

Kenney Creek Seepage Study

August 25, 2008

A seepage study was conducted August 25, 2008 by IDWR staff accompanied by Mark Davidson of The Nature Conservancy. The study consisted of measuring surface water flows (stream flows, diversion rates, and return flows) in Kenney Creek in order to quantify gaining and losing reaches. During this study six measurements or observations were taken, including measurements of diversions, 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 a water transaction.

Above all diversions a flow of 5.5 cfs was measured; below the upper most diversion KC-3 to the lower diversion KC-2 flows decreased slightly. The lower diversion KC-2 took most of the flow, 4.8 cfs. There is a measuring device on the KC-2 ditch but it underestimated the diversion rate due to fast approach velocities. KC-2 is also screened and the return flow from the screen was 0.8 cfs. Below KC-2 to the lower Kenney Creek gauge, near 17-Mile Road, Kenney Creek gained 0.45 cfs. Currently, lower Kenney Creek is connected to the Lemhi River but the reach below KC-2 is flow limited.

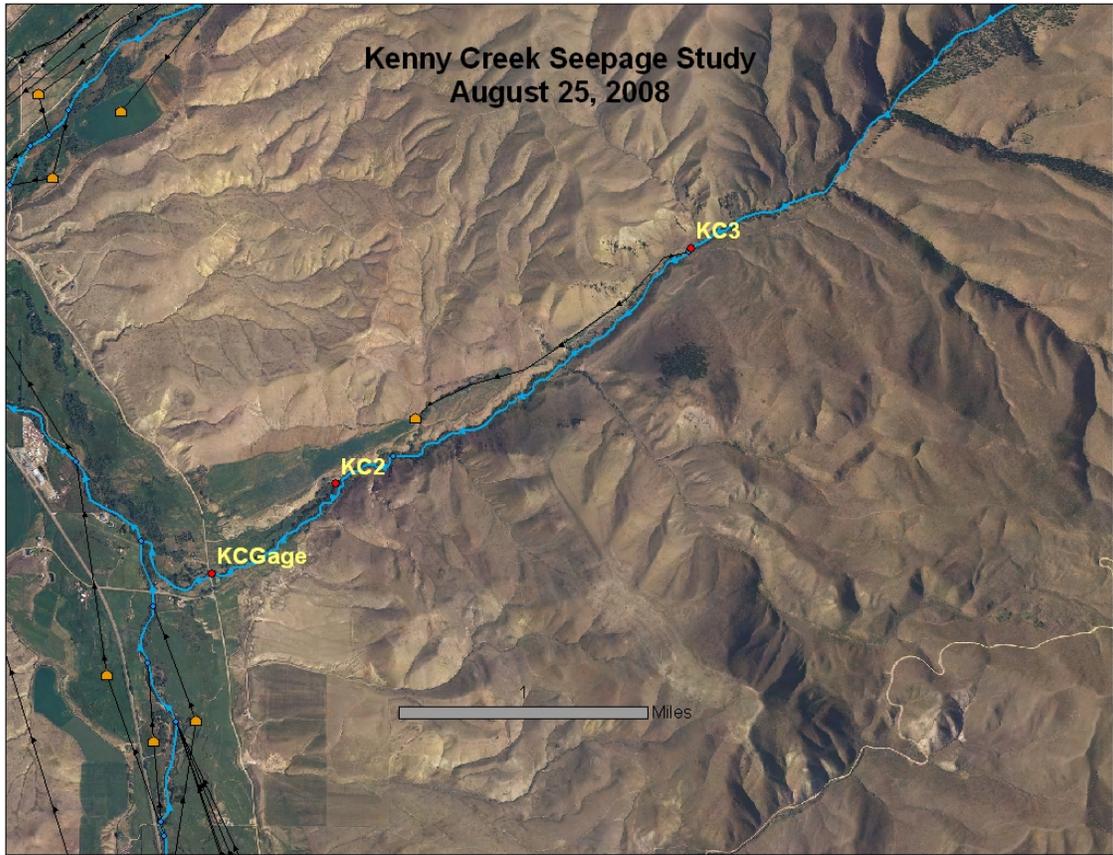


Figure 1. Map of Kenney Creek with important surface water features labeled.

Main stream location	Trib/diversion location	Discharge	Q diverted out	Trib/diversion Q in	Kenney Creek Q	Seepage	Point_X	Point_Y	Date and time	Notes
Upstream of KC3 to KC2										
Above KC3		5.48			5.48		2530369	1538343	8/25/2008 3:24pm DLS	Water temperatue was 52F as measured by the FlowTracker.
	KC3	0.32	0.32				2527983	1536668		
Below KC3		5.16			5.16		2530312	1538292	8/25/2008 3:25pm	
Above KC2		4.97			4.97		2528195	1536926	8/25/2008 4:27pm	
	KC2	4.82	4.82				2528079	1536825		The flume (a 3ft wide Parshall) read 0.39 equivalent to 2.75 cfs, but the approach velocities were very high so we measured the flow.
Below KC2 and above screen return		0.47			0.47				8/25/2008 2:05pm	The short reach between the headgate for the KC2 diversion and before the KC2 screen return flow Kenny Creek only has 0.47cfs (measured at 2:05pm).
Upstream of KC3 to KC2										
	Screen Return	0.80		0.80						Assuming a 0.8cfs screen return.
Below KC2 and screen return		1.28			1.28		2528143	1536854	8/25/2008 4:30pm DLS	Below the screen return 1.284cfs was measured. Above the return 0.471cfs was measured in stream at 2:05pm; this was remeasured at a different cross-section at 5:22pm at 0.285cfs.
Gauge/Mouth		1.72			1.72		2527200	1536236		The stage for the IPCO gauge is 4.14, the flow is calculated from the IPCO rating.
KC2 to mouth										
						0.45				

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

Kenney Creek Summary	cfs
Initial flow/input	5.478
Diverted rate out of Kenny Creek	5.134
Tributary/injection Input	0.800
Cumulative reach losses	0.000
Cumulative reach gains	0.576
Calculated output	1.720
Measured output	1.720

Table 2. Summary of Kenney Creek seepage study.