

# **APPENDIX D**

## **DERIVATION OF NATURAL FLOW AT PRAIRIE DOG CREEK AND LITTLE PINEY CREEK**

## LITTLE PINEY CREEK UNGAGED NATURAL FLOW ESTIMATE

<b>Wet Year Hydrologic Conditions</b>	<b>Jan</b>	<b>Feb</b>	<b>Mar</b>	<b>Apr</b>	<b>May</b>	<b>Jun</b>	<b>Jul</b>	<b>Aug</b>	<b>Sep</b>	<b>Oct</b>	<b>Nov</b>	<b>Dec</b>	<b>Annual</b>	
Little Piney Creek (SEO gage)	642	833	1,030	1,054	2,734	2,540	1,336	722	707	925	830	582	13,933	
Diversions on Little Piney Creek	0	0	0	86	410	829	929	933	833	10	0	0	4,031	
Return Flows on Little Piney Creek	122	85	48	44	215	435	504	559	647	326	242	180	3,408	
Depletions on Little Piney Creek	(122)	(85)	(48)	42	195	393	425	374	187	(316)	(242)	(180)	623	
														<b>Area</b>
Naturalized Little Piney Cr (SEO)	520	748	982	1,095	2,929	2,933	1,761	1,096	894	609	588	402	14,556	21.9
Little Piney Creek just below Bear Gulch	<b>351</b>	<b>505</b>	<b>664</b>	<b>740</b>	<b>1,979</b>	<b>1,982</b>	<b>1,190</b>	<b>741</b>	<b>604</b>	<b>411</b>	<b>397</b>	<b>271</b>	<b>9,837</b>	14.8

<b>Normal Year Hydrologic Conditions</b>	<b>Jan</b>	<b>Feb</b>	<b>Mar</b>	<b>Apr</b>	<b>May</b>	<b>Jun</b>	<b>Jul</b>	<b>Aug</b>	<b>Sep</b>	<b>Oct</b>	<b>Nov</b>	<b>Dec</b>	<b>Annual</b>	
Little Piney Creek (SEO gage)	549	707	950	954	1,428	1,428	803	584	718	744	722	580	10,166	
Diversions on Little Piney Creek	0	0	0	145	653	1,043	976	919	802	19	0	0	4,558	
Return Flows on Little Piney Creek	122	83	47	105	474	780	776	788	832	362	265	189	4,823	
Depletions on Little Piney Creek	(122)	(83)	(47)	40	179	263	200	131	(29)	(343)	(265)	(189)	(265)	
														<b>Area</b>
Naturalized Little Piney Cr (SEO)	427	624	903	995	1,607	1,691	1,003	714	688	400	457	391	9,901	21.9
Little Piney Creek just below Bear Gulch	<b>289</b>	<b>422</b>	<b>610</b>	<b>672</b>	<b>1,086</b>	<b>1,143</b>	<b>678</b>	<b>483</b>	<b>465</b>	<b>271</b>	<b>309</b>	<b>264</b>	<b>6,691</b>	14.8

<b>Dry Year Hydrologic Conditions</b>	<b>Jan</b>	<b>Feb</b>	<b>Mar</b>	<b>Apr</b>	<b>May</b>	<b>Jun</b>	<b>Jul</b>	<b>Aug</b>	<b>Sep</b>	<b>Oct</b>	<b>Nov</b>	<b>Dec</b>	<b>Annual</b>	
Little Piney Creek (SEO gage)	627	589	941	809	1,082	623	660	538	586	766	760	636	8,616	
Diversions on Little Piney Creek	0	0	0	399	703	1,346	1,139	975	888	26	0	0	5,476	
Return Flows on Little Piney Creek	135	91	52	297	571	1,042	965	910	969	429	303	218	5,984	
Depletions on Little Piney Creek	(135)	(91)	(52)	102	132	304	174	64	(81)	(403)	(303)	(218)	(508)	
														<b>Area</b>
Naturalized Little Piney Cr (SEO)	492	498	889	911	1,214	926	834	602	505	363	457	417	8,109	21.9
Little Piney Creek just below Bear Gulch	<b>332</b>	<b>336</b>	<b>601</b>	<b>616</b>	<b>820</b>	<b>626</b>	<b>564</b>	<b>407</b>	<b>341</b>	<b>245</b>	<b>309</b>	<b>282</b>	<b>5,480</b>	14.8

## PRAIRIE DOG CREEK UNGAGED NATURAL FLOW ESTIMATE

<b>Wet Year Hydrologic Conditions</b>	<b>Jan</b>	<b>Feb</b>	<b>Mar</b>	<b>Apr</b>	<b>May</b>	<b>Jun</b>	<b>Jul</b>	<b>Aug</b>	<b>Sep</b>	<b>Oct</b>	<b>Nov</b>	<b>Dec</b>	<b>Annual</b>	
Prairie Dog Creek Near Acme (USGS)	1,023	1,816	5,423	3,027	8,112	3,531	2,223	2,239	2,303	2,221	1,815	1,521	35,256	
Diversions on Prairie Dog Creek	0	0	0	241	1,300	3,155	3,920	3,560	3,141	11	0	0	15,328	
Return Flows on Prairie Dog Creek	400	271	151	91	501	1,890	2,403	3,110	3,426	1,034	776	590	14,643	
Depletions on Prairie Dog Creek	(400)	(271)	(151)	151	799	1,264	1,516	449	(286)	(1,022)	(776)	(590)	685	
														<b>Area</b>
Naturalized Prairie Dog Creek (USGS)	623	1,545	5,272	3,178	8,911	4,796	3,740	2,689	2,018	1,199	1,040	931	35,941	174.0 <sup>1</sup>
Prairie Dog Creek just above Dutch Cr	<b>439</b>	<b>1,090</b>	<b>3,717</b>	<b>2,241</b>	<b>6,283</b>	<b>3,382</b>	<b>2,637</b>	<b>1,896</b>	<b>1,423</b>	<b>845</b>	<b>733</b>	<b>657</b>	<b>25,343</b>	122.7

<b>Normal Year Hydrologic Conditions</b>	<b>Jan</b>	<b>Feb</b>	<b>Mar</b>	<b>Apr</b>	<b>May</b>	<b>Jun</b>	<b>Jul</b>	<b>Aug</b>	<b>Sep</b>	<b>Oct</b>	<b>Nov</b>	<b>Dec</b>	<b>Annual</b>	
Prairie Dog Creek Near Acme (USGS)	1,174	2,419	4,913	2,968	2,928	2,289	1,335	1,630	2,521	2,548	1,977	1,655	28,356	
Diversions on Prairie Dog Creek	0	0	0	437	1,928	3,759	4,075	3,688	2,692	22	0	0	16,600	
Return Flows on Prairie Dog Creek	381	250	130	112	1,498	3,106	2,784	3,233	3,508	1,058	801	588	17,450	
Depletions on Prairie Dog Creek	(381)	(250)	(130)	324	431	653	1,291	455	(816)	(1,036)	(801)	(588)	(850)	
														<b>Area</b>
Naturalized Prairie Dog Creek (USGS)	793	2,168	4,782	3,292	3,359	2,942	2,626	2,085	1,705	1,512	1,177	1,066	27,506	174.0 <sup>1</sup>
Prairie Dog Creek just above Dutch Cr	<b>559</b>	<b>1,529</b>	<b>3,372</b>	<b>2,321</b>	<b>2,368</b>	<b>2,074</b>	<b>1,852</b>	<b>1,470</b>	<b>1,202</b>	<b>1,066</b>	<b>830</b>	<b>752</b>	<b>19,395</b>	122.7

<b>Dry Year Hydrologic Conditions</b>	<b>Jan</b>	<b>Feb</b>	<b>Mar</b>	<b>Apr</b>	<b>May</b>	<b>Jun</b>	<b>Jul</b>	<b>Aug</b>	<b>Sep</b>	<b>Oct</b>	<b>Nov</b>	<b>Dec</b>	<b>Annual</b>	
Prairie Dog Creek Near Acme (USGS)	1,080	2,157	4,793	2,043	1,678	1,279	878	1,552	1,928	2,335	1,842	1,542	23,105	
Diversions on Prairie Dog Creek	0	0	0	1,248	3,340	4,690	4,390	3,709	3,236	44	0	0	20,657	
Return Flows on Prairie Dog Creek	424	282	158	277	2,427	3,939	3,281	3,397	3,556	1,318	974	676	20,711	
Depletions on Prairie Dog Creek	(424)	(282)	(158)	971	912	751	1,109	312	(320)	(1,275)	(974)	(676)	(54)	
														<b>Area</b>
Naturalized Prairie Dog Creek (USGS)	656	1,875	4,635	3,014	2,591	2,030	1,987	1,864	1,608	1,060	867	866	23,052	174.0 <sup>1</sup>
Prairie Dog Creek just above Dutch Cr	<b>462</b>	<b>1,322</b>	<b>3,268</b>	<b>2,125</b>	<b>1,827</b>	<b>1,432</b>	<b>1,401</b>	<b>1,314</b>	<b>1,134</b>	<b>747</b>	<b>612</b>	<b>610</b>	<b>16,254</b>	122.7

Note: 1. The Prairie Dog Creek Near Acme drainage area was adjusted to exclude the Dutch Creek drainage area as Dutch Creek was assumed to be a non-contributing area.