Hawley Creek Seepage Run Summary 2007-2008

The Hawley Creek basin is a tributary to the Upper Lemhi River system with high quality aquatic habitat in the upper reaches. Hawley Creek has only three major diversions (Figure 1). During summer months, the stream is entirely diverted at HC2. During these periods the natural channel below this point is typically dry down to the HC2 return flow. Two reconnect scenarios for this reach have been discussed by the Upper Salmon Basin Technical Team in order to allow aquatic species to migrate from the main Lemhi River system to upper Hawley Creek. One is to provide additional flow to the natural channel below HC2. It has been said that this portion of the natural channel loses a significant amount of flow to the ground. During the 2008 seepage run, flows also exceeded the lower channel capacity downstream of the HC2 diversion (Figure 2). The other reconnect project scenario is to leave flow in the HC2 ditch using the ditch as the reconnected channel; this scenario would potentially provide a longer period of time that fish could migrate from the lower river system to upper Hawley Creek as the ditch loses less water. To evaluate the potential of each scenario, a study plan was designed to measure flows along both the natural channel below HC2 and the HC2 ditch to determine the relative seepage loss.

During the 2007 seepage study (Tables 1 and 2) Hawley Creek gained 17 cfs upstream of HC2; the reach above HC2 to above HC1 Hawley Creek was losing flow. The flow loss from the channel combined with the diversions at HC3 (~17cfs), HC2 (11cfs), and HC1 (6 cfs) left lower Hawley Creek dry. This is typical of Hawley Creek during the irrigation season.

During the 2008 seepage study (Tables 3 and 4) Hawley Creek again gained flow above HC2 but at a much lower rate. The diversions during the 2008 study were also diverting at a much smaller rate allowing some flow past HC1 (~9 cfs). The losing trend below HC2 was again present but at a much higher rate (10 cfs from the Kauer ditch return to HC1 and an additional 1.7 cfs from lower Hawley Creek). Also of note is the lack of capacity for flow in the historical lower Hawley Creek channel (Figure 2).

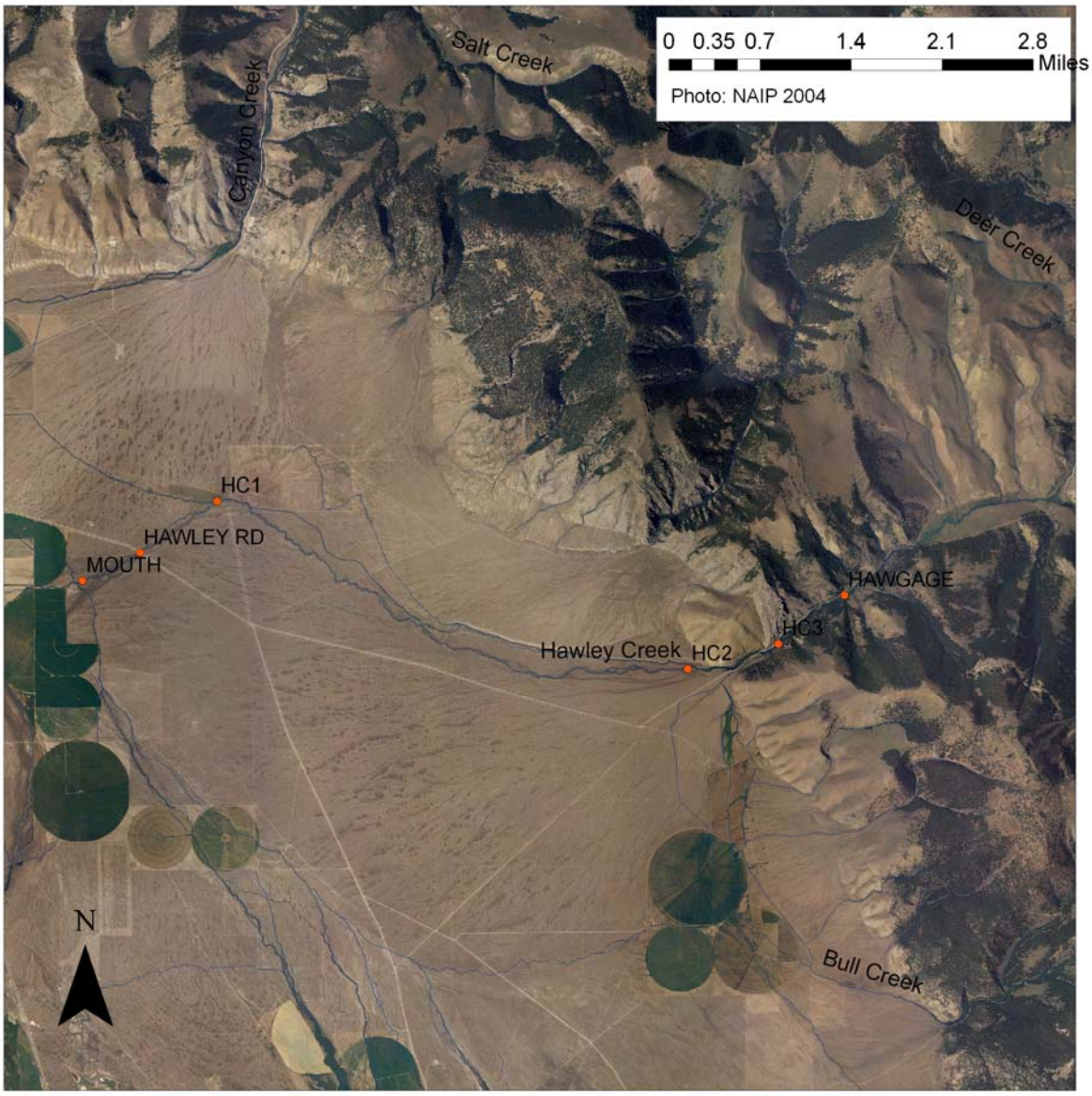

Figure 1. Map of Hawley Creek with labeled diversions (HC1, HC2, and HC3) and points of reference concerning the seepage measurement points.

Figure 2. Photo of lower Hawley Creek with flows exceeding channel . Notice lack of riparian vegetation, this channel is typically dry.

Mainstem Location	Trib/Div Location	Discharge (cfs)	Q diverted out (cfs)	Trib/div Q in (cfs)	Hawley Ck Q (cfs)	Seepage	Point_X	Point_Y
Hawley Gage/Abv Diversions		19.862			19.86			
Hawley Abv HC3		20.656			20.66		2563243	1495852
	HC3		16.694				2562631	1495452
Hawley below HC3		20.656			20.656			
Above diversions to below HC3						17.49		
Above HC2		11.159			11.159			
	HC2		11.159					
Hawley Ck below HC2		0			0		2562099	1495541
Hawley Ck old channel mid point		**8.955**			8.955		2559689	1495685
Above HC2 to Below HC2						-0.542		
Hawley Above Kauer Ditch Return		8.955			8.955			
	Kauer Ditch Return			0				
Hawley Below Kauer Ditch		**6.433**			6.433			
Above HC1		**6.433**			6.433			
	HC1		6.433				2556301	1497619
Blw HC1		*0*			0			
Above Kauer Ditch to below HC1						-2.52		
Hawley Ck below Road		0.00			0.00		2555349	1496977
Hawley Ck Mouth		0			0.00		2554635	1496627
Hawley Creek above road to Mouth						0.00		

Table 1. Seepage study conducted May 1, 2007. (Projection - Idaho Transverse Mercator 1983)

Hawley Ck 2007 Summary	
Initial Flow/input	19.86
Diverted rate out	34.29
Diversion Return	0
Cumulative reach losses	-2.52
Cumulative reach gains	16.95
Calculated output	0.00
Measured output	0.00

Table 2. Summary of 2007 seepage study.

Mainstem Location	Trib/Div Location	Discharge (cfs)	Q diverted out (cfs)	Trib/div Q in (cfs)	Hawley Ck Q (cfs)	Seepage	Point_X	Point_Y
Hawley Gage		15.1			15.10			
Hawley Abv HC3		16.9			16.9		2563243	1495852
	HC3	0	0		0		2562631	1495452
Hawley below HC3		16.9			16.9			
Above diversions to below HC3						1.80		
Above HC2		23.7			23.7			
	HC2		2.88					
Hawley Ck below HC2		16.9			16.9		2562099	1495541
Hawley Ck old channel mid point		14.3			14.3		2559689	1495685
Above HC2 to Below HC2						0.28		
Hawley Above Kauer Ditch Return		4.39			4.39			
Kauer Ditch Return				5.77				
Hawley Below Kauer Ditch		**10.16**						
Above HC1		**10.16**			10.16			
	HC1		1.50				2556301	1497619
Blw HC1		8.66			8.66			
Above Kauer Ditch to below HC1						-9.91		
Hawley Ck below Road		8.20			8.20		2555349	1496977
Hawley Ck Mouth		6.48			6.48		2554635	1496627
Hawley Creek above road to Mouth						-1.72		

Table 3. Seepage study conducted May 13, 2008. (Projection - Idaho Transverse Mercator 1983)

Hawley Ck 2008 Summary	
Initial Flow/input	15.10
Diverted rate out	4.38
Diversion Return	5.77
Cumulative reach losses	-11.63
Cumulative reach gains	2.08
Calculated output	6.94
Measured output	6.48

Table 4. Summary of 2008 seepage study.