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**NEVADA DIVISION OF WATER RESOURCES
ADJUDICATION SECTION**

FIELD INVESTIGATION REPORT

DIAMOND VALLEY (BASIN 153) ADJUDICATION

THOMPSON RANCH AREA, EUREKA COUNTY, NV

CLAIMS OF VESTED RIGHT: V-01114, V-01115, V-10974

INVESTIGATED: SEPTEMBER, 2016 and SPRING 2017

INVESTIGATED & PREPARED BY:

Tony Eng

10/23/2017

Tony Eng – Water Resource Specialist

Date

INTRODUCTION

Location and Brief History - The Thompson Ranch area and associated claims of vested right are located in the east-central portion of Diamond Valley, Hydrographic Basin 10-153, approximately 27 miles north of Eureka in north-central Nevada (Figure 1). The main ranch buildings and former springs are situated in the SE¼ Section 3, T23N, R54E, MDBM, at an elevation of 5,820 ft and at 39.901°N, 115.868°W (NAD83). The best access to the area is north from Eureka on the Carlin-Eureka Highway (Route 278) for approximately 20 miles, then northeast on the Sadler-Brown County road to the Sulfur-Thompson County road, which then crosses Diamond Valley to the ranch; driving time from Eureka is approximately 45 minutes. The ranch is located approximately 15 miles NNE of the center area of the highest concentration of pivots and underground pumpage in southern Diamond Valley (Figure 2).

The area was first settled as part of the Overland Stage Route and Pony Express trail in approximately 1859. Due to the flowing springs and reliable water source, a stage and trail stop was built as Diamond Springs station. One of the stone buildings associated with the station is still standing on the ranch. These former transportation routes utilized Overland Pass, a low topographic point along the Diamond Range 3½ miles east of the station. With the development of the transcontinental telegraph, a telegraph station was later established at the Cox Ranch, located about 1 mile north of the Diamond Springs station. The Thompson Ranch has been occupied more or less continuously since the establishment of the Diamond Springs station. It lies just west of the range front of the Diamond Mountains at an elevation of 5,840 ft, and extends to the west for approximately 2 miles along the east side of the valley. The ranch has had several previous names including Toft, Taft and Jacobsen, but the name Thompson is preferred here as the Thompson family occupied the ranch for an extended period in more modern times. That is also the name used for the ranch on several of the USGS topographic maps.

Fieldwork, Logistics and Weather Conditions - During 2016, the investigator spent 4 days field investigating the immediate Thompson Ranch area. The fieldwork consisted mainly of Place of Use (POU) and crop/culture inspections; no flow measurements were possible due to the former springs and ephemeral stream (Horse Canyon) being dry in the fall season. The equipment used was a hand held Garmin GPS (model GPSMAP 62sc with generally 3-4 m accuracy) and several digital cameras. The work was conducted from September 7-9, 2016, and again with other DWR personnel and the property owner (Daniel Venturacci) on September 12, 2016. There were no weather or access problems, and the work was facilitated by staying onsite at the ranch in a truck camper, thereby eliminating the 1½ hour

daily commute to Eureka. Mr. Venturacci kindly provided space for the truck camper during the fieldwork, and also for investigation of the ranches to the north, so a total of 7 nights were spent onsite; his hospitality is gratefully acknowledged.

Weather during the time of the fieldwork was warm to unseasonably warm, with daytime highs in the 80s°F, and generally frost-free overnight lows. According to the USDA drought monitor maps, the AOI at the time of the field work was under “abnormally dry” conditions, versus prior years of “severe drought” conditions due to low precipitation and snowpack from 2012-2015. A SNOTEL site named “Diamond Peak” (<https://wcc.sc.egov.usda.gov/nwcc/site?sitenum=443&state=NV>), is located 23 miles south of the Thompson Ranch in the Diamond Mountains, and 7 miles ENE of Eureka. Precipitation for the site located at an elevation of 8,033 ft was 148% of normal as of 9/1/2016 for the water year, reflecting a much better water year. According to the USDA/NRCS website, SNOTEL 2016 water year precipitation on 9/1/2016 was 121% of normal for the Eastern Nevada region, which includes Diamond Valley. Perhaps more indicative of the climate conditions during the water year and at the time of the fieldwork is the Palmer Drought Severity Index (PDSI) map for September 2016, which shows Diamond Valley and the Thompson Ranch area, as well as most of Eureka County in the positive (non-drought) range, with numeric values of +1 to +4 PDSI.

Additional minor fieldwork occurred in 2017 during and after the spring freshet when portions of several days in April, May and June were spent collecting flow measurement data on the Horse Canyon ditch, and re-visiting the former springs. This complimented the more extensive fieldwork done in the fall of 2016 and followed a near record year and winter for precipitation in the area.

Purpose, Data Sources, Report Outline – The purpose of this report is to document the conditions found during the course of the fieldwork. Since the springs, which were the primary source of irrigation water, have ceased flowing for two decades or more, there is relatively little to describe and detail in terms of crop/culture, irrigation infrastructure, appurtenances, etc. Consequently, this report will also draw upon and summarize other file and historic data, which would normally not be the case in a typical field investigation report. The primary sources of data reviewed, were files submitted in support of the proofs by Agents of the Claimant. Exhibits provided to the State Engineer’s Office (SEO) as part of the Sadler-Venturacci hearing of November, 2013 were reviewed, as well as prior Rulings by the SEO (#6290 and #6372), and the USGS’s surface water website.

The report outline will be as follows: 1) summary of the proof filings and their supporting maps; 2) historic flow measurements; 3) field observation of Points of Diversion (PODs), crop/culture in the claimed places of use (POU); 4) a series of photos documenting the above #3); 5) evidence from other maps (Government Land Office (GLO) and topographic maps) and aeriels; 6) evidence from County tax records; and 7) other related miscellaneous field work in the area. Larger scale reference maps, figures, tables and a few historic photographs are included within the main body of the report, while smaller scale, more detailed maps and a series of recent supporting photographs are appended in the last sections of the report.

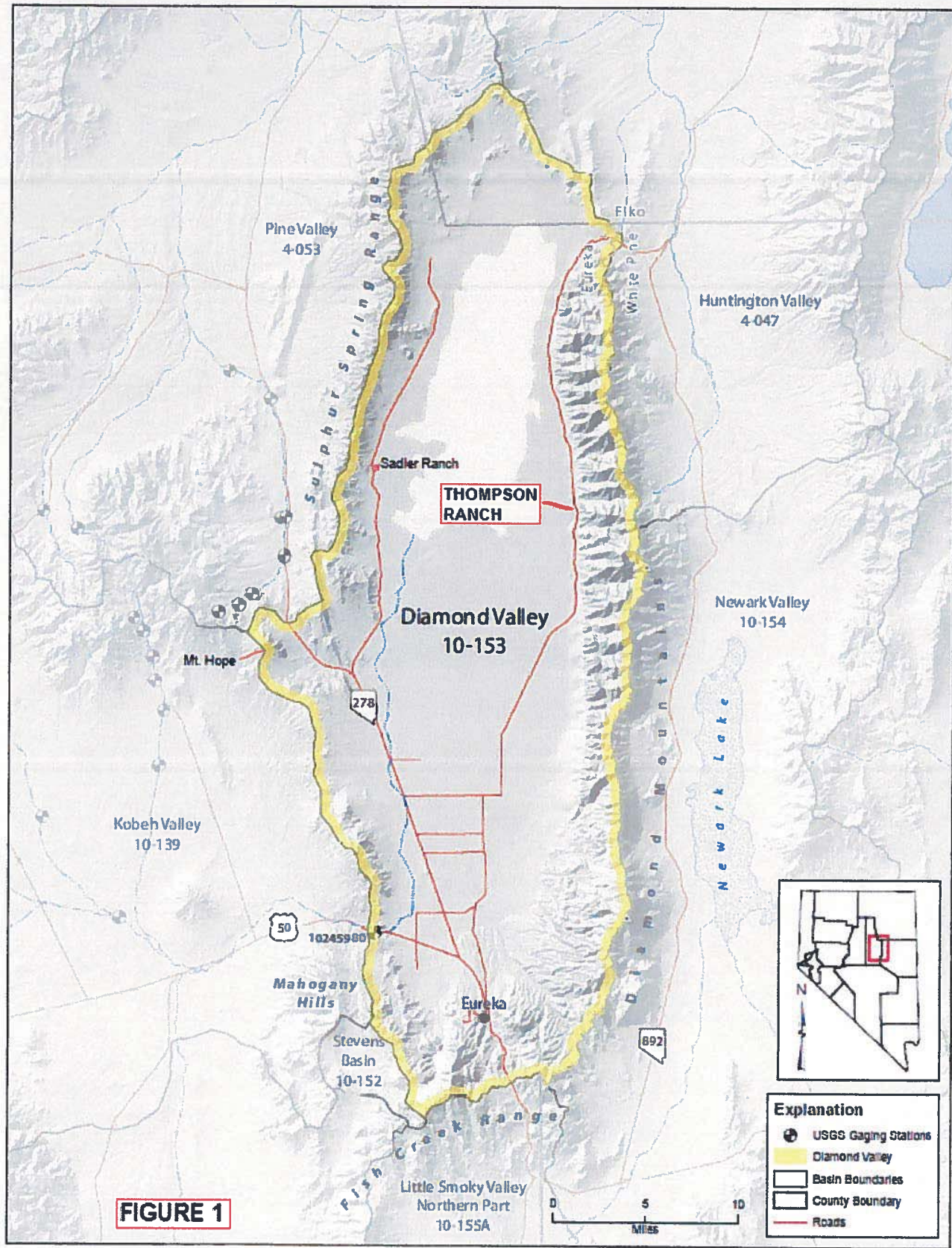




FIGURE 2 - 2010 NAIP Image

SUMMARY OF CLAIMS

In the following section, the claims are discussed in the order of irrigation importance rather than in numeric order, with the spring sources first, followed by the intermittent stream source. Figure 3 is a larger scale USGS topographic map, and Figure 4 is a 1950 aerial image at the same scale of the Thompson Ranch area for reference purposes; these follow at the end of this section.

V-01115, Taft/Thompson Springs

Proof of Appropriation V-01115 was filed in the Office of the State Engineer on June 26, 1912 by Nels Toft, claiming a pre-statutory vested water right for irrigation by the waters from Taft (Thompson) Springs. The means of diversion was said to be by dams and ditches of various dimensions; neither a diversion rate nor duty was specified. Crops were listed as meadow grass, alfalfa, grain, and truck garden. Water was first used in 1880, when an estimated 150 acres were said to have been irrigated by George Taft, the prior owner. The proof listed an additional 6 acres (garden and grain) in the SE $\frac{1}{4}$ of Section 3 with first irrigation in 1901, for a total of 156 acres, with irrigation from April 1 to October 30. In the Remarks section of the proof, the POU was said to be mainly irrigated by Taft Springs, with the melting snow water from Horse Canyon (V-01114, about 1 mile to the south), being commingled but that source being limited to the spring time only. Approximately 50 acres were said to be irrigated by Horse Canyon, for a total of 206 acres (204.30 acres per the proof map), the flow from Taft Springs being higher and more uniform throughout the year. All but approximately 18 acres of the 204 acres within the total POU were illustrated to be irrigated by the springs per the proof map, with the 18 acres being “stand-alone” (i.e., non-supplemental) and irrigated only from Horse Canyon (V-01114). Legal descriptions, tie and bearings for Taft Springs were not stated in the proof. However, the map filed in support of the claim, shows three springs mainly within the NE $\frac{1}{4}$ SE $\frac{1}{4}$ of Section 3, T. 23N, R. 54E, with the POU being mainly in the S $\frac{1}{2}$ of Section 3, with lesser amounts in the NE $\frac{1}{4}$ Section 9, and NW $\frac{1}{4}$ Section 10. Three dams are shown on the map below Taft Springs, generally lying along the W to WNW draining “old channel of Taft Creek”; several miles of ditches are illustrated, along with 6.18 acres of alfalfa located immediately west of 6.18 acres of garden and grain. The original proof map surveyed by Geo. S. Nickerson of Sacramento, CA on May 29-31, 1912 is reproduced here as Map 1, and is referred to here as the “1912 map”. The total area of land owned and occupied by the Claimant per the filed map was 960 acres (i.e. twenty-four, 40 acre subdivisions).

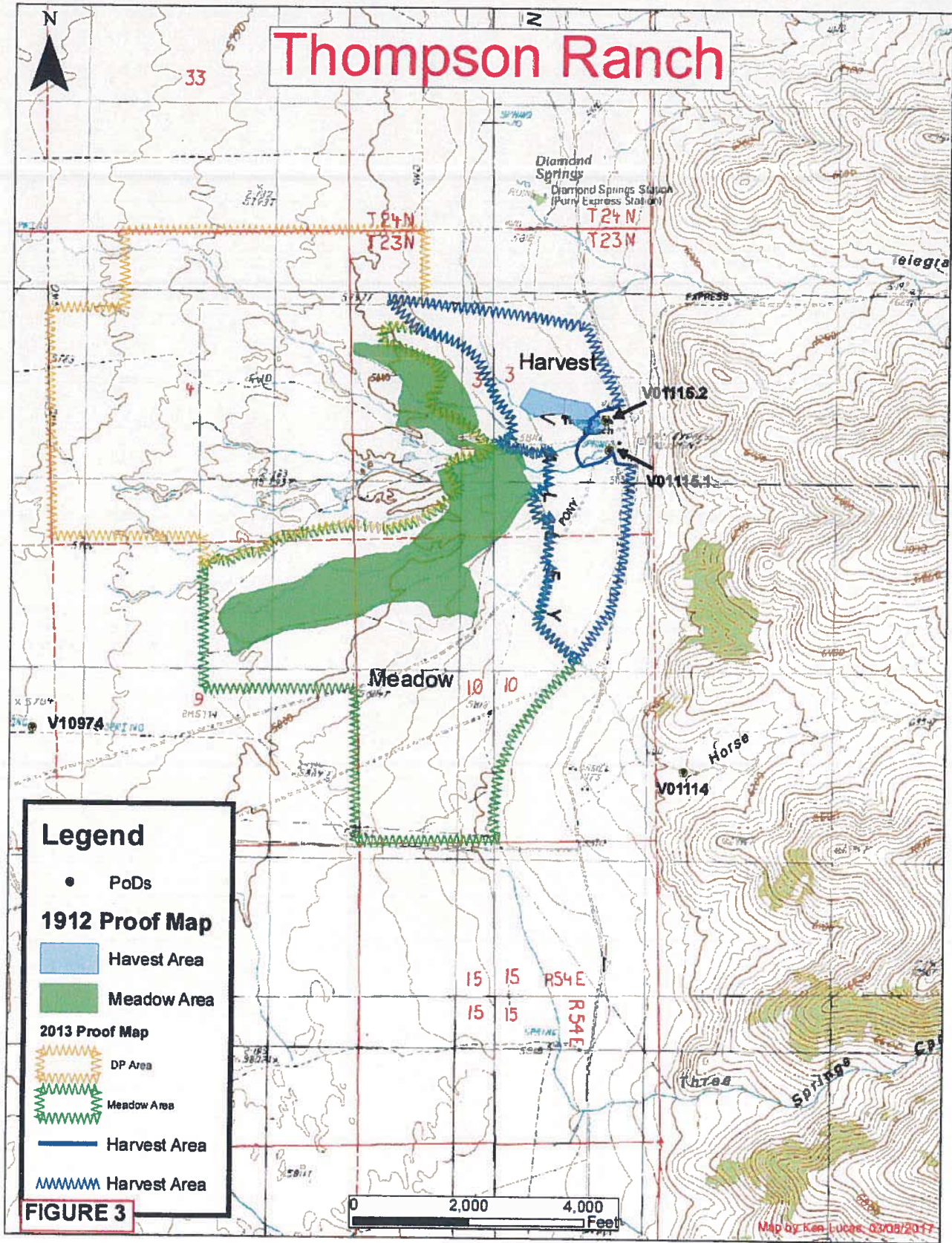
Proof V-01115 was amended on January 30, 1975, by Richard W. Forman, Agent on behalf of Theodore M. and Olivia M. Thompson. The following are notable changes to the original proof and map: 1) diversified pasture was added to meadow grasses, for a total acreage of 607.93; 2) a continuous flow of 3.12 cfs was specified; 3) grain totaling 12.89 acres was increased from 12.36 acres of alfalfa, grain and truck garden per the 1912 map; 4) period of use was extended to year round (January 1 to December 31) at 4 acre-feet/acre; and 5) stockwatering of 100 head of horses and 500 head of cattle were added. Tie and bearings to the two main springs and four dams were given, and ditch dimensions were listed as 2.5 ft wide at top, 1 ft deep, on a grade of 10 ft per thousand ft. In the Remarks section, the statement was made that the amended proof was filed to show pasture lands (i.e., diversified pasture, or "DP") not shown on the original filing and for stockwatering purposes. The addition of DP added 405.80 acres, and approximately 18.81 acres were added for meadow grasses from the 1912 proof. The amended map filed on the same date in support of the amended proof, was surveyed by Mr. Forman from November 14-18, 1974, and shows considerable detail, including the tie and bearings to the PODs, dams, ditches and drainage/flow directions, fences and ranch buildings. In addition to the 607.93 acres irrigated by Thompson Springs, about 22 acres were illustrated as stand-alone, and only irrigated by Horse Canyon. Therefore, the total acreage irrigated by both sources was approximately 630 acres. A portion of the map is copied here as Map 2 and is referred to here as the "1975 map". The total area of land owned by the Claimant per the filed map was 1,680 acres (i.e. forty-two, 40 acre subdivisions).

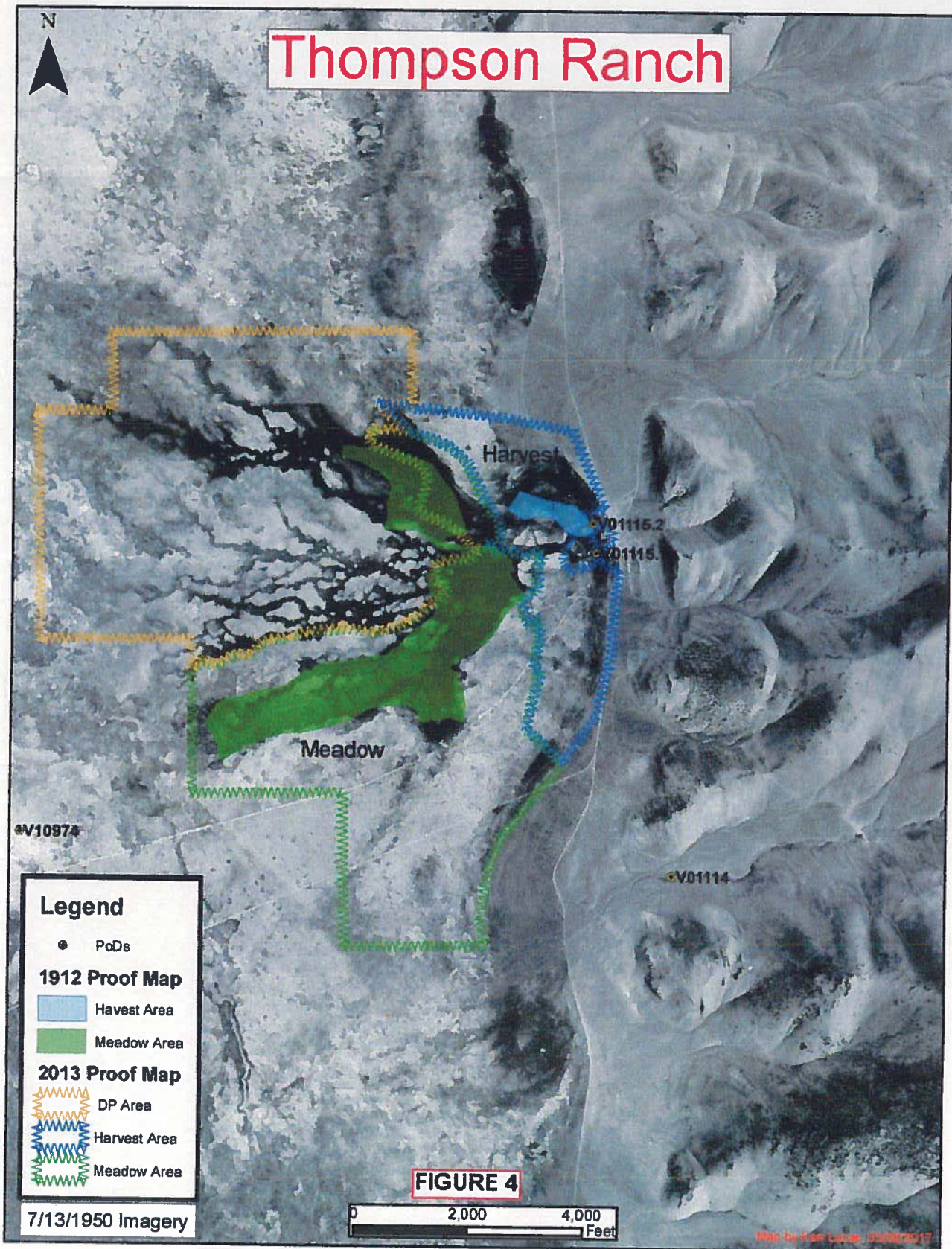
Proof V-01115 was amended a second time on February 25, 2013, by George M. Thiel, Agent on behalf of Daniel S. Venturacci. The following are notable changes to the 1st amended proof filed in 1975: 1) with commingling from Horse Canyon (V-01114), total irrigated acreage was greatly expanded to 1,636.36 acres; 2) an additional 200 "springs and seeps" were also named as the water source, as well as the two main springs, all with a continuous flow of "9.33 +/- cfs"; and 3) domestic use was added to stockwatering. Under Item 16, the following statement was made: "Due to the overappropriation of the groundwater basin the springs and seeps have disappeared. By 1993 all of the resources fully ceased to exist". In the Remarks section, acreage was broken out as: 208.97 acres of grain and alfalfa, 646.52 acres of hay and grasses, and the remaining 780.87 acres as improved and diversified pasture for livestock forage and use. A BLM GLO survey map dated 1879 is cited as showing the full extent of the original land irrigated from all sources (Horse Canyon, Taft Springs, and the approximately 200 additional springs and seeps within the POU), with the full water right being used "pre-1879". However, the 200 additional springs and seeps were not described in the proof nor identified on any map. An amended map was

submitted by Mr. Thiel to accompany the amended proof and was filed on April 15, 2013. The POU of the Thompson Springs and Horse Canyon water were shown to be totally overlapping and not distinguished or separated. Portions of that map are reproduced here as Map 3, and is referred to here as the “2013 map”. The total area of land owned by the Claimant per the 2nd amended map is 1,680 acres, and is identical in acreage and shape to the amended map filed in 1975. Therefore, virtually the entire current Thompson Ranch land parcel owned by the current Claimant, was claimed to have been historically irrigated prior to 1905. Table 1 summarizes the change in acreages between the original and amended proof maps for the ranch. Relative to the 1st amended proof filed in 1975, grain/alfalfa increased by 196.08 acres (12.89 to 208.97 acres); the amount of hay/meadow tripled (210.75 to 646.52 acres); and DP nearly doubled (405.80 to 780.87 acres).

TABLE 1 – SUMMARY OF CLAIMED ACERAGES, THOMPSON RANCH

Combined POU Acres, V01115 (SPRS) & V01114 (STR)	1912 Map	1975 Map	2013 Map
Harvest (Garden, Grain, Alfalfa)	12.36	12.89	208.97
Meadow/Hay, Grasses	191.94	210.75	646.52
Diversified Pasture (DP)	0	405.80	780.87
TOTAL IRRIGATED ACRES	204.30	628.44	1636.36
TOTAL RANCH ACRES (private lands)	960.00	1680.00	1680.00
V01114, Horse Canyon stand-alone (approx. meadow acres)	18	22	N/A





V-01114, Horse Canyon

Proof of Appropriation V-01114 was filed in the Office of the State Engineer on June 26, 1912 by Nels Toft, claiming a pre-statutory vested water right for irrigation by the waters from Horse Canyon. The means of diversion was said to be by an earth and rock dam, and an open ditch with dimensions of 2 ft at bottom, 4 to 5 ft at top, and a depth of 2 ft, on a grade of 25 ft per thousand feet. Fifty acres of wild meadow grass with a priority of 1880 was claimed, with a period of use from April 1 to June 15. In the Remarks section, the waters of Horse Canyon were said to be used in conjunction (commingled) with those from Taft Springs (V-01115), for total irrigation of approximately 206 acres combined. It was very difficult to distinguish just how many acres were irrigated from either source, and that as the waters from Horse Canyon failed or became only a small flow, it was necessary to use the waters from Taft Springs on the same land. A legal description, tie and bearing for the POD were not stated in the proof. However, the supporting map shows the POD in the SW $\frac{1}{4}$ SW $\frac{1}{4}$ of Section 11, T. 23N, R. 54E, with the POU being mainly in the NW $\frac{1}{4}$ Section 10, and the ditch extending about 5,000 ft to the NW from the POD to the POU. As noted above, the total acreage irrigated by Thompson Springs and Horse Canyon per the filed map is 204.30 acres, with approximately 18 acres being illustrated as more or less stand-alone and watered solely by Horse Canyon.

Proof V-01114 was amended on 1/30/1975 in a similar manner to V-01115, by Richard W. Forman. The following were notable changes to the original proof: diversified pasture was added to meadow grasses for a total acreage of 269.84, almost all of which were irrigated by commingled waters from Thompson Springs (V-01115); period of use was extended to year round (1January 1 to December 31) at 4 acre-feet/acre, and stockwatering of 100 head of horses and 500 head of cattle was added. In the Remarks section of the amended proof, the waters of Horse Canyon were said to run only in the springtime, and varied depending on the amount of rain and snowfall annually. Approximately 22 acres were stand-alone and irrigated solely by Horse Canyon. Based on the ditches and flow gradients illustrated on the 1975 map, the Horse Canyon water can only irrigate the southern and southwest portion of the ranch.

Proof V-01114 was amended a second and third time on February 25, 2013, and March 14, 2013, in a similar manner as for V-00115, by George M. Thiel. The following were notable changes to the 1st amended proof filed in 1975: with co-mingling with Taft Springs (V-01115) total acreage irrigated was greatly expanded to 1,636.36 acres from 607.93; crops were specified as "grain, alfalfa, hay, and diversified pasture"; the ditch depth was listed as 5 ft; and domestic use was added. In the Remarks

section, acreage is broken out as 208.97 acres of grain and alfalfa, 646.52 acres of hay and grasses, and the remaining 780.87 acres as improved and diversified pasture for livestock forage and use. Due to the reported difficulty in quantifying the separate water sources, the fully irrigated acreage from all sources (i.e. Thompson et al. springs and Horse Creek) was listed.

THOMPSON SPRINGS, V-01115 FLOW MEASUREMENTS & DISCUSSION

Approximately 30 flow measurements are available for Taft/Thompson Springs (V-01115), and are summarized in Table 2 and associated hydrograph. Almost all of the data are from the period after the onset of intense underground pumping of Diamond Valley which commenced in the 1960's, and is concentrated in the southern portion of the basin, which is centered about 15 miles SSW of Thompson Ranch. Only two measurements are available for the springs prior to the 1960's. On October 14, 1912, H. M. Payne of the SEO measured flow from the larger southern spring at 1.29 cfs, and 0.25 cfs from the smaller north spring, for a combined flow rate of 1.54 cfs (approximately 690 gpm). The measurements were made with a current meter. His reading for the smaller northern spring is the only known measurement for it as a separate source. Subsequent reported measurements may not account for flow from the north spring, or depending on where the measurements were taken, may have been at a location where the north spring flow was combined via ditching and measured with the larger south spring (see photo, Figure 5a below). A flow rate of approximately 900 gpm (2.01 cfs) was reported for the spring in USGS Water Supply Paper 679-B, published in 1937. This publication lists a temperature of 71-75°F for the spring, consistent with other historical accounts of the spring waters being "warm". The actual date of the measurement is unknown other than it being before 1937; for the purposes of the hydrograph and attached table, a date of December 31, 1936 is assigned. (It should be noted that the publication lists the site as the "Jacobson ranch springs" on the east side of Diamond Valley; per deeds on file, Jorgen Jacobsen acquired the ranch in 1922 from Nels Toft, his uncle.)

Three measurements made by James Harrill of the USGS from the mid-1960's, range from 2.05 to 2.34 cfs, and average 2.17 cfs. A water temperature of 69°F was reported for one of the readings. The next set of measurements from the early 1980's show a significant decrease in spring flows due to basin underground pumping, with measurements ranging from 0.07 to 0.77 cfs, and an arithmetic average of

0.42 cfs for the 5 readings. Four of these were made during the springtime when flows would be expected to be greatest; the lowest reading (0.07 cfs) was made in the fall (October). Spring flows increased remarkably from 1983-1986, perhaps in response to several wet winters from 1983-84, or for other reasons (see discussion below). Nine measurements collected during this period ranged from 2.23 to 4.15 cfs, and averaged 2.95 cfs. During the late 1980's spring flows markedly decreased again, and by the fall of 1991 there was little flow (9-13 gpm). A brief inspection of the spring area by DWR personnel when the Diamond Valley well net was established, estimated flow of only ½ gpm on March 26, 1997, with the north spring being totally dry. No sign of any spring water was observed during the recent fieldwork, and several well logs in the immediate ranch area suggest ground water is at least 5-10 ft below mean ground level (BMGL). This is confirmed by a backhoe excavation around the north spring area which is 10 ft or more deep, and was totally dry when inspected during the recent fieldwork.

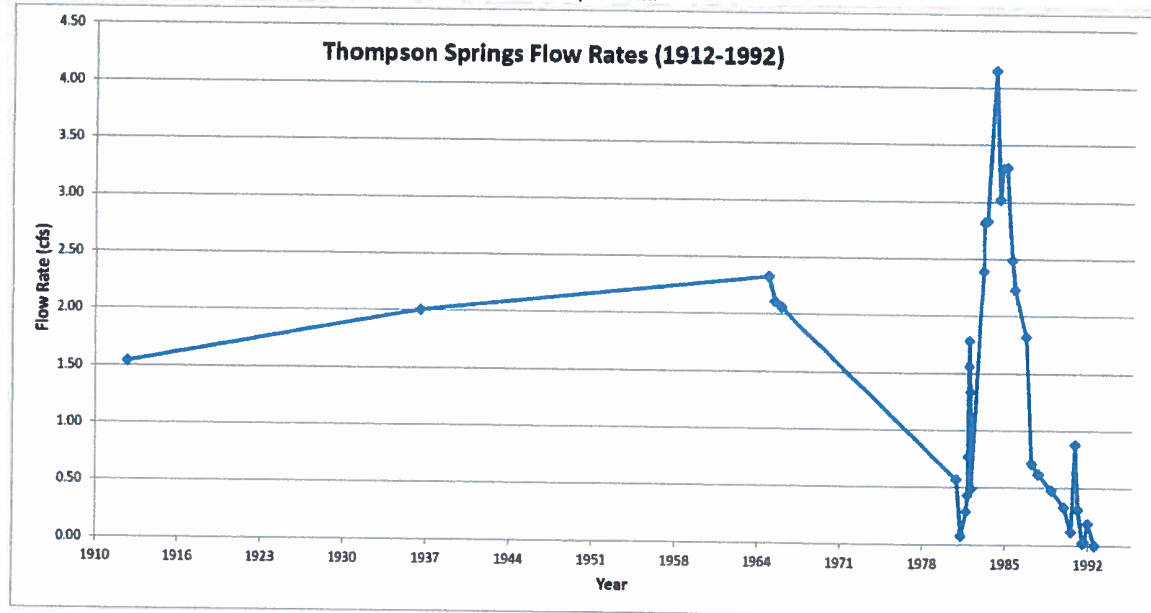
The five older readings from 1912 through 1966 may be the best representation of "average" spring flows before the anthropogenic effects of intense underground pumpage began in Diamond Valley, the effects of which are likely reflected by several of the readings beginning in and after 1981. The arithmetic average of the five older readings is 2.01 cfs, and ranged from 1.54 to 2.33 cfs (1912-1966). Three of the measurements were determined in the fall season (September and October), when spring flows with any seasonal variation would likely rebound. Therefore, a flow of approximately 2 cfs is a good estimate of the average flow of Thompson springs from this period. Subsequent readings show marked variability in the mid-1980's, with a surprising number of higher readings (2-4 cfs), especially from 1983-1986. While some of these higher readings may be attributable to record or near record wet winters and abnormally high snow pack, an equally likely explanation may be due to the manner in which the measurements were taken, as detailed as follows. Figure 5a is a photograph taken the 2nd week of March 1982, showing the main south spring and smaller north spring, their associated reservoir and pond, and the upper irrigation system at the time. Due to the very low gradient in the spring areas, the challenge and difficulty of obtaining a reliable flow measurement cannot be overstated. The flow rate on March 10, 1982, several days after this photo was taken, was estimated at 130 gpm (0.29 cfs) by Mr. Harrill of the USGS based on flow in the south ditch (far left side of photo). This would represent an approximate flow rate with the springs and reservoirs being in close equilibrium with each other, although the water pressure (head) in the reservoirs over the springs likely suppressed their flow to some extent. Based on this photo showing the configuration of the reservoirs at the time, examination of historic photos showing dry, poorly irrigated fields, and recent field inspection, it is probable that when many of the later flow measurements

were taken from around mid-1982 through most of the remaining 1980s, a headgate would be opened below the main southern reservoir. Rather than waiting the probable lengthy time required for flows to reach equilibrium, the measurement would be taken shortly after the headgate was opened which would yield an artificially high, false reading. A good example of this problem is the measurement for March 8, 1991 of 0.88 cfs (395 gpm), when the property owner on the same date stated flow was less than 100 gpm. Figure 5b is a further illustration and explanation for what are most likely false readings.

**TABLE 2 – FLOW MEASUREMENTS & HYDROGRAPH,
THOMPSON SPRINGS, V-01115**

Date	Flow (cfs)	Flow (gpm)	Data Source	Method	Rating Code	Notes
10/14/1912	1.54		DWR	current	NS	measured by H.M. Payne; south spring: 1.29 cfs, north spring: 0.25 cfs
12/31/1936	2.01	900	USGS	NS	NS	temp.: 71-75°F; uncertain date prior to 1937 (Water Supply Paper 679-B, 1937)
9/21/1965	2.33		USGS	current	NS	Harrill (1968), Water Resource Bulletin No. 35
4/1/1966	2.11		USGS	current	NS	ditto; temperature 69°F, in Garside and Schilling (1979)
10/19/1966	2.06		USGS	current	NS	Harrill (1968), Water Resource Bulletin No. 35
5/13/1981	0.57		DWR	current	NS	current meter notes in file V01115; main channel: 0.482 cfs + 40 gpm from south side
10/3/1981	0.08	34	USGS	volumetric	NS	USGS computer print-out, 11/19/1991
3/10/1982	0.29	130	USGS	visual	NS	USGS computer print-out, 11/19/1991; 3/15/1982 J. Harrill memo
4/21/1982	0.43		DWR	current	NS	current meter notes in file V01115; reading was 0.429 cfs, rounded in table
4/30/1982	0.77		DWR	current	NS	current meter notes in file V01115; reading was 0.769 cfs, rounded in table
5/25/1982	1.56	700	DWR/USGS	current?	poor?	USGS computer print-out, 11/19/1991
6/4/1982	1.78	800	DWR/USGS	current?	poor?	USGS computer print-out, 11/19/1991
7/2/1982	1.34	600	DWR/USGS	current?	poor?	USGS computer print-out, 11/19/1991
7/29/1982	1.11	500	DWR/USGS	current?	poor?	USGS computer print-out, 11/19/1991
8/9/1982	0.49	220	DWR/USGS	current?	poor?	USGS computer print-out, 11/19/1991
7/6/1983	2.39		USGS	current	fair	USGS website, accessed 11/30/2016
8/3/1983	2.82		USGS	current	fair	USGS website, accessed 11/30/2016
11/8/1983	2.83		USGS	current	fair	USGS website, accessed 11/30/2016
6/12/1984	4.15		USGS	current	good	USGS website, accessed 11/30/2016
11/14/1984	3.02		USGS	current	fair	USGS website, accessed 11/30/2016
1/18/1985	3.29		USGS	current	fair	USGS website, accessed 11/30/2016
5/27/1985	3.30		USGS	current	fair	USGS website, accessed 11/30/2016
11/3/1985	2.49		USGS	current	fair	USGS website, accessed 11/30/2016
2/5/1986	2.23		USGS	current	NS	USGS website, accessed 11/30/2016
2/9/1987	1.82		USGS	current	fair	USGS website, accessed 11/30/2016
8/10/1987	0.71		USGS	current	NS	USGS website, accessed 11/30/2016
2/22/1988	0.62		USGS	current	NS	USGS website, accessed 11/30/2016
3/13/1989	0.48		USGS	current	NS	USGS website, accessed 11/30/2016
4/2/1990	0.33	150	USGS	volumetric	NS	USGS computer print-out, 11/19/1991
11/15/1990	0.12	54	USGS	flume	NS	USGS computer print-out, 11/19/1991
3/8/1991	0.88		USGS	other	NS	USGS website, accessed 11/30/2016 (M. Thompson says flow was <100 gpm)
6/4/1991	0.31	140	USGS	flume	NS	USGS computer print-out, 11/19/1991
10/25/1991	0.02		USGS	other	NS	USGS website, accessed 11/30/2016
12/8/1991	0.03		USGS	flume	NS	USGS website, accessed 11/30/2016
3/20/1992	0.19		USGS	other	poor	USGS website, accessed 11/30/2016
10/13/1992	0.00	0	USGS	visual?	NS	USGS website, accessed 11/30/2016; R. Whitney note: "looks pretty dry at flume"
3/26/1997	0.00	0.5	DWR	visual	fair	inspection by SJW/TKG during well net; north spring dry
9/7/2016	0.00	0	DWR	visual	excellent	all springs dry for many years; N spring excavated to ~10ft BMGL and dry
4/10/2017	0.00	0	DWR	visual	excellent	

NS = not stated/unknown



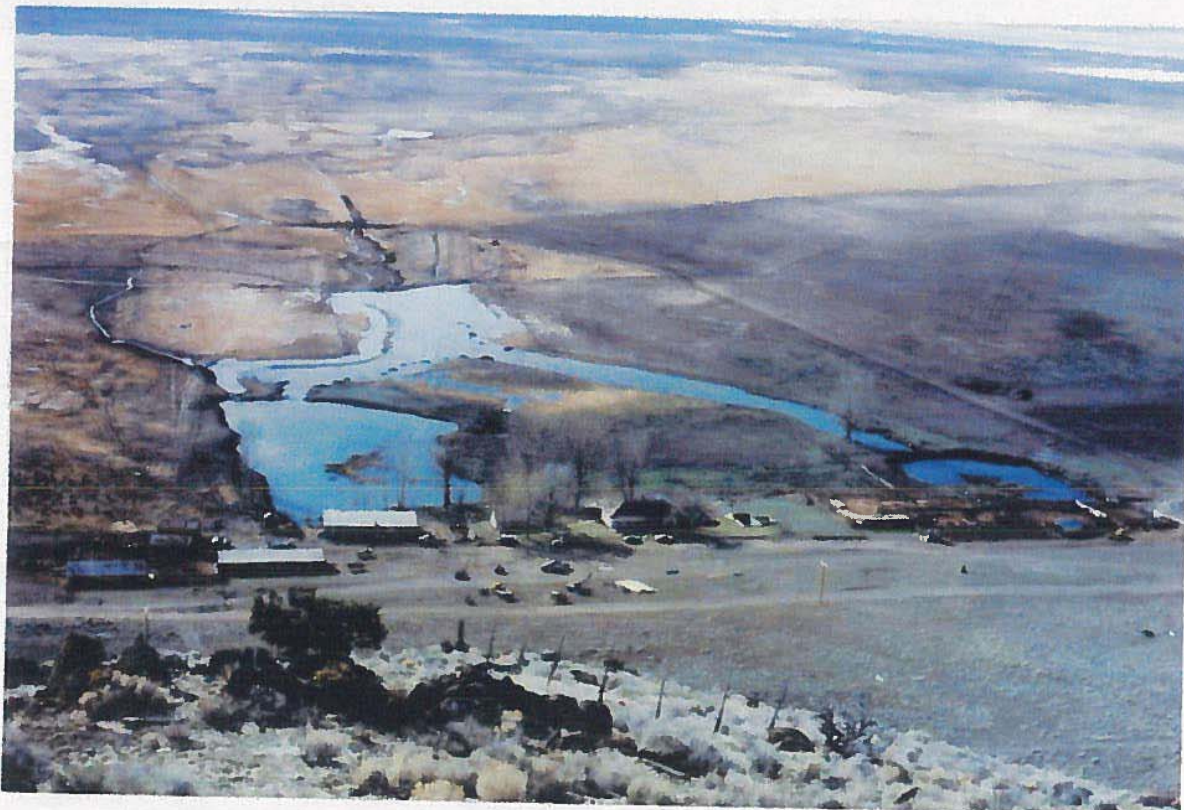


Figure 5a – Photograph of Thompson Springs (V-01115) and Ranch, taken about March 7, 1982, looking west. Shows larger, main south spring (V-01115.1) on left and associated reservoir, and smaller north spring (V-01115.2) and pond on right. The photograph highlights the challenges of obtaining an accurate flow measurement from the springs, due to the configuration of the reservoirs and flat gradient. J. Harrill of the USGS estimated the flow at 130 gpm (0.29 cfs) on March 10, 1982. Photo provided by M. Thompson.

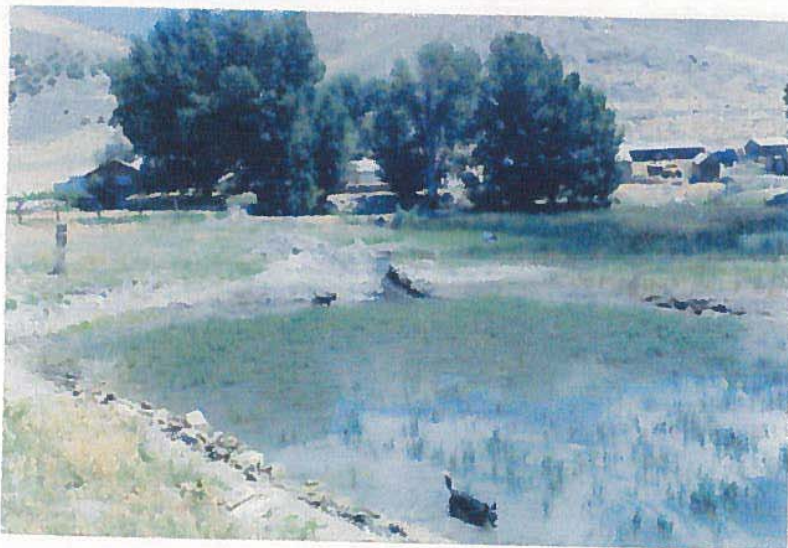


Figure 5b – Photograph of the south, main Thompson Spring (V-01115.1) summer 1982, looking east. Flow rate is likely much less than $\frac{1}{4}$ cfs, however, the average of five measurements from the same summer was 1.26 cfs. Photo by M. Thompson.

FIELD OBSERVATIONS & FINDINGS

H.M. Payne of the State Engineer's Office inspected the Thompson Ranch area in October 14, 1912 when Nels Toft owned the ranch. The following is taken directly from his field notes and is the best record of the springs and likely pre-statutory, 1905 beneficial use of water for irrigation on the ranch.

"This ranch hold a vested right and is irrigated from both Taft Springs and Horse Canyon, the latter source being snow water which flows a maximum of 2 sec. ft. of water from March 15th to June 15th. Taft Springs do not vary in flow and consist of two sources only a few hundred feet apart. The smallest source, according to a measurement by which the velocity was determined with a current meter, flowed .25 of a sec. ft. and the larger source, by a similar measurement, 1.29 sec. ft. A reservoir 100 feet in diameter and 2 to 6 feet deep stores the water of the first spring, which is used to irrigate about 20 acres of alfalfa and grain. The second spring has a long narrow, and very irregular reservoir in connection with it, said reservoir covering an area of about 3 acres, and the water therefrom used to irrigate nearly 200 acres of meadow land. The springs are so arranged that the water from the smallest can be added to that of the largest if desired, and the ditches so arranged that the waste water from the ditch leading from the smaller spring is caught by the ditch leading from the larger spring. The water of Horse Canyon is used on the lower end of the meadow, but this is also irrigated by water from the springs. The appropriator cuts approximately 150 tons of hay from the meadow, and pastures the second crop."

Based on Payne's inspection and the original filed proof and map, the State Engineer issued pre-statutory certificates in 1912 as follows: Certificate 38 for V-01114 (Horse Canyon) for 50 acres of irrigation with a priority of 1880; Certificates 39 and 40 (Taft Springs) for irrigation of 148.3 acres and priority of 1880, and 6 acres and priority of 1901, respectively. The total of these certificates from the two sources is 204.3 acres.

In the following section regarding the recently conducted fieldwork, the area of the claimed PODs are described first, followed by the vegetation and crop/culture found at various locations throughout the claimed POUs. Photos representative of the conditions found are included as documentation in the last section of the report, along with an index map showing the location of where the various photos were taken.

V-01115, Thompson Springs PODs – The two PODs for this claim were investigated on September 7-8, 2016, and more briefly again on April 10, 2017 and were found to be totally dry. However, former works of diversion were observed in the vicinity of both of the claimed PODs. At the former south spring (V-01115.1, Figure 3), an apparatus for domestic water was found adjacent to an overgrown rock wall feature that enclosed the main spring source at one time, and validates the claimed domestic use on the 2013 amended proof (Figure 6, photo of main spring in 1993). An 18" steel casing was driven into the area

several decades ago (Photo 1b). The casing was bridged (blocked) at a shallow depth below the surface, so the depth to water could not be determined. Remnants of the former small irregular reservoir, which extended over an area of about 3 acres to the west, along with associated ditches draining from it could still be discerned (Photo 1a). The POD area for the north, smaller spring (V-01115.2, Figure 3) consists of a dry former pond about 1 acre in size (Photos 2-3). A recent backhoe excavation about 6-8 ft deep was made in 2013 (per Exhibit 237), and was reportedly pumped a slight amount for water at the time. No sign of near surface water was seen in this excavation during the recent field work. An older steel headgate on a 12" CMP was observed leading to one of the former ditches at the west end of this smaller former pond. An old wooden stock trough is present above the headgate, and the main natural channel or ditch from the pond was clearly obvious just to the south of the headgate, which conveyed water to the north-central portion of the former POU, and the 12 acres of harvest crop (alfalfa, garden, grain, etc.) claimed in both older proof maps.

Figure 6 – Photograph of the south, main spring (V-01115.1) with rock lined wall and M. Thompson, taken in about 1993, around the time when the spring ceased flowing. This is the same area shown in Photo 1b in later part of report; the former spring is now mostly overgrown and obscured. Photo from HCN article, August 9, 1993.



V-01114, Horse Canyon POD – The POD claimed on Horse Creek was examined on September 7 and 12, 2016. The modest canyon and ditch were totally dry, and despite the relatively wet winter and spring of 2016, the drainage and sediment characteristics suggest there was little significant flow. Mr. Venturacci stated that there were only several weeks of flow earlier in the year at the POD during 2016. The USGS 7½ minute topographic map (Diamond Springs) shows several springs 2 miles or more east of the POD in upper Horse Canyon, and about 800 ft or more higher in elevation, but aerial photography indicate that these mapped springs have little or no flow and do not contribute to water in Horse Canyon at the described POD. When visited in September 2016, the claimed POD and upper-most ditch were in

place and more or less as depicted as on the various proof maps (Photo 4). However, in more recent years Google imagery indicate that most of the Horse Creek water has been ditched from the POD for about ½ mile further northward, at a flatter gradient along the east side of the county road, rather than as shown on the various submitted proof maps. Ditching the water in this manner likely resulted in higher ditch losses due to the greater distance. In April 2017, portions of the lower ditch just east of the claimed POU on the 2013 map had been cleaned with a backhoe. The water was flood irrigating a portion of the POU without the benefit of secondary ditches, with the ditch water flowing WSW along an older dirt road, rather than a ¼ to ½ mile to the NW per the 1912 and 1975 maps, and down the ditch-channel (stream) depicted on the USGS topographic map (Photo 6).

The Horse Canyon ditch was visited several times in early 2017, and a flow measurement site was established just east of the county road crossing at an elevation of 5,885 ft (Photo 5). The ditch captured all of the water at the POD, therefore the measurements reflect the total flow from the canyon. The flow measurement data are summarized in Table 3, and highlight that at least in recent times, Horse Canyon has had insufficient spring run-off to provide much water to satisfy flood irrigation requirements. Perhaps earlier in the 20th century, during a wetter climate cycle, the intermittent stream may have flowed more during the freshet and/or in springtime, and when commingled with water from Thompson Springs would have provided “starter” water to initiate and grow a crop of meadow hay. The higher measurement and general findings are in line with H.M. Payne’s brief inspection and notes from October 1912, when he stated the source as being snow water, and flowing a maximum of 2 cfs.

TABLE 3 – FLOW MEASUREMENTS, HORSE CANYON DITCH, V-01114

Date	Time	Flow Rate	Method	Quality/Rating	Water/Air temp °F
9/7/2016	11:15	0	visual	excellent	N/A/upper 70's
4/10/2017	16:30	1.03 cfs	weir	poor	56/60
4/11/2017	12:30	~1.00 cfs	weir	very poor	N/A/upper 50's
4/12/2017	20:00	1.32 cfs	pygmy	good	45/57
4/12/2017	20:45	0.96 cfs	weir	poor	45/57
5/1/2017	17:30	0	visual	excellent	N/A
5/22/2017	18:50	0	visual	excellent	N/A/low 70's
6/16/2017	20:00	0	visual	excellent	N/A/mid 70's

Vegetation and Crop-Culture in the POUs - In this section, vegetation and crop-culture are discussed mainly in the context of photos, beginning in more or less a clockwise direction from around the Horse Canyon ditch area; continuing to the southern claimed area; progressing northward to the west-central POU; then northward to the central and northern POU; and finally ending back at the main ranch area and Thompson spring PODs (see Figure 8 for the location map of the various photos).

General Findings/Statement - Since the spring sources have been dry for several decades or more, there are no crops or culture currently being irrigated from the springs. The several days spent inspecting the claimed POU generally showed evidence of former irrigation ditches with some related appurtenances, such as check dams and a few head gates mainly in the upper main drainage area below the claimed and described former spring PODs. Many of the ditches are overgrown with rabbitbrush and lesser sagebrush, and some have had moderate use as trails by cattle, which make them difficult to distinguish from ordinary, more linear cattle trails which did not originate as ditches.

Evidence of former crop culture is generally characterized by the predominance of taller (3-4 ft high), more robust rabbitbrush and lesser sagebrush in areas claimed as meadow on the older proof maps, which in part probably reflects better quality soils in the former main irrigated areas. Along the periphery and outward of those areas of the more dense taller rabbit and sagebrush, these same plants are generally less concentrated, shorter in height and frequently intermixed with greasewood. Toward the western half and third of the claimed area on the 2013 proof map, approximately west of the E½ of Section 4 and beyond, greasewood predominates, particularly in more elevated, higher relief areas, above natural drainages. This is especially the case west of the center of Section 4, and also in the SW¼ of Section 10. The former area is marked by an outermost fence line, coinciding with the center of Section 4. The area to the west claimed on the 2013 proof map as diversified pasture, is entirely unfenced and is dominated by greasewood with sparse to lesser rabbit and sagebrush which is stunted due to more alkali-rich soils.

Photos and Discussion - During the last year or so, Mr. Venturacci attempted to grow a small crop of wheat in the ESE-most claimed area on the 2013 POU map, north of the Horse Canyon ditch. Due to lack of water, the main vegetation seen was dry mustard weed in a smaller cleared area of about 30-40 acres, along the far east side of the claimed POU. Large areas (about 150 acres) in the NE¼ Section 10 and SE¼ Section 3, are claimed as harvest (grain/alfalfa or hay) on the 2013 amended map, but there is little or no evidence that these crops were grown in this area prior to the 1960s based on aerials, although a portion of the area near the main ranch was recently cleared and brush-hogged (see Photos 5-7). The current natural vegetation in the area where it was not cleared is 2-3 ft high rabbitbrush, lesser to minor sagebrush, and

trace to minor native grasses. A significant portion of this area is topographically even with, or slightly above the elevation of the former Thompson springs reservoir, and could not be flood irrigated from that source, and therefore the main water source would have to be the Horse Canyon ditch, which has been demonstrated to be an insufficient source, especially for a harvest crop. If the above area was ever irrigated from the Thompson springs and reservoir, water would have had to be pumped into topographically higher ditches, or by hand lines. It is noteworthy that neither the 1912 nor the 1975 maps show any type of crop or culture in this approximate 150 acre area of claimed harvest on the 2013 map, nor the approximate 300 acres to the south and west in the W½ Section 10 and NE¼ Section 9, even though the same land was owned by the 1975 claimants (Figure 7 historic photo; and Photos 8-9).

Photos 5-9 show the general area, vegetation and character of this part of the POU for the 2013 claim map, much of which is claimed as grain/alfalfa or hay, while neither the 1912 nor 1975 maps show any crop-culture in most of this nearly 3/4 square mile area. It is highly unlikely that flows from Thompson springs and Horse Canyon were ever sufficient to irrigate any of this land, and hence no crop-culture was claimed on the 1912 and 1975 maps.

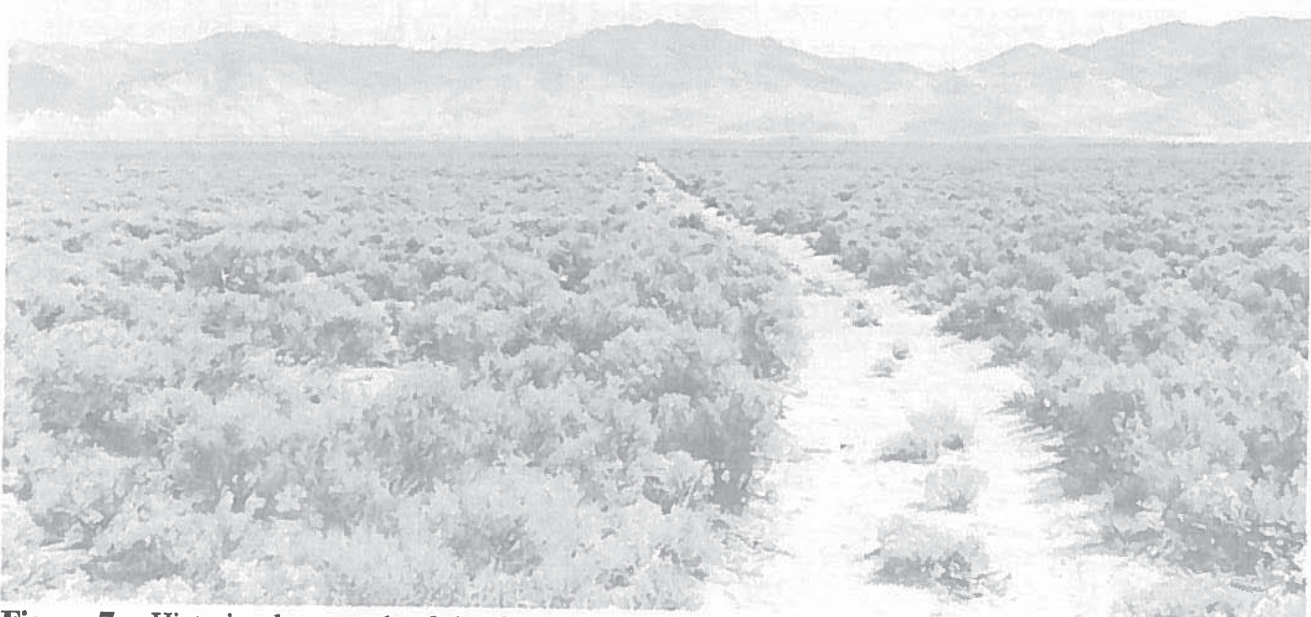


Figure 7 – Historic photograph of the Overland Trail and SW portion of Thompson Ranch, taken from about the west-central portion of Section 10, looking NE with Thompson Ranch in far distance and Overland Pass on skyline. Photo likely dates from the 1960s before intense underground pumping affected the ranch springs; no crops were claimed on the 1912 and 1975 proof maps in the foreground area, which is all sagebrush; the 2013 amended proof and map claimed hay throughout this general area, and cited the 1879 GLO map illustrating a large meadow expanse as support. Location of photo and view is similar to that of Photo 8 in later part of report. Taken from Soil Conservation Service Report for Diamond Valley Area, published in 1980.

Photos 10-12 in the west and NW portion of the greater POU area per the 2013 map, illustrate a similar pattern, with very sparse vegetation much of which is dominated by greasewood and lesser rabbitbrush, especially toward the far western extent of the claimed POU. Some diversified pasture is claimed in the more central area (approx. E½ Section 4) on the 1975 map. If a crop was ever grown it would have been limited to the low relief gully areas and irrigated by essentially tail water from Thompson springs, with the higher intervening ground between the gullies likely unable to sustain any type of crop due to a combination of lack of water and more alkali-rich soils (Photo 10). Cattle and stock could have potentially grazed some of this lower ground and gullies as diversified pasture, but tax and assessment records (see later discussion) do not support that there were sufficient number of stock present on the ranch in about 1905 to beneficially use such tail water.

The current vegetation in the area of the former pond and reservoir just below the former springs, and the general surrounding area, including the 12.36 acres of harvest crop (alfalfa, garden and grain) per the 1912 map, is dominated by alkali weeds (kochia), lesser thistles and minor grasses in low lying areas (Photos 1a-b). The area of former harvest crop located on the WNW side of the northern spring POD is unremarkable other than the headgate and ditch mentioned previously (Photos 2a-b, and 14). A new approximate 125 acre irrigation pivot was placed into production in 2016 to the NW of the former harvest area (Photo 13). A starter crop of triticale (hybrid of wheat and rye) was grown and one cutting was made. Irrigation of the field was by a 16" cased well completed in April, 2015. According to the well log (#122416) for Permit 81825, the well was drilled to a depth of 190 ft, with the first water encountered from 30-34 ft. The water temperature was described as "warm" on the log. When visited on September 7, 2016, the well was pumping at the rate of 760 gpm, and the water discharging at surface was 75°F. The water was flowing to the SW and then west down the former main ditch and drainage ("Taft Creek"), the pivot having been previously cut and harvested earlier in the summer.

On the NNW side of the current pivot, a northward draining older ditch was examined at the north fence line in the NW¼ Section 3. Mr. Venturacci surmised that this ditch was evidence of former irrigation in this area, which continued northward onto the adjacent Cox Ranch. A more likely scenario based on the field inspection, together with testimony by the former owner (M. Thompson, 1983 hearing), is that this ditch served to drain the fields, to rid the area of nuisance water in order to allow mechanized cutting and harvesting, as it was described as bog-like, and could not be harvested without taking such measures.

OTHER EVIDENCE & DISCUSSION

Evidence From Other Maps - The GLO map for T23N, R54E dated 1879 serves to validate human occupation and possible beneficial use of water in the ranch area at that time. The following are noteworthy features labeled on the GLO map: 1) "Tafts house and Large Spring" located in the E $\frac{1}{2}$ SE $\frac{1}{4}$ Section 3; 2) Irrigation Ditch; 3) Taft's Creek; 4) Telegraph Station, Diamond Station; and 5) several roads. Much of the valley floor is mapped as "meadow" and comprises approximately 13 square miles of the township. Based on its large extent, it is probable that the term "meadow" was very loosely applied, perhaps using artistic license and likely just represented flatter land with sagebrush and some grasses. Significantly, no fences were mapped around or within the area depicted as meadow. The several mile-long "irrigation ditch" does bisect the main area represented as meadow; as mapped the ditch crosses several roads, one of which corresponds to the Overland Stage road and Pony Express Trail (see photo, Figure 7). If this were actually a wet meadow at the time, it would have been a very unsuitable location for these important transportation routes. Moreover, the only beneficial use of water in 1879 would probably have been limited to some cattle and horses, as the Overland Stagecoach line had mostly ceased operation about 1870, following completion of the Transcontinental Railroad, and 13 square miles of cultivated meadow for forage would not have been needed, even when the stage line was operational. Of note, careful review of the 1879 GLO map in other parts of the township reveal a surprising number of inaccuracies in the location and extent of several mapped features, besides the above mentioned "meadow", and therefore the GLO map should not be taken as gospel truth.

The USGS 15' Diamond Springs topographic map (1:62,500 or $\pm 1''=1$ mile), published in 1957 was prepared from aerial photos taken in 1954; it names "Thompson Ranch", and maps three ranch buildings and the pond and reservoir adjacent to the claimed PODs. It is noteworthy that no other springs are mapped within a mile of the ranch, except at "Diamond Springs" (which is misnamed as mapped), 1 mile to the north at the Cox Ranch. Soil Conservation Service (SCS) maps were published in 1978 for Diamond Valley at the scale of 1:24,000 (1"=2000ft), and utilized aerial photos taken in 1975-1976, or shortly after the sharp increase in underground pumpage in the basin. The SCS map for the Thompson Ranch area also identified the pond and reservoir, as well as Diamond Springs. Despite the more detailed scale, only one additional spring was mapped in the greater ranch area, and occurs about 2 miles WNW of Thompson Ranch proper. An approximate 1 mile long by $\frac{1}{2}$ -mile wide area identified on the SCS map as "intermittent" water occurs about 3 miles WNW of the Thompson Ranch proper, and partially corresponds with the NW part of the "meadow" on the 1879 GLO map, which extends to the north onto

the adjacent GLO township plat. This water feature was also mapped on the 1957 USGS 15' topographic map as "dry lake". Modern USGS 7½' (1"=2000 ft) topographic maps published in 1990 are based on aerial photos taken in 1983-84. They are reproduced here as Figure 3. These map a considerable number of new springs in the greater Thompson Ranch area, but mainly several miles to the west in Diamond Valley proper, or scattered springs to the east in the canyons of the Diamond Mountains. Notably, no new springs are mapped or depicted in the immediate Thompson Ranch area, despite utilizing modern methods of mapping.

Unpublished 1937 Agricultural Conservation Program (ACP) maps were recently provided by the current claimant, as additional information in support of the proofs. The ranch was owned by J.P. Jacobsen at that time. The maps appear quite detailed, being originally drafted at 1"= 400ft, with planimetered acreages of a half dozen or more crop types. However, the majority of the ranch land is mapped as "non-crop pasture". No description is given for this crop class, but it is apparent that it merely represents fenced lands. Another shortcoming of the ACP maps is that they are not tied to any surveyed PLSS corners, although fences and a few other cultural features are mapped. The total acreage for the higher class crops (i.e. anything that is not non-crop pasture) total 393.55 acres as follows: 1) Clover, Grain & Potatoes – 15.02; 2) Alfalfa – 54.25; 3) Grasses – 11.83; and 4) Meadow – 312.45. One of the four map sheets for the ranch is missing, but it is for the SW part of the ranch, and a later SCS map from 1954 shows little to no higher class crops in the area of the missing map. The 393.55 acreage amount would represent roughly a doubling of the crop acreage from the original 1912 proof map (204 acres), which is a reasonable increase in acreage if more modern cultivation methods and some mechanization were utilized. The amount is roughly ⅔ of that claimed on the 1975 amended proof map (608 acres), and ¼ of that claimed on the 2013 amended proof map (1,636 acres).

Evidence From Aerials – Five sets of historical aerial photos were reviewed for the area, spanning the time period from 1946 to 1967. Aerials from 1946 and 1953 generally are of lower resolution. A set from July, 1950 was found to be the most useful as they have good resolution, were flown during the height of the irrigation season, and being the oldest quality sequence, are closest in time to the claimed historical irrigation on the ranch. Figure 4 is taken from this sequence and displays the extent of irrigation at the time. The culture claimed on the 1912 map is shown as a more solid color overlay (green for meadow and blue for harvest), while the crop culture claimed on the 2013 map are shown by the hachured outline. Later aerials from 1954 and 1967 also have good resolution and quality, but reflect changes to more modern irrigation practices from those historically used on the ranch. For example, the aerials from May

1967 show considerable expansion of irrigated acreage, and include what resemble managed fields to the north and south of the main ranch buildings, encompassing an area of perhaps 160 acres or more. Irrigation of these areas was likely accomplished by a combination of pumping water from the reservoir and pond into higher elevation ditches for flood irrigation, and also by hand lines. It is probable that this was the period when crop cultivation and irrigation achieved its maximum extent on the ranch; this is also reflected in the county assessment tax records (see discussion below). The 1967 aerial suggests that at least some of the historically irrigated land was fallowed to accommodate the new areas placed into production.

Evidence From County Tax Records – Table 4 is a summary of Eureka County assessment tax records for the Thompson Ranch for six separate years from 1887 to 1968. The table is mostly taken from hand written tax roll tables, which were transcribed by the claimant's Agent. Of note is for the Year 1900 when Henry Millett owned the ranch, which consisted of 640 acres at the time. Two hundred acres were assessed at the highest rates (\$2.00-2.50/acre), and is a similar acreage amount to the 206 acres claimed on the 1912 proof; there were only 50 stock animals (horses) listed for Year 1900. Other acreages were 160 acres assessed at a middle rate (\$1.83/acre), and 280 acres assessed at the lowest rate (\$1.25/acre). In 1912 when Nels Toft owned the ranch, it consisted of 960 acres (the same amount shown on the 1912 proof map), with 400 acres at the highest assessed rate (\$2.50/acre), and 560 acres at the lowest assessed rate (\$1.25/acre). Stock consisted of 90 cattle and 20 horses. This low number of stock animals would likely not require the 405.80 acres and 780.87 acres of diversified pasture claimed on the 1975 and 2013 proofs, respectively, especially when considering the amount of meadow claimed on these amended proofs. Both of these amended proofs also list stockwatering of 500 cattle and 100 horses; this number of stock animals is not supported by the assessment records from 1887-1918, when the maximum number was 160 stock in 1918. In the later years of 1956 and 1968, the tax records support the higher number of stock animals claimed in the amended proofs, but this time frame is significantly later than the 1905 required statutory date. In addition, the much larger assessed number of acres (2,766 acres) from this time period indicate that other property of the Thompsons' in Diamond Valley was included together with the ranch (i.e., Cox and Mau Ranches to the north).

TABLE 4 – EUREKA COUNTY ASSESSMENT RECORDS, THOMPSON RANCH, 1887-1968

YEAR	RANCH OWNER	TOTAL ASSESSED ACRES & \$ AMOUNT	HIGHER ASSESSED ACRES	MIDDLE ASSESSED ACRES	LOWER ASSESSED ACRES	CATTLE	HORSES	MILK COWS
1887	Taft, George W.	1,080 acres; \$1,400 or \$1.30/ac	320 acres @ \$2/ac		760 acres @ \$1/ac	20	60	16
1900	Millett, Henry	640 acres; \$1,065 or \$1.66 ac	40 acres @ \$2.50/ac 160 acres @ \$2/ac	160 acres @ \$1.84/ac	280 acres @ \$1.25/ac	NS	50	NS
1912	Toft, Nels	960 acres; \$1,700 or \$1.77/ac	400 acres @ \$2.50/ac		560 acres @ \$1.25/ac	90	20	NS
1918	Toft, Nels & Jacobsen, J.	1,724 acres; \$6,232 or \$3.61/ac	60 wild hay acres @ \$18/ac	80 grazing acres @ \$5/ac	1,584 grazing acres @ \$3/	150	10	NS
1956	Thompson, Theodore & Olivia	2,766 acres; \$14,320 or \$5.18/ac	50 meadow acres @ \$40/ac 350 meadow acres @ \$25/ac	50 grazing acres @ \$6/ac	500 grazing acres @ \$2/ac 1,816 grazing acres @ \$1.25/ac	614	27	3
1968	Thompson, Ted & Olive	2,766 acres; \$23,868 or \$8.63/ac	40 cultivated acres @ \$60/; 400 meadow acres @ \$30/ac	602 pasture acres @ \$10/	1,724 grazing acres @ \$2/	366	45	5

VERACITY OF CLAIMS & CONCLUSION

H.M. Payne’s 1912 inspection and the original proofs and supporting map filed in 1912, are the best evidence of beneficial use of water on the Thompson Ranch prior to 1905. Payne described 20 acres of alfalfa and grain irrigated by the smaller north spring (V-01115.2), and nearly 200 acres of meadow mostly irrigated by the main south spring (V-01115.1) and to a lesser extent Horse Canyon (V-01114); 150 tons of hay was cut from the meadow, with the second crop pastured. These acreages are reflected in the pre-statutory certificates issued by the SEO in 1912, totaling 204.3 acres of irrigation. Historic spring flows were likely never sufficient to irrigate the expanded acreages claimed under the 1975 amended proof, and certainly not the 2013 amended proof, which tripled the harvest crop acreage, and nearly doubled the diversified pasture acreage from that claimed on the 1975 amended proof. The five flow measurements from 1912 to 1966 average 2.01 cfs, and likely are a good estimate of the Thompson Ranch spring flows prior to the anthropogenic effects of underground pumpage in Diamond Valley. Using the common rule of thumb of 100 acres of irrigation per 1 cfs, would equate to approximately 200 acres capable of being irrigated by the springs. Moreover, analysis of topographic maps and the recent fieldwork indicate that significant portions of the harvest lands claimed under the 2013 proof and map are level with, or uphill of the two spring sources, and/or too distant from the sources to have been irrigated with the above spring flows (2.01 cfs). In addition, analysis of historic maps (USGS topos, GLO and miscellaneous) do not provide evidence of the “200 springs and seeps” claimed as a water source in the 2013 amended proof, although undoubtedly when the two Thompson springs were flowing and the meadows well irrigated, considerable portions of the claimed POU were “bog-like”, as stated in prior testimony.

The flows from Horse Canyon (V-01114) are inadequate for substantial crop irrigation, and likely only provided starter water for a relatively small area of meadow (less than 40-50 acres). Domestic use from the Thompson springs was not claimed on the original proof filed under V-01115, but should be added as a manner of use since the south spring was historically the only drinking and culinary water available on the ranch, and was the main reason for its initial establishment as an Overland stage and trail stop in 1859.

Tax records for the ranch from around the turn of the 20th century (specifically 4 years from 1887 to 1918), are in fairly close agreement with the original claimed harvest crop acreages and that observed by H.M. Payne. For example in 1900, 40 acres were assessed at \$2.50/acre, and 160 acres at \$2.00/acre; in 1918, 60 acres of hay were assessed at \$18.00/acre, and 80 grazing acres at \$5.00/acre. In addition, the number of stock animals (cattle, horses and milk cows) never exceeded 160 head, with the maximum in 1918, casting further doubt as to the likelihood of the expanded harvest crop and diversified acreages claimed on the 1975 and 2013 amended proofs. The tax records from 1956 and 1968 do show a significant increase in both harvest crop acreage and number of stock animals, but this is well after the pre-statutory 1905 date, and the result of more modern farming and ranching practices. In addition, these later tax years also include other nearby assessed ranch lands owned by the Thompsons at the time.

OTHER MISCELLANEOUS WORK & FINDINGS

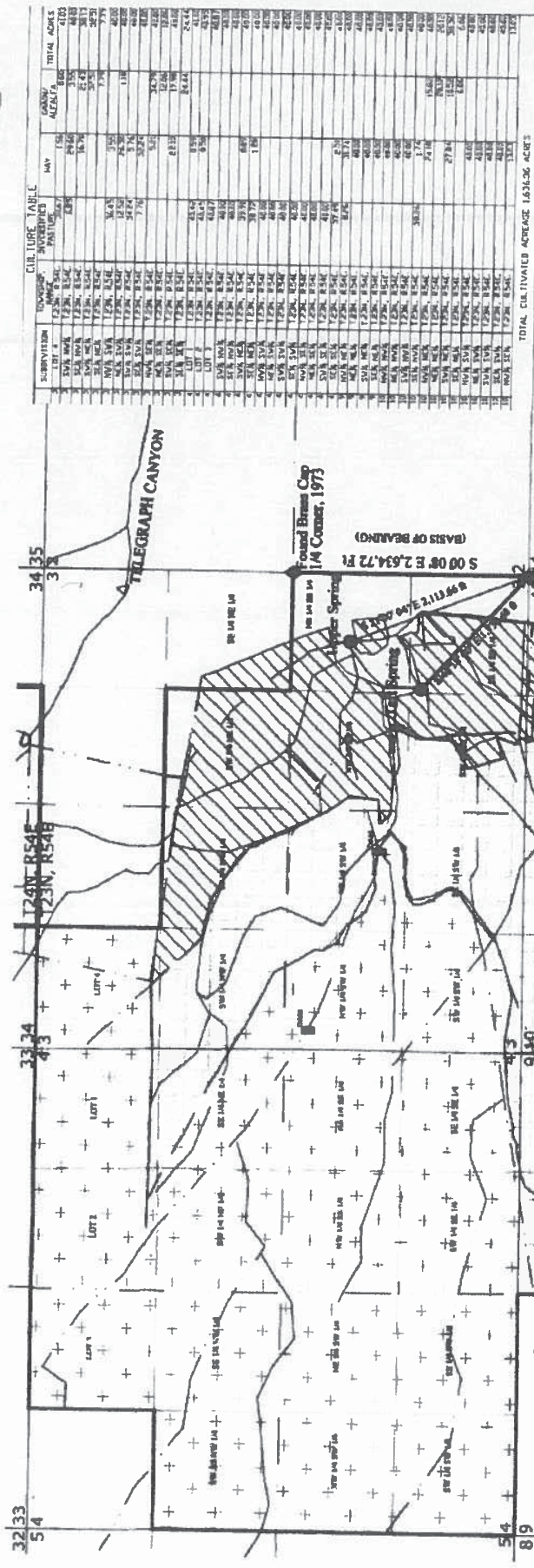
V-10974 (spring, stock) – Claim V-10974 was filed for stockwatering purposes from “Diamond Valley Spring #3” on May 31, 2016, and is located in NE¼SE¼ Section 8, T23N, R54E. The means of diversion was said to be the spring to a trough, with the water impounded in troughs, reservoir and natural channel. Date of construction and works was prior to 1860, and in the first year of use in 1894, 300 cattle, 150 horses and 2,500 sheep were said to have watered from the source; flow was stated at 0.025 cfs.

The claimed point of diversion was visited on September 8, 2016 and again on June 16, 2017, and is located about 2 miles southwest of the Thompson Ranch, approximately 200 yds north of the former Overland and Pony Express trail (Photo 16, Figure 8). No flowing spring or trough were found. However, a 2 ft high, 4” diameter steel well casing with a 1½” diameter hole about 6” above ground level was found. Static ground water in the casing was measured at a depth of 7.84 ft BMGL (5,778.16 ft) on June 16, 2017. The approximate 2 ft high steel casing was uncemented and appeared to be hand-driven based on the battered top of the casing; the steel looked to be many decades old. No excavation near the casing was seen, and it appeared that when there was artesian water flowing in previous years, it merely flowed

through the hole in the side of the casing directly onto the ground surface, without the benefit of an excavation or trough. There is a mapped spring on the 7½ minute USGS topographic map at this location. It is possible that there was a spring at one time, but it has since ceased flowing for similar reasons as the Thompson springs, and the steel casing may have been driven into the spring to enhance its flow and to use the water. However, it is more likely that it is an older, pre-1970s seismic survey shot hole that the 4" casing was driven into for stockwatering, in a similar manner as for Application 44780 ("Bend Well"), which was cased by the Thompson family in the 1950s. (The well under 44780 is a similar looking, hand driven steel casing into a "spring" mapped on the USGS topographic map, but which originated as a seismic shot hole.) It is troubling that the information filed with the proof in regards to the description of both the works and water source, could not be verified by the field investigation. This site is suitable for groundwater monitoring purposes and should be added to the Diamond Valley well net.

Other Nearby Casings & Seismic Line - Two other similar 4" diameter steel casings were found approximately 300 yds east and west of the above claimed location for V10974; the eastern casing corresponds to a mapped spring on the USGS topo, while no spring is mapped for the western casing location. No appurtenances or excavations were associated with either of these two steel casings, and both were bridged at or just below ground level. A nearby former oil exploration seismic line from the 1970s was also investigated, as aeriels suggested that surface water may have flowed from shot holes along the line. One site located about 300 yds SW of V-10974, was found to be an approximate 10 ft diameter area of partially cemented alkali soil; there was no evidence of former surface water or a spring. It is probable that the small circular vegetation anomaly observed on aeriels is likely due to merely broken and fractured ground in the immediate vicinity of the former seismic shot hole; this increased permeability and aided in the growth of taller and more dense rabbitbrush and other vegetation over a small area.

Unnamed Artesian Well, Thompson Ranch - A former artesian well was visited with Mr. Venturacci on September 12, 2016, and is located about 1 mile WNW of the Thompson Ranch in the SE¼NE¼ Section 4, T23N, R54E (N39.90635°, W115.88476°). The casing consists of a 4" diameter, thick walled uncemented black PVC pipe, with an adjacent small bathtub, which served as a stock watering trough at one time (Photo 17). A static water level measurement with an E-tape, measured water 9.87 ft below the top of the casing, for a corrected groundwater elevation of 5,787.63 ft. A similar depth to possible groundwater was measured on 4/12/2017, but the casing appeared bridged more or less at that depth and could not be sounded deeper.

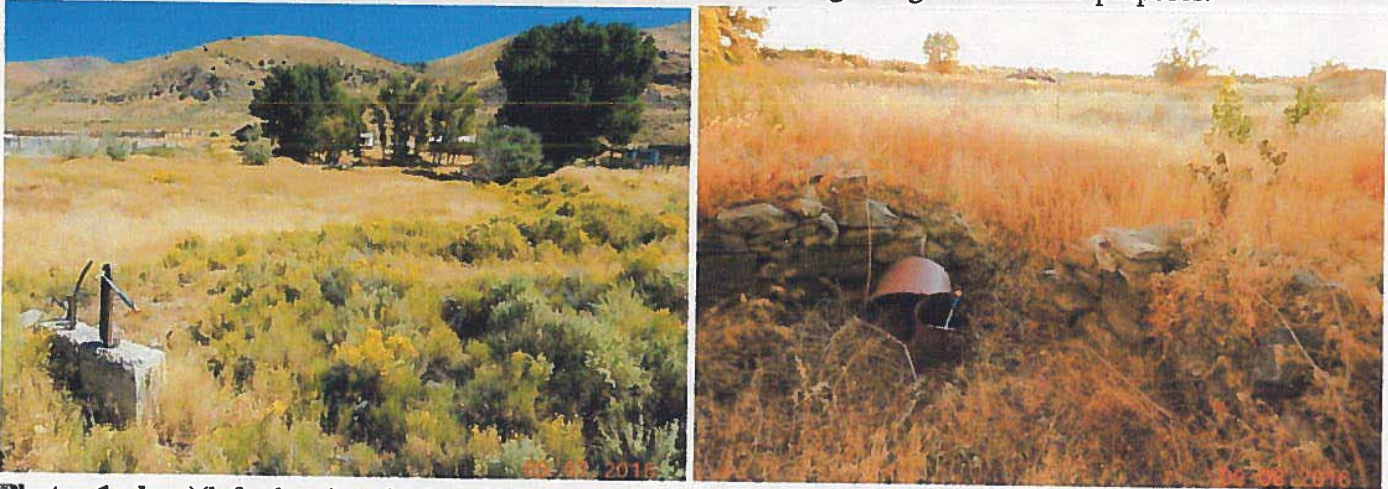


FEBRUARY 13, 2013
 MAP TO ACCOMPANY
 PROOF OF APPROPRIATION
 BY
 DANIEL S. VENTURACCI
 FOR
 IRRIGATION, STOCKWATER, & DOMESTIC USE
 FROM HORSE CANYON AND SPRINGS
 EUREKA COUNTY NEVADA
 V001115 V001114

Map 3 - 2013 Proof Map

SUPPORTING PHOTOGRAPHS

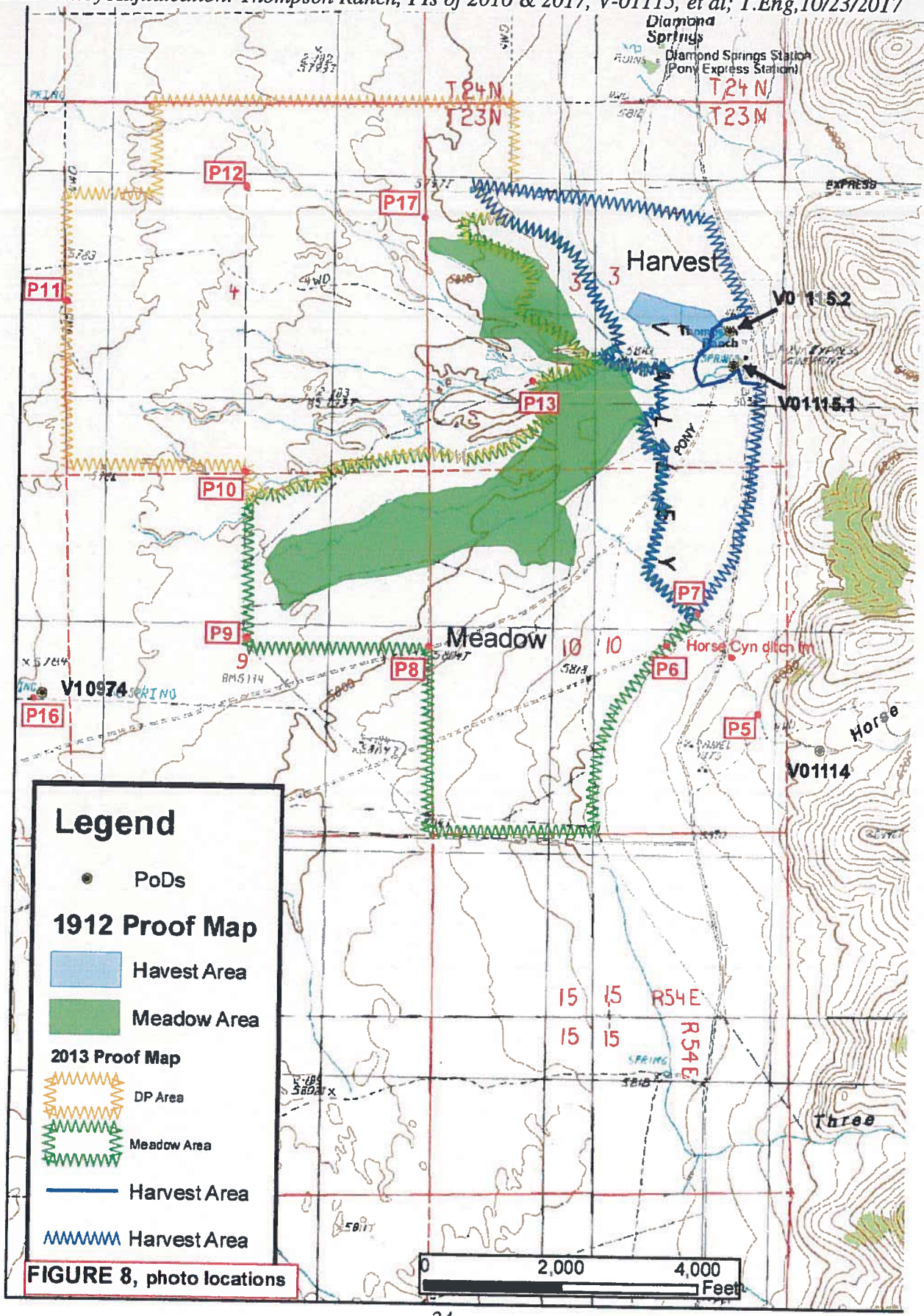
In the following section, photographs are arranged in the order of the main PODs (Thompson Springs, V-01115, then Horse Canyon, V-01114), followed by POU photos beginning near the claimed POU for Horse Canyon, and progressing more or less in a clockwise direction from there to other claimed POU areas, and ending back at the former Thompson springs and ranch. Photos of other miscellaneous sites are included at the end. Unless indicated otherwise, all photos were taken in early September 2016. An index topographic map showing the location of the photos relative to the claimed POU (Figure 8), is included at the beginning for reference purposes.



Photos 1a-b: a)(left photo) main (south) Thompson spring (V-01115.1) area and ranch, looking E with Diamond Mountains in distance; former south spring is located in center cluster of cottonwoods and has been dry since the 1990's; historic ranch buildings are behind trees; area in middle ground is former ~5 acre reservoir, with concrete dam/headgate structure in lower left corner; b)(right photo) rock lined main south spring, at east end of former reservoir, looking W; an 18" steel casing (left of center with hammer) was drilled into the spring several decades ago for domestic water, but is now bridged and dry.



Photos 2a-b: a) north Thompson spring (V-01115.2) area and ranch, looking SSW; this smaller spring also has been dry for several decades; an 8-10 ft deep backhoe excavation near center of photo did reportedly encounter some water several years ago; the former ~1 acre pond is in the right portion of photo; b) headgate and wooden trough at west end of former 1 acre pond, looking W.



Legend

- PoDs
- 1912 Proof Map**
- Harvest Area
- Meadow Area
- 2013 Proof Map**
- ~ DP Area
- ~ Meadow Area
- Harvest Area
- ~ Harvest Area

FIGURE 8, photo locations

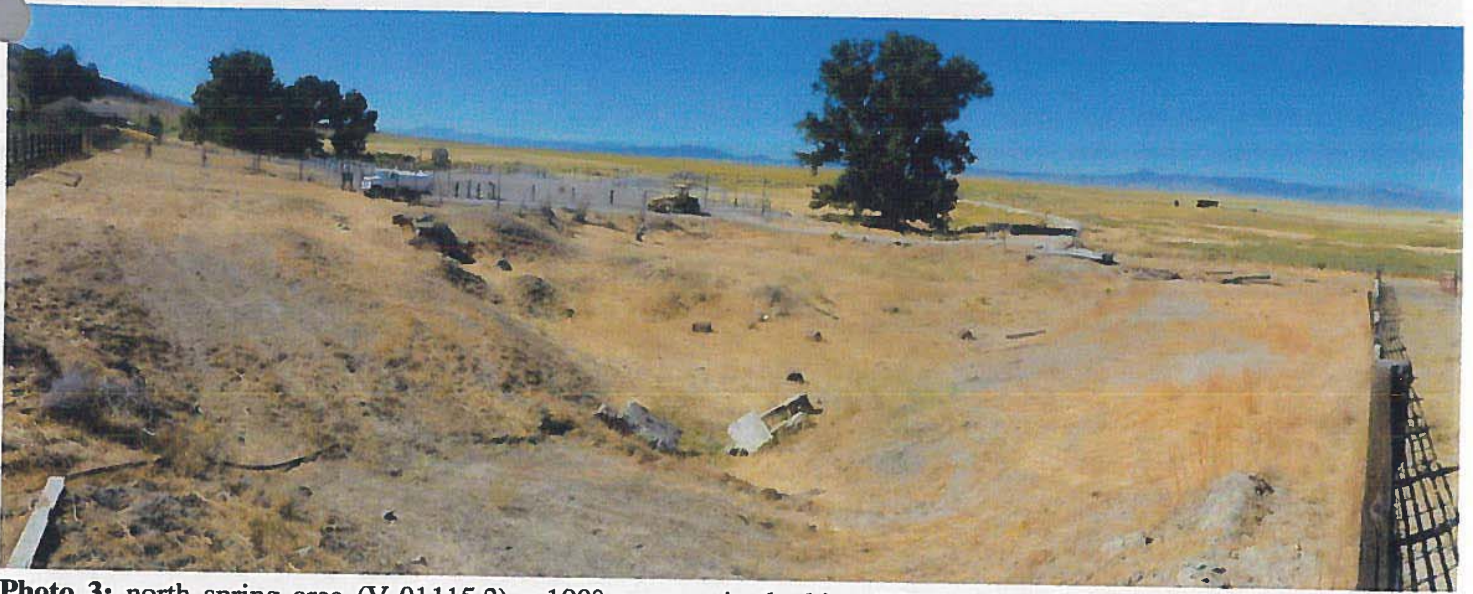


Photo 3: north spring area (V-01115.2), ~100° panoramic, looking SW; headgate and trough in Photo 2b are located in center, to right of large cottonwood; former ~12 acres of historic harvest crops and grain shown on the 1912 and 1975 proof maps would be located to right, in upper far right portion of photo; south spring area is located by larger cluster of cottonwood trees on left.



Photo 4: POD for Horse Canyon claim (V-01114), ~100° panoramic, looking W. The natural stream channel is on left, and the constructed ditch from the POD is on right; Thompson Ranch is just out to view in upper right; the distinct round peak to left on horizon is Mt. Hope with the Sulphur Spring Range to right; the Roberts Mountains are in the very far distance, left of center.

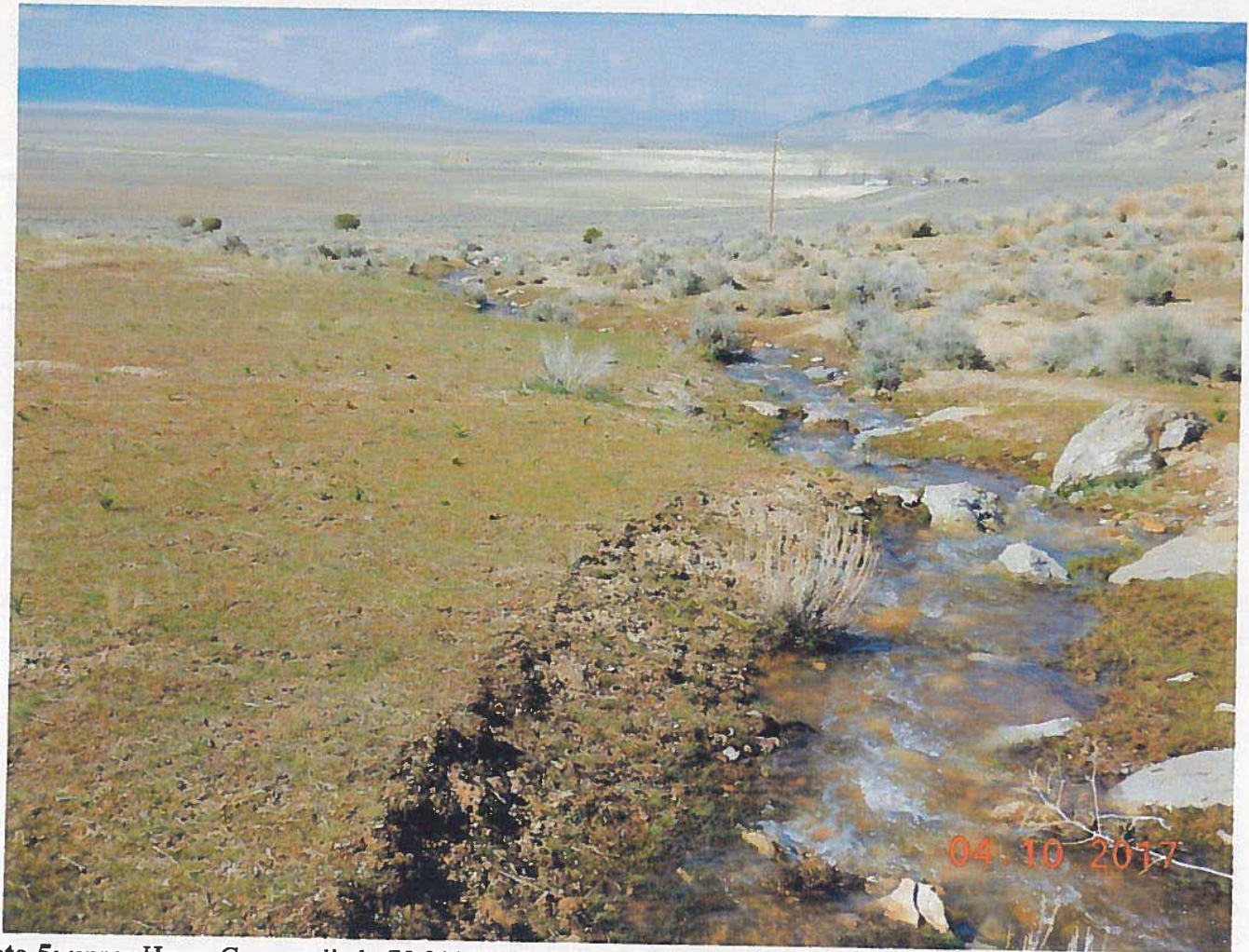


Photo 5: upper Horse Canyon ditch (V-01114), looking NNW; the 4/2017 flow measurement site is located ~300 yds NW of photo, just above the county road. Maximum flow recorded with a pygmy meter was 1.32 cfs, while flow measured with a large 90° V-notch weir was 1.03 cfs. There was no flow of water on 5/1/2017, nor on subsequent visits in later May and June despite wet late spring weather, indicating that flow is limited to the early freshet, and melting snow conditions. Thompson Ranch and former springs (V-01115) are marked by cottonwoods to right of power pole; former claimed irrigated lands extend from those trees, to left center and left distance. The light tan areas south of the ranch are mostly dry mustard weed, where a wheat crop was attempted in 2016; light tan-greenish area to left of mustard weed was brush-hogged in 2016 but not planted; brownish areas to left of that, were brush-hogged in early 2017; these entire areas were claimed as harvest or hay on the 2013 proof map



Photo 6: lower Horse Canyon (V-01114) water; photo taken 4/10/2017 at start of POU (claimed as hay) for 2013 map; 180° panoramic looking ~NW. Water was being conveyed here, instead of in the Horse Canyon ditch as claimed on all maps, and located several hundred yds to north (right portion of photo, middle distance). The 1912 and 1975 maps do not claim any crop-culture in the foreground area, nor from center of photo to left in middle distance. Much of area inside fence was brush-hogged in early spring, 2017.



Photo 7: lower Horse Canyon ditch (V-01114) on left, at start of POU for 2013 map, 180° panoramic looking ~NW. Note alluvial-rich material in foreground with low sagebrush; according to the 2013 map, the right side of photo is claimed as harvest (grain/alfalfa), while the left side is hay; Thompson Ranch is in right distance; note that much of the claimed POU in foreground is topographically even with, or slightly upslope from the springs and could not be watered by them. The 1912 and 1975 maps do not claim any crop-culture in this general area. The light tan area in middle distance is mostly dry mustard weed, where a crop of wheat was attempted in 2016.



Photo 8: SW part of POU for 2013 map near the Section 9/10 quarter corner; 180° panoramic looking ~NE along former Overland/Pony Express Trail (marked by a linear narrow growth of rabbitbrush in foreground). Most vegetation is now low greasewood growing in alkali-rich soil; Thompson Ranch and former springs with cottonwood trees are in center distance. Entire area in foreground is claimed as hay on the 2013 map; no crop-culture is claimed in this area on either the 1912 or 1975 maps; see Figure 7 photo of same general area for comparison of dominant sagebrush vegetation in the 1960s.

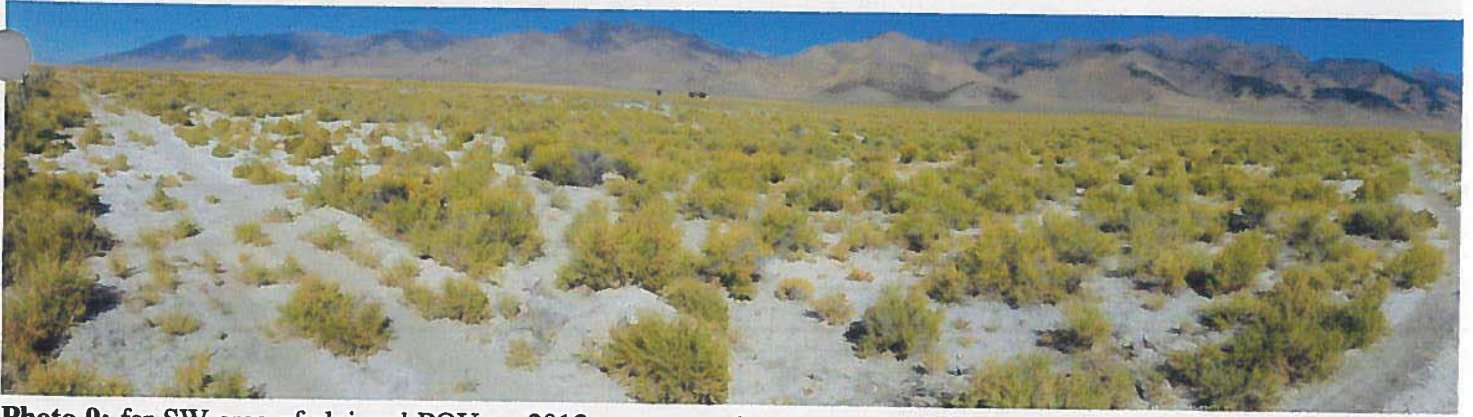


Photo 9: far SW area of claimed POU on 2013 map, near the center of Section 9; ~140° panoramic looking ~NE, Thompson Ranch in center far distance. Vegetation in foreground is mostly 2 ft high greasewood; no crop-culture is claimed in this area on the 1912 and 1975 maps; the right 1/3 of photo is outside of the POU on all claim maps, and shows no difference to the left 2/3's of photo which is claimed as hay on 2013 map; note alkali-rich soil in most of foreground area. North-south fence line and trail at far left edge of photo mark, west boundary of 2013 claimed POU.

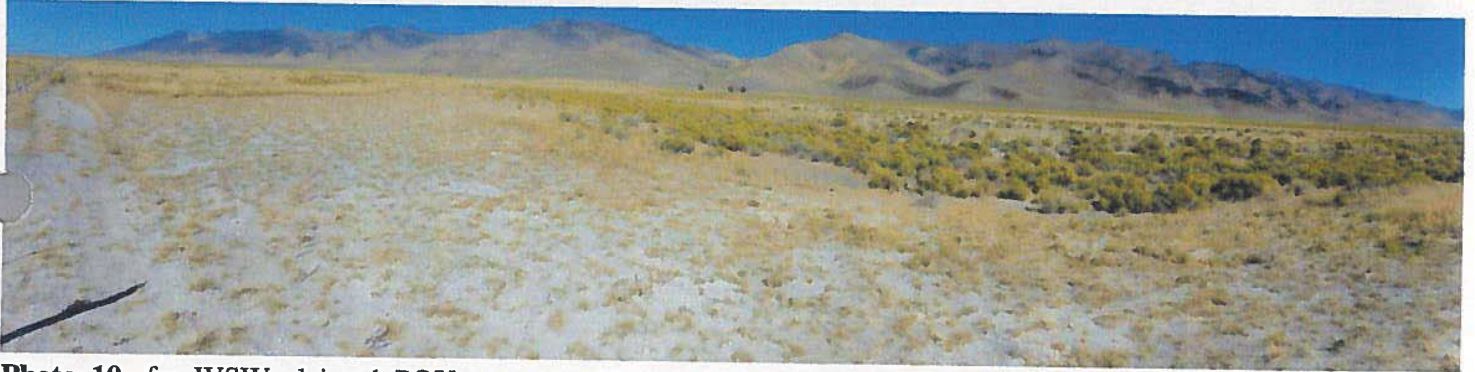


Photo 10: far WSW claimed POU, near the ¼ corner of Sections 4 and 9; ~140° panoramic looking ~NE, Thompson Ranch in center far distance. On 1975 map, area is claimed as diversified pasture ("DP"); on 2013 map, right side of photo is claimed as hay, left side as DP, while no crop-culture is claimed on the 1912 map. Vegetation is moderately dense, 2 ft high rabbitbrush on right in gully area with ~3 ft of relief, and more sparse alkali grasses and other vegetation on left side of photo on slightly higher, elevated ground.

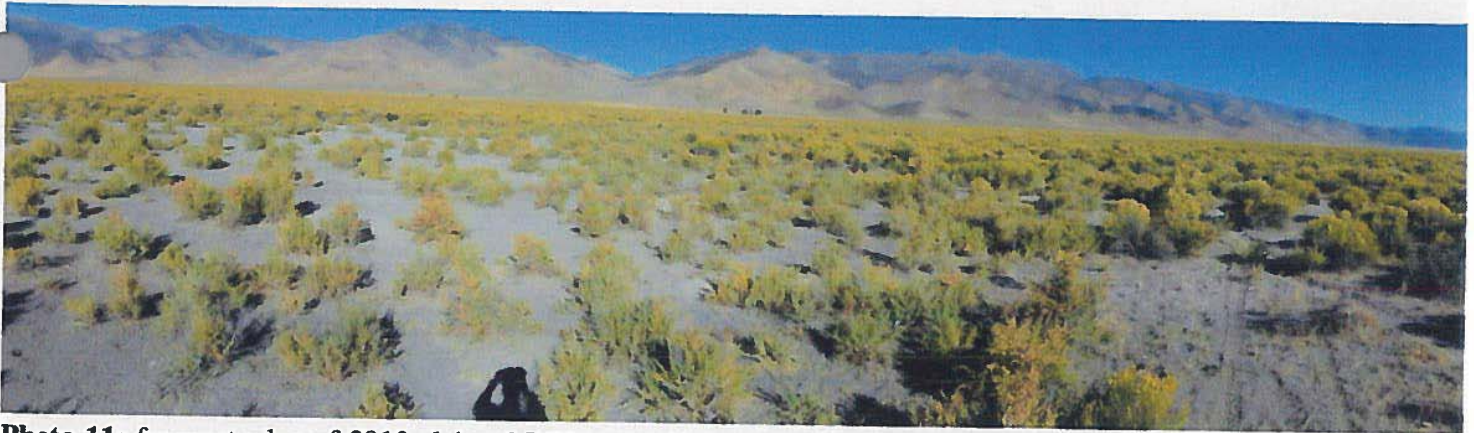


Photo 11: far west edge of 2013 claimed POU, near $\frac{1}{4}$ corner of Sections 4 and 5; $\sim 140^\circ$ panoramic looking $\sim E$, Thompson Ranch in center far distance. Most of 1 square mile to east of photo is claimed as diversified pasture on the 2013 map; no crop-culture is claimed on the 1912 and 1975 maps. Vegetation is sparse greasewood with lesser rabbitbrush; the entire outer west boundary of the Venturacci property along the north-south section line is unfenced in this area.



Photo 12: far NW corner of 1975 claimed POU, $\sim 120^\circ$ panoramic looking $\sim SE$, Thompson Ranch left of center. Area is also claimed as DP on 2013 map, while no crop-culture is claimed on the 1912 map. Vegetation is mostly rabbitbrush. Left fence is E/W, right fence is N/S and correspond to the mapped fence lines on USGS topo map in the north center of Section 4.

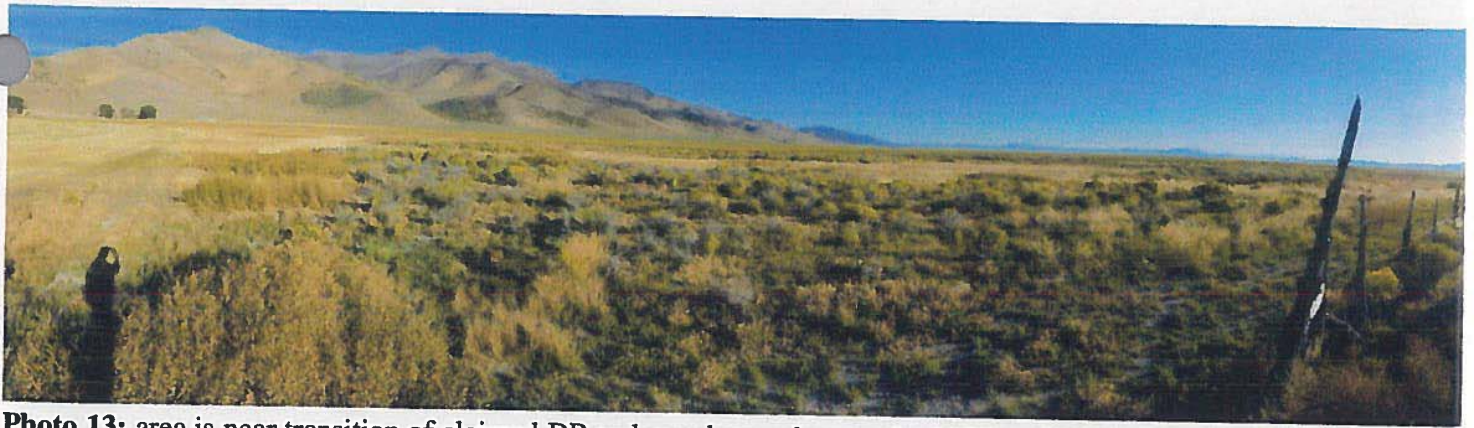


Photo 13: area is near transition of claimed DP and meadow or hay on the 1975 and 2013 maps; ~130° panoramic looking ~SSE, Thompson Ranch on far left side behind edge of new pivot. Most of area in fore- and middle ground is claimed as former meadow on all maps, and lies along the former channel of Taft/Thompson creek, which here per the topo map drains westerly through central portion of photo, and then NW behind photo. Vegetation is mostly mixed grasses and rabbitbrush; cut crop on pivot is triticale.



Photo 14: near POD for northern-most spring (V-01115.2, left of photo) at Thompson Ranch, 180° panoramic looking ~WNW; most of area in photo is claimed as harvest (grain/alfalfa) on 2013 map. Much of the claimed POU in immediate foreground and to right is topographically even with, or upslope from the spring source; there is evidence that crops were grown here but water was pumped from the pond, after the Thompsens acquired the property in the late 1940's. The 1912 and 1975 maps do not claim any crop-culture in this area, except for ~12 acres of harvest (grain, garden, alfalfa) in the low-lying area in middle left distance, to right of cottonwood.



Photo 15: historic Thompson Ranch buildings, ~130° panoramic looking ~WSW; cottonwoods mark former spring area (V-01115.1). Most of area in left foreground and left middle distance is claimed as harvest (grain/alfalfa) on the 2013 map; no crop-culture is claimed in the corresponding areas on the 1912 and 1975 maps; main area of formerly irrigated meadow and hay claimed on all maps is in the central middle and far distance, to left and behind cottonwoods.

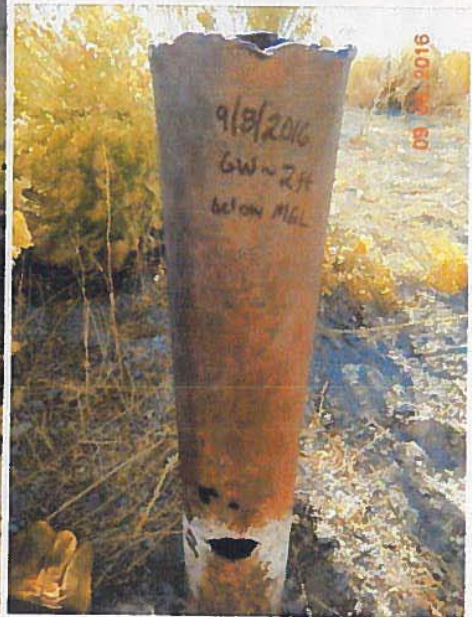
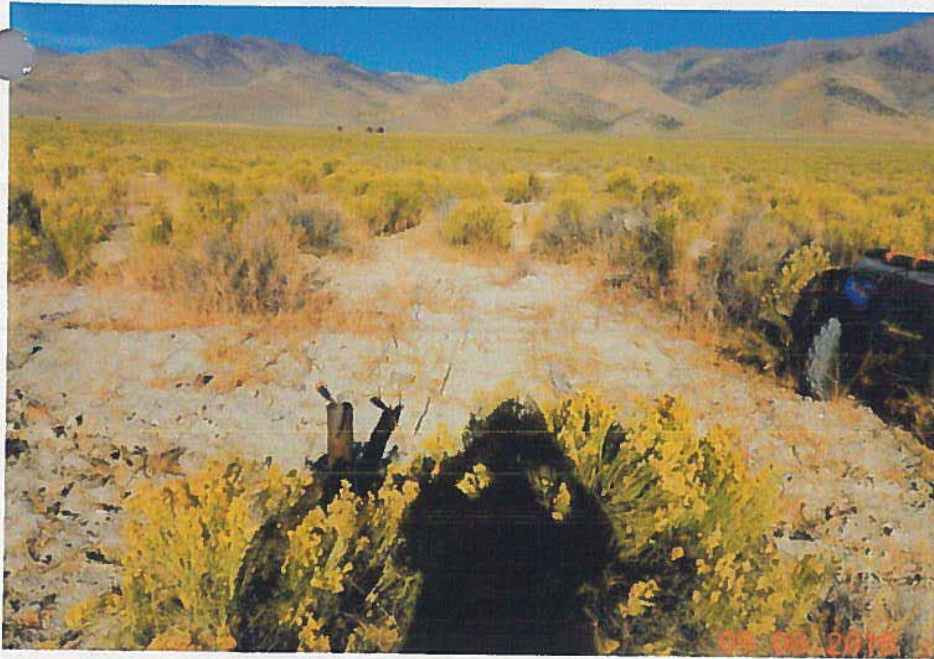


Photo 16: V-10974 (spring, stockwatering), ~2 miles SW of Thompson Ranch buildings; a) 4" steel casing (to left of shadow), with Thompson Ranch cottonwoods in far distance, looking ENE; b) close-up of well casing; depth to ground water was measured at 6.84 ft BMGL (5,778.16 ft) on 6/16/2017; looking SW; note battered nature of top of casing and absence of any trough, excavation or appurtenances.

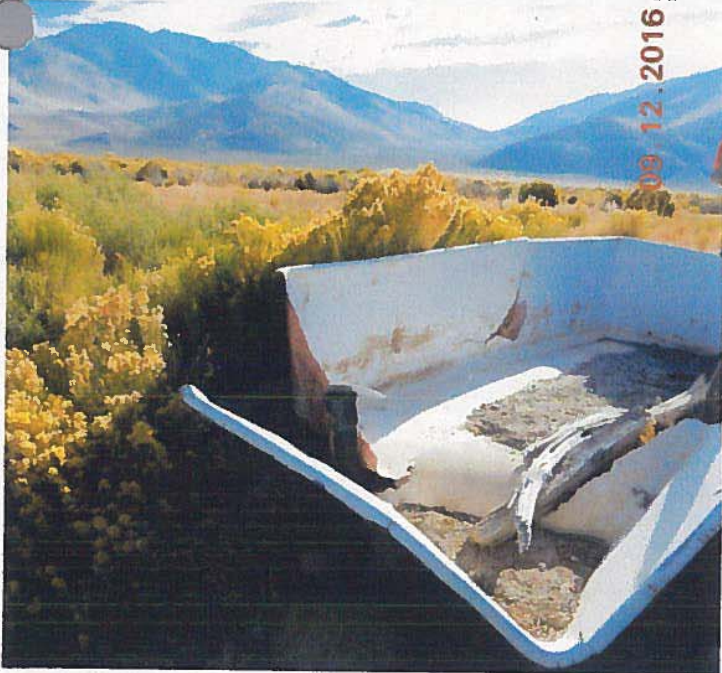


Photo 17: former artesian well (4" black PVC casing with hammer head, left center) and tub stock trough, looking east. Water was measured at 9.87 ft below the top of the casing on 9/12/2016, or a corrected water level elevation of 5,787.63 ft; the well last reportedly flowed ~2008. Telegraph Canyon and Overland Pass are in the center distance.