundwater available for appropriation require a tabulation of each separate surface water source, the rights or claims on each source and the annual supply from the source. If there are other claims on the source, such as claims of vested rights or federal claims of public water reserves, additional appropriations might not be allowed until those claims are quantified or adjudicated. While NRS § 533.364 does not require the State Engineer to quantify any vested water right claim prior to approving an application for an interbasin transfer of groundwater, some basic quantification of vested claims is necessary in order to determine the amount of water available for appropriation from an individual surface water source. Since groundwater is managed at a basin scale, it can

be appropriated anywhere in the basin, but with certain practical considerations for local factors, such as depth to water, the productivity of the aquifer and possible conflicts with existing rights.

Estimates of surface water average annual flow are based on very limited data. Furthermore, surface water supply is highly variable, being dependent on weather patterns on time scales ranging from daily to decadal. Estimates of the amount available for appropriation may not, in fact, be available on a year to year basis, and applications for such water may be denied. This inventory is a snapshot in time of water availability and should not be relied upon as satisfying the statutory criteria found in NRS § 533.370(5) for the filing of applications to appropriate.

As shown in the Spring and Stream Availability tables in Appendix A, most of the discharge estimates are based on filings for vested rights or proofs of beneficial use. Unless there are specific measurements of flow that can be used to estimate the average annual discharge of a surface water source, the discharge was assumed to be equal to the existing permits on the source. The reasoning behind this approach is that most of these sources are limited, and it is presumed that the water right user has filed on the entire supply.

The upper part of Haggerty Creek, just below Haggerty Spring, is the only known perennial stream in Cave Valley. Other than during local flood or runoff events, Haggerty Creek is primarily supplied by Haggerty Spring; therefore, most of Haggerty Creek's annual flow is accounted for in the totals of the spring summary in Table A2. Stream and stream-related water rights total 486 AFA and are shown in Table A1. Perennial streamflow is fully appropriated; therefore, there is no stream water available. Quantification of the average annual flood flow of each watercourse is beyond the scope of this statutory requirement.

The total supply of spring sources is estimated to be approximately 2,296 AFA. The existing rights and claims on those springs is 882 AFA. The amount of available spring water is estimated to be 1,414 AFA.

Nine springs are identified in the National Hydrography Dataset for which no permits, claims, or flow estimates exist. Based on average spring flows in the basin, 50 to 100 AFA of additional unappropriated water could exist at these springs. These spring sites are listed in Table A2.

The perennial yield for Cave Valley was established in State Engineer's Ruling 5875 as 5,000 acre-feet. As shown in Table A3, existing groundwater rights total 47 AFA. There are three domestic wells in Cave Valley. Domestic wells are allowed 2.0 AFA; however, for inventory purposes, domestic wells in rural areas have been shown to pump approximately 1 AFA on average. Available groundwater in Cave Valley is the perennial yield of 5,000 acre-feet less 50 AFA of groundwater rights and domestic wells. There is 4,950 AFA of available groundwater in Cave Valley.

Owners of Record: NRS § 533.364(1)(c)

The name of each owner of record set forth in the records of the Office of the State Engineer for each decreed, certificated or permitted right is listed in Appendix B.

LIMITATIONS

NRS § 533.364(1)(a) directs the State Engineer to identify the "total amount of surface water and groundwater appropriated in accordance with a decreed, certified or permitted right." Though claims of pre-statutory vested water rights are specifically excluded from the provisions of 533.364(1)(a), they have been included in this inventory in order to make an analysis of the availability as required by NRS § 533.364(1)(b). Note that only those water rights that have been filed with the State Engineer can be considered in this inventory. It is possible that vested rights exist for which no filing has been made.

NRS § 533.364(1)(b) requires an "estimate of the amount and location of all surface water and groundwater available for appropriation in the basin." In order to estimate the amount of surface water available, it is necessary to estimate the average annual discharge of the source.

Due to the limited nature of the data used to arrive at the discharge estimate, no guarantee can be made of the accuracy of the estimate and any application filed to appropriate any of the public waters of the State of Nevada will be evaluated as prescribed in Chapters 533 and 534 of the Nevada Revised Statutes.

NRS § 533.364(1)(c) requires that "the name of each owner of record set forth in the records of the Office of the State Engineer for each decreed, certified or permitted right in the basin" be included in the inventory. Because claims of vested water rights have been included in this report for the purposes described above, they have also been included in this component of the inventory. The owners of record listed in this report are those persons that are currently identified as such by documents filed with and confirmed by the State Engineer in accordance with NRS §§ 533.384 through 533.386.

NRS § 533.364(2)(a) states that the State Engineer is not required to quantify any claims of vested water rights within the basin. This report is not an adjudication of any water source, nor a quantification of any claim of vested water right. The values utilized in this report for claims of vested rights are in no way an acknowledgment by this office of the validity of the claim or that the water so claimed has actually been put to beneficial use. The amount of water associated with each claim of vested right is obtained from the documents filed with the State Engineer and is taken at face value.

NRS § 533.035 provides, "Beneficial use shall be the basis, the measure and the limit of the right to the use of the water." Availability of unappropriated water at a source is not the only criterion for approval or denial of an application. NRS Chapters 533 and 534 establish the criteria for approval or denial of an application before the State Engineer, including availability of water at the source. Evidence of availability of water from a specific source for a specific application before the State Engineer is required at the time of application; this inventory is limited to estimates of availability for the timeframe of the inventory.

Explanation of Column Headings and Abbreviations for Tables

APP	The application/file number of the Permit, Claim of Vested Right or Public Water Reserve.	
CERT	Certificate number.	
STATUS	This is the status of the water right.	
	CER	A certificated right.
	DEC	A claim of vested right that has been adjudicated and is part of a decree.
	PER	A permit that has not been certificated.
	RES	A claim of public water reserve.
	VST	A claim of vested right not yet adjudicated.
	###	The serial number of a certificate. See "CER" above.
SOURCE	The source of water associated with the subject water right.	
	OSW	Other Surface Water
	RES	Reservoir
	SPR	Spring
	STR	Stream
	OGW	Other Groundwater
	UG	Groundwater
MOU	Manner of use of the water right.	
	IRR	Irrigation
	DOM	Domestic
	STK	Stock
	OTH	Other
POD	Point of diversion.	
QQ	The quarter-quarter of the section in which the point of diversion or source is located.	
Q	The quarter of the section in which the point of diversion or source is located.	
S	The section in which the point of diversion or source is located.	
T	The township in which the point of diversion or source is located.	
R	The range in which the point of diversion or source is located.	
DUTY	The amount of water appropriated by the right in acre-feet (either annually or seasonally, see "UNITS" below). In some cases, the duty is not explicit in terms of acre-feet because it is based on the number of animals or has not been determined. In such cases a conservative value of the diversion rate expanded over the period of use is used; this is the theoretical maximum that could be diverted and not necessarily the extent of the right since beneficial use is the basis, measure and the limit of the water right.	
UNITS	AFS is acre-feet per season. AFA is acre-feet annually. CFS is cubic feet per second.	

Explanation of Column Headings and Abbreviations for Tables (Cont.)

SUP	Supplemental indicates a water right is supplemental to another water right.
TCD	Some rights are limited to a total combined duty (TCD), which can be less than the sum of the individual rights comprising the entire group. To properly calculate the appropriations on a source, a TCD value is needed to represent the entire group. If there is no TCD group, then the duty of the individual right is placed in this column for calculation purposes.
UG TCD GROUP	This is the list of groundwater rights that comprise a TCD group
OWNER OF RECORD	Owner of the water right as recorded in the files of the State Engineer. A water right may have more than one owner of record.

APPENDIX A - Commitment and Availability Tables

Table A1 - Stream supply and availability

Table A2 - Spring supply and availability

Table A3 - Groundwater commitments

Table A1 - Cave Valley Stream Supply and Availability

Stream Name	APP	Status	MOU	QQ	Q	S	T	R	Existing Active Water Rights		Estimated Average Annual Flow		Estimation Method	Estimated Amount of Water Available (AFA): Estimated Streamflow - Existing Rights = Available	Notes
									CFS	Duty (AFA)	CFS	AFA			
Haggerty Creek	25322	Cert	Irr	SE	SW	3	09N	63E	0.89	240.00				60 acres	
Haggerty Creek	4599	Cert	Irr	SE	SE	11	09N	63E	0.12	36.00				12 acres	
Haggerty Creek Total										276.00	1	276	Few measurements, est. 1 cfs, remainder of flow allocated in Spring table	0.00	Main source of supply is Haggerty Spring. 240 afa of spring Cert and Vested rights are supplemental to 25322
North Branch Sheep Creek	V01678	Vst	Stk	NE	SE	34	10N	64E	1	7.49		Unknown	Proof Filing	Unknown	2,500 sheep 8 months
South Branch Sheep Creek	V01679	Vst	Stk	NW	NW	2	09N	64E	1	7.49		Unknown	Proof Filing	Unknown	2,500 sheep 8 months
South Branch Sheep Creek	V09523	Vst	Stk	NW	NW	2	09N	64E	1	11.20		Unknown	Proof Filing	Unknown	500 cattle or 2,500 sheep
Sheep Creek	V01680	Vst	Stk	NW	NE	4	09N	64E	1	7.49		Unknown	Proof Filing	Unknown	2,500 sheep 8 months
North Creek	V01681	Vst	Stk	NE	NW	26	10N	64E	1	14.98		Unknown	Proof Filing	Unknown	5,000 sheep 8 months
Cave Valley Creek or Sheep Creek	V01807	Vst	Irr	NW	SW	31	10N	64E		150.00		Unknown	Proof Filing	Unknown	142.94 acres, claim states insufficient water to irrigate in the dry season. Estimate approx 1 af/acre.
Silver Creek	V01878	Vst	Stk	SW	SE	15	11N	63E	0.25	11.20		Unknown	Proof Filing	Unknown	2,500 sheep
Lower Cave Valley Wash							7-9N	64E				Unknown		Unknown	Flood flows, amount appropriable not determined.

Table A2 - Cave Valley Spring Supply and Availability

Spring Name	APP	Status	MOU	Latitude	Longitude	Existing Active Water Rights		Estimated Average Annual Discharge		Estimation Method	Estimated Amount of Water Available (AFA): Estimated Discharge - Existing Rights = Available	Notes
				NAD 83	NAD 83	CFS	Duty (AFA)	CFS	AFA			
ANTELOPE SPRING	5071	CER	STK	38.51856	-114.74223	0.015	7.52	0.033	23.89	PBU	16	500 CATTLE
BASQUE SPRING	V09875	VST	STK	38.79778	-114.91611	0.020	8.08		8.08	Proof Filing	0	568CATTLE 3HORSES 722SHEEP
BIG CANYON SPRING	V09232	VST	STK	38.65389	-114.95444	0.013	3.39		3.39	Proof Filing	0	300 CATTLE
BIG SPRING	V09234	VST	STK	38.59884	-114.91640	0.100	4.52		4.52	Proof Filing	0	400 CATTLE
BLIND SPRG	V01883	VST	STK	38.82300	-114.88223	0.050	5.63		5.63	Proof Filing	0	100 CATTLE, 2500 SHEEP
BRUSH SPRING	V01675	VST	STK	38.69995	-114.76584	0.025	7.46		7.46	Proof Filing	0	2500 SHEEP
CABBIN SPRING	9720	CER	STK			0.025	17.92					2500 SHEEP AND 300 CATTLE.
CABBIN SPRING	V01698	VST	STK			0.025	11.20					300 TO 500 CATTLE
CABIN SPRING	V09526	VST	STK			0.025	8.96					400 CATTLE
Cabin Spring Total				38.64662	-114.75723		38.08		38.08	Sum of Permits	0	
CANYON SPRING	V01699	VST	STK			0.025	11.20					300 TO 500 CATTLE
CANYON SPRING	V09527	VST	STK			0.025	8.96					400 cows
Canyon Spring Total				38.63773	-114.74501		20.16		20.16	Sum of Permits	0	
CARTER SPRING	3139	CER	STK	38.78234	-114.92749	0.003	1.29	0.025	18.10	PBU	17	100 CATTLE
CAVE SPRING	4881	CER	IRR			0.751	225.57					75.19 acres
CAVE SPRING	9001	CER	DOM			0.044	31.86					DOMESTIC & MINING USE
Cave Spring Total				38.64078	-114.79695		257.43		700.00	Weighted Average Measurements	443	
CHIMNEY ROCK SPRGS	V01882	VST	STK			0.250	7.04					250 CATTLE AND 2500 SHEEP
CHIMNEY ROCK SPRING	V09878	VST	STK			0.020	8.12					568CATTLE 3HORSES 722SHEEP
Chimney Rock Spring Total				38.83550	-114.88529		15.17		15.17	Sum of Permits	0	
COTTONWOOD SPRING	V09236	VST	STK	38.64384	-114.96140	0.025	3.39		3.39	Proof Filing	0	300 CATTLE
CURRANT SPRINGS	V01486	VST	STK	38.80050	-114.91196	0.250	2.62		2.62	Proof Filing	0	175 animals
HAGGARTY CREEK	V02693	VST	IRR			0.000	0.00					60 acres, supplemental to 25322
HAGGARTY LOWER SPRING	V02694	VST	IRR			0.120	0.00					19.8 acres, supplemental to 25411
HAGGARTY UPPER SPRING	V02692	VST	IRR			0.414	0.00					60 acres, supplemental to 25322
HAGGERTY LOWER SPRING	25411	CER	IRR			0.564	79.20					19.8 acres
HAGGERTY LOWER SPRING	27814	CER	IRR			0.670	126.00					31.5 acres
Haggerty Spring Total				38.66931	-114.90491		205.20	1.000	448	Average Meas. ~ 1 cfs, minus amount allocated to Haggerty Cr.	243	79.8 acres supplemental vested and cert. rights, 111.3 acres supplemental to 72 acres of stream certificated rights
HORSE SPRING	9702	CER	STK			0.010	7.24	0.004	3.23	PBU		500 CATTLE
HORSE SPRING	R09414	RES	STK			0.002	2.24					100 CATTLE

Spring Name	APP	Status	MOU	Latitude	Longitude	Existing Active Water Rights		Estimated Average Annual Discharge		Estimation Method	Estimated Amount of Water Available (AFA): Estimated Discharge - Existing Rights = Available	Notes
				NAD 83	NAD 83	CFS	Duty (AFA)	CFS	AFA			
HORSE SPRING	V01964	VST	STK			0.004	6.81					600 HEAD OF CATTLE
Horse Spring Total				38.36560	-114.93506		16.30		16.30	Sum of Permits	0	
JORDAN SPRING	V09231	VST	STK	38.66833	-114.93639	0.013	5.65		5.65	Proof Filing	0	500 CATTLE
LEWIS SPRING	R09416	RES	STK	38.64634	-114.87779	0.002	2.24		2.24	Proof Filing	0	100 CATTLE
LONG WATER SPRING	V02079	VST	STK	38.72556	-114.91778	0.250	6.72		6.72	Proof Filing	0	100 CATTLE & 2500 SHEEP (1898- PRESENT)
MAHOGANY SPRINGS	V01697	VST	STK	38.65245	-114.74278	0.025	11.20		11.20	Proof Filing	0	300 TO 500 CATTLE
OUTLAW SPRING	R09417	RES	STK	38.34833	-114.94528	0.002	2.24		2.24	Proof Filing	0	100 CATTLE
QUARTZITE SPRING #2	V01660	VST	STK			0.300	7.46					2500 SHEEP
QUARTZITE SPRING #2	V09525	VST	STK			0.333	6.52					
Quartzite Spring #2 Total				38.71056	-114.77083		13.97		13.97	Sum of Permits	0	
QUARTZITE SPRING NO.1	V01659	VST	STK	38.71056	-114.77083	0.300	7.46		7.46	Proof Filing	0	2500 SHEEP
ROBBERS ROOST SPRING	13102	CER	STK	38.77050	-114.78195	0.019	5.59		5.59	PBU	0	3000 SHEEP
ROSEBUD SPRING	5073	CER	STK	38.52773	-114.73389	0.015	7.30	0.025	18.10	PBU	11	500 CATTLE
SAGE HEN SPRING	V01658	VST	STK			0.300	7.46					2500 SHEEP
SAGE HEN SPRING	V09524	VST	STK			0.333	5.99					400 CATTLE
Sage Hen Spring Total				38.71606	-114.76584		13.45		13.45	Sum of Permits	0	
SAGEHEN SPRING	V09881	VST	STK	38.81097	-114.90368	0.020	8.12		8.12	Proof Filing	0	568CATTLE 3HORSES 722SHEEP
SCHOOL HOUSE SPRING	5747	CER	STK	38.78333	-114.93417	0.004	1.50	0.050	36.20	PBU	35	150 HEAD OF CATTLE.
SIDEHILL SPRING	66129	PER	IRR			0.150	80.00					20 acres
SIDEHILL SPRING	V09235	VST	STK			0.050	4.52					400 CATTLE
Sidehill Spring Total				38.41606	-114.79584		84.52		84.52	Sum of Permits	0	
SILVER SPRING	V09882	VST	STK	38.81050	-114.88140	0.020	8.12		8.12	Proof Filing	0	568CATTLE 3HORSES 722SHEEP
SOUTH BULL WHACK SPRG	V01881	VST	STK	38.84111	-114.88250	0.250	7.04		7.04	Proof Filing	0	250 CATTLE, 2500 SHEEP
SPRING	V09883	VST	STK	38.78333	-114.93417	0.020	8.12		8.12	Proof Filing	0	568cattle 3horses 722sheep
SUMMIT SPRINGS	V01416	VST	STK	38.78333	-114.93417	0.100	17.97		17.97	Proof Filing	0	Several hundred cattle, several thousand sheep
Unnamed Spring	3142	CER	STK	38.80500	-114.90722	0.004	1.66		1.66	PBU	0	150 HEAD OF CATTLE.
URRITIA SPRING	V09233	VST	STK	38.68250	-114.91778	0.013	3.38		3.38	Proof Filing	0	300 CATTLE
WALL SPRING	9721	CER	STK			0.025	17.92					2500 SHEEP AND 300 CATTLE.
WALL SPRING	V01696	VST	STK			0.025	11.20					300 TO 500 CATTLE
WALL SPRING	V09522	VST	STK			0.025	8.96					400 CATTLE
Wall Spring Total				38.66106	-114.75667		38.08		38.08	Sum of Permits	0	
WILD CAT SPRING	V01559	VST	STK	38.74189	-114.76362	0.500	22.10		22.10	Proof Filing	0	500 CATTLE AND 10,000 SHEEP.

Table A2 - Cave Valley Spring Supply and Availability

Spring Name	APP	Status	MOU	Latitude	Longitude	Existing Active Water Rights		Estimated Average Annual Discharge		Estimation Method	Estimated Amount of Water Available (AFA): Estimated Discharge - Existing Rights = Available	Notes
				NAD 83	NAD 83	CFS	Duty (AFA)	CFS	AFA			
WILLOW SPRING	V02075	VST	STK	38.74384	-114.91696	0.250	6.72	6.72	6.72	Proof Filing	0	100 CATTLE & 2500 SHEEP (1898-PRESENT)
WOLF HOLE SPRING	V01965	VST	STK	38.34690	-114.96112	0.002	2.27	2.27	2.27	Proof Filing	0	
Cave Valley Ranch Complex Springs						0.000	0.00	400-900	400-900	Evapotranspiration	650	From Smith net al, USGS SIR 2007-5087. 400 to 900 acre feet of groundwater and/or spring source evapotranspiration, use 650 AFA for best estimate.
Unnamed Spring				38.67398	-114.84198	0.000	0.00			Unknown	Unknown	
Unnamed Spring				38.66327	-114.80695	0.000	0.00			Unknown	Unknown	
Unnamed Spring				38.66748	-114.83707	0.000	0.00			Unknown	Unknown	
Quartzite Spring				38.56778	-114.75953	0.000	0.00			Unknown	Unknown	
Unnamed Spring				38.67353	-114.84126	0.000	0.00			Unknown	Unknown	
Unnamed Spring				38.76267	-114.90186	0.000	0.00			Unknown	Unknown	
Unnamed Spring				38.71926	-114.92831	0.000	0.00			Unknown	Unknown	
Big Travis Spring				38.63619	-114.92584	0.000	0.00			Unknown	Unknown	
Unnamed Spring				38.76128	-114.89676	0.000	0.00			Unknown	Unknown	

Table A3 - Cave Valley Groundwater Commitments

APP	Status	Source	QQ	Q	S	T	R	MOU	SUP	Div Rate (CFS)	Duty	Units
6638	2105	UG	NE	SE	21	05N	63E	STK		0.003	2.15	AFA
7397	1175	UG	SW	SE	31	06N	63E	STK		0.015	1.87	AFA
7485	1876	UG	SW	SE	36	09N	64E	STK		0.012	8.96	AFA
66123	16617	UG	NW	SE	15	07N	63E	STK		0.0156	11.20	AFA
66125	16619	UG	SE	SW	30	08N	64E	STK		0.0156	11.20	AFA
73168	PER	UG	SW	NW	27	09N	64E	STK	Y	0.05	11.20	AFA
73169	PER	UG	SW	NW	15	08N	64E	STK	Y	0.05	11.20	AFA
73170	PER	UG	NW	NE	25	10N	63E	STK	Y	0.05	11.20	AFA

APPENDIX B

Owners of Record

APP	Owner of Record	STATUS	CER	SOURCE	MOU	SUP
3139	CARTER, ALICE	CER	1661	SPR	STK	
3142	REID, ROBERT	CER	2334	SPR	STK	
4599	ADAMS, MYRON	CER	643	STR	IRR	
4881	CAVE VALLEY RANCH, LLC	CER	1060	SPR	IRR	
5071	CAVE VALLEY RANCH, LLC	CER	540	SPR	STK	
5073	CAVE VALLEY RANCH, LLC	CER	542	SPR	STK	
5747	REED, G.M.	CER	707	SPR	STK	
6638	JENSEN, BRUCE A.,JENSEN, PAMELA G.	CER	2105	UG	STK	
7397	JENSEN, BRUCE A.,JENSEN, PAMELA G.	CER	1175	UG	STK	
7485	KIRKEBY, GORDON A.,KIRKEBY, KAYE A.,KIRKEBY, MARY HANNAH	CER	1876	UG	STK	
9001	GREAT WESTERN MINING &DEVELOPMENT CO	CER	4209	SPR	DOM	
9702	JENSEN, BRUCE A. AND PAMELA G.	CER	2135	SPR	STK	
9720	CAVE VALLEY RANCHES	CER	2269	SPR	STK	
9721	CAVE VALLEY RANCHES	CER	2270	SPR	STK	
13102	CAVE VALLEY RANCHES	CER	4059	SPR	STK	
25322	LEWIS, LOU JEANNE,LEWIS, MELANIE,LEWIS, PAUL C.,LEWIS, RICHARD C.,LEWIS, ROBERT C.,LEWIS, VIVIAN C.	CER	8358	STR	IRR	
25411	LEWIS, LOU JEANNE,LEWIS, MELANIE,LEWIS, PAUL C.,LEWIS, RICHARD C.,LEWIS, ROBERT C.,LEWIS, VIVIAN C.	CER	8359	SPR	IRR	
27814	LEWIS, JEANNE LOU,LEWIS, MELANIE,LEWIS, PAUL C.,LEWIS, RICHARD C.,LEWIS, ROBERT C.,LEWIS, VIVIAN C.	CER	9654	SPR	IRR	
66123	JENSEN, BRUCE A. & PAMELA G.	CER	16617	UG	STK	
66125	JENSEN, BRUCE A. & PAMELA G.	CER	16619	UG	STK	
66129	JENSEN, BRUCE A. & PAMELA G.	PER		SPR	IRR	
73168	CAVE VALLEY RANCH, LLC	PER		UG	STK	Y
73169	CAVE VALLEY RANCH, LLC	PER		UG	STK	Y
73170	CAVE VALLLEY RANCH, LLC	PER		UG	STK	Y
V01416	ADAMS-MCGILL COMPANY	VST		SPR	STK	
V01486	ADAMS-MCGILL COMPANY	VST		SPR	STK	
V01559	CAVE VALLEY RANCHES	VST		SPR	STK	
V01658	CAVE VALLEY RANCHES	VST		SPR	STK	
V01659	CAVE VALLEY RANCH, LLC	VST		SPR	STK	
V01660	CAVE VALLEY RANCHES	VST		SPR	STK	
V01675	CAVE VALLEY RANCH, LLC	VST		SPR	STK	
V01678	CAVE VALLEY RANCH, LLC	VST		STR	STK	
V01679	CAVE VALLEY RANCHES INC.	VST		STR	STK	
V01680	CAVE VALLEY RANCH, LLC	VST		STR	STK	
V01681	CAVE VALLEY RANCH, LLC	VST		STR	STK	
V01696	GEYSER LAND & CATTLE CO.	VST		SPR	STK	
V01697	CAVE VALLEY RANCH, LLC	VST		SPR	STK	
V01698	GEYSER LAND & CATTLE CO.	VST		SPR	STK	
V01699	CAVE VALLEY RANCHES INC.	VST		SPR	STK	
V01807	CAVE VALLEY RANCH, LLC	VST		STR	IRR	
V01878	ADAMS-MCGILL COMPANY	VST		STR	STK	
V01881	ADAMS-MCGILL COMPANY	VST		SPR	STK	
V01882	ADAMS-MCGILL COMPANY	VST		SPR	STK	
V01883	ADAMS-MCGILL COMPANY	VST		SPR	STK	
V01964	JENSEN, BRUCE A.,JENSEN, PAMELA G.	VST		SPR	STK	

APP	Owner of Record	STATUS	CER	SOURCE	MOU	SUP
V01965	JENSEN, BRUCE A.,JENSEN, PAMELA G.	VST		SPR	STK	
V02075	JENSEN, BRUCE A.,JENSEN, PAMELA G.	VST		SPR	STK	
V02079	JENSEN, BRUCE A.,JENSEN, PAMELA G.	VST		SPR	STK	
V02692	LEWIS, LOU JEANNE,LEWIS, MELANIE,LEWIS, PAUL C.,LEWIS, RICHARD C.,LEWIS, ROBERT C.,LEWIS, VIVIAN C.	VST		SPR	IRR	
V02693	LEWIS, LOU JEANNE,LEWIS, MELANIE,LEWIS, PAUL C.,LEWIS, RICHARD C.,LEWIS, ROBERT C.,LEWIS, VIVIAN C.	VST		SPR	IRR	
V02694	LEWIS, LOU JEANNE,LEWIS, MELANIE,LEWIS, PAUL C.,LEWIS, RICHARD C.,LEWIS, ROBERT C.,LEWIS, VIVIAN C.	VST		SPR	IRR	
V09231	JENSEN, BRUCE A.,JENSEN, PAMELA G.	VST		SPR	STK	
V09232	JENSEN, BRUCE A.,JENSEN, PAMELA G.	VST		SPR	STK	
V09233	JENSEN, BRUCE A.,JENSEN, PAMELA G.	VST		SPR	STK	
V09234	JENSEN, BRUCE A.,JENSEN, PAMELA G.	VST		SPR	STK	
V09235	JENSEN, BRUCE A.,JENSEN, PAMELA G.	VST		SPR	STK	
V09236	JENSEN, BRUCE A.,JENSEN, PAMELA G.	VST		SPR	STK	
V09522	CAVE VALLEY RANCH, LLC	VST		SPR	STK	
V09523	CAVE VALLEY RANCH, LLC	VST		STR	STK	
V09524	CAVE VALLEY RANCH, LLC	VST		SPR	STK	
V09525	CAVE VALLEY RANCH, LLC	VST		SPR	STK	
V09526	CAVE VALLEY RANCH, LLC	VST		SPR	STK	
V09527	CAVE VALLEY RANCH, LLC	VST		SPR	STK	
V09875	BLUE DIAMOND OIL CORPORATION	VST		SPR	STK	
V09878	BLUE DIAMOND OIL CORPORATION	VST		SPR	STK	
V09881	BLUE DIAMOND OIL CORPORATION	VST		SPR	STK	
V09882	BLUE DIAMOND OIL CORPORATION	VST		SPR	STK	
V09883	BLUE DIAMOND OIL CORPORATION	VST		SPR	STK	

APPENDIX C

List of Available Flow Measurements

<i>Station</i>	<i>Data Source</i>	<i>Measure Date</i>	<i>Rating Code</i>	<i>Discharge (gpm)</i>	<i>Discharge (cfs)</i>	<i>Notes</i>
Cave Spring	DRI	5/24/1966	Unknown	400	0.89	--
Cave Spring	DRI	6/15/1968	Unknown	400	0.89	--
Cave Spring	USGS	3/1/1980	Unknown	1000	2.23	--
Cave Spring	SNWA	6/23/2004	Good	105	0.233	--
Cave Spring	SNWA	7/16/2004	Excellent	36.4	0.081	--
Cave Spring	SNWA	7/29/2004	Poor	9.9	0.022	--
Cave Spring	SNWA	9/14/2004	Excellent	0	0	Spring was dry, a few puddles in channel but no active flow.
Cave Spring	SNWA	7/26/2005	Fair	359	0.799	--
Cave Spring	SNWA	10/12/2006	Poor	14.8	0.033	Estimated discharge.
Cave Spring	SNWA	7/9/2007	Excellent	0	0	Creek is dry at office.
Cave Spring	SNWA	9/7/2007	Excellent	0	0	Pool in a cave.
Cave Spring	SNWA	5/11/2010	Fair	1764	3.93	Cross section was 20 ft downstream of the mouth of the cave.
Cave Spring	SNWA	11/9/2010	Excellent	0	0	Water in photos is from yesterday's (11/8) snowmelt and rain.
Cave Spring	NDWR	5/16/2011	Fair		9.30	Measure 50 ft run using float method in Cave Spring channel near main Cave V rd.
Cave Valley Ranch Springs	NDWR	5/16/2011	Fair		5.00	Cave Creek just south of Cave Valley Ranch, all flow from Cave Valley Ranch's springs coalesce just above this location.
Haggerty Spring	NDWR	5/16/2011	Fair		3.76	Large perennial spring at head of Haggerty Cr.
Haggerty Spring	PBU	9/25/1979	Unknown	300	0.67	Measured at spring with 90° v-notch weir by applicant
Haggerty Spring	PBU	10/29/1973	Unknown	398	0.89	Measured at spring with 90° v-notch weir by applicant
Horse Spring	NDWR	5/16/2011	Good	0.3		Spring discharge area developed with network of perforated pipe, all covered and recontoured. Piped to water trough.
Parker Station Spring	SNWA	5/11/2010	Poor	158	0.351	Flow is estimated using the float method. Flow measurement was taken between two impoundments downstream of the spring.
Sidehill Spring	USGS	3/1/1980	Unknown	1	0	Discharge is < 1 gpm.
Sidehill Spring	USGS	6/21/2004	Poor	2.7	0.006	Estimated twice the measured flow of spring, only half is captured.
Cave Valley Wash	NDWR	5/16/2011	Fair		5	Cave Valley Wash just south of Cave Valley Ranch, all flow from Cave Valley Ranch's springs coalesce above this measurement site.
Cave Valley Wash	NDWR	5/16/2011	Fair		12.2	Cave Valley Wash 3.6 miles south of Cave Spring, spring runoff just past peak
Cave Valley Wash	NDWR	5/16/2011	Fair		0.08	Cave Valley Wash at Parker Station

Cave Spring monthly averages		
Month	CFS	Monthly AF
Jan	0.00	0
Feb	1.00	55.44
Mar	2.33	143.0154
Apr	3.00	178.2
May	4.71	288.8952
Jun	0.56	33.3531
Jul	0.23	13.84119
Aug	0.00	0
Sep	0.00	0
Oct	0.03	2.02554
Nov	0.00	0
Dec	0.00	0
Weighted total		714.77043