

Little Eightmile Creek Seepage Study

August 20, 2008

A seepage study was conducted August 20, 2008 by IDWR staff. The study consisted of measuring surface water flows (stream flows, diversion rates, and return flows) in Little Eightmile Creek in order to quantify gaining and losing reaches. During this study twelve measurements or observations were taken, including measurements of diversions, a tributary, stream flows, and return flows. This study was conducted with a dual purpose of calibration of a hydrologic model (understanding of the basin hydrology); and to examine the feasibility of water transactions for Lemhi River tributary reconnects.

Little Eightmile Creek has five diversions (Figure 1) but only 3 of those were active during this study. The upper most diversion, LE5 did not divert any water from Little Eightmile Creek but did capture a tributary that was flowing an estimated 0.5 cfs. Nearly 4 cfs (3.9 cfs Table 1) was measured in Little Eightmile Creek just below the LE5 diversion. Because this diversion was not running during this seepage study, the 3.9 cfs measured represents a flow amount above all diversions. Below LE5 the valley containing Little Eightmile Creek widens slightly. The next diversion downstream, EM4, is the first with any withdrawal, 2.75 cfs. The stream reach between LE5 and LE4 loses less than a tenth of a cfs. Downstream of LE4 to LE2 there are visible returns flowing off of the hillside irrigated by LE5, LE4, and LE3 but the measured flows did not show a significant gain. Diversion LE3 diverted 1 cfs of 1.1 cfs in stream at that point. The remaining flow and gained flow, totaling around 0.1 cfs, was diverted down LE2. Below LE2 Little Eightmile Creek was dry until Lemhi River water was spilled down the lowest reach, below LE1.

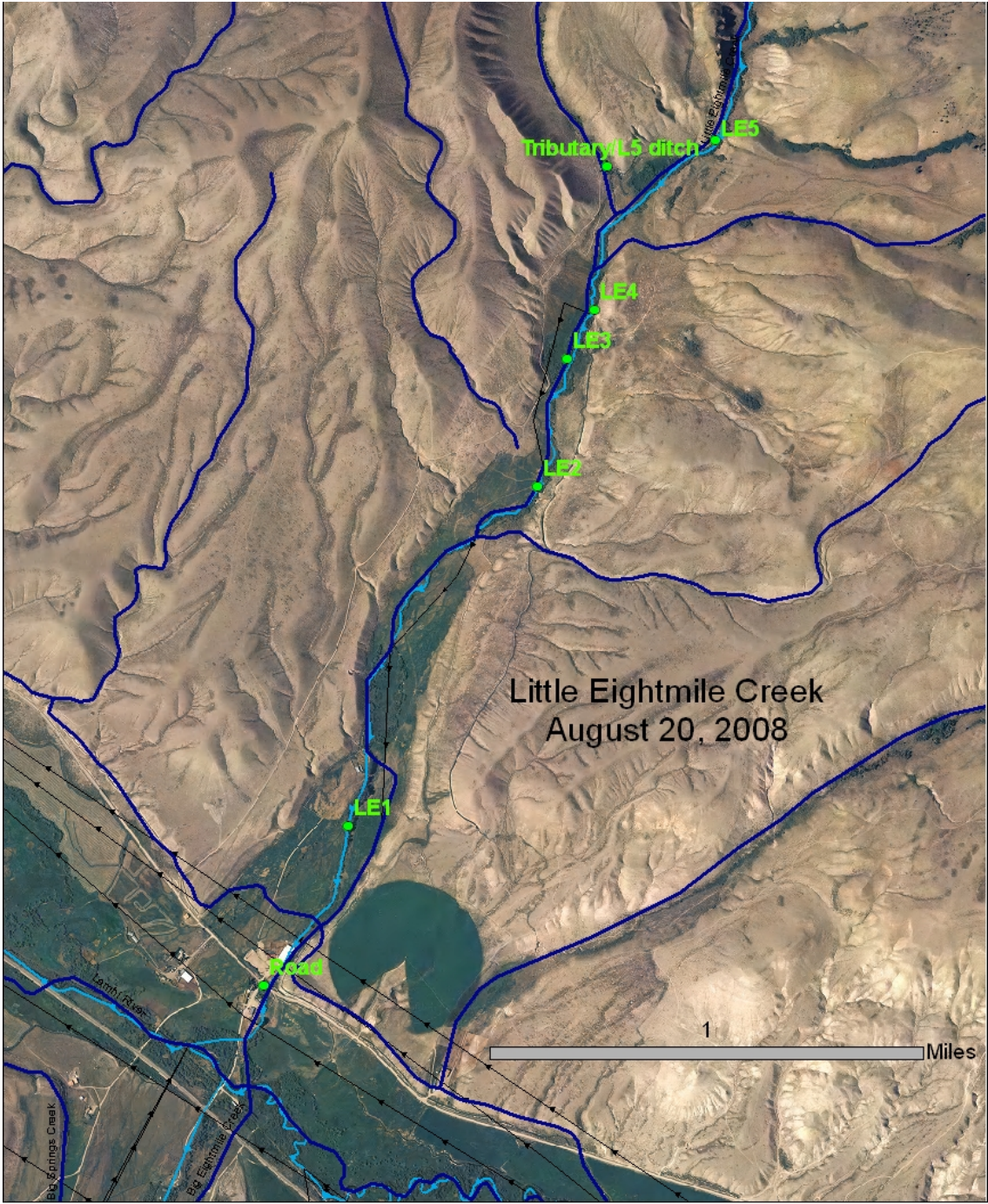


Figure 1. Map of Little Eightmile Creek with important surface water features labeled.

Main stream location	Trib/diversion location	Discharge	Q diverted out	Trib/diversion Q in	Little Eightmile Creek Q	Seepage	Point_X	Point_Y	Date and time	Notes
Above LE5		3.90			3.896					
	LE5	0.00	0.00				2544459	1507874	8/20/2008 12:11pm	LE5 captures a tributary that was flowing around half a cfs, this flow irrigates a pasture that is very wet and adds seepage to Little Eightmile downstream of LE5 diversion.
Below LE5		3.90			3.896				8/20/2008 12:50pm	
Above LE4		3.80			3.803				8/20/2008 12:50pm	One-hundred feet upstream of LE4
	LE4	2.75	2.75				2544010	1507246		
Below LE4		1.06			1.055					
Above LE5 to LE4						-0.09				
Above LE3		1.10			1.098					
	LE3	1.00	1.00				2543910	1507063	8/20/2008 2:50pm	Creek at this point. About 0.1cfs flows past LE3.
Below LE3		0.10			0.100				8/20/2008 2:30pm	
Above LE2		0.10			0.100					
	LE2	0.10	0.10				2543799	1506588	8/20/2008 2:30pm	LE2 takes what was left in the stream by LE3 and all gained flow.
Below LE2		0.00			0.000					Channel is dry.
Above LE3 to LE2						0.04				
Above LE1		0.00			0.000					
	LE1	0.00					2543098	1505329		
Below LE1		0.00			0.000					
LE2 to LE1										
Below LE1		0.00			0.000					
Lemhi cross-ditch		0.70		0.70			2542784	1504735	8/20/2008 4:00pm	Appears that Lemhi River water flows through the Little Eightmile Creek channel at the road.
Mouth		0.70								
LE1 to Mouth						0.00				

Table 1. Summary of seepage study for Little Eightmile Creek, including reach gains and losses calculated from the measured flows. Location coordinates are in IDTM 83.

Little Eightmile Creek Summary	cfs
Initial flow/input	3.896
Diverted rate out of Little Eightmile Creek	3.846
Tributary/injection Input	0.700
Cumulative reach losses	-0.093
Cumulative reach gains	0.043
Calculated output	0.700
Measured output	0.700

Table 2. Summary of Little Eightmile Creek seepage study.