

MEMORANDUM

TO: Water Right File 2-7472, 47-8356, and 47-8657

FROM: Daniel Nelson – Analyst 3

DATE: January 6, 2018

SUBJECT: Licensing Review of Water Right 2-7472, 47-8356, and 47-8657

The field exams for these rights were performed by Department staff from the Southern Region in 2005. There is a question on the ownership of this permit. The ownership of the permit is currently Simplot – McCollum Development Company. However, it appears as though McCollum Development Company is now the current owner of the property. Change of ownership forms were sent at the time of the field report, but no change of ownership information was received. Therefore, I am processing this permit under the ownership of the permit. The recommendations for licensing each permit will be discussed below to ensure that there is continuity of the information provided.

History:

According to the water right files, these permits were originally filed to replace water flows into an existing fish hatchery from a spring known locally as Alpheus Creek. The water right authorizing the Alpheus Creek water delivery to the hatchery is water right 36-7239. Water right 36-7239 allows fish propagation (6.00 cfs), recreation (6.00 cfs), aesthetic (6.00 cfs) and irrigation (1.60 cfs, 320 af, and 80 acres within a 112 acre permissible place of use [PPU]). An enlargement water right (36-15455) was decreed in the Snake River Basin Adjudication (SRBA) that allowed an additional 32 acres to be irrigated from the Alpheus Creek.

The reason for filing these permits was a concern that water from Alpheus Creek would no longer be available. According to Department records, a common pipeline originally delivered water rights 36-2646 (City of Twin Falls – 7.47 cfs), 36-2603A (City of Twin Falls – 45.00 cfs), and 36-7239 (Simplot – McCollum) across the Snake River to the City of Twin Falls and Canyon Springs. It is difficult to determine from the water right records the size of the pipeline across the Snake River, but it appears to have been less than the combined diversion rate of 52.47 cfs authorized by the City of Twin Falls rights. Please see the agreement in water right file 36-7239 for more information. Since the Twin Falls rights when diverted at full capacity can completely shut down the Simplot-McCollum rights due to the agreement and priority dates, they needed to find an alternative to avoid losing their water supply to the fish hatcheries.

Even though it appeared as though these three permits were only being filed to replace the Alpheus Creek water, the permit was issued with the following condition:

This right does not authorize the development of a new fish propagation facility, or, any increase in volume or use of the facilities developed under right nos. 36-07239, 47-07758, and 47-07813.

Water right 47-7758 is a ground water right that allows fish propagation (6.00 cfs), recreation (6.00 cfs), aesthetic (6.00 cfs) and irrigation (1.60 cfs, 320 af, and 80 acres of irrigation within a 112 acre PPU). Water right 47-7813 is diverted from the same ground water well as water right 47-7758, and is for power (6.25 cfs and 4510 af). Conditions on these two water rights limit the total diversion rate from the well to 6.25 cfs and 4510 af.

Water rights 36-7239 and 47-7758 are the only rights that authorize fish propagation and aesthetic uses. Neither of these rights have a volume limitation for the fish propagation or aesthetic uses, so we need to assume that the total volume authorized by these rights is the maximum volume possible for the combined diversion rate of the two water rights of 12.00 cfs. At 12.00 cfs, the maximum volume that could be diverted is 8,690 af ($12 \text{ cfs} \times 1.9835 \times 365 = 8,687.73 \text{ af}$). Water right 47-7813 does authorize additional volume for power use only from the well, but we can't consider the additional volume for the fish propagation or aesthetic uses, since fish propagation or aesthetic were not uses on water right 47-7813.

The condition does prevent us from limiting the volumes of these permits to just the water that was diverted from Alpheus Creek, so the combined maximum volume of 8,690 af would be the maximum volume we can allow to be diverted to comply with the condition of the permits. The aesthetic use is for manmade streams and ponds through the attached golf course. All of the water for this use flows through the ponds and ditches to the fish hatchery. There are no irrigation or recreation uses on the permits, and the irrigation use is diverted at the end of the fish hatcheries, so they should not affect these permits.

Even though the diversion rate does seem high, this is a rather large fish hatchery. According to the water right records, it appears as though the fish propagation facility has a total facility volume of 141,840 cubic feet or 3.26 af. At a diversion rate of 12.00 cfs this would only allow 0.3 exchanges per hour in this facility, which is well below the recommended 2.5 exchanges per hour for trout. However, this facility raised tilapia, trout, and catfish, so this exchange rate may actually be reasonable for the different species of fish. Please see the following table:

Determination of facility exchange = Diversion Rate in cfs X 3600/ Facility Volume in ft³		
Diversion Rate	12.00	
Facility Volume	141,840.00	
Exchanges per Hour	0.30	
Under Ideal Conditions, Exchanges per Day should be 2.5 for Trout.		

Place of Use:

The places of use varies from permit to permit. The reasoning for the different places of use for each permit is that the piping and delivery systems from each water source apparently doesn't reach all of the facilities. The entire fish and aesthetic system is based on gravity flow, except for the water pumped from the Snake River. To avoid costs, the Snake River water is not pumped up to the top of the system. It should also be noted that the irrigation use of this water under the various existing water rights is pumped from the end of the raceways. At this time, there should be more than enough water being supplied by Alpheus Creek and ground water to supply all of the irrigation needed for the golf course. However, if the flows of the Alpheus water and the ground water ceases, the system would need to be redesigned to only divert canal water for the irrigation of the golf course.

Diversion Rate and Volume:

The field examiner recommended the following:

2-7472
4.25 cfs / 3,080 af
for fish propagation

47-8356
2.30 cfs / 1,670 af
for fish propagation
and aesthetic for a
total of 2.30 cfs / 1670 af

47-8357
0.69 cfs / 500 af
for fish propagation
and aesthetic for a
total of 0.69 cfs / 500 af

I have rounded the volumes to meet the significant figure standard. I have no reason to doubt the field examiner's analysis. However, a condition will be needed that states the following:

Rights 36-7239, 47-7758, 2-7472, 47-8356, and 47-8357 when combined shall not exceed a total diversion rate of 12.00 cfs or a total annual maximum diversion volume of 8,690 acre-feet for the fish propagation and aesthetic uses.

The analysis attached to this memo shows that during the development period the maximum diversion volume diverted under the 3 permits was 3,910 af. Therefore, another X35 condition will be needed to avoid enlargement of the permits if water levels continue to decline in Alpheus Creek and the well. The condition would read as follows:

Rights 2-7472, 47-8356, and 47-8357 when combined shall not exceed a total annual maximum diversion volume of 3,910 acre-feet for the fish propagation and aesthetic uses.

Since water rights 36-15455 and 47-7813 do allow additional diversion rates for water uses not associated with these permits, another X35 conditions will be needed to address the overall water use for all the uses. This condition should state the following:

Rights 36-7239, 36-15455, 47-7758, 2-7472, 47-7813, 47-8356, and 47-8357 when combined shall not exceed a total diversion rate of 12.25 cfs.

Conditions:

All of these permits should have the above condition added to replace the permit condition limiting the development of additional fish propagation facilities. Since the total volume is limited by amount authorized by water rights 36-7239 and 47-7758, the facility would be limited to the very low amount of exchanges per hour, which would prevent any significant enlargement of the facility. Whereas some of the rights are within a water district and some of them are not part of water district, the following condition will be needed:

Use of this right may be used in conjunction with water rights regulated by multiple water districts. The right holder must work with each water district to ensure proper administration of their rights.

Water right 2-7472 is in Water District 2, so it will need standard watermaster conditions. The remainder of the conditions will be added or changed according to Department standards.

Volume Calculations for Permits 02-7472, 47-8356, and 47-8357

Year	Alpheus Creek Annual Volume in Acre Feet	Geothermal Well Annual Volume in Acre Feet	Total Actual Diversions for Groundwater and Alpheus Creek in Acre Feet.	Total Volume Authorized by Existing Licenses.	Total Amount Volume Needed to Meet Licensed Water Right Volume.
1995	2,109	3,599	5,708	8,688	2,980
1996	2,187	3,903	6,090	8,688	2,598
1997	3,178	3,705	6,883	8,688	1,805
1998	2,847	3,781	6,628	8,688	2,060
1999	2,610	3,792	6,402	8,688	2,286
2000	1,468	3,307	4,775	8,688	3,913
2001	2,300	4,005	6,305	8,688	2,383
2002	2,835	3,913	6,748	8,688	1,940
2003	1,970	3,615	5,585	8,688	3,103

Average Volume Needed from the 3 Permits to Meet Original Annual Volumes =	2,563	in Acre Feet
Maximum Volume Needed from the 3 Permits to Meet Original Annual Volumes =	3,913	in Acre Feet
Minimum Volume Needed from the 3 Permits to Meet Original Annual Volumes =	1,805	in Acre Feet

Volume Limit for Existing Alpheus Creek Fish Propagation Rights (Diversion rate X 1.9835 X365)=	4,344
Volume Limit for Existing Ground Water Fish Propagation Rights (Diversion rate X 1.9835 X365)=	4,344
TOTAL =	8,688

These permits were approved with a condition that did not authorize any development or volume for a set of fish hatcheries developed by existing water rights 36-7239 (Alpheus Creek) and 47-7758 and 47-7813 (Groundwater). The development period for water right 02-7472 was from 1998 to 2003, and the development period for permits 47-8356 and 47-8357 was from 1995 to 1999. The maximum required volume to maintain the volume authorized by the licenses during the development period of 1995 to 2003 was 3,913 af in the year 2000. This is very reasonably close to all three water right permits. There is some overlap between the development period for the permits, but I do think 2000 would be the most reasonable time to consider for the actual water needed during the development period when all three permits are considered.

Limiting the volume of the three rights when combined is important, since the flows in Alpheus Creek and the artesian geothermal well have declined over time. I spoke with staff about this, and there is a significant concern that the decline in the well and Alpheus Creek could continue. Without a limit of the permits, the continued decline of water could allow the total use from these permits to continue to grow, which could be construed as enlargement.

We do not feel that the use of the minimum or the average would be reasonable, since they did divert a significant amounts of water that are above the average and minimum during the development period. Therefore, the maximum seems the most reasonable alternative.

Site ID# (Well Name)	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	10 YR Average
Pristine Springs - Old	0	0	0	0	0	0	0	0	0	0	0	
Pristine Springs	4968	4769	3495	3304	3353	3375	3367	3367	3369	3359	3362	3512
Canyon Springs	3957	3971	3916	3976	4088	3975	3313	3143	3230	3166	3022	3728
CSI #1	48	536	188	132	35	65	3	7	190	457	521	158
CSI #2	627	281	237	394	583	486	590	571	463	382	298	450
Twin Falls High School	88	88	95	92	86	78	74	69	50	137	133	79
CSI Total	675	817	425	526	618	551	593	578	653	839	819	642

Use	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	
Space Heating	763	905	520	618	704	629	667	647	703	976	952	686
Power Generation and Fish Farming	8925	8740	7411	7280	7441	7350	6680	6510	6599	6525	6384	7550
Total	9688	9645	7931	7898	8145	7979	7347	7157	7302	7501	7336	8236

09S 17E 29ACC2
09S 17E 33BBC1

CSI #1 is used only as a backup. Discharge readings in 2013 are from very brief times when the well was pumped in order to get temperature readings.

Site ID#	Pristine Springs	Canyon Springs	Twin Falls High School
1990	0	4420	154
1991	0	4508	130
1992	1927	4188	149
1993	3124	4106	137
1994	3165	3702	121
1995	3446	3599	117
1996	3558	3903	115
1997	3082	3705	112
1998	3016	3781	109
1999	3053	3792	97
2000	4556	3307	47
2001	4785	4005	112
2002	4902	3913	47
2003	4535	3615	99
2004	4680	3794	96
2005	4623	3888	83
2006	4854	3706	65
2007	4968	3957	88
2008	4769	3971	88
2009	3495	3916	95
2010	3304	3976	92
2011	3353	4088	86
2012	3375	3975	78
2013	3367	3313	74
2014	3367	3143	69
2015	3369	3230	50
2016	3359	3166	137
2017			

Idaho Department of Water Resources

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Report Year	Alternate	FM	PCC	Time Clock
2017	0.0			
2016	0.0			
2015	418.5			
2012	548.4			
2011	613.9			
2000		1467.60		
1999		2610.23		
1998		2846.64		
1997		3178.46		
1996		2187.90		
1995		2109.43		

360410029 MCCOLLUM DIV. AT ALPHEUS

DAILY MEAN VALUES FOR DISCHARGE IN CUBIC FEET PER SECOND, WATER YEAR, OCTOBER 2000 TO SEPTEMBER 2001

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	--	--	--	6	6	6	6	6	6	0	0	0
2	--	--	--	6	6	6	6	6	6	0	0	0
3	--	--	--	6	6	6	6	6	6	0	0	0
4	--	--	--	6	6	6	6	6	6	0	0	0
5	--	--	--	6	6	6	6	6	6	0	0	0
6	--	--	--	6	6	6	6	6	6	0	0	0
7	--	--	--	6	6	6	6	6	6	0	0	4.4
8	--	--	--	6	6	6	6	6	6	0	0	4.4
9	--	--	--	6	6	6	6	6	6	0	0	6
10	--	--	--	6	6	6	6	6	6	0	0	6
11	--	--	--	6	6	6	6	6	6	0	0	6
12	--	--	--	6	6	6	6	6	6	0	0	6
13	--	--	--	6	6	6	6	6	4.4	0	0	6
14	--	--	--	6	6	6	6	6	4.4	0	0	6
15	--	--	--	6	6	6	6	6	4.4	0	0	6
16	--	--	--	6	6	6	6	6	4.4	0	0	6
17	--	--	--	6	6	6	6	6	4.4	0	0	6
18	--	--	--	6	6	6	6	6	4.4	0	0	6
19	--	--	--	6	6	6	6	6	4.4	0	0	6
20	--	--	--	6	6	6	6	6	2	0	0	6
21	--	--	--	6	6	6	6	6	2	0	0	6
22	--	--	--	6	6	6	6	6	2	0	0	6
23	--	--	--	6	6	6	6	6	2	0	0	6
24	--	--	--	6	6	6	6	6	2	0	0	6
25	--	--	--	6	6	6	6	6	--	0	0	6
26	--	--	--	6	6	6	6	6	0	0	0	6
27	--	--	--	6	6	6	6	6	0	0	0	6
28	--	--	--	6	6	6	6	6	0	0	0	6
29	--	--	--	6	--	6	6	6	0	0	0	6
30	--	--	--	6	--	6	6	6	0	0	0	6
31	--	--	--	6	--	6	--	6	--	0	0	--
TOTAL	--	--	--	186.00	168.00	186.00	180.00	186.00	112.80	0.00	0.00	140.88
MEAN	--	--	--	6.0	6.0	6.0	6.0	6.0	3.9	0.0	0.0	4.7
MAX	--	--	--	6	6	6	6	6	6	0	0	6
MIN	--	--	--	6	6	6	6	6	0	0	0	0
AC-FT	--	--	--	369	333	369	357	369	224	0.0	0.0	279

WATER YEAR 2001 TOTAL 1160 MEAN 6 AC-FT 2300

360410029 MCCOLLUM DIV. AT ALPHEUS

DAILY MEAN VALUES FOR DISCHARGE IN CUBIC FEET PER SECOND, WATER YEAR, OCTOBER 2001 To SEPTEMBER 2002

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6	6	6	6	6	6	6	6	0	0	0	0
2	6	6	6	6	6	6	6	6	0	0	0	0
3	6	6	6	6	6	6	6	6	0	0	0	0
4	6	6	6	6	6	6	6	6	0	0	0	0
5	6	6	6	6	6	6	6	6	0	0	0	0
6	6	6	6	6	6	6	6	6	0	0	0	0
7	6	6	6	6	6	6	6	6	0	0	0	0
8	6	6	6	6	6	6	6	6	0	0	0	0
9	6	6	6	6	6	6	6	6	0	0	0	0
10	6	6	6	6	6	6	6	6	0	0	0	0
11	6	6	6	6	6	6	6	6	0	0	0	0
12	6	6	6	6	6	6	6	6	0	0	0	0
13	6	6	6	6	6	6	6	6	0	0	0	0
14	6	6	6	6	6	6	6	6	0	0	0	0
15	6	6	6	6	6	6	6	6	0	0	0	0
16	6	6	6	6	6	6	6	6	0	0	0	0
17	6	6	6	6	6	6	6	6	0	0	0	0
18	6	6	6	6	6	6	6	3.3	0	0	0	0
19	6	6	6	6	6	6	6	3.3	0	0	0	0
20	6	6	6	6	6	6	6	3.3	0	0	0	0
21	6	6	6	6	6	6	6	3.3	0	0	0	0
22	6	6	6	6	6	6	6	3.3	0	0	0	0
23	6	6	6	6	6	6	6	3.3	0	0	0	0
24	6	6	6	6	6	6	6	3.3	0	0	0	0
25	6	6	6	6	6	6	6	3.3	0	0	0	0
26	6	6	6	6	6	6	6	3.3	0	0	0	0
27	6	6	6	6	6	6	6	3.3	0	0	0	3
28	6	6	6	6	6	6	6	3.3	0	0	0	3
29	6	6	6	6	--	6	6	3.3	0	0	0	3
30	6	6	6	6	--	6	6	3.3	0	0	0	3
31	6	--	6	6	--	6	--	0	--	0	0	--
TOTAL	186.00	180.00	186.00	186.00	168.00	186.00	180.00	145.29	0.00	0.00	0.00	12.00
MEAN	6.0	6.0	6.0	6.0	6.0	6.0	6.0	4.7	0.0	0.0	0.0	0.4
MAX	6	6	6	6	6	6	6	6	0	0	0	3
MIN	6	6	6	6	6	6	6	0	0	0	0	0
AC-FT	369	357	369	369	333	369	357	288	0.0	0.0	0.0	24

WATER YEAR 2002 TOTAL 1429 MEAN 5 AC-FT 2835

2-APR-2017

360410029 MCCOLLUM DIV. AT ALPHEUS

DAILY MEAN VALUES FOR DISCHARGE IN CUBIC FEET PER SECOND, WATER YEAR, OCTOBER 2002 To SEPTEMBER 2003

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3	6	6	6	6	6	0	0	0	0	0	0
2	3	6	6	6	6	6	0	0	0	0	0	0
3	3	6	6	6	6	6	0	0	0	0	0	0
4	6	6	6	6	6	6	0	0	0	0	0	0
5	6	6	6	6	6	6	0	0	0	0	0	0
6	6	6	6	6	6	6	0	0	0	0	0	0
7	6	6	6	6	6	6	0	0	0	0	0	0
8	6	6	6	6	6	6	0	0	0	0	0	0
9	6	6	6	6	6	6	0	0	0	0	0	0
10	6	6	6	6	6	6	0	0	0	0	0	0
11	6	6	6	6	6	6	0	0	0	0	0	0
12	6	6	6	6	6	6	0	0	0	0	0	0
13	6	6	6	6	6	6	0	0	0	0	0	0
14	6	6	6	6	6	6	0	0	0	0	0	0
15	6	6	6	6	6	4	0	0	0	0	0	0
16	6	6	6	6	6	4	0	0	0	0	0	0
17	6	6	6	6	6	4	0	0	0	0	0	0
18	6	6	6	6	6	0	0	0	0	0	0	0
19	6	6	6	6	6	0	0	0	0	0	0	0
20	6	6	6	6	6	0	0	0	0	0	0	0
21	6	6	6	6	6	0	0	0	0	0	0	0
22	6	6	6	6	6	0	0	0	0	0	0	0
23	6	6	6	6	6	0	0	0	0	0	0	0
24	6	6	6	6	6	0	0	0	0	0	0	0
25	6	6	6	6	6	0	0	0	0	0	0	0
26	6	6	6	6	6	0	0	0	0	0	0	0
27	6	6	6	6	6	0	0	0	0	0	0	0
28	6	6	6	6	6	0	0	0	0	0	0	0
29	6	6	6	6	--	0	0	0	0	0	0	0
30	6	6	6	6	--	0	0	0	0	0	0	0
31	6	--	6	6	--	0	--	0	--	0	0	--
TOTAL	177.00	180.00	186.00	186.00	168.00	96.00	0.00	0.00	0.00	0.00	0.00	0.00
MEAN	5.7	6.0	6.0	6.0	6.0	3.1	0.0	0.0	0.0	0.0	0.0	0.0
MAX	6	6	6	6	6	6	0	0	0	0	0	0
MIN	3	6	6	6	6	0	0	0	0	0	0	0
AC-FT	351	357	369	369	333	190	0.0	0.0	0.0	0.0	0.0	0.0

WATER YEAR 2003 TOTAL 993 MEAN 5 AC-FT 1970

2-APR-2017

360410029 MCCOLLUM DIV. AT ALPHEUS

DAILY MEAN VALUES FOR DISCHARGE IN CUBIC FEET PER SECOND, WATER YEAR, OCTOBER 2003 To SEPTEMBER 2004

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0	3	6	6	6	6	0	0	0	0	0	0
2	0	3	6	6	6	6	0	0	0	0	0	0
3	0	3	6	6	6	6	0	0	0	0	0	0
4	0	6	6	6	6	6	0	0	0	0	0	0
5	0	6	6	6	6	6	0	0	0	0	0	0
6	0	6	6	6	6	6	0	0	0	0	0	0
7	0	6	6	6	6	6	0	0	0	0	0	0
8	0	6	6	6	6	6	0	0	0	0	0	0
9	0	6	6	6	6	6	0	0	0	0	0	0
10	0	6	6	6	6	6	0	0	0	0	0	0
11	0	6	6	6	6	6	0	0	0	0	0	0
12	0	6	6	6	6	6	0	0	0	0	0	0
13	0	6	6	6	6	6	0	0	0	0	0	0
14	0	6	6	6	6	6	0	0	0	0	0	0
15	0	6	6	6	6	6	0	0	0	0	0	0
16	0	6	6	6	6	1	0	0	0	0	0	0
17	0	6	6	6	6	1	0	0	0	0	0	0
18	0	6	6	6	6	1	0	0	0	0	0	0
19	0	6	6	6	6	1	0	0	0	0	0	0
20	0	6	6	6	6	1	0	0	0	0	0	0
21	0	6	6	6	6	1	0	0	0	0	0	0
22	0	6	6	6	6	1	1	0	0	0	0	0
23	0	6	6	6	6	1	1	0	0	0	0	0
24	0	6	6	6	6	1	0	0	0	0	0	0
25	0	6	6	6	6	1	0	0	0	0	0	0
26	2	6	6	6	6	0	0	0	0	0	0	0
27	2	6	6	6	6	0	0	0	0	0	0	0
28	2	6	6	6	6	0	0	0	0	0	0	0
29	2	6	6	6	6	0	0	0	0	0	0	0
30	2	6	6	6	--	0	0	0	0	0	0	0
31	2	--	6	6	--	0	--	0	--	0	0	--
TOTAL	12.00	171.00	186.00	186.00	174.00	100.00	2.00	0.00	0.00	0.00	0.00	0.00
MEAN	0.4	5.7	6.0	6.0	6.0	3.2	0.1	0.0	0.0	0.0	0.0	0.0
MAX	2	6	6	6	6	6	1	0	0	0	0	0
MIN	0	3	6	6	6	0	0	0	0	0	0	0
AC-FT	24	339	369	369	345	198	4.0	0.0	0.0	0.0	0.0	0.0

WATER YEAR 2004 TOTAL 831 MEAN 4 AC-FT 1648