

Utah Division of Water Rights Well Metering Project – Parowan Valley – 2014 Summary

On March 25, 2014 meter totalizers were reset to zero and power meters read at all metered well sites. At least one photo was taken of each site showing the water meter box and well.

Subsequent site visits to inspect the meters, record meter and power readings, and install or repair meters were made on April 30, May 28, June 17, July 17, August 18-19, August 25-26 and October 21, 2014. During the 2014 irrigation season photos showing the water and power meter readings at each site were taken during each site visit. During the October 21 site visit the flow meters were disconnected from their power source for the non-irrigation season.

Three new metering locations were added during the season: Paragonah 3 and Church Farm 5, which were new wells drilled in 2014, and Paragonah 1, where plumbing near the well head was redone, making a meter possible for this well. The metering of these new locations began on August 25, 2014. For the period from August 25 to October 21, the following well rating factors were determined for these wells:

Paragonah 1 – 14.5 kW-hr/AF

Paragonah 3 – 436.5 kW-hr/AF

Church Farm 5 – 499.2 kW-hr/AF

The Paragonah 1 well rating is likely in error. The well's water meter should be closely monitored at the beginning of next season to ensure it is functioning and whether or not the correct power meter is being read should also be checked. (There are two power meters at this location.)

Also of note is that the Paragonah 2 well rating decreased significantly throughout the 2014 irrigation season, a pattern very similar to that of the 2013 season.

The Buckhorn 2 North and South meters were removed on July 17, 2014 after discovering that water diverted by the other two Buckhorn wells can flow through these meters. Any diversions recorded for the Buckhorn 2 well are not accurate, including those recorded during 2013. The Buckhorn 1 and 3 meters remain in place, but because of the commingling of the farm's three wells and not knowing the total diversion for the farm, a diversion amount per acre is not known.

A few of the water meters experienced some sort of malfunction during the 2014 season, part or all of their recorded diversion amounts are not accurate.

- On April 30 at the Church Farm 4 well, the meter showed fluctuating flow. The sensors were adjusted to improve the signal strength. On May 28 the meter showed little water use since the previous visit. The sensors were readjusted for improved signal strength, but the well was off so it could not be determined if the meter was functioning. On June 17 the meter was still showing fluctuating flow and was replaced.
- On May 28 at the Burton North well, the sensor wires near the sensors were found cut. The wires were replaced, and the meter appeared to be functioning. On August 18 the signal strength of the sensors was zero and attempts adjusting the sensors to improve

signal strength were unsuccessful. The meter did not record flow during the rest of the season.

- On August 25, the Buckhorn 1 meter was found not functioning. The meter was replaced on August 26.
- Field one pump well meter showed an unusually large amount of water diversion on August 18 so the totalizer was reset. On August 25 the sensors were adjusted to improve the signal strength. On October 21 the meter was found repeating its startup display. The solar controller indicated a low battery. The battery and meter should be tested at the beginning of next season.
- Old Farm East water meter appears to have quit functioning sometime after May 28, but went unnoticed until after the end of the season.

The attached tables and figure summarize the data collected during the 2014 irrigation season.

Table 1 Power Meter Readings

Well Name	kw-hr Multiplier	Date								
		3/25	4/30	5/28	6/17	7/17	8/18	8/25	8/26	10/21
Buckhorn 2	10	20896	20986	21621		28326 ¹				
Buckhorn 1	40	12888	14527	16608		21313	23970	24531	24610	25836
Buckhorn 3	-	95697	95892	1175		52580	89899			11953
Oaktree	40	47569	48314	49794		54107	56780			58312
Paragonah 1	-							90452		91370
Paragonah 2	40	13697	14688	16109		19036	20405			21465
Paragonah 3	40							177		1110
Burton South	-	40930	40930	48812		7118	56399			115
Burton North	40	65673	65675	65969 ²	66452	68135	69967			71245
Old Farm East	-	16693	42947	76305		32984	56869			87731
Old Farm West	10	35899	40236	46437		13347	61106			66477
Field One Pump	-	69857	94842	30427		94726	33353	42126		57768
Church Farm 2	-	88349	1299	33253		77314	97742			99514
Church Farm 5	40							304		2267
Church Farm 4	40	18578	19709	20676	22582	24290	25987			27966
Church Farm 3	10	25105	28318	33274		38012	40354			44591
Allread	-	95809	23819	53193		6000	33244			72139
Evans	80	10464	11143	12026		14168	15012			16350

¹ Buckhorn 2 water meters were removed on 7/17 so the power meter was not read after that date.

² Burton North power meter read at 65975 later on the same day. See footnote on water meter readings table for corresponding water meter reading.

Table 2 Water Meter Readings (acre-feet)

Well/Water Meter Name	Date								
	3/25	4/30	5/28	6/17	7/17	8/18	8/25	8/26	10/21
Buckhorn 2 North	0.0	0.1	9.8		112.1 ¹				
Buckhorn 2 South	0.0	53.5	115.0		272.9 ²				
Buckhorn 1	0.0	80.4	182.4		266.5	336.9	337.1	0.0 ³	74.7
Buckhorn 3	0.0	0.9	27.2		197.1	326.4			398.4
Oaktree	0.0	67.5	189.7		469.8	630.6			725.4
Paragonah 1							0.0		63.2
Paragonah 2	0.0	33.5	105.8		292.2	469.3			827.3
Paragonah 3							0.0		85.5
Burton South	0.0	0.0	20.6		173.2	302.2			416.1
Burton North	0.0	0.0	0.0 ⁴	14.8	39.0	46.4			46.4
Old Farm East	0.0	42.9	93.3		123.6	123.6			123.6 ⁵
Old Farm West	0.0	81.5	194.6		373.6	445.2			535.1
Field One Pump	0.0	49.7	119.2		228.9	0.0 ⁶	6.5		
Church Farm 2	0.0	22.6	78.8		150.1	185.4			185.5
Church Farm 5							0.0		157.3
Church Farm 4	0.0	6.1	15.4	0.0 ⁷	163.1	326.1			505.2
Church Farm 3	0.0	55.5	138.0		219.1	259.1			325.2
Allread	0.0	59.3	121.0		237.5	299.9			383.7
Evans	0.0	90.5	224.1		517.0	624.3			750.7

¹ Buckhorn 2 North meter was removed on 7/17. It was discovered that the meter also registered diversions from the Buckhorn 3 well.

² Buckhorn 2 South meter was removed on 7/17. It was discovered that the meter also registered diversions from the Buckhorn 1 well.

³ Buckhorn 1 meter replaced on 8/26/14. Readings prior to that date are not accurate.

⁴ Burton North meter read at 0.2 later on same day. See footnote on power meter readings table for corresponding power meter reading.

⁵ Old Farm East meter read 123.6 from 7/17 to 10/21, but there were 54,747 kW-hr of power used during that time. Readings after 5/28 are not accurate.

⁶ Field One Pump meter read as 49328.8 AF on 8/18. Meter totalizer was reset to zero, but appeared to not function the rest of the year. Readings after 7/17 are not accurate.

⁷ Church Farm 4 meter was replaced on 6/17. Readings prior to that date are not accurate.

Table 3 Water Use Summary

Well/Meter Name	Unmetered Diversion Power (kW-hr)	Well Rating Factor (kW-hr/AF) ¹	Estimated Unmetered Diversion (AF)	Metered Diversion (AF)	Total Diversion (AF)	Crop Type	Acres	Diversion per Acre (AF/ac)
Buckhorn 2	-	-	-	-	-	Corn & Alfalfa	720	-
Buckhorn 1	468,880	441.6 to 656.5 ²	714.2 to 1033.9	74.7	788.9 to 1108.6			
Buckhorn 3	701	216.7	3.2	398.4	401.6			
Oaktree	160	441.5	0.4	725.4	725.8	Alfalfa	240	3.02
Paragonah 1	-	-	-	63.2	-	Alfalfa	570	-
Paragonah 2	280	1,183.3 ³	0.2	827.3	827.5			
Paragonah 3	7,080	436.5	16.2	85.5	101.7			
Burton South	-	-	-	416.1	416.1	Corn	263	2.25
Burton North	211,040	1,200 ⁴	175.9	-	175.9			
Old Farm East	111,426	661.9 ⁵	168.4	93.3	261.7	Alfalfa	272	2.93
Old Farm West	-	-	-	535.1	535.1			
Field One Pump	63,042	586.1 ⁶	107.6	228.9	336.5	Alfalfa	874	2.67
Church Farm 2	-	-	-	185.5	185.5			
Church Farm 5	12,160	499.2	24.4	157.3	181.7			
Church Farm 4	160,360	417.7	383.9	505.2	889.1			
Church Farm 3	-	-	-	325.2	325.2			
Allread	15,333	472.3	32.5	383.7	416.2			
Evans	-	-	-	750.7	750.7	Alfalfa	235	2.75

¹ Unless specified otherwise, well rating factor is determined from power and water use during first and second meter readings of the season. If blank, no unmetered diversions were estimated.

² Rating factor of 441.6 kW-hr/AF is the average for the Buckhorn 1 well during 2013. Rating factor of 656.5 kW-hr/AF is that determined after the meter was replaced on 8/26/14.

³ Well rating factor was determined as 1183.3 kW-hr/AF at the beginning in the season, but decreased to 118.4 kw-hr/AF at the end of the season. Due to the small amount of power use prior to the start of water metering, the well rating factor has little consequence on the total diversion for the well.

⁴ Burton North water meter did not function for almost the entire season. Well rating factor is from power and water meter readings that occurred about 2 hours apart on the 5/28/14 while well was operating and was used to estimate the entire season's diversion amount for this well.

⁵ Old Farm East water meter stopped functioning sometime after 5/28/14. Well rating factor for the period between 4/30/2014 and 5/28/2014 was used to estimate diversion for the remainder of the season.

⁶ Field one pump water meter stopped functioning sometime after 7/17/2014. Well rating factor for the period between 5/28/2014 and 7/17/2014 was used to estimate diversion for the remainder of the season.

Figure 1 Well Ratings during 2014

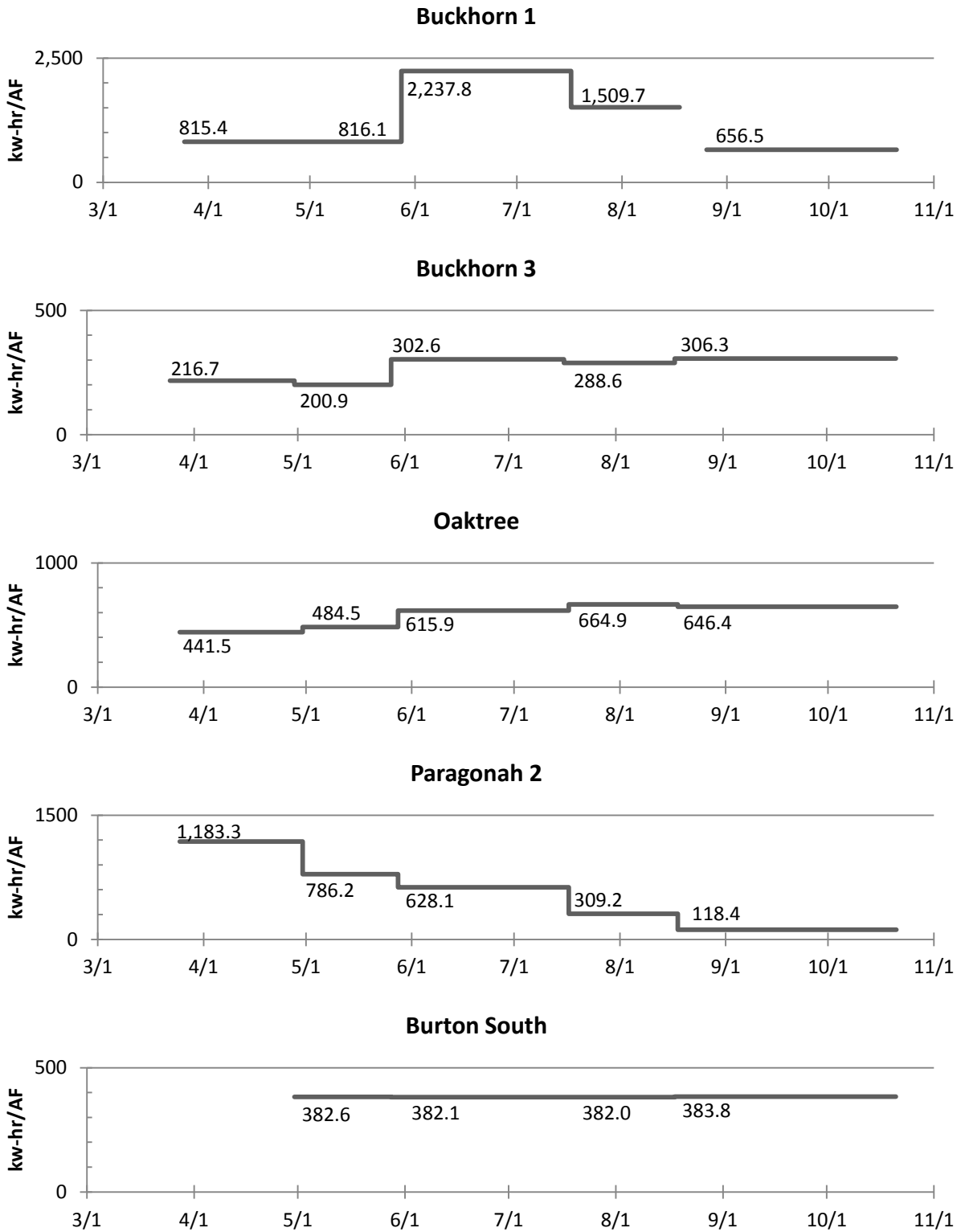


Figure 1 continued Well Ratings during 2014

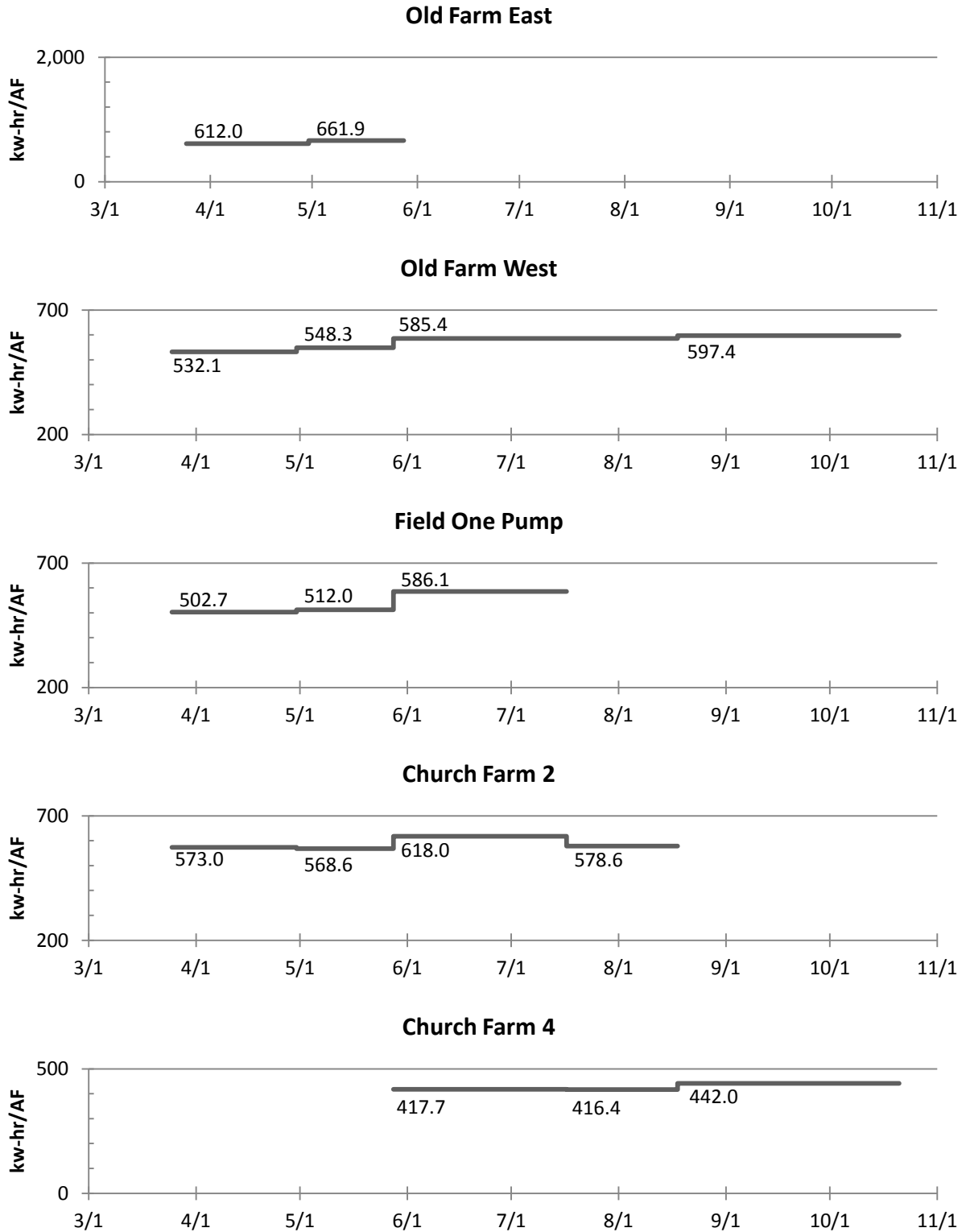


Figure 1 continued Well Ratings during 2014

