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NEVADA DIVISION OF WATER RESOURCES

ADJUDICATION SECTION

FIELD INVESTIGATION REPORT

DIAMOND VALLEY (BASIN 153) ADJUDICATION

ROCK & BOX SPRINGS CANYONS, EUREKA COUNTY, NV

IRRIGATION CLAIMS OF VESTED RIGHT:

V-01110, V-10973; V-01111, V-10972

INVESTIGATED: SEPTEMBER, 2016 and SPRING 2017

INVESTIGATED & PREPARED BY:

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10/3/2017

Tony Eng – Water Resource Specialist

Date

INTRODUCTION

Location and Brief History – The Rock Canyon field (V-01110, V-10973) and Box Springs Canyon Ranch (V-01111, V-10972), the Area of Interest (AOI) are located in the east-central portion of Diamond Valley, Hydrographic Basin 10-153, approximately 32 and 33 miles north of Eureka, respectively, in north-central Nevada (Figure 1). These areas are located five and six miles north of the Thompson Ranch and just west of the Diamond Mountains range front at an average elevation of about 5,800 ft. The reader is referred to a more detailed field investigation report filed under V-01115 on the Thompson Ranch, for background information on the general area, weather conditions during the fieldwork, methods, etc. A report on the Cox Ranch and Willow Field filed under V-02846 may also be referenced, as these areas are only 3-5 miles south of the current AOI. The outline of the current report will follow that for the Thompson Ranch, but in greater brevity. The Box Springs Canyon Ranch was also known as the Mau Ranch after a prior owner, and this will be the name used here. Based on tax records, it was probably first settled around 1882 by I.F. Crofut. T. Milton Thompson is the current owner of the main ranch, the Rock Canyon field and the immediate adjacent fee lands.

During the second week of September 2016, the investigator spent approximately two days investigating the AOI. Additional minor fieldwork occurred in 2017 during and after the spring freshet when visits were made in April, May and June collecting flow measurement data, and/or inspecting for flow of water in the Rock Canyon and Box Springs Canyon intermittent drainages, and re-visiting the springs claimed for irrigation. This complimented the more extensive fieldwork done in the fall of 2016 and followed a near record year and winter for precipitation in the Diamond Mountains.

The report outline is as follows: 1) summary of the proof filings; 2) flow measurements from the claimed sources; 3) field observation of the Points of Diversion (PODs), ditches, crop/culture, etc. in the claimed Places of Use (POUs); 4) a series of photos documenting the above #3); 5) evidence from other maps and county tax records; and 6) other miscellaneous field work in the AOI. Larger scale reference maps and a table are included within the main body of the report, while supporting photographs are appended.

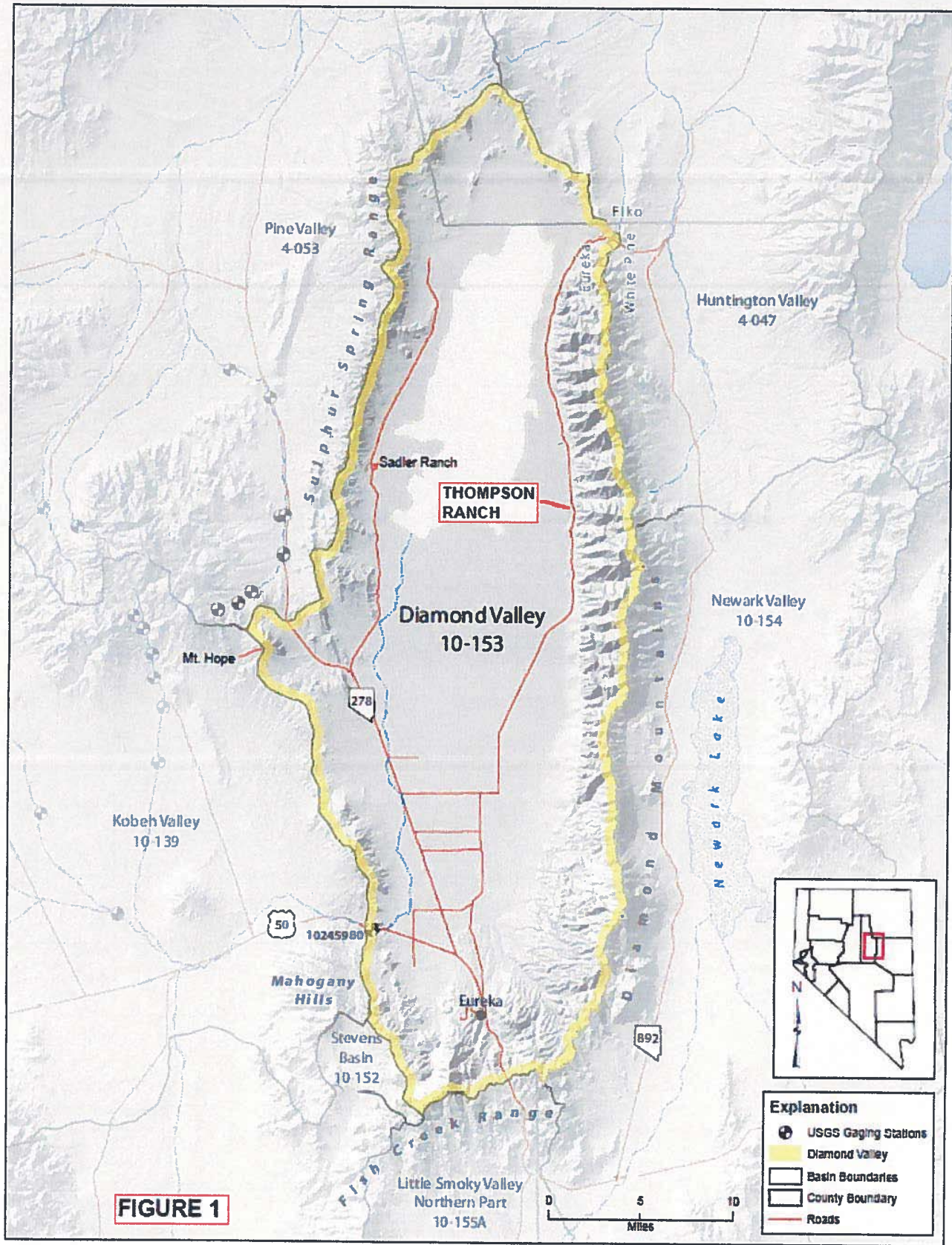


FIGURE 1

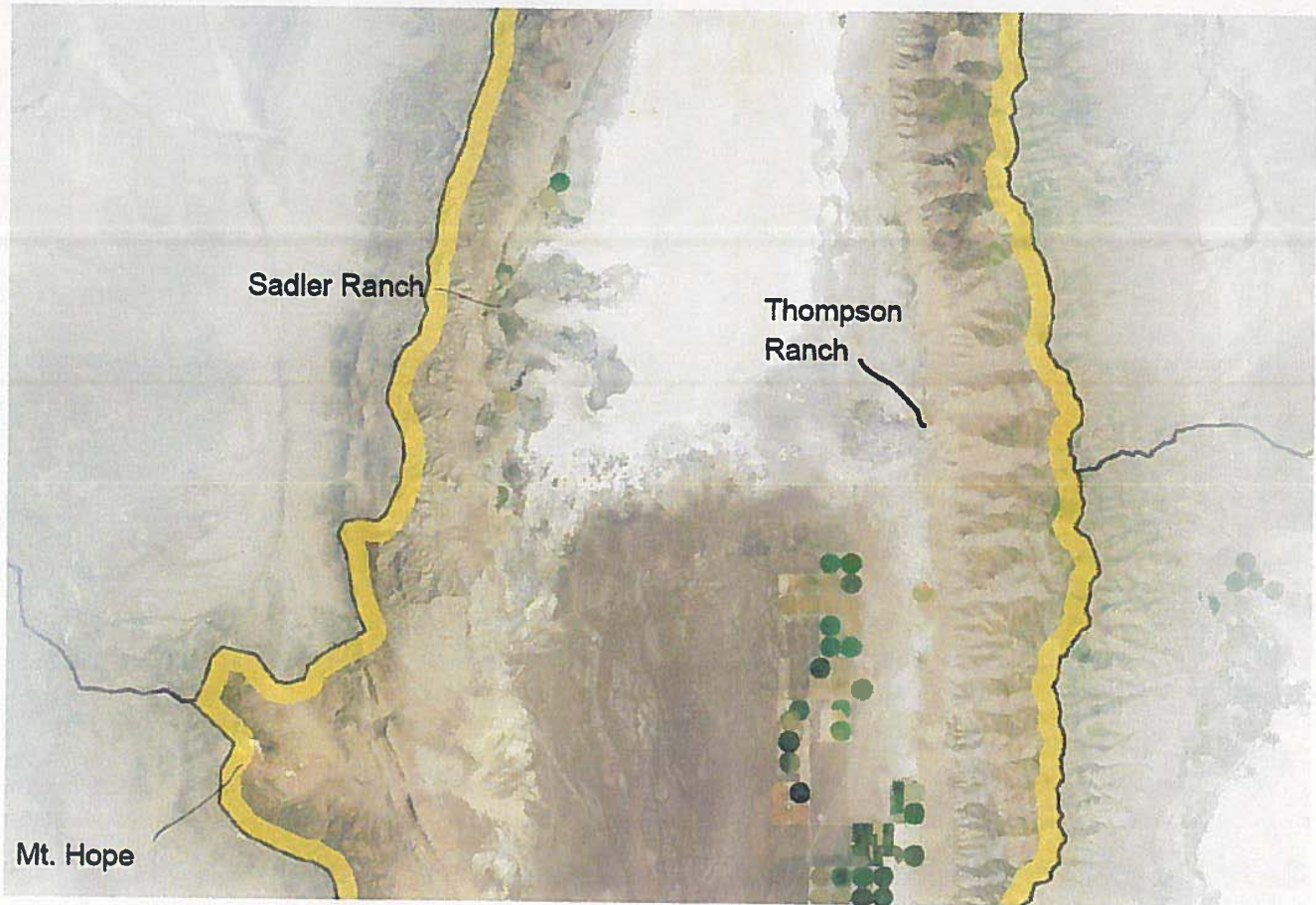


Figure 2 – Enlargement of 2015 NAIP image, north-central portion of Diamond Valley. Mau Ranch and Box Springs Canyon are located 6 miles north of Thompson Ranch; scale is two center pivots equal approximately 1 mile.

SUMMARY OF CLAIMS

Rock Canyon Area

V-01110, Rock Canyon

Proof of Appropriation V-01110 was filed on June 7, 1912 by Jorgen P. Jacobsen, owner of the land at the time. The means of diversion was by a dam and ditch from Rock Canyon, for irrigation of 21.25 acres of alfalfa, grain and meadow grass from April 1 to June 10; the priority claimed was 1895. No other secondary manners of use were claimed. In the Remarks section, the water was said to be from melting snows with no flow after June 10 in ordinary years. A supporting map submitted on the same date as the proof, was surveyed by Geo. S. Nickerson on May 27, 1912. The POD is shown in the SE $\frac{1}{4}$ NE $\frac{1}{4}$ Section 9, T24N, R54E with the POU mostly in the NE $\frac{1}{4}$ SE $\frac{1}{4}$ of the same section. The POD is shown as being in the natural drainage channel of Rock Canyon, with two ditches at roughly 110° from each other, bounding and irrigating the north and east sides of the POU. The 21.25 acres claimed for irrigation are illustrated in the green outline, along with the POD immediately to the north in Figures 3 (topo map) and 4 (aerial).

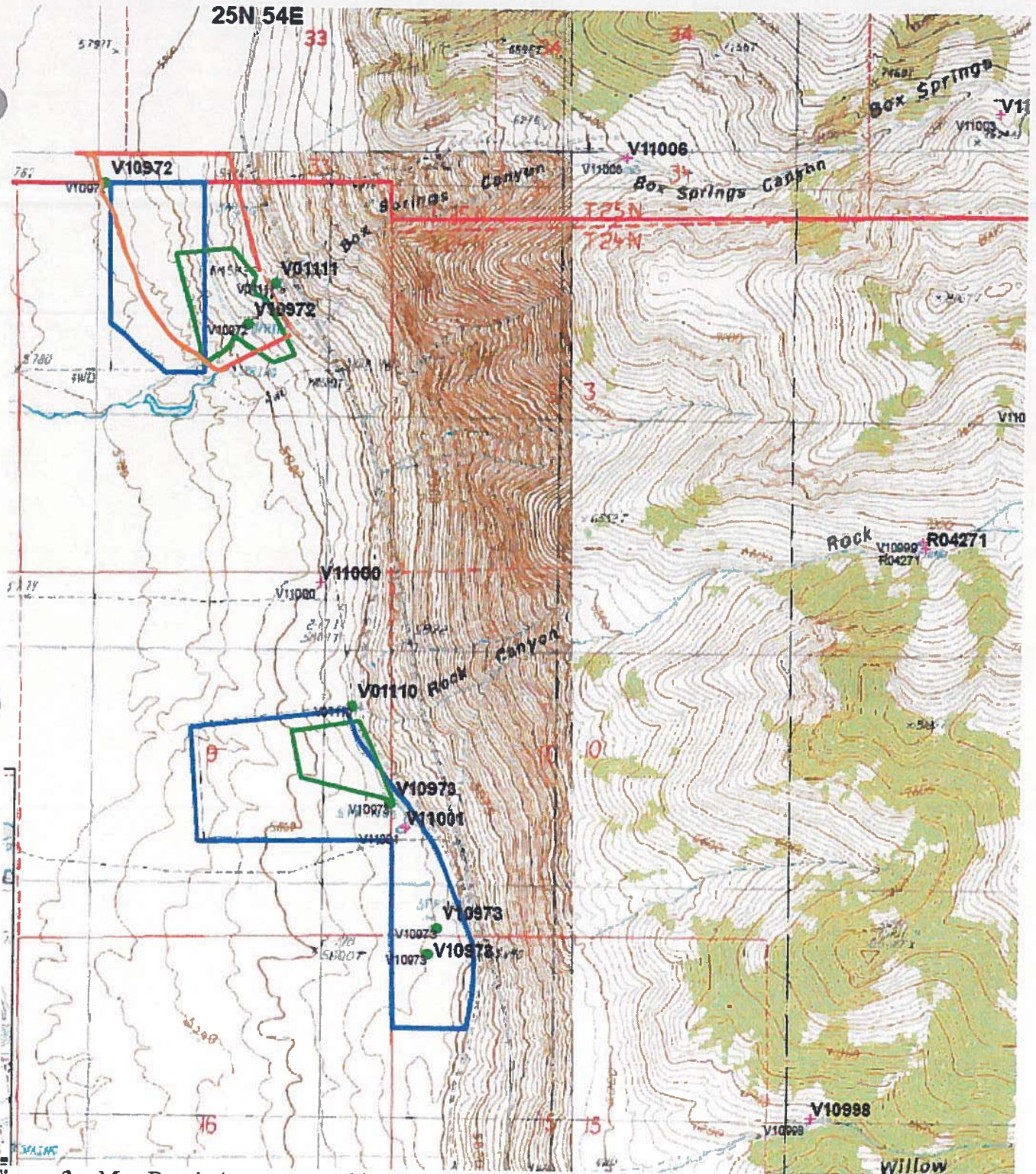


Figure 3 – Mau Ranch Area topographic map, showing locations of PODs & POUs. Rock Canyon field in east center of Section 9 and POU of V-01110 (green outline), with POD near NE corner of POU, is enclosed by V-10973 POU (blue outline). One mile to the north is main Mau Ranch; POU of V-01111 below Box Springs Canyon (green outline), is mostly enclosed by POU of V-10972 (orange outline); blue outline is certificated POU of Permit 2441 from Davis Canyon Creek. Contour interval (CI) 5 ft in POU; 40 ft CI east portion of map.

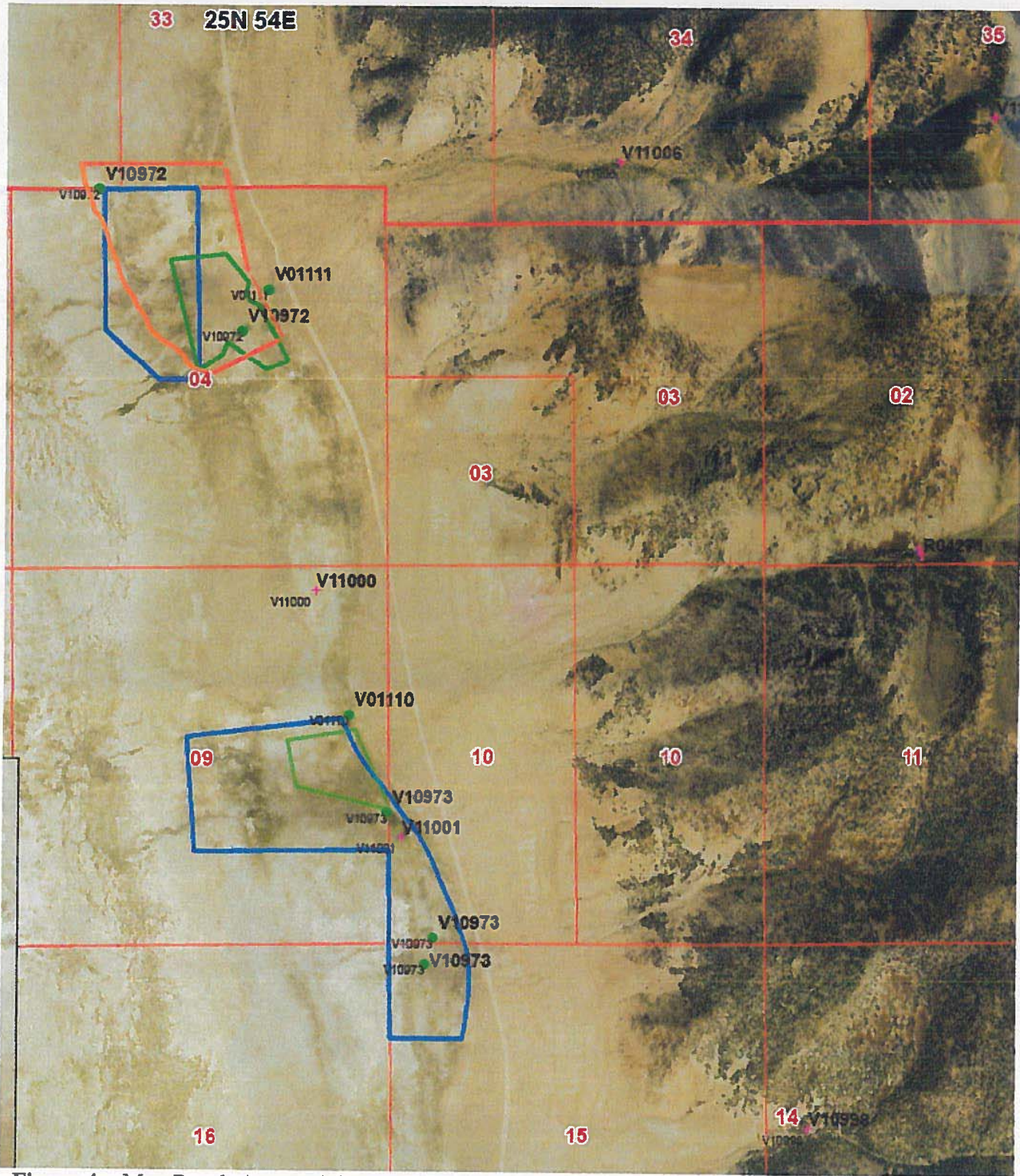


Figure 4 – Mau Ranch Area aerial map, showing locations of PODs & POU. Rock Canyon field in east center of Section 9 and POU of V-01110 (green outline), with POD near NE corner of POU, is enclosed by V-10973 POU (blue outline). One mile to the north is main Mau Ranch; POU of V-01111 (green outline) in NE portion of Section 4, is mostly enclosed by POU of V-10972 (orange outline); blue outline is certificated POU of Permit 2441 from Davis Canyon Creek.

The current owner of record for claim V-01110 is Theodore M. and Olive M. Thompson.

Rock Canyon Area

V-10973, Springs and Seeps

Proof of Appropriation V-10973 was filed for Milton Thompson on May 31, 2016 by his Agent George M. Thiel. The claim encompasses the Rock Canyon field filed under V-01110. The claim was filed for 166.64 acres of irrigation and diversion of 1.25 cfs, from unnamed springs and seeps, with secondary uses for stock water and domestic. The means of diversion was by "meadow/hay areas and open ditches", with a claimed priority of "prior to 1879". Three main spring areas were described by legal description and tie and bearing, and from south to north, were informally referred to as "Upper", "Middle" and "Lower", respectively in Attachment A of the proof, with the lower northern spring area being located near the southeast corner of the POU of V-01110, in the NE¼SE¼ Section 9, T24N, R54E. Under Item 7, the springs were said to have ceased flowing due to overpumping. Under livestock, the first year of watering in 1894 was for 300 cattle, 150 horses and 2500 sheep from January 1 to December 31, and in subsequent years 600 cattle, 150 horses, and 2000 sheep; there was no description provided for impoundments. In regards to irrigation methods, ditches, etc. under Items 12 through 19 of the proof, no information was given. Under Item 20, crops were listed as alfalfa, native hay, meadow grasses supplemented with grazing seed, etc., with irrigation from January 1 to December 31; cuttings averaged 1 per year, with a maximum of 2 per year. Under Item 23, the following statement was made: *"Water flowing from the springs has diminished to non-existent due to the over pumping within the southern portion of Diamond Valley by Junior Appropriators"*. The following is paraphrased or taken directly from statements in the Additional Supporting Remarks section: *"Water from the multiple springs and seeps located in the POU is commingled and supplemental with other sources, including from Rock Canyon. Spring flow has been declining since the onset of heavy development of groundwater rights in the basin. The entire flow of the appurtenant springs is diverted and used to irrigate lands and water livestock when available. Diversified pasture areas include Top Fescue, Timothy, and Johnson Grasses. The full water right has been used since pre 1879 to water livestock and provide hay and forage. Irrigation and livestock uses have continued to the extent water has been available at the source"*. A supporting map was filed on the same day as the proof; the 166.64 acres claimed as irrigation is illustrated

in the blue outline below Rock Canyon in Figures 3 and 4, along with the three main claimed spring areas mostly in the southern portion of the claimed POU. The map culture table and proof Attachment B, list meadow hay as the only crop, not alfalfa, diversified pasture, etc., as claimed in other portions of the proof. The current owner of record for the claim is Milton Thompson.

**Box Springs Canyon Ranch/Mau Place
V-01111, Box Springs Canyon**

The filing and ownership information for this claim is similar to that for V-01110, with the following exceptions: 1) the water source is Box Springs Canyon, via an unnamed ditch and priority of 1892; 2) ditch dimensions of 2 ft wide at bottom, 4 ft wide at top, and 1 ft deep at a grade of 20 ft/1000 ft; 3) period of use April 1 to June 15; and 4) 36.0 acres of fee lands irrigated including garden in Section 4, T24N, R54E. The supporting map was surveyed on May 29, 1912 and shows 36.0 acres of meadow only, in the north central portion of Section 4, with the POD located in Lot 2 (NW $\frac{1}{4}$ NE $\frac{1}{4}$), and an array of branching ditches flowing southwest to the claimed POU. The outline of the 36.0 acres of irrigation is illustrated in the green outline in the NE portion of Section 4, along with the POD to the east in Figures 3 and 4.

V-10972, Springs and Seeps

The filing and ownership information for this claim is nearly identical to that of V-10973 with the following exceptions: 1) "Upper" and "Lower" springs areas are described in Lot 4, and SW $\frac{1}{4}$ NE $\frac{1}{4}$ Section 4, respectively (note in terms of topography, the names are reversed); and 2) the supporting map illustrates 115.0 acres of meadow hay only, located mostly in the north-central portion of Section 4, T24N, R54E, as well as some land in Section 33 in T25N. The 115.0 acres of claimed irrigation is illustrated in the orange outline, and lies mostly in Section 4 along with the two PODs in Figures 3 and 4. The topographically higher (upper) springs area is located wholly within the POU of V-01111, while the lower springs is located in the far NW corner and edge of the claimed POU, about $\frac{1}{2}$ mile to the northwest.

Other Irrigation Water Rights within POU

Numerous other water rights for irrigation have been granted in the main Mau Ranch area, but the only valid right is Permit 2441, certificated for 75.0 acres of irrigation. Its POU is shown in

the blue outline in the NW¼ of Section 4 of Figures 3 and 4, and is mostly enclosed by the POU of V-10972. The source of water is Davis Canyon Creek via an approximately 2½ mile-long ditch draining from the north to the POU. In addition, the following underground rights were applied for use within the main Mau Ranch area, Permits 13728, 29862, and 36311, Application 29740, and Permit 4057 for surface water from upper Box Springs Canyon; none of these are active as they were either cancelled or withdrawn.

FLOW MEASUREMENTS, MAU RANCH AREA
ROCK CANYON (V-01110), BOX SPRINGS CANYON (V-01111), et al.

Several flow measurements are available for the sources of interest, and are summarized in Table 1. A flow measurement on Rock Canyon was made on April 11, 2017, at the culvert along the county road, about 300 yards above (east) of the claimed POD for V-01110 (Photo 1a). A flow rate of 22.5 gpm was measured by direct methods (3 gallon bucket and stop watch). On May 1, 2017 flow was estimated at approximately 5 gpm. On several other visits in May and June, as well as on September 11, 2016 there was no flow and the channel was dry (Photo 1b). It is apparent that flows in Rock Canyon to the POU are mainly limited to the freshet period from melting snow, and it may be classed as a smaller intermittent drainage. The spring areas claimed under V-10973 were visited in September 2016, and April 2017, and were not flowing at either time and there was no evidence of any recent flow (Photo 3).

Flow in Box Springs Canyon was measured in the main channel near the Mau Ranch buildings and claimed POD for V-01111, just below (west) of the county road. On April 11, 2017 the flow was measured at 48 gpm using a 90° V-notch weir (Photo 4a). On May 1, there was no flow at the county road crossing, but portions of the channel were moist and likely flowed earlier in the day. Subsequent visits in May and June, as well as in September 2016 the channel was dry and there was no evidence of any recent flow. Box Springs Canyon may be classed as a moderate-size intermittent drainage, similar to the Telegraph Canyon drainage near the Cox Ranch. The upper (south) spring claimed under V-10972 is an oblong depression, approximately 40 ft wide by 150 ft long, with 10-15 ft of relief. On September 11, 2016 the depression was mostly dry, with some partially muddy areas, as well as several small clusters of 2-3 ft high tules. On April

11, 2017 there was some standing water several inches deep and mud in the lower part of the depression (Photo 5b). On May 25, 2017 much of the depression was filled with water 6" to 1 ft deep (Photo 5a); there was likely some flow ($\leq 1-2$ gpm), but it could not be measured due to the low gradient and lack of an outlet. Based on these visits and conversations with Mr. Venturacci, it is apparent that much of the water recently observed in the spring is from subsurface flow from the Box Canyon ditch and natural channel, which drains SW toward the depression. There was likely a greater groundwater component to the spring flow before intense underground pumping of Diamond Valley, as a photograph by M. Thompson from April 1961 shows that water filled most of the depression, and was likely 3-5 ft or more deep then.

The lower (northern) spring area claimed under V-10972 was inspected several times during the recent visits, but there was no evidence of a spring found. The Davis Canyon Creek ditch, which enters the Mau Ranch near the north-center of Section 4 and irrigates much of the claimed POU and land under Permit 2441 was found, but was dry on all occasions. Mr. Venturacci reports that the ditch washed out several miles to the north in approximately the spring of 2011. From the measurements and observations made, it is evident that Rock and Box Springs Canyons flow significantly more during the freshet, than Judd (V-10368) and Cox Canyons (V-02847) located to the south.

TABLE 1 – FLOW MEASUREMENTS, MAU RANCH AREA, V-01110, et al

Claim No	Field Site Name	Date	Time	Flow Rate	Method	Rating Code	Water/Air temp °F
V01110	Rock Canyon ditch at rd	9/11/2016	14:35	0	visual	excellent	N/A, mid 80's
		4/11/2017	15:05	22.5 gpm	direct	excellent	48/low 50's
		5/1/2017	17:55	5 gpm	visual	poor	N/A, upper 50's
		5/22/2017	19:15	0	visual	excellent	N/A, low 70's
		6/16/2017	20:30	0	visual	excellent	N/A, upper 70's
V10973	Rock Cyn field, unnamed spring(s)	9/10/2016	17:50	0	visual	excellent	
		4/11/2017	16:00	0	visual	excellent	
V01111	Box Sprs Cyn, at POD or culvert	9/11/2016	16:05	0	visual	excellent	N/A, low 80's
		4/11/2017	19:05	48 gpm (good)	90° weir	good	44/46
		5/1/2017	18:00	0 (moist)	visual	excellent	N/A, upper 50's
		5/22/2017	19:20	0	visual	excellent	N/A, low 70's
		6/16/2017	20:35	0	visual	excellent	N/A, upper 70's
V10972	upper spring SW of buildings	9/11/2016	18:35	<<1 gpm	visual	fair	N/A, upper 70's
		4/11/2017	19:20	<1 gpm	visual	poor	NA, mid 40's
		5/25/2017	14:40	≤1-2 gpm	visual	poor	N/A, upper 70's

OTHER FIELD OBSERVATIONS & FINDINGS

H.M. Payne of the State Engineer’s Office visited the AOI in October 1912; the following is taken directly from his field notes. For V-01110, the Rock Canyon field inspected October 14, 1912:

“Mr. Jacobson has recently bought this ranch, though the initial right dates back 30 years or more. There is a spring in the field, but it is beneficial for stock only. The sole source of water for irrigation therefore, is derived from Rock Canyon. This source is snow water only which flows from March 15th to June 15th, the maximum at any time being about 2 sec. ft. Mr. Jacobson uses the water in the most advantageous manner possible while it lasts, and derives the benefit of one crop of hay. There is about 30 acres under cultivation.”

Based on this inspection, pre-statutory Certificate Number 36 was issued for 21.25 acres of irrigation, stockwatering and domestic purposes, with a date of appropriation of 1895 by the State Engineer on November 23, 1912.

For V-01111, Box Springs Canyon/main Mau Ranch inspected October 14, 1912:

"This canyon is the next canyon above Rock Canyon just described. The water derived for irrigation therefrom is snow water which flows for 2 or 3 months of the year, the maximum at any one time not exceeding 2½ sec. ft. The ranch consists of approximately 35 acres of alfalfa, and holds a right under a priority of about 1872."

Based on this inspection, pre-statutory Certificate Number 37 was issued for 36.0 acres of irrigation, stockwatering and domestic purposes, with a date of appropriation of 1892 by the State Engineer on November 23, 1912.

Rock Canyon Area

V-01110 (Rock Canyon) & V-10973 (Springs and Seeps)

Recent examination of the POD and POU for the Rock Canyon field area (V-01110) shows a fairly well defined natural channel, and a 50-100 ft wide zone of gravel and smaller cobbles near the lower portion of the alluvial fan, west of and below the county road (Photo 1b), indicating considerable water flow. Near the claimed POD, there is a NW-SE fence line where the east highline ditch would be located. A few signs of a former unmaintained ditch could be surmised, along with pieces of historic (pre-WW II) farm implements (steel tire from hay crane). The north-bounding ditch per the claim map coincides with the main drainage channel, rather than a well-maintained ditch. There is approximately 20-25 acres of unmanaged, mostly cleared land near the claimed POU for V-01110, which in September 2016 had been heavily grazed by cattle; some remnants of alfalfa were seen in the grazed forage. Rabbitbrush and lesser amounts of sagebrush occur outward from the main portion of the claimed POU, as well as some smaller clusters and other scattered plants within the POU (Photos 2a-b).

The three spring PODs for **V-10973** roughly correspond with springs mapped on the USGS 7½' topographic map. The northern, lower spring occurs near the SE corner of the claimed POU of V-01110. There is a circular depression approximately 50 ft in diameter associated with it, along with about 1 acre of grassland; a probable excavated trench several hundred feet long extends to the SSE to a former spring claimed for stock under V-11001 (Photo 3). It is difficult to determine to what extent these northern spring areas have been modified by human excavation versus natural events, but regardless none appear to have been developed for irrigation and were more

likely made for stock watering. One of the larger oblong depressions is fenced, likely for protection of livestock. The total area that could conceivably be irrigated by the northern spring is approximately 110 acres, the majority of which is well removed and quite distant from the claimed spring. The two southern springs claimed for irrigation under V-10973 are located approximately ½ mile or more south of the northern springs described above. They also occur just west of the break in slope near the valley floor and are similar, smaller circular depressions. No works of diversion or ditches occur near them, and any use was likely limited to stock watering. Some alkali and other grasses occur 50-100 yards west of these springs, but they are likely natural in origin from subsurface flow west of the range front, and not from human development for irrigation. It should be noted that approximately half or more of the claimed POU around the south springs is uphill from the claimed PODs, and could not be irrigated by normal flood methods from them.

V-01111 (Box Springs Canyon) & V-10972 (Springs and Seeps), main Mau Ranch

The claimed POD under V-01111 per the 1912 filed proof map is 100 yards or more north of the actual location in the field; this can be attributed to a non-extent tie and bearing for the POD to an actual surveyed corner on the submitted map. The actual POD in the field consists mostly of the natural stream channel, which is somewhat braided in gravels with some smaller boulders (Photo 4a), and has partially re-channeled some of the POD area and upper ditches. However, a partially branching network of ditches from the main channel could still be recognized below the former ranch buildings, to and within the unmanaged POU and the ditches found resemble those on the filed claim map. There is approximately 30-35 acres within the claimed POU that was mostly cleared (Photos 4b, 5a-b). In September 2016, the POU was heavily grazed and there was some evidence of alfalfa as forage similar to the Rock Canyon field. A small portion of the POU on the western edge may overlap the POU of Permit 2441 from the Davis Canyon Creek ditch.

For the upper (south) spring POD claimed under V-10972 (Photos 5a-b), no evidence of any works of diversion, outlet or ditches were found extending from the oblong depression to the claimed POU, a significant portion of which would be uphill of the POD. Before intense underground pumping of the basin, the spring may have subirrigated a small area in its vicinity, in a similar manner as was postulated for the former springs on the Cox Ranch (V-02546). The south spring could also have been used for stock watering at one time, though the depression is

now fenced with barbed wire to prevent cattle from becoming mired in the mud, and no troughs or other impoundments for stock were seen in the immediate area. In May 2017, some cattle were watering in the Box Spring Canyon stream channel and ditches within the POU, not the claimed south spring. As mentioned in the section under flow measurements, there was no sign of a spring near the north (lower) POD claimed under V-10972. As may be seen on the topographic map (Figure 3), if a spring were present at the claimed location, virtually the entire POU would be uphill of it and could not be flood irrigated by normal means (i.e. without pumping water uphill into ditches).

Several buildings and other structures are still standing at the Mau Ranch (Photo 4b). Along the immediate east side of one of the historic wooden dwellings is a possible former hand dug well, which is rock lined and approximately 6 ft by 6 ft in size. This structure is now mostly filled in by dirt to within 2 ft of ground level, and several modest-size silver poplar or similar trees are growing within it.

OTHER EVIDENCE

Evidence From Other Maps - The GLO map for T24N, R54E surveyed and dated 1879 does not show any buildings, fence lines or other human development in the AOI. (It should be noted that some of the mapped features on the GLO map along the northern part of the township boundary, are a ½ mile or more mislocated relative to the current township and sections (for example, the Diamond Mountains range front boundary, and the Eureka-Huntington Valley-Elko road).)

The unpublished Agricultural Conservation Program (ACP) map of the main Rock Canyon field (V-01110) dated 1938 shows a fenced parcel consisting of approximately 99 acres, or roughly the same size and shape as the current north parcel located mainly in the SE¼ Section 9. The map identifies 40.15 acres of pasture mostly on the far west side of the parcel, and 58.47 acres of mixed grasses to the east of the pasture; the latter area would enclose the claimed POU of V-01110. The 1938 ACP map for the southern parcel to the SSE of the main Rock Canyon field and part of the POU of V-10973, shows a fenced parcel of approximately 63 acres with the following culture: 1) 26.45 acres of mixed grasses in the central portion of the parcel; and 2) 36.73 acres of “waste” surrounding the area of the mixed grasses. The southern fenced parcel

corresponds to the southern portion of the claimed POU of V-10973. The 58.47 acres of mixed grasses in the northern parcel helps validate the claimed 21.25 acres of irrigation under V-01110, and establishes that it was productive land in 1937 when the surveys were conducted.

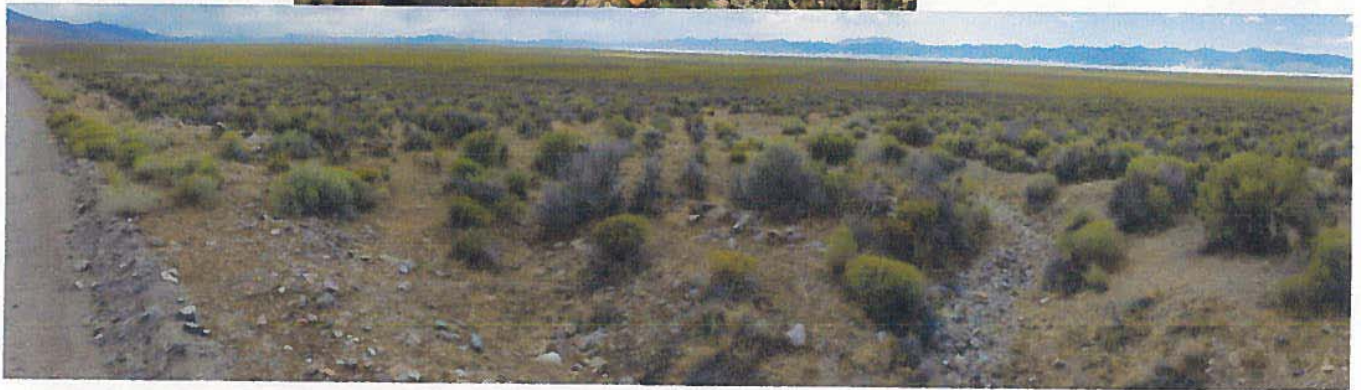
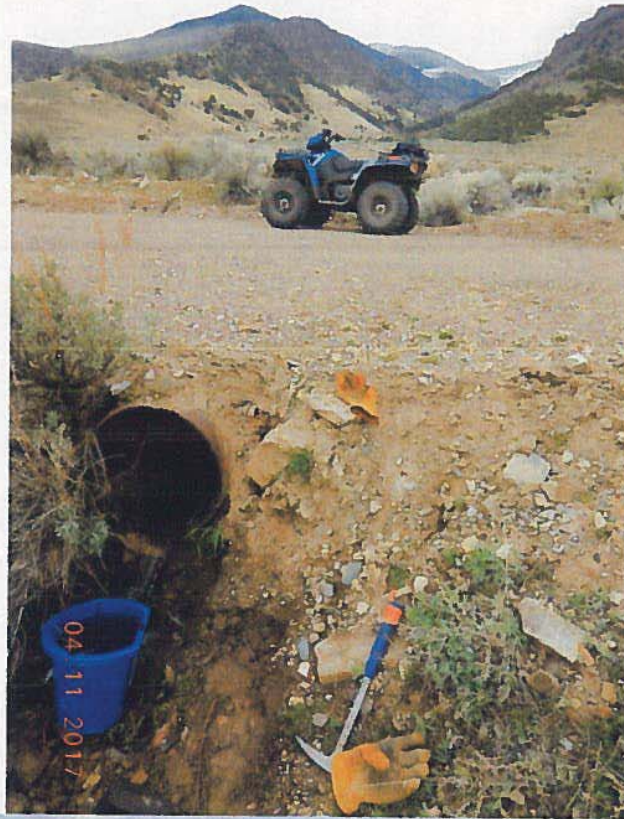
The 1938 ACP map for the main Mau Ranch below Box Springs Canyon (V-01111, V-10972) shows a fenced parcel of approximately 225 acres with the following culture: 1) 21.05 acres of alfalfa in two areas (just west of the ranch buildings, and near the north-central boundary of the parcel directly below where the Davis Canyon Creek ditch would enter the parcel); 2) 65.28 acres of mixed grasses; 3) 107.62 acres of pasture on the west half of the parcel; 4) 20.12 acres of "waste"; and 5) 11.21 acres of unidentified lands, and/or corrals, stackyards, etc. The eastern 12.93 acres of alfalfa is located within the eastern POU of V-01111, and indicates that a good harvest crop was still being cultivated in 1937, and helps validate this older claim.

Evidence From County Tax Records – Eureka County tax records for the Box Springs Canyon portion of the Mau Ranch were provided for seven years from 1882 to 1900. During this time, the ranch was described as being 80 acres, and belonging to I.F. Crofut until 1894 when the Dibbles were assessed. The maximum number of livestock listed was in 1888, when 82 horses and 30 cattle were assessed. Improvements for most years were stated as being a house, stockade, stable and corral, with the 80 acres being described as "farming land" in 1882, and "a tract of hay land" in 1888. No land acres were assessed separately in any of the years. No tax records were provided for the other Mau Ranch lands (i.e. Rock Canyon field), nor were patent records provided for any of the lands.

VERACITY OF CLAIMS & CONCLUSION

The notes from H.M. Payne's 1912 inspection of the Rock Canyon field (V-01110) corroborates the claim of 21.25 acres of cultivated lands (alfalfa, grain and meadow grass) in the POU, and is further bolstered by his statement that "the initial right dates back 30 years or more". His comment regarding the spring in the field being beneficial for stock only, and "the sole source of water for irrigation" being derived from Rock Canyon snow water, more or less refutes the claim of 166.64 acres of irrigation from "springs and seeps" filed under V-10973. The recent fieldwork and other analysis do not support the validity of this latter claim either. However, it is probable that the several former springs historically did provide water for stock before drying-up,

though not for the quantity of stock claimed under V-10975. For the Box Springs Canyon area and main Mau Ranch, the 36.0 acres of irrigation claimed under V-01111 is supported by H.M. Payne's comment that "the ranch consists of approximately 35 acres of alfalfa, and holds a right under a priority of about 1872" and similar to Rock Canyon, the water source is snow melt. This does not support the claim of 115 acres of irrigation from "springs and seeps" filed under V-10972. There is some surface water present at the southern spring claimed under V-10972, but there is no indication that it was ever developed for irrigation, though it likely did subirrigate a small area. It also was likely used historically for stock watering. There is no evidence in the field for the northern spring POD, and if it did exist it could not irrigate the claimed POU being topographically below it. The possible former hand dug well at the Mau Ranch indicates potential historic domestic use of underground water, for which no claim has yet been submitted.



Photos 1a & 1b – 1a (upper) Rock Canyon flow measurement site at county road, looking ENE; site is several hundred yards east of the claimed POD for V-01110. Flow measured at 22.5 gpm on 4/11/2017 using a 3 gallon bucket and stopwatch; flow estimated at 5 gpm on 5/11/2017. There was no flow and the channel was dry on later visits, and in September 2016. **1b** (lower) Rock Canyon channel and POU from county road and flow measurement site, ~120° panoramic looking SSW on 9/11/2016. The POU of V-01110 is in middle distance in right portion of photo below darker vegetation and break-in slope. The PODs and southern portion POU for V-10973 is in left portion of photo in middle distance below break-in-slope; main north portion of its POU encompasses the area claimed under V-0110, as well as ~¼ west in distance. The only flowing surface water throughout this area is from Rock Canyon during the spring freshet.



Photos 2a & 2b – 2a (upper) Photo from NW corner of claimed POU of V-01110, looking east, showing typical heavily grazed land with rabbitbrush, and lesser sagebrush and grasses. Rock Canyon is the largest canyon, left of center. **2b** (lower) ~160° panoramic looking east from same location as 2a, of main portion of POU in center of photo taken on 9/11/2016; central and southern portion of POU of V-10973 and PODs are in right ~1/3 of photo, with the three claimed springs located along the base of the alluvial fan in middle to far distance.

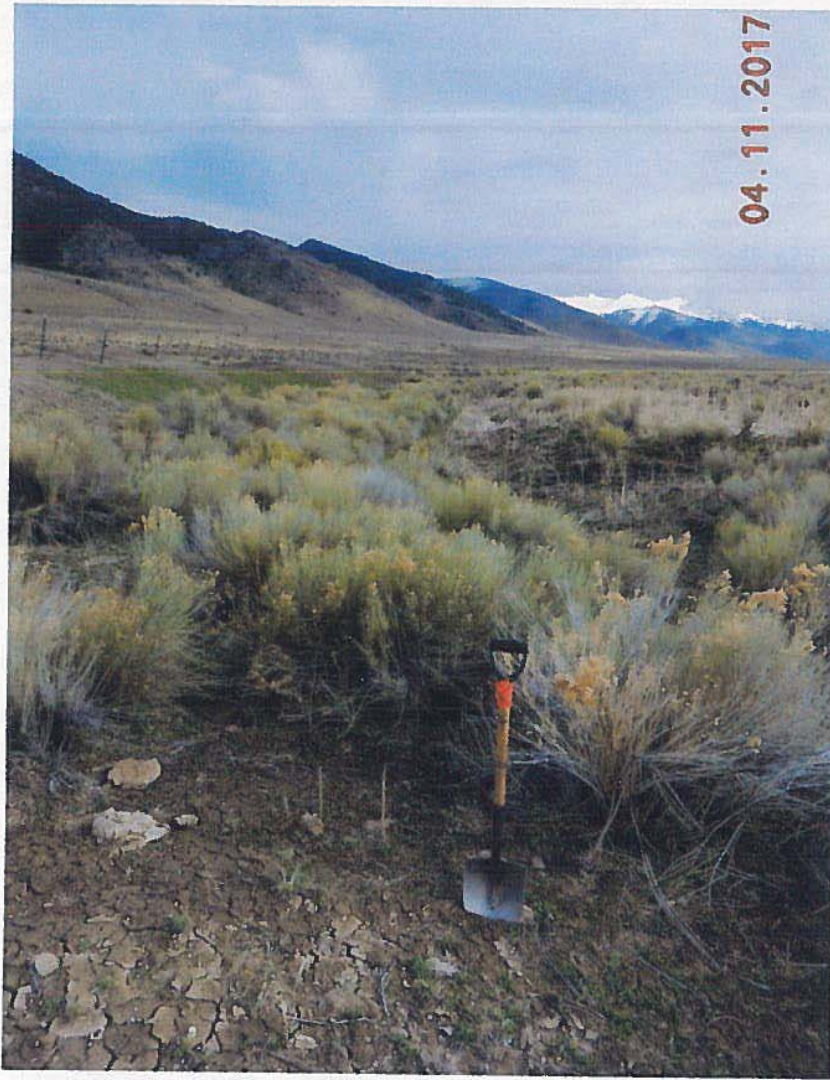


Photo 3 – Area around north claimed spring POD for V-10973, looking SSE. Former spring is located near the southeast corner of the POU of V-01110. South portion of claimed POU for V-10973 extends from this photo for ~3,000 ft to right of break-in-slope, in right lower portion of photo. There is ~100 yard trench-like feature above shovel, and a fenced linear spring-like, dry depression to the left.

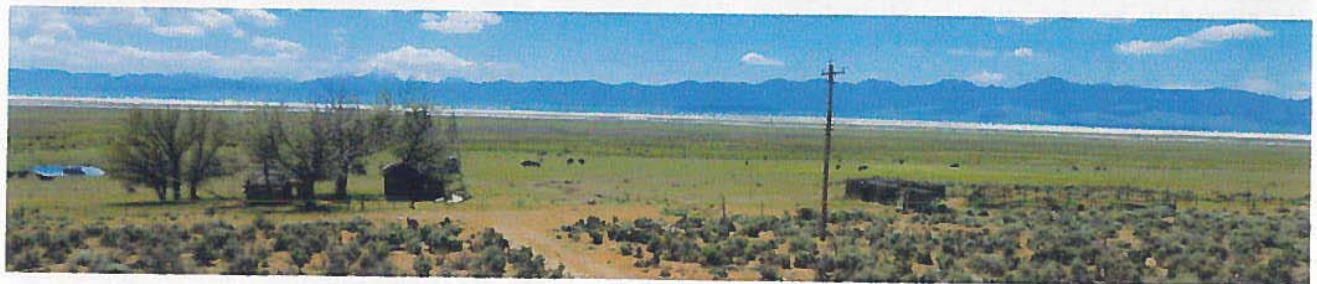


Photo 4a & 4b – 4a (upper) Box Springs Canyon drainage at county road, looking west. POD for V-01111 is just west of culvert; a flow rate of 48 gpm was determined using a 90° V-notch weir on 4/11/2017. Northern portion of POU for V-01111 is in middle distance; POUs of V-10972 and Permit 2441 from Davis Creek are further west and in upper right. **4b** (lower) Cropped photo looking west, of main Mau Ranch area and most of POU of V-01111, taken 5/25/2017; Box Springs Canyon flow measurement site (Photo 4a) is ~100 yards to right of photo. South (upper) spring for V-10972 (Photos 5a-b) is just left of trees. POU for V-10972 encloses most of that of V-01111, and includes areas ¼ mile or more to the west and north. The possible former hand dug well is located on the east side of the building on the far left.

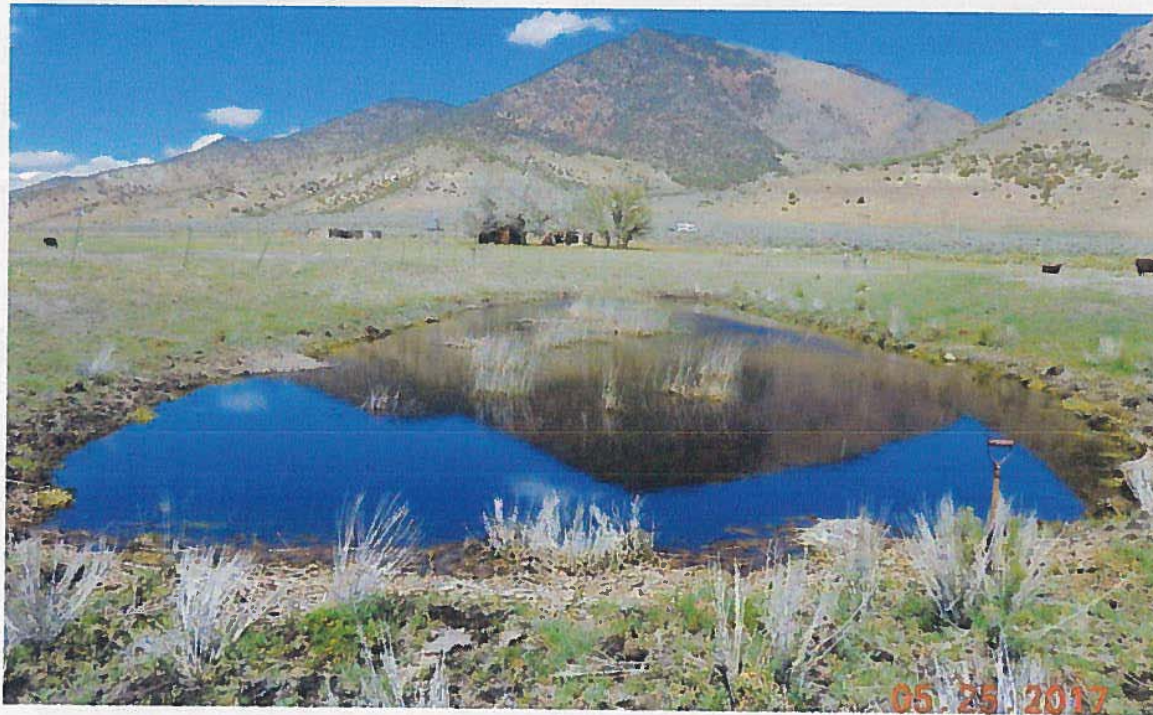
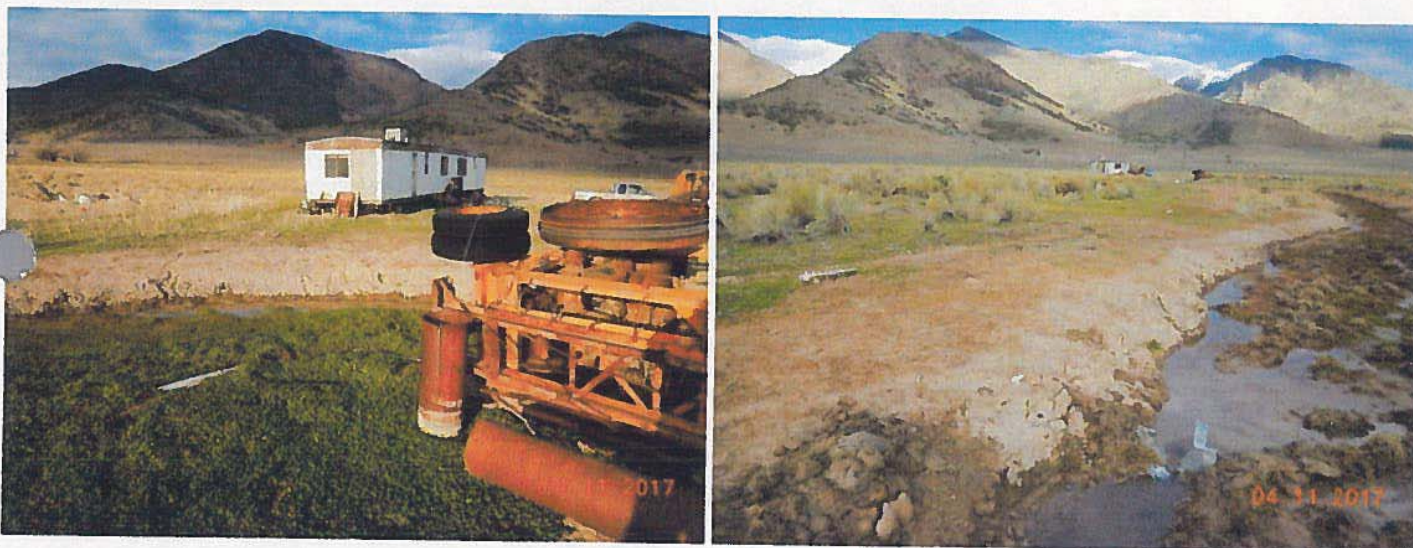


Photo 5a & 5b – 5a (upper) Shallow spring pool for south (upper) spring claimed under V-10972, looking NE. Flow is unmeasurable, but on this date was likely $\leq 1\text{-}2$ gpm, and is mostly due to recharge from Box Springs Canyon. POU of V-01111 encompasses all of foreground area and middle distance to abandoned ranch buildings. Note lack of outlet or ditch from the spring. **5b** (lower) same location as Photo 5a, looking NNE; flow is likely < 1 gpm and the spring was not yet recharged by Box Springs Canyon.

OTHER MISCELLANEOUS WORK

Unpermitted Well & Permit 29862 – An unpermitted 16” cased artesian well is located in the NW¼SE¼ Section 4, approximately 700 ft SSW of the south spring claimed under V-10972, and about 400 yards SSW of the abandoned Mau Ranch buildings. A recently occupied single-wide trailer is located immediately northeast of the well, and a drill rig is tipped over at the wellhead (Photo 6a). According to Milt Thompson, the well was drilled in 1979. The well likely corresponds to abrogated irrigation Permit 29862, and well log 20517; recent use has been for domestic and stock watering. Static water level was measured at 3.39 ft below the top of the casing, or at 1.89 ft below mean ground level, equating to an elevation of 5,792.11 ft on April 11, 2017; water temperature was 57°F. Water quality is likely good based on abundant watercress in the immediate discharge area. A flow measurement site was established 85 yards WNW of the wellhead, and a flow rate of 10.6 gpm was determined using a small 60° V-notch weir on the same date (Photo 6b). The well should be added to the Diamond Valley wellnet and flow rates monitored.



Photos 6a & 6b – 6a (left photo) Unpermitted artesian well likely drilled under abrogated Permit 29862², looking NE; 6b (right photo) nearby downstream flow measurement weir site, looking ESE.

Other Well Casings – Several 4” steel well casing were found along the north section line of Section 4, north of the Mau Ranch. The casing correspond to several artesian wells labeled on the 1975 BLM GLO map for the township. These are likely former seismic shot holes, which were subsequently cased by ranchers for stock watering purposes. The several investigated near the county road are bridged near ground level, and have not flowed for quite some time (many decades). Two other artesian wells are labeled on the same township map along the north border of Section 6. These were not examined but are likely of the same origin.