

## **Appendix C: Simulated Monthly Groundwater Budgets**



Table C-1. Simulated Monthly Groundwater Budgets (ac-ft)

Month/Year	Inflows												Outflows										Mass Balance	
	Groundwater Flow In from Storage	Stream Loss to Aquifer	Precipitation Recharge	Surface Water Irrigation Return Flow Recharge	Groundwater Irrigation Return Flow Recharge	Canal Seepage Recharge	Augmentation Recharge Ponds	Reservoir Seepage Recharge	Alluvial Underflow In	Net Bedrock Flux	Net Lateral Boundary Flow	Total In	Groundwater Flow Out to Storage	Alluvial Underflow out below Julesburg	Stream Gain from Aquifer	Agricultural Irrigation Pumping	M&I Pumping	Augmentation Pumping	Alfalfa ET	Subirrigated Meadow ET	Phreatophyte ET	Total Out	In Minus Out	% Error
Jan. 1950	42,918	25,660	1,257	160	0	149	0	2,658	1,040	1,590	39,857	115,289	12,303	334	96,673	0	845	0	0	0	4,437	114,592	696	0.61
Feb. 1950	39,633	18,772	1,224	197	0	11,824	0	2,400	940	1,436	35,456	111,882	6,341	270	99,961	0	719	0	0	0	4,371	111,662	220	0.20
Mar. 1950	35,449	23,504	1,287	1,521	0	9,328	0	2,658	1,040	1,589	38,600	114,975	7,669	318	97,613	0	873	0	0	0	7,956	114,428	547	0.48
Apr. 1950	8,562	28,942	13,151	28,569	107	17,007	0	2,572	1,007	1,538	36,914	138,369	30,446	308	96,535	283	1,267	0	3	57	9,547	138,446	-77	-0.06
May 1950	11,495	28,111	16,267	68,702	4,120	35,820	0	2,658	1,040	1,589	38,099	207,901	63,574	290	117,895	11,560	1,751	0	797	447	11,584	207,897	4	0.00
Jun. 1950	21,226	25,159	11,496	106,979	13,540	65,950	0	2,572	1,007	1,537	37,496	286,963	99,123	249	131,531	36,825	2,156	0	2,285	963	13,796	286,927	37	0.01
Jul. 1950	27,855	28,192	14,637	84,173	19,454	48,033	0	2,658	1,040	1,587	39,897	267,527	47,076	278	139,850	56,444	2,661	0	3,452	2,405	15,498	267,663	-136	-0.05
Aug. 1950	61,295	21,543	4,311	65,426	31,118	37,819	0	2,658	1,040	1,588	40,609	267,407	17,519	285	136,595	89,767	2,504	0	4,513	3,371	12,733	267,288	120	0.04
Sep. 1950	49,910	23,499	8,443	40,931	24,875	28,872	0	2,572	1,007	1,537	39,555	221,200	7,046	276	123,729	72,112	1,945	0	2,572	3,332	9,777	220,789	412	0.19
Oct. 1950	42,499	18,306	1,385	40,175	6,379	22,661	0	2,658	1,040	1,589	40,902	177,594	16,822	256	129,799	17,891	1,590	0	1,656	2,305	7,293	177,611	-17	-0.01
Nov. 1950	51,357	19,451	1,803	3,333	102	19,299	0	2,572	1,007	1,537	39,405	139,866	16,886	264	116,669	304	1,008	0	32	28	4,415	139,608	258	0.18
Dec. 1950	49,342	19,858	791	1,380	0	14,120	0	2,658	1,040	1,589	40,362	131,140	10,910	279	114,254	0	1,205	0	0	0	4,213	130,861	279	0.21
Jan. 1951	41,280	21,754	2,245	718	0	10,255	0	2,658	1,040	1,589	39,771	121,310	8,660	290	106,365	0	1,322	0	0	0	4,051	120,688	622	0.51
Feb. 1951	38,014	18,589	1,841	213	0	15,882	0	2,400	940	1,435	35,370	114,685	8,282	247	100,491	0	1,178	0	0	0	4,182	114,380	305	0.27
Mar. 1951	35,853	23,515	1,610	1,553	0	7,757	0	2,658	1,040	1,589	38,543	114,119	9,322	297	94,931	0	1,286	0	0	0	7,728	113,564	555	0.49
Apr. 1951	14,191	30,181	13,013	18,183	13	14,557	0	2,572	1,007	1,538	36,858	132,113	29,053	311	91,681	31	1,704	0	1	5	9,578	132,363	-250	-0.19
May 1951	10,031	30,091	19,025	67,882	4,231	41,996	0	2,658	1,040	1,588	38,174	216,718	78,255	302	110,609	11,802	2,236	0	1,133	606	11,893	216,836	-119	-0.05
Jun. 1951	13,931	28,087	16,911	101,410	9,835	64,539	0	2,572	1,007	1,537	37,775	277,602	106,350	287	124,459	27,322	2,580	0	1,474	585	14,786	277,843	-240	-0.09
Jul. 1951	37,261	25,595	12,682	100,158	25,662	60,864	0	2,658	1,040	1,588	40,425	307,934	69,327	289	143,501	69,972	3,270	0	3,413	2,097	16,068	307,936	-2	0.00
Aug. 1951	16,092	36,171	25,145	79,859	20,229	51,436	0	2,658	1,040	1,587	41,673	275,888	64,922	335	133,262	55,466	3,026	0	2,305	2,184	14,799	276,298	-410	-0.15
Sep. 1951	37,130	21,369	9,016	56,149	12,394	37,380	0	2,572	1,007	1,536	40,980	219,532	20,991	289	145,824	35,763	2,347	0	2,031	2,073	10,301	219,621	-89	-0.04
Oct. 1951	45,079	24,347	13,994	22,318	1,950	28,009	0	2,658	1,040	1,587	42,432	183,414	23,130	280	143,756	5,495	1,917	0	431	614	7,565	183,189	225	0.12
Nov. 1951	56,495	19,943	2,014	1,163	0	18,752	0	2,572	1,007	1,536	40,766	144,249	13,359	281	124,675	0	1,273	0	0	0	4,594	144,183	66	0.05
Dec. 1951	46,072	20,992	2,117	4,646	0	14,575	0	2,658	1,040	1,588	41,680	135,367	10,683	298	118,425	0	1,249	0	0	0	4,453	135,108	259	0.19
Jan. 1952	46,411	20,110	361	243	0	13,219	0	2,658	1,040	1,588	41,094	126,724	7,038	303	113,483	0	1,344	0	0	0	4,206	126,374	351	0.28
Feb. 1952	37,151	20,978	1,702	2,972	0	7,735	0	2,486	973	1,486	37,859	113,343	6,880	297	99,615	0	1,242	0	0	0	4,740	112,775	568	0.50
Mar. 1952	34,949	25,047	3,844	432	0	9,489	0	2,658	1,040	1,589	39,806	118,852	7,570	327	100,853	0	1,310	0	0	0	8,224	118,284	568	0.48
Apr. 1952	12,546	31,759	14,440	10,359	44	18,051	0	2,572	1,007	1,537	38,034	130,350	24,523	332	93,496	108	1,758	0	2	14	10,143	130,376	-27	-0.02
May 1952	2,418	41,002	27,177	58,371	2,229	45,216	0	2,658	1,040	1,587	39,148	220,847	96,058	395	100,955	6,073	2,305	0	516	415	14,339	221,056	-209	-0.09
Jun. 1952	31,565	24,658	5,841	116,671	22,898	85,141	0	2,572	1,007	1,536	38,435	330,323	114,616	347	127,637	62,156	2,673	0	4,121	2,305	16,597	330,451	-127	-0.04
Jul. 1952	65,497	21,841	6,419	96,885	37,461	57,862	0	2,658	1,040	1,588	40,882	332,133	42,970	319	153,297	104,343	3,411	0	6,484	5,031	16,241	332,097	36	0.01



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	Groundwater Flow In from Storage	Stream Loss to Aquifer	Precipitation Recharge	Surface Water Irrigation Return Flow Recharge	Groundwater Irrigation Return Flow Recharge	Canal Seepage Recharge	Augmentation Recharge Ponds	Reservoir Seepage Recharge	Alluvial Underflow In	Net Bedrock Flux	Net Lateral Boundary Flow	Total In	Groundwater Flow Out to Storage	Alluvial Underflow out below Julesburg	Stream Gain from Aquifer	Agricultural Irrigation Pumping	M&I Pumping	Augmentation Pumping	Alfalfa ET	Subirrigated Meadow ET	Phreatophyte ET	Total Out	In Minus Out	% Error
Aug. 1952	47,501	26,948	12,447	82,727	36,348	48,722	0	2,658	1,040	1,587	41,878	301,857	26,119	321	145,013	102,826	3,152	0	6,050	4,471	13,712	301,664	193	0.06
Sep. 1952	62,795	19,305	3,489	56,418	27,303	35,548	0	2,572	1,007	1,537	41,101	251,074	9,214	280	141,658	78,995	2,430	0	4,092	4,480	9,843	250,992	83	0.03
Oct. 1952	51,966	18,062	2,248	33,920	2,671	29,379	0	2,658	1,040	1,588	42,597	186,129	18,300	252	148,160	8,078	1,971	0	466	1,413	7,213	185,851	278	0.15
Nov. 1952	55,561	20,656	3,485	2,587	0	14,532	0	2,572	1,007	1,537	40,887	142,824	15,676	266	121,017	0	1,287	0	0	0	4,508	142,753	70	0.05
Dec. 1952	52,420	19,861	885	820	0	14,253	0	2,658	1,040	1,589	41,773	135,300	10,298	285	118,844	0	1,257	0	0	0	4,310	134,993	307	0.23
Jan. 1953	45,990	20,622	1,281	480	0	13,216	0	2,658	1,040	1,589	41,111	127,988	8,380	288	113,551	0	1,368	0	0	0	4,069	127,657	331	0.26
Feb. 1953	35,348	20,483	2,479	531	0	10,958	0	2,400	940	1,436	36,565	111,140	7,845	269	96,861	0	1,223	0	0	0	4,409	110,607	532	0.48
Mar. 1953	36,934	22,457	3,090	2,097	0	8,707	0	2,658	1,040	1,589	39,857	118,430	5,958	295	102,436	0	1,334	0	0	0	7,798	117,822	608	0.52
Apr. 1953	22,456	27,274	13,066	4,803	5	9,711	0	2,572	1,007	1,538	38,077	120,509	11,815	304	96,955	13	1,784	0	0	1	9,399	120,272	237	0.20
May 1953	7,601	29,082	15,741	54,422	918	30,895	0	2,658	1,040	1,589	39,193	183,139	55,320	292	110,701	2,444	2,339	0	184	131	11,743	183,154	-15	-0.01
Jun. 1953	21,576	26,843	13,929	107,396	15,318	63,016	0	2,572	1,007	1,537	38,494	291,687	99,307	270	127,052	43,229	2,709	0	3,052	1,783	14,354	291,756	-69	-0.02
Jul. 1953	33,230	29,592	16,970	94,819	27,718	56,169	0	2,658	1,040	1,588	41,017	304,801	58,428	288	140,574	78,747	3,524	0	4,427	3,011	15,815	304,814	-12	0.00
Aug. 1953	51,179	24,945	9,176	79,833	35,950	46,934	0	2,658	1,040	1,588	42,168	295,473	24,789	295	140,905	103,136	3,254	0	5,545	4,320	13,067	295,311	161	0.05
Sep. 1953	78,600	18,750	1,183	51,118	37,128	32,858	0	2,572	1,007	1,538	41,446	266,199	5,462	262	132,439	106,020	2,507	0	4,732	5,156	9,457	266,034	165	0.06
Oct. 1953	43,262	18,955	2,910	35,832	5,560	24,975	0	2,658	1,040	1,589	43,011	179,793	16,040	250	134,490	16,643	2,021	0	765	2,233	7,225	179,666	126	0.07
Nov. 1953	56,192	18,678	2,818	4,502	58	18,949	0	2,572	1,007	1,538	41,281	147,596	18,683	235	122,534	164	1,310	0	0	42	4,294	147,262	334	0.23
Dec. 1953	47,811	21,499	1,612	557	0	11,024	0	2,658	1,040	1,590	42,135	129,927	13,054	282	110,792	0	1,281	0	0	0	4,302	129,711	216	0.17
Jan. 1954	45,225	20,110	513	217	0	12,615	0	2,658	1,040	1,591	41,420	125,391	9,905	285	109,178	0	1,376	0	0	0	4,035	124,779	612	0.49
Feb. 1954	37,456	17,840	120	1,155	0	10,377	0	2,400	940	1,438	36,785	108,510	7,104	255	95,526	0	1,230	0	0	0	4,290	108,406	104	0.10
Mar. 1954	36,737	21,806	2,248	1,982	0	7,574	0	2,658	1,040	1,592	40,059	115,697	5,814	287	100,144	0	1,342	0	0	0	7,571	115,158	539	0.47
Apr. 1954	29,216	21,450	2,797	25,447	4,960	15,144	0	2,572	1,007	1,541	38,248	142,381	11,647	268	99,867	15,308	1,797	0	2,007	2,121	8,851	141,867	514	0.36
May 1954	21,386	23,940	7,951	68,676	11,212	34,618	0	2,658	1,040	1,592	39,484	212,558	48,620	269	114,827	31,503	2,361	0	2,350	1,556	10,998	212,484	73	0.03
Jun. 1954	56,140	23,381	5,682	63,857	33,068	36,369	0	2,572	1,007	1,540	38,553	262,170	28,545	250	112,152	93,953	2,735	0	6,966	4,433	12,929	261,963	207	0.08
Jul. 1954	91,771	32,298	12,565	56,699	65,353	34,066	0	2,658	1,040	1,591	40,361	338,403	15,171	234	107,984	182,349	3,638	0	7,830	6,295	14,458	337,959	445	0.13
Aug. 1954	79,229	28,780	10,176	48,333	55,997	30,067	0	2,658	1,040	1,591	40,889	298,761	7,503	191	109,824	154,484	3,404	0	6,364	4,802	11,574	298,146	615	0.21
Sep. 1954	67,650	25,352	7,598	30,384	37,968	17,843	0	2,572	1,007	1,540	39,868	231,782	3,099	176	101,111	107,530	2,647	0	3,778	4,130	8,705	231,177	605	0.26
Oct. 1954	40,042	19,559	2,313	26,496	5,476	17,686	0	2,658	1,040	1,592	41,221	158,084	23,299	178	106,153	16,438	2,158	0	1,072	2,095	6,562	157,955	129	0.08
Nov. 1954	39,882	19,558	1,254	7,612	44	15,291	0	2,572	1,007	1,541	39,593	128,354	25,644	179	96,711	127	1,442	0	0	42	4,014	128,159	195	0.15
Dec. 1954	38,264	21,006	1,337	1,617	0	9,861	0	2,658	1,040	1,593	40,462	117,837	17,027	210	95,262	0	1,413	0	0	0	3,928	117,840	-3	0.00
Jan. 1955	34,934	21,114	1,074	296	0	6,910	0	2,658	1,040	1,593	39,815	109,435	12,957	233	90,767	0	1,513	0	0	0	3,793	109,264	171	0.16
Feb. 1955	29,072	19,791	1,398	173	0	7,555	0	2,400	940	1,439	35,408	98,176	11,225	226	80,808	0	1,453	0	0	0	4,082	97,794	382	0.39



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Mar. 1955	28,752	21,696	2,361	3,483	0	10,949	0	2,658	1,040	1,593	38,594	111,125	11,842	244	89,951	0	1,675	0	0	0	7,100	110,812	312	0.28
Apr. 1955	18,724	21,089	2,763	21,337	1,458	13,615	0	2,572	1,007	1,542	36,857	120,963	18,116	244	87,211	3,970	2,236	0	328	418	8,428	120,951	11	0.01
May 1955	17,032	29,210	13,899	58,958	11,307	31,817	0	2,658	1,040	1,593	38,000	205,513	57,445	267	96,115	33,463	2,813	0	2,466	1,853	11,091	205,514	0	0.00
Jun. 1955	21,723	30,242	17,856	56,850	17,441	35,230	0	2,572	1,007	1,541	37,127	221,588	51,291	251	99,828	49,106	3,367	0	2,854	1,653	13,262	221,612	-24	-0.01
Jul. 1955	102,023	30,793	11,807	52,946	66,499	32,081	0	2,658	1,040	1,591	39,088	340,526	19,164	239	102,040	187,601	4,271	0	6,765	5,500	14,516	340,096	430	0.13
Aug. 1955	64,915	33,485	15,765	56,691	58,078	33,460	0	2,658	1,040	1,591	39,824	307,507	19,442	192	101,015	160,323	3,913	0	5,325	4,502	12,073	306,785	722	0.23
Sep. 1955	34,703	26,240	12,669	41,125	24,676	25,237	0	2,572	1,007	1,539	39,080	208,849	16,000	161	105,949	69,806	3,114	0	2,200	2,817	8,769	208,816	33	0.02
Oct. 1955	38,596	18,965	2,921	24,174	4,941	20,439	0	2,658	1,040	1,591	40,570	155,895	22,233	164	107,387	15,025	2,356	0	640	1,564	6,593	155,962	-67	-0.04
Nov. 1955	38,968	20,589	2,750	2,520	0	10,409	0	2,572	1,007	1,540	38,993	119,348	23,145	191	90,134	0	1,568	0	0	0	4,175	119,213	135	0.11
Dec. 1955	37,897	19,241	633	994	0	9,721	0	2,658	1,040	1,592	39,853	113,628	14,513	218	93,003	0	1,540	0	0	0	3,993	113,266	362	0.32
Jan. 1956	33,377	20,278	1,408	460	0	9,296	0	2,658	1,040	1,592	39,240	109,350	13,687	235	89,761	0	1,688	0	0	0	3,808	109,180	170	0.16
Feb. 1956	28,205	19,746	1,746	253	0	8,450	0	2,486	973	1,489	36,161	99,510	10,936	229	82,128	0	1,671	0	0	0	4,217	99,181	329	0.33
Mar. 1956	27,705	21,477	1,774	2,565	0	9,926	0	2,658	1,040	1,592	38,095	106,831	12,052	246	85,265	0	1,817	0	0	0	7,171	106,552	279	0.26
Apr. 1956	15,160	22,432	4,977	17,287	35	12,229	0	2,572	1,007	1,541	36,455	113,694	19,892	239	82,525	105	2,385	0	3	33	8,530	113,711	-16	-0.01
May 1956	18,070	27,862	10,088	73,849	11,962	40,609	0	2,658	1,040	1,592	37,781	225,511	82,788	253	93,635	32,358	3,018	0	1,350	861	11,279	225,542	-30	-0.01
Jun. 1956	55,359	22,802	8,890	85,028	37,795	48,135	0	2,572	1,007	1,541	37,273	300,403	59,570	229	109,543	106,190	3,555	0	4,990	3,294	12,899	300,271	132	0.04
Jul. 1956	41,346	37,109	25,228	65,638	41,254	36,030	0	2,658	1,040	1,591	39,570	291,465	35,986	247	110,349	117,381	4,492	0	4,556	3,450	14,897	291,358	107	0.04
Aug. 1956	73,691	24,424	10,573	56,340	53,523	32,662	0	2,658	1,040	1,591	40,337	296,841	10,088	202	113,967	147,880	4,179	0	4,536	4,051	11,713	296,616	225	0.08
Sep. 1956	75,087	18,624	1,306	39,249	40,390	21,609	0	2,572	1,007	1,540	39,415	240,800	3,922	177	103,014	113,151	3,328	0	3,756	4,568	8,695	240,611	189	0.08
Oct. 1956	43,739	17,564	1,630	27,134	8,569	16,506	0	2,658	1,040	1,592	40,783	161,214	17,782	161	105,134	25,474	2,517	0	1,230	2,235	6,457	160,991	223	0.14
Nov. 1956	40,937	21,260	3,293	2,082	1	10,148	0	2,572	1,007	1,541	39,175	122,014	26,491	207	89,267	3	1,734	0	0	2	4,142	121,845	169	0.14
Dec. 1956	38,754	18,848	2,001	1,081	0	12,096	0	2,658	1,040	1,593	39,997	118,068	17,544	205	94,621	0	1,704	0	0	0	3,878	117,952	115	0.10
Jan. 1957	34,316	20,314	1,153	1,198	0	7,192	0	2,658	1,040	1,569	39,323	108,764	16,067	234	86,497	0	1,816	0	0	0	3,794	108,408	356	0.33
Feb. 1957	29,269	17,615	1,109	1,093	0	9,322	0	2,400	940	1,417	34,968	98,133	12,439	205	79,600	0	1,761	0	0	0	3,993	97,999	134	0.14
Mar. 1957	28,194	20,883	1,994	3,245	0	8,516	0	2,658	1,040	1,569	38,099	106,199	12,439	241	84,147	0	2,005	0	0	0	7,130	105,962	236	0.22
Apr. 1957	9,034	37,057	24,337	4,992	0	16,555	0	2,572	1,007	1,517	36,452	133,523	43,735	244	78,420	0	2,549	0	0	0	8,763	133,711	-187	-0.14
May 1957	1,876	69,511	43,255	14,527	49	44,389	0	2,658	1,040	1,566	37,648	216,520	130,200	389	67,770	121	3,202	0	0	2	14,989	216,673	-153	-0.07
Jun. 1957	20,810	38,513	12,699	81,590	16,508	72,904	0	2,572	1,007	1,515	36,814	284,932	124,984	380	90,722	44,952	3,738	0	1,641	891	18,187	285,497	-564	-0.20
Jul. 1957	41,537	29,346	14,531	121,272	36,104	86,594	0	2,658	1,040	1,565	39,256	373,905	107,694	319	135,862	100,631	4,641	0	3,993	3,153	17,742	374,035	-129	-0.03
Aug. 1957	35,501	27,039	14,843	103,012	34,849	68,055	0	2,658	1,040	1,565	40,766	329,328	66,265	279	143,174	94,789	4,212	0	4,164	2,997	13,869	329,749	-422	-0.13
Sep. 1957	47,506	18,431	5,041	68,820	21,436	47,315	0	2,572	1,007	1,509	40,422	254,059	30,355	213	146,111	59,685	3,375	0	2,558	2,564	9,322	254,183	-124	-0.05



Table C-1. Simulated Monthly Groundwater Budgets (ac-ft)

Month/Year	Inflows												Outflows										Mass Balance	
	Groundwater Flow In from Storage	Stream Loss to Aquifer	Precipitation Recharge	Surface Water Irrigation Return Flow Recharge	Groundwater Irrigation Return Flow Recharge	Canal Seepage Recharge	Augmentation Recharge Ponds	Reservoir Seepage Recharge	Alluvial Underflow In	Net Bedrock Flux	Net Lateral Boundary Flow	Total In	Groundwater Flow Out to Storage	Alluvial Underflow out below Julesburg	Stream Gain from Aquifer	Agricultural Irrigation Pumping	M&I Pumping	Augmentation Pumping	Alfalfa ET	Subirrigated Meadow ET	Phreatophyte ET	Total Out	In Minus Out	% Error
Oct. 1957	33,293	25,943	11,484	23,664	4,301	24,307	0	2,658	1,040	1,559	42,182	170,430	24,665	251	120,780	12,605	2,552	0	713	1,057	7,785	170,407	23	0.01
Nov. 1957	51,064	19,043	1,438	2,818	0	16,590	0	2,572	1,007	1,510	40,702	136,743	18,468	261	111,397	0	1,785	0	0	1	4,650	136,561	183	0.13
Dec. 1957	50,718	17,883	267	1,742	0	14,901	0	2,658	1,040	1,561	41,602	132,373	12,294	259	113,586	0	1,750	0	0	0	4,246	132,135	238	0.18
Jan. 1958	41,513	22,902	1,110	708	0	5,302	0	2,658	1,040	1,561	40,958	117,752	12,806	312	98,217	0	1,884	0	0	0	4,305	117,524	227	0.19
Feb. 1958	32,019	20,005	2,040	346	0	7,806	0	2,400	940	1,410	36,424	103,390	8,078	281	88,186	0	1,860	0	0	0	4,535	102,941	450	0.44
Mar. 1958	28,909	24,433	4,715	1,464	0	8,003	0	2,658	1,040	1,561	39,670	112,452	9,314	318	92,249	0	2,111	0	0	0	8,075	112,067	385	0.34
Apr. 1958	17,018	31,108	13,137	3,530	18	7,522	0	2,572	1,007	1,511	37,884	115,307	20,582	323	81,510	44	2,647	0	0	4	10,095	115,205	101	0.09
May 1958	5,140	67,796	27,342	32,572	5,962	32,837	0	2,658	1,040	1,560	38,842	215,750	104,883	485	71,758	16,155	3,316	0	1,781	1,062	16,819	216,259	-509	-0.24
Jun. 1958	37,582	27,754	16,427	89,099	24,385	63,908	0	2,572	1,007	1,509	37,815	302,059	84,489	334	123,135	68,013	3,843	0	4,288	2,152	16,046	302,301	-242	-0.08
Jul. 1958	40,904	30,536	22,889	95,433	28,915	57,032	0	2,658	1,040	1,555	40,028	320,990	63,768	292	148,847	81,197	4,791	0	4,147	2,815	15,443	321,301	-311	-0.10
Aug. 1958	71,628	21,521	7,057	87,331	49,249	56,102	0	2,658	1,040	1,555	41,080	339,221	36,205	238	142,032	134,190	4,350	0	5,817	4,119	12,173	339,124	97	0.03
Sep. 1958	35,497	23,714	10,362	61,316	23,359	37,029	0	2,572	1,007	1,505	40,530	236,892	21,333	207	130,303	66,131	3,487	0	2,997	3,168	9,187	236,814	78	0.03
Oct. 1958	47,024	19,235	3,251	24,268	5,999	22,638	0	2,658	1,040	1,556	42,191	169,859	14,102	193	125,408	17,754	2,641	0	876	1,761	6,924	169,660	199	0.12
Nov. 1958	52,739	18,863	1,358	3,799	25	15,418	0	2,572	1,007	1,506	40,598	137,886	18,571	218	112,721	77	1,854	0	2	8	4,249	137,700	186	0.14
Dec. 1958	43,610	20,155	2,388	2,419	0	16,065	0	2,658	1,040	1,557	41,493	131,385	14,998	243	110,031	0	1,824	0	0	0	4,092	131,188	197	0.15
Jan. 1959	37,812	21,174	2,309	1,947	0	12,751	0	2,658	1,040	1,557	40,862	122,110	11,192	255	104,451	0	1,998	0	0	0	3,916	121,813	298	0.24
Feb. 1959	31,807	19,560	1,948	1,211	0	10,657	0	2,400	940	1,407	36,349	106,279	8,695	236	90,717	0	1,938	0	0	0	4,212	105,798	481	0.45
Mar. -1959	28,008	24,554	5,857	1,599	0	12,084	0	2,658	1,040	1,557	39,636	116,994	12,405	277	94,117	0	2,229	0	0	0	7,611	116,638	356	0.30
Apr. 1959	21,310	29,567	8,621	2,769	10	9,507	0	2,572	1,007	1,507	37,884	114,755	19,659	300	82,170	27	2,793	0	0	4	9,685	114,638	117	0.10
May 1959	2,832	38,350	26,096	40,266	1,759	33,558	0	2,658	1,040	1,556	38,959	187,075	70,483	326	95,143	4,876	3,483	0	352	366	12,580	187,609	-534	-0.28
Jun. 1959	44,487	22,646	7,551	102,900	30,601	64,695	0	2,572	1,007	1,504	38,112	316,075	87,715	252	121,398	83,115	4,077	0	3,718	1,992	13,710	315,978	98	0.03
Jul. 1959	69,512	23,150	7,289	100,602	52,228	57,674	0	2,658	1,040	1,553	40,498	356,203	47,198	217	138,322	141,665	5,029	0	5,898	3,599	14,227	356,154	49	0.01
Aug. 1959	74,584	23,473	5,249	86,447	61,299	51,899	0	2,658	1,040	1,553	41,674	349,877	23,847	185	131,072	166,485	4,554	0	6,720	4,760	11,775	349,400	477	0.14
Sep. 1959	27,109	26,695	13,592	57,180	24,681	33,795	0	2,572	1,007	1,503	41,107	229,240	25,820	174	119,816	66,698	3,662	0	1,642	2,156	9,191	229,159	81	0.04
Oct. 1959	38,532	29,286	16,921	6,784	2,051	26,589	0	2,658	1,040	1,553	42,768	168,182	36,226	190	115,299	5,849	2,771	0	134	481	7,260	168,208	-27	-0.02
Nov. 1959	54,012	17,958	484	485	0	22,861	0	2,572	1,007	1,503	41,114	141,997	21,252	193	114,413	0	1,966	0	0	0	4,184	142,008	-12	-0.01
Dec. 1959	42,854	20,243	339	1,405	0	14,825	0	2,658	1,040	1,554	41,989	126,907	14,083	232	106,402	0	1,920	0	0	0	4,100	126,737	170	0.13
Jan. 1960	37,975	22,136	1,777	801	0	8,483	0	2,658	1,040	1,554	41,314	117,737	11,967	257	99,015	0	2,049	0	0	0	3,970	117,258	479	0.41
Feb. 1960	31,651	21,311	2,989	551	0	7,235	0	2,486	973	1,454	38,030	106,680	8,950	242	90,621	0	2,054	0	0	0	4,360	106,226	453	0.43
Mar 1960	27,756	25,118	2,202	955	0	11,180	0	2,658	1,040	1,554	40,005	112,469	13,733	267	88,019	0	2,242	0	0	0	7,709	111,971	497	0.44
Apr. 1960	11,535	29,090	10,761	17,831	881	17,916	0	2,572	1,007	1,504	38,229	131,327	27,057	279	88,916	2,474	2,816	0	252	277	9,406	131,477	-150	-0.11



Table C-1. Simulated Monthly Groundwater Budgets (ac-ft)

Month/Year	Inflows												Outflows										Mass Balance	
	Groundwater Flow In from Storage	Stream Loss to Aquifer	Precipitation Recharge	Surface Water Irrigation Return Flow Recharge	Groundwater Irrigation Return Flow Recharge	Canal Seepage Recharge	Augmentation Recharge Ponds	Reservoir Seepage Recharge	Alluvial Underflow In	Net Bedrock Flux	Net Lateral Boundary Flow	Total In	Groundwater Flow Out to Storage	Alluvial Underflow out below Julesburg	Stream Gain from Aquifer	Agricultural Irrigation Pumping	M&I Pumping	Augmentation Pumping	Alfalfa ET	Subirrigated Meadow ET	Phreatophyte ET	Total Out	In Minus Out	% Error
May 1960	7,951	30,695	18,847	64,734	7,919	51,369	0	2,658	1,040	1,553	39,490	226,256	75,104	259	112,457	21,810	3,513	0	1,066	653	11,439	226,301	-44	-0.02
Jun. 1960	40,825	23,065	8,217	98,481	29,997	65,094	0	2,572	1,007	1,503	38,811	309,572	75,326	216	127,877	82,675	4,112	0	4,090	2,005	13,215	309,516	57	0.02
Jul. 1960	48,425	28,473	13,628	102,579	44,149	57,158	0	2,658	1,040	1,553	41,238	340,901	55,840	214	136,388	120,410	5,083	0	4,934	3,294	14,736	340,899	1	0.00
Aug. 1960	89,179	21,138	2,246	82,059	67,397	47,953	0	2,658	1,040	1,551	42,372	357,594	18,059	175	131,653	178,427	4,602	0	7,116	5,570	11,714	357,314	280	0.08
Sep. 1960	56,191	22,627	5,930	50,623	36,838	30,619	0	2,572	1,007	1,501	41,715	249,623	8,900	149	118,204	101,942	3,694	0	3,544	3,932	8,830	249,194	429	0.17
Oct. 1960	35,465	25,686	13,418	24,565	5,101	28,657	0	2,658	1,040	1,550	43,313	181,452	28,982	149	125,714	15,211	2,793	0	752	1,146	6,671	181,418	34	0.02
Nov. 1960	49,925	20,505	762	414	54	13,415	0	2,572	1,007	1,501	41,584	131,738	21,367	178	103,599	182	1,978	0	29	8	4,208	131,547	191	0.15
Dec. 1960	39,903	22,468	2,718	1,803	0	13,539	0	2,658	1,040	1,551	42,438	128,119	17,672	219	103,786	0	1,930	0	0	0	4,090	127,697	422	0.33
Jan. 1961	38,862	20,466	185	518	0	13,182	0	2,658	1,040	1,552	41,735	120,197	12,389	234	101,551	0	2,035	0	0	0	3,854	120,063	134	0.11
Feb. 1961	31,408	19,288	1,005	780	0	10,698	0	2,400	940	1,402	37,105	105,025	9,256	214	89,262	0	1,969	0	0	0	4,090	104,791	233	0.22
Mar. 1961	26,683	25,711	7,853	860	0	11,913	0	2,658	1,040	1,551	40,456	118,725	15,775	234	92,927	0	2,215	0	0	0	7,275	118,427	299	0.25
Apr. 1961	22,283	25,108	5,453	4,335	21	17,364	0	2,572	1,007	1,502	38,638	118,282	15,834	240	90,596	52	2,789	0	0	8	8,694	118,213	69	0.06
May 1961	3,755	43,266	29,646	47,515	2,220	42,090	0	2,658	1,040	1,550	39,778	213,520	99,115	309	91,877	5,881	3,474	0	159	197	12,729	213,741	-221	-0.10
Jun. 1961	28,215	44,522	13,579	63,285	24,546	45,282	0	2,572	1,007	1,500	38,746	263,254	79,801	364	91,207	66,101	4,049	0	2,905	1,590	17,478	263,495	-242	-0.09
Jul. 1961	41,834	29,177	24,798	102,121	31,557	56,623	0	2,658	1,040	1,549	40,792	332,150	76,542	278	146,474	83,916	5,032	0	2,712	1,766	15,622	332,342	-192	-0.06
Aug. 1961	42,427	27,447	15,455	95,563	43,147	58,804	0	2,658	1,040	1,549	41,840	329,930	48,800	228	143,691	113,296	4,566	0	3,734	3,056	12,549	329,919	12	0.00
Sep. 1961	12,379	35,063	26,077	48,704	10,044	39,983	0	2,572	1,007	1,498	41,408	218,735	55,087	241	121,991	26,717	3,690	0	402	584	10,422	219,133	-398	-0.18
Oct. 1961	49,743	26,048	4,107	5,755	3,909	13,639	0	2,658	1,040	1,549	43,121	151,568	17,715	272	110,529	10,671	2,790	0	331	850	8,388	151,545	23	0.02
Nov. 1961	46,619	21,679	1,288	1,259	0	12,804	0	2,572	1,007	1,500	41,422	130,150	15,400	276	107,406	0	1,977	0	0	0	4,935	129,993	157	0.12
Dec. 1961	43,745	22,543	760	1,629	0	8,322	0	2,658	1,040	1,550	42,270	124,518	10,946	311	106,431	0	1,930	0	0	0	4,727	124,346	172	0.14
Jan. 1962	38,827	23,886	2,554	385	0	5,072	0	2,658	1,040	1,539	41,598	117,559	8,824	324	101,351	0	2,048	0	0	0	4,479	117,025	533	0.45
Feb. 1962	30,962	20,703	1,567	647	0	10,683	0	2,400	940	1,390	36,992	106,285	9,129	282	89,650	0	1,980	0	0	0	4,756	105,797	488	0.46
Mar. 1962	35,489	22,801	1,443	1,420	0	7,782	0	2,658	1,040	1,540	40,291	114,464	6,401	315	96,723	0	2,237	0	0	0	8,266	113,942	521	0.46
Apr. 1962	15,208	23,852	3,995	23,655	1,765	22,658	0	2,572	1,007	1,490	38,476	134,678	22,028	284	94,348	4,734	2,814	0	356	456	9,699	134,719	-41	-0.03
May 1962	14,879	28,464	18,960	82,018	11,351	46,618	0	2,658	1,040	1,537	39,865	247,391	77,304	278	121,804	30,631	3,500	0	1,319	721	11,819	247,377	14	0.01
Jun. 1962	12,500	37,335	29,931	62,568	16,655	42,954	0	2,572	1,007	1,470	39,302	246,294	65,112	310	113,047	45,379	4,089	0	2,074	1,365	15,184	246,561	-267	-0.11
Jul. 1962	48,350	26,209	17,283	103,975	39,286	62,661	0	2,658	1,040	1,519	41,746	344,728	67,010	281	141,252	108,742	5,069	0	3,972	2,552	15,864	344,743	-15	0.00
Aug. 1962	55,689	20,908	7,477	97,682	47,735	58,646	0	2,658	1,040	1,519	42,842	336,196	38,776	223	148,154	124,423	4,588	0	4,378	3,360	12,351	336,253	-58	-0.02
Sep. 1962	37,387	17,731	3,000	66,471	16,923	40,847	0	2,572	1,007	1,471	42,194	229,603	25,475	177	140,055	46,286	3,696	0	2,465	2,326	9,076	229,555	49	0.02
Oct. 1962	52,454	22,091	6,055	16,607	7,274	17,324	0	2,658	1,040	1,520	43,770	170,792	13,458	219	122,533	21,098	2,795	0	1,302	1,798	7,339	170,543	249	0.15
Nov. 1962	59,117	18,211	1,641	1,936	134	19,763	0	2,572	1,007	1,467	42,070	147,918	19,068	216	121,623	395	1,977	0	0	56	4,228	147,564	355	0.24





Table C-1. Simulated Monthly Groundwater Budgets (ac-ft)

Month/Year	Inflows												Outflows										Mass Balance	
	Groundwater Flow In from Storage	Stream Loss to Aquifer	Precipitation Recharge	Surface Water Irrigation Return Flow Recharge	Groundwater Irrigation Return Flow Recharge	Canal Seepage Recharge	Augmentation Recharge Ponds	Reservoir Seepage Recharge	Alluvial Underflow In	Net Bedrock Flux	Net Lateral Boundary Flow	Total In	Groundwater Flow Out to Storage	Alluvial Underflow out below Julesburg	Stream Gain from Aquifer	Agricultural Irrigation Pumping	M&I Pumping	Augmentation Pumping	Alfalfa ET	Subirrigated Meadow ET	Phreatophyte ET	Total Out	In Minus Out	% Error
Dec. 1962	48,270	19,780	772	692	0	13,413	0	2,658	1,040	1,508	42,894	131,027	12,957	246	111,507	0	1,930	0	0	0	4,132	130,772	255	0.19
Jan. 1963	41,835	21,585	2,054	197	0	9,270	0	2,658	1,040	1,509	42,158	122,306	11,589	265	103,782	0	2,039	0	0	0	4,001	121,675	631	0.52
Feb. 1963	36,070	18,329	762	106	0	11,718	0	2,400	940	1,363	37,467	109,155	8,607	240	93,641	0	1,963	0	0	0	4,222	108,674	481	0.44
Mar. 1963	33,518	25,060	3,343	561	0	6,522	0	2,658	1,040	1,509	40,787	114,998	11,038	293	93,144	0	2,209	0	0	0	7,826	114,510	488	0.43
Apr. 1963	24,596	20,081	3,742	28,259	3,276	16,799	0	2,572	1,007	1,460	38,947	140,739	15,346	253	103,042	9,008	2,777	0	664	865	8,704	140,658	81	0.06
May 1963	43,524	21,620	5,637	74,187	25,878	39,866	0	2,658	1,040	1,509	40,204	256,124	43,729	249	119,052	72,112	3,440	0	4,215	2,611	10,528	255,938	186	0.07
Jun. 1963	36,924	33,907	22,432	62,077	35,219	37,727	0	2,572	1,007	1,457	39,352	272,675	46,496	231	107,235	94,883	4,046	0	4,146	2,336	13,168	272,541	134	0.05
Jul. 1963	101,273	27,398	10,802	74,336	78,452	41,171	0	2,658	1,040	1,499	41,445	380,074	21,139	214	120,209	206,723	5,038	0	6,842	5,682	13,908	379,753	320	0.08
Aug. 1963	28,893	36,316	25,486	65,469	42,292	39,597	0	2,658	1,040	1,498	42,179	285,428	33,396	180	116,336	112,648	4,604	0	3,241	2,823	11,964	285,193	236	0.08
Sep. 1963	17,216	31,514	20,453	49,271	19,362	34,931	0	2,572	1,007	1,449	41,415	219,191	33,822	162	115,574	53,384	3,708	0	1,804	2,196	9,005	219,656	-465	-0.21
Oct. 1963	55,951	19,347	4,052	21,926	12,814	26,733	0	2,658	1,040	1,498	43,050	189,068	14,644	155	122,282	37,431	2,803	0	2,083	2,634	6,618	188,651	417	0.22
Nov. 1963	47,245	20,443	1,004	3,136	327	11,577	0	2,572	1,007	1,450	41,522	130,282	21,627	193	100,998	948	1,987	0	16	101	4,199	130,070	212	0.16
Dec. 1963	41,161	21,159	1,273	1,481	0	11,069	0	2,658	1,040	1,499	42,446	123,786	16,453	231	100,608	0	1,948	0	0	0	4,090	123,331	456	0.37
Jan. 1964	38,519	19,917	543	1,310	0	11,887	0	2,658	1,040	1,499	41,761	119,134	12,268	239	100,267	0	2,060	0	0	0	3,822	118,655	479	0.40
Feb. 1964	32,665	20,032	1,602	883	0	9,718	0	2,486	973	1,403	38,463	108,225	9,967	226	91,288	0	2,097	0	0	0	4,213	107,791	434	0.40
Mar. 1964	30,942	22,602	2,708	293	0	11,018	0	2,658	1,040	1,492	40,447	113,201	10,401	240	92,720	0	2,312	0	0	0	7,149	112,823	378	0.33
Apr. 1964	16,591	26,895	11,019	8,129	237	12,568	0	2,572	1,007	1,444	38,633	119,095	19,674	238	87,016	593	2,886	0	49	126	8,565	119,147	-52	-0.04
May 1964	11,594	32,280	16,703	72,569	11,910	39,168	0	2,658	1,040	1,491	39,878	229,292	78,250	236	103,800	30,926	3,552	0	1,022	655	10,989	229,431	-139	-0.06
Jun. 1964	39,815	26,078	13,530	69,671	28,578	46,397	0	2,572	1,007	1,443	39,076	268,165	49,731	193	117,515	78,693	4,263	0	3,768	1,957	12,188	268,309	-144	-0.05
Jul. 1964	94,252	27,740	7,124	88,778	82,874	50,187	0	2,658	1,040	1,491	41,341	397,484	32,838	192	117,999	214,510	5,198	0	7,284	5,659	13,612	397,292	192	0.05
Aug. 1964	78,563	28,121	6,139	67,471	68,403	38,343	0	2,658	1,040	1,491	42,299	334,530	12,999	167	112,861	181,224	4,647	0	5,956	4,694	11,302	333,850	680	0.20
Sep. 1964	59,103	24,163	5,320	40,101	38,000	22,785	0	2,572	1,007	1,443	41,592	236,086	7,481	141	105,630	103,753	3,748	0	3,055	3,416	8,411	235,635	451	0.19
Oct. 1964	46,586	18,349	1,325	28,567	7,343	19,718	0	2,658	1,040	1,492	43,062	170,140	26,053	130	109,244	22,165	2,806	0	997	2,281	6,335	170,011	129	0.08
Nov. 1964	41,751	19,156	2,009	7,678	7	14,635	0	2,572	1,007	1,444	41,386	131,645	25,262	151	100,252	21	1,979	0	0	5	3,845	131,516	130	0.10
Dec. 1964	39,454	20,901	628	363	0	11,584	0	2,658	1,040	1,492	42,250	120,370	19,711	188	94,586	0	1,940	0	0	0	3,827	120,251	119	0.10
Jan. 1965	33,777	21,269	2,082	237	0	11,436	0	2,658	1,040	1,454	41,547	115,500	15,824	202	93,414	0	2,075	0	0	0	3,656	115,171	329	0.29
Feb. 1965	27,891	19,884	2,162	512	0	8,561	0	2,400	940	1,314	36,953	100,617	12,174	196	81,916	0	2,103	0	0	0	3,940	100,329	288	0.29
Mar. 1965	28,636	21,618	2,510	1,685	0	10,919	0	2,658	1,040	1,454	40,236	110,756	11,053	210	89,893	0	2,462	0	0	0	6,883	110,500	256	0.23
Apr. 1965	13,993	23,865	5,999	21,553	1,457	16,386	0	2,572	1,007	1,407	38,448	126,687	26,176	206	84,458	3,954	3,058	0	235	279	8,270	126,636	51	0.04
May. 1965	9,737	31,774	20,753	68,551	9,977	40,277	0	2,658	1,040	1,453	39,674	225,895	80,905	221	101,994	26,910	3,723	0	1,059	495	10,624	225,932	-37	-0.02
Jun. 1965	4,677	68,827	38,122	36,517	10,802	58,563	0	2,572	1,007	1,404	38,842	261,334	128,365	354	78,452	29,716	4,673	0	1,344	1,027	18,024	261,954	-620	-0.24



Table C-1. Simulated Monthly Groundwater Budgets (ac-ft)

Month/Year	Inflows												Outflows										Mass Balance	
	Groundwater Flow In from Storage	Stream Loss to Aquifer	Precipitation Recharge	Surface Water Irrigation Return Flow Recharge	Groundwater Irrigation Return Flow Recharge	Canal Seepage Recharge	Augmentation Recharge Ponds	Reservoir Seepage Recharge	Alluvial Underflow In	Net Bedrock Flux	Net Lateral Boundary Flow	Total In	Groundwater Flow Out to Storage	Alluvial Underflow out below Julesburg	Stream Gain from Aquifer	Agricultural Irrigation Pumping	M&I Pumping	Augmentation Pumping	Alfalfa ET	Subirrigated Meadow ET	Phreatophyte ET	Total Out	In Minus Out	% Error
Jul. 1965	35,452	45,046	30,200	81,918	38,763	55,088	0	2,658	1,040	1,450	41,220	332,834	86,375	348	114,214	102,621	5,573	0	2,882	2,049	18,925	332,987	-153	-0.05
Aug. 1965	45,331	27,198	9,386	87,874	48,626	60,907	0	2,658	1,040	1,450	42,369	326,838	43,704	283	128,466	127,407	4,915	0	4,470	3,465	14,171	326,882	-44	-0.01
Sep. 1965	19,179	28,334	18,812	49,616	9,296	35,042	0	2,572	1,007	1,403	41,871	207,132	44,218	268	122,740	24,568	4,003	0	449	742	10,580	207,566	-434	-0.21
Oct. 1965	50,941	24,511	6,546	9,086	5,088	9,416	0	2,658	1,040	1,451	43,500	154,237	15,792	290	110,714	14,276	2,960	0	503	1,357	8,108	154,001	236	0.15
Nov. 1965	49,268	18,138	230	2,696	442	13,537	0	2,572	1,007	1,405	41,838	131,133	14,555	269	108,119	1,178	2,094	0	22	102	4,597	130,935	198	0.15
Dec. 1965	42,809	21,132	2,053	689	0	9,663	0	2,658	1,040	1,450	42,701	124,194	12,270	294	104,917	0	2,054	0	0	0	4,420	123,955	239	0.19
Jan. 1966	37,261	21,637	1,062	1,309	0	5,878	0	2,658	1,040	1,450	42,026	114,323	9,860	310	97,279	0	2,169	0	0	0	4,243	113,861	462	0.40
Feb. 1966	30,483	20,187	1,486	697	0	4,925	0	2,400	940	1,310	37,378	99,805	7,689	279	84,682	0	2,208	0	0	0	4,506	99,364	441	0.44
Mar. 1966	38,171	19,609	1,169	853	0	13,132	0	2,658	1,040	1,451	40,695	118,778	8,802	270	99,588	0	2,566	0	0	4	7,367	118,596	182	0.15
Apr. 1966	17,110	24,621	8,874	16,275	87	13,827	0	2,572	1,007	1,404	38,873	124,652	17,459	258	94,506	225	3,157	0	52	233	8,672	124,563	89	0.07
May 1966	35,688	20,946	3,419	64,593	21,528	34,678	0	2,658	1,040	1,451	40,014	226,016	38,575	235	109,979	57,789	3,810	0	2,790	2,144	10,469	225,792	225	0.10
Jun. 1966	33,189	30,792	19,361	57,590	29,766	32,854	0	2,572	1,007	1,404	39,013	247,547	39,379	244	103,703	80,550	4,681	0	3,665	2,294	12,949	247,466	81	0.03
Jul. 1966	95,589	30,457	11,175	74,400	80,388	42,401	0	2,658	1,040	1,450	41,105	380,664	26,669	235	110,601	210,772	5,580	0	6,881	5,663	13,912	380,312	352	0.09
Aug. 1966	42,205	32,142	14,646	66,275	52,506	38,460	0	2,658	1,040	1,450	41,958	293,341	19,575	207	108,648	139,541	4,921	0	4,666	3,880	11,594	293,032	309	0.11
Sep. 1966	24,219	32,180	21,168	39,667	24,999	28,689	0	2,572	1,007	1,403	41,234	217,137	26,656	191	103,918	69,343	4,003	0	1,826	2,385	8,775	217,097	40	0.02
Oct. 1966	39,697	22,326	6,429	17,995	5,511	21,850	0	2,658	1,040	1,450	42,769	161,725	22,699	174	111,510	15,996	2,960	0	618	1,328	6,495	161,780	-55	-0.03
Nov. 1966	43,862	18,622	1,001	1,116	17	14,217	0	2,572	1,007	1,403	41,186	125,004	19,313	180	99,322	53	2,083	0	0	6	3,928	124,886	118	0.09
Dec. 1966	37,637	20,809	421	406	0	12,485	0	2,658	1,040	1,451	42,115	119,023	17,480	221	94,912	0	2,047	0	0	0	3,900	118,560	462	0.39
Jan. 1967	32,115	21,346	1,628	1,613	0	8,870	0	2,658	1,040	1,451	41,522	112,242	13,176	229	92,545	0	2,251	0	0	0	3,690	111,891	352	0.31
Feb. 1967	29,954	18,266	685	424	0	8,443	0	2,400	940	1,308	36,984	99,404	8,962	208	83,760	0	2,307	0	0	0	3,888	99,123	281	0.28
Mar. 1967	27,194	21,610	1,989	2,985	14	8,450	0	2,658	1,040	1,448	40,304	107,692	9,379	226	88,126	30	2,710	0	0	36	6,884	107,391	302	0.28
Apr. 1967	8,475	31,595	19,324	29,109	2,869	20,556	0	2,572	1,007	1,400	38,574	155,480	45,968	215	88,095	8,513	3,337	0	489	639	8,263	155,518	-38	-0.02
May 1967	2,960	42,248	36,126	44,777	4,464	30,925	0	2,658	1,040	1,446	39,771	206,415	81,087	256	96,278	12,809	4,008	0	805	401	11,064	206,707	-292	-0.14
Jun. 1967	7,801	43,403	34,791	23,522	8,429	46,270	0	2,572	1,007	1,398	38,732	207,924	73,249	282	89,641	23,748	5,065	0	1,259	622	14,372	208,238	-314	-0.15
Jul. 1967	29,182	38,414	23,040	69,948	35,239	52,256	0	2,658	1,040	1,443	40,629	293,849	66,522	275	104,765	94,074	5,940	0	3,380	2,942	16,070	293,968	-119	-0.04
Aug. 1967	47,079	24,064	8,815	100,195	47,468	59,089	0	2,658	1,040	1,444	41,398	333,250	60,062	212	130,531	119,198	5,173	0	3,460	2,556	12,255	333,447	-197	-0.06
Sep. 1967	54,385	21,381	5,466	58,670	39,056	41,569	0	2,572	1,007	1,398	40,879	266,383	21,839	174	120,772	104,904	4,227	0	2,724	2,803	8,923	266,366	17	0.01
Oct. 1967	45,704	19,957	4,041	22,524	9,354	31,341	0	2,658	1,040	1,445	42,709	180,773	18,863	163	121,217	27,784	3,092	0	1,087	1,611	6,672	180,489	284	0.16
Nov. 1967	42,947	19,994	2,249	6,059	9	15,853	0	2,572	1,007	1,399	41,296	133,386	22,796	182	104,027	25	2,188	0	0	5	4,110	133,333	54	0.04
Dec. 1967	37,425	22,669	2,593	392	0	11,822	0	2,658	1,040	1,446	42,347	122,392	17,897	231	97,913	0	2,130	0	0	0	4,083	122,254	138	0.11
Jan. 1968	34,013	21,472	647	3,886	0	8,554	0	2,658	1,040	1,447	41,766	115,484	14,208	247	94,756	0	2,258	0	0	0	3,893	115,361	122	0.11





Table C-1. Simulated Monthly Groundwater Budgets (ac-ft)

Month/Year	Inflows												Outflows										Mass Balance	
	Groundwater Flow In from Storage	Stream Loss to Aquifer	Precipitation Recharge	Surface Water Irrigation Return Flow Recharge	Groundwater Irrigation Return Flow Recharge	Canal Seepage Recharge	Augmentation Recharge Ponds	Reservoir Seepage Recharge	Alluvial Underflow In	Net Bedrock Flux	Net Lateral Boundary Flow	Total In	Groundwater Flow Out to Storage	Alluvial Underflow out below Julesburg	Stream Gain from Aquifer	Agricultural Irrigation Pumping	M&I Pumping	Augmentation Pumping	Alfalfa ET	Subirrigated Meadow ET	Phreatophyte ET	Total Out	In Minus Out	% Error
Feb. 1968	30,248	19,616	1,704	178	0	11,878	0	2,486	973	1,354	38,551	106,989	9,904	228	89,918	0	2,410	0	0	0	4,211	106,671	318	0.30
Mar. 1968	25,938	22,633	2,085	4,843	0	10,479	0	2,658	1,040	1,447	40,626	111,750	11,148	250	90,010	0	2,734	0	0	0	7,318	111,460	290	0.26
Apr. 1968	11,456	26,594	10,557	17,711	1	17,208	0	2,572	1,007	1,401	38,852	127,359	25,530	237	89,757	29	3,355	0	0	3	8,610	127,521	-163	-0.13
May 1968	7,531	28,505	16,018	59,741	3,397	33,763	0	2,658	1,040	1,447	39,987	194,087	62,671	236	106,784	9,016	4,023	0	409	294	10,723	194,155	-69	-0.04
Jun. 1968	42,349	24,766	8,022	88,487	34,119	54,663	0	2,572	1,007	1,397	39,097	296,478	73,460	214	111,882	87,557	5,063	0	3,195	2,122	12,899	296,391	87	0.03
Jul. 1968	52,243	29,902	11,776	94,323	53,746	51,185	0	2,658	1,040	1,443	41,534	339,851	50,060	209	125,055	135,835	5,936	0	4,635	3,530	14,453	339,712	139	0.04
Aug. 1968	37,470	29,473	16,551	81,822	41,985	50,976	0	2,658	1,040	1,443	42,660	306,079	45,034	204	126,160	111,606	5,176	0	3,388	2,493	11,961	306,023	56	0.02
Sep. 1968	67,231	18,809	2,102	52,910	43,110	36,006	0	2,572	1,007	1,397	41,949	267,093	8,976	151	122,600	115,878	4,224	0	3,221	3,039	8,502	266,590	503	0.19
Oct. 1968	47,604	20,983	4,764	21,374	8,840	26,014	0	2,658	1,040	1,444	43,560	178,281	21,715	145	118,926	25,411	3,086	0	920	1,647	6,467	178,317	-36	-0.02
Nov. 1968	45,837	20,585	2,349	3,339	12	14,743	0	2,572	1,007	1,397	41,908	133,750	23,891	173	103,519	37	2,185	0	0	2	3,969	133,776	-26	-0.02
Dec. 1968	41,308	21,523	1,121	599	0	11,430	0	2,658	1,040	1,444	42,843	123,967	18,082	216	99,487	0	2,128	0	0	0	3,913	123,825	142	0.11
Jan. 1969	37,641	19,990	647	980	0	12,166	0	2,658	1,040	1,444	42,177	118,743	12,836	218	99,403	0	2,253	0	0	0	3,639	118,349	393	0.33
Feb. 1969	32,454	18,447	770	760	0	9,399	0	2,400	940	1,305	37,520	103,996	9,395	198	88,003	0	2,318	0	0	0	3,848	103,764	232	0.22
Mar. 1969	30,552	23,132	1,994	550	0	10,240	0	2,658	1,040	1,445	40,896	112,507	13,147	228	89,183	0	2,723	0	0	0	6,907	112,188	319	0.28
Apr. 1969	15,580	25,276	9,844	17,215	3,758	15,564	0	2,572	1,007	1,398	39,074	131,289	17,336	211	90,628	10,234	3,343	0	666	800	8,098	131,317	-28	-0.02
May 1969	2,665	63,230	32,730	48,001	9,371	54,377	0	2,658	1,040	1,443	40,310	255,825	133,521	362	77,496	24,517	4,025	0	891	737	14,582	256,131	-306	-0.12
Jun. 1969	19,046	54,679	20,580	52,921	27,428	52,796	0	2,572	1,007	1,395	39,333	271,758	85,228	407	84,760	72,643	5,109	0	3,364	1,890	19,045	272,448	-690	-0.25
Jul. 1969	70,579	28,580	17,992	108,335	58,626	69,987	0	2,658	1,040	1,441	41,483	400,723	69,993	263	150,827	149,106	5,959	0	5,427	3,964	15,293	400,832	-109	-0.03
Aug. 1969	68,184	26,986	11,390	89,726	66,636	53,787	0	2,658	1,040	1,441	42,614	364,461	31,064	217	135,643	169,887	5,164	0	5,761	4,436	12,225	364,397	64	0.02
Sep. 1969	39,297	23,863	10,358	50,221	25,681	36,586	0	2,572	1,007	1,395	42,109	233,088	20,834	161	125,087	68,723	4,222	0	2,469	2,627	8,976	233,097	-10	0.00
Oct. 1969	28,094	37,271	32,026	6,244	610	29,904	0	2,658	1,040	1,440	43,797	183,084	59,303	187	111,568	1,593	3,129	0	7	84	7,435	183,306	-223	-0.12
Nov. 1969	44,091	22,046	1,585	1,024	0	20,209	0	2,572	1,007	1,395	42,215	136,143	24,982	227	104,042	0	2,227	0	0	0	4,583	136,062	82	0.06
Dec. 1969	41,195	23,622	830	1,343	0	8,344	0	2,658	1,040	1,442	43,200	123,674	17,475	274	99,131	0	2,167	0	0	0	4,534	123,581	93	0.08
Jan. 1970	39,058	23,397	247	1,980	0	4,867	0	2,658	1,040	1,441	42,575	117,263	13,857	305	96,260	0	2,372	0	0	0	4,384	117,178	85	0.07
Feb. 1970	33,305	19,933	193	1,036	0	6,766	0	2,400	940	1,300	37,910	103,782	9,666	274	86,443	0	2,429	0	0	0	4,572	103,385	398	0.38
Mar. 1970	27,260	24,552	5,034	660	0	11,767	0	2,658	1,040	1,439	41,302	115,713	10,588	287	93,707	0	2,886	0	0	0	7,893	115,361	351	0.30
Apr. 1970	17,222	37,793	9,504	1,953	38	8,068	0	2,572	1,007	1,393	39,472	119,021	29,382	350	74,791	86	3,500	0	8	29	10,891	119,037	-16	-0.01
May 1970	20,764	35,466	10,835	52,644	15,985	39,630	0	2,658	1,040	1,439	40,663	221,125	69,756	367	88,464	41,690	4,207	0	1,117	1,413	14,296	221,310	-185	-0.08
Jun. 1970	17,931	51,345	23,452	68,860	25,049	50,882	0	2,572	1,007	1,392	39,694	282,183	98,618	434	88,633	65,819	5,239	0	2,261	1,868	19,732	282,604	-421	-0.15
Jul. 1970	71,430	24,479	12,926	110,648	60,038	76,241	0	2,658	1,040	1,438	41,959	402,857	67,655	264	153,233	150,386	6,174	0	4,809	4,155	16,284	402,961	-104	-0.03
Aug. 1970	75,002	23,395	7,968	100,165	64,328	62,397	0	2,658	1,040	1,438	43,022	381,414	38,311	195	150,571	163,902	5,298	0	6,079	4,663	12,327	381,347	67	0.02



Table C-1. Simulated Monthly Groundwater Budgets (ac-ft)

Month/Year	Inflows												Outflows										Mass Balance	
	Groundwater Flow In from Storage	Stream Loss to Aquifer	Precipitation Recharge	Surface Water Irrigation Return Flow Recharge	Groundwater Irrigation Return Flow Recharge	Canal Seepage Recharge	Augmentation Recharge Ponds	Reservoir Seepage Recharge	Alluvial Underflow In	Net Bedrock Flux	Net Lateral Boundary Flow	Total In	Groundwater Flow Out to Storage	Alluvial Underflow out below Julesburg	Stream Gain from Aquifer	Agricultural Irrigation Pumping	M&I Pumping	Augmentation Pumping	Alfalfa ET	Subirrigated Meadow ET	Phreatophyte ET	Total Out	In Minus Out	% Error
Sep. 1970	32,891	25,050	12,436	53,133	22,636	41,642	0	2,572	1,007	1,392	42,477	235,237	28,699	165	126,031	62,639	4,323	0	1,901	1,830	9,642	235,230	7	0.00
Oct. 1970	52,592	23,629	7,501	6,607	3,152	23,494	0	2,658	1,040	1,439	44,114	166,226	25,676	198	118,853	9,486	3,246	0	402	1,009	7,382	166,252	-26	-0.02
Nov. 1970	43,051	21,431	2,323	2,406	0	16,263	0	2,572	1,007	1,393	42,431	132,876	20,649	228	105,100	0	2,351	0	0	0	4,586	132,914	-38	-0.03
Dec. 1970	43,123	20,646	663	2,429	0	12,262	0	2,658	1,040	1,440	43,375	127,636	15,033	262	105,502	0	2,284	0	0	0	4,416	127,497	139	0.11
Jan. 1971	37,967	22,713	1,908	1,409	0	6,698	0	2,658	1,040	1,440	42,734	118,568	12,120	288	99,036	0	2,396	0	0	0	4,273	118,113	455	0.38
Feb. 1971	30,141	20,775	2,525	1,622	0	9,200	0	2,400	940	1,301	38,068	106,972	9,971	266	89,378	0	2,432	0	0	0	4,539	106,586	387	0.36
Mar. 1971	31,875	22,384	2,635	1,929	0	10,895	0	2,658	1,040	1,440	41,484	116,341	9,445	290	95,543	0	2,857	0	0	0	7,864	115,998	343	0.29
Apr. 1971	8,522	38,340	22,339	7,520	9	14,740	0	2,572	1,007	1,393	39,706	136,148	40,425	331	81,556	21	3,558	0	1	11	10,482	136,385	-237	-0.17
May 1971	8,698	41,151	14,400	31,834	5,954	29,366	0	2,658	1,040	1,439	40,784	177,325	56,005	399	83,611	16,712	4,282	0	1,124	1,046	14,581	177,760	-435	-0.24
Jun. 1971	52,098	23,244	8,032	91,285	36,728	73,786	0	2,572	1,007	1,393	39,636	329,780	78,874	271	123,292	98,892	5,291	0	5,198	3,484	14,492	329,793	-13	0.00
Jul. 1971	72,068	21,834	7,088	116,752	60,205	74,747	0	2,658	1,040	1,439	42,074	399,906	65,607	218	146,967	157,098	6,191	0	5,076	4,046	14,597	399,800	105	0.03
Aug. 1971	67,125	25,516	7,675	93,972	63,267	56,336	0	2,658	1,040	1,439	43,383	362,411	32,233	181	136,705	165,424	5,333	0	5,998	4,460	11,951	362,285	126	0.03
Sep. 1971	21,468	33,160	21,890	41,371	14,131	33,791	0	2,572	1,007	1,392	42,859	213,640	46,936	197	112,423	38,411	4,329	0	656	870	10,024	213,846	-206	-0.10
Oct. 1971	57,071	20,444	4,683	6,173	3,322	19,851	0	2,658	1,040	1,439	44,523	161,205	21,515	192	118,124	9,776	3,309	0	36	965	7,274	161,192	13	0.01
Nov. 1971	52,942	17,757	532	1,760	0	20,198	0	2,572	1,007	1,393	42,776	140,938	19,334	202	114,693	0	2,390	0	0	0	4,234	140,854	84	0.06
Dec. 1971	40,973	21,472	600	1,842	0	13,216	0	2,658	1,040	1,440	43,687	126,928	15,982	249	103,654	0	2,318	0	0	0	4,254	126,457	471	0.37
Jan. 1972	36,026	23,226	1,595	1,241	0	6,898	0	2,658	1,040	1,420	43,028	117,132	13,068	281	96,742	0	2,416	0	0	0	4,170	116,678	454	0.39
Feb. 1972	31,637	19,440	752	2,012	0	13,695	0	2,486	973	1,329	39,642	111,966	10,103	256	94,364	0	2,540	0	0	0	4,472	111,735	231	0.21
Mar. 1972	34,300	20,889	1,433	2,016	62	14,436	0	2,658	1,040	1,420	41,709	119,964	10,009	256	98,788	174	2,920	0	0	60	7,422	119,628	336	0.28
Apr. 1972	14,247	26,977	12,397	31,065	3,957	22,708	0	2,572	1,007	1,367	39,882	156,181	31,428	242	98,115	12,157	3,574	0	808	1,091	8,752	156,167	14	0.01
May 1972	22,325	25,203	10,751	64,976	14,563	37,433	0	2,658	1,040	1,410	41,099	221,459	43,262	226	116,325	42,864	4,226	0	2,341	1,580	10,556	221,381	78	0.04
Jun. 1972	27,881	33,183	20,794	70,186	29,767	56,382	0	2,572	1,007	1,364	40,164	283,300	64,903	221	109,016	83,805	5,157	0	4,084	2,748	13,443	283,379	-79	-0.03
Jul. 1972	67,009	25,545	8,748	94,261	54,820	53,269	0	2,658	1,040	1,410	42,398	351,158	39,159	200	133,033	149,749	6,159	0	5,075	3,703	14,049	351,128	30	0.01
Aug. 1972	29,468	33,279	21,247	75,019	40,907	45,026	0	2,658	1,040	1,404	43,315	293,363	35,048	193	122,455	111,992	5,268	0	3,384	2,618	12,316	293,274	88	0.03
Sep. 1972	60,424	26,392	12,463	26,435	32,589	29,605	0	2,572	1,007	1,358	42,454	235,298	8,578	148	114,078	93,747	4,370	0	2,419	2,590	8,957	234,887	412	0.18
Oct. 1972	42,621	21,679	4,332	18,133	7,579	22,140	0	2,658	1,040	1,404	43,955	165,542	18,723	160	110,797	22,602	3,391	0	1,286	1,528	6,955	165,443	99	0.06
Nov. 1972	39,959	22,605	7,283	1,631	0	21,685	0	2,572	1,007	1,358	42,294	140,394	28,693	172	104,898	0	2,408	0	0	0	4,181	140,351	43	0.03
Dec. 1972	39,204	23,305	1,888	129	0	10,723	0	2,658	1,040	1,403	43,295	123,645	19,755	229	96,972	0	2,344	0	0	0	4,196	123,497	148	0.12
Jan. 1973	30,644	24,975	3,048	1,799	0	7,438	0	2,658	1,040	1,400	42,697	115,699	17,086	265	91,485	0	2,432	0	0	0	4,131	115,399	299	0.26
Feb. 1973	29,865	19,129	394	1,663	0	8,460	0	2,400	940	1,265	38,016	102,131	9,922	239	84,812	0	2,471	0	0	0	4,347	101,791	340	0.33
Mar. 1973	25,244	24,682	6,481	2,044	0	13,157	0	2,658	1,040	1,400	41,443	118,149	14,392	261	92,837	0	2,902	0	0	0	7,582	117,975	173	0.15



Table C-1. Simulated Monthly Groundwater Budgets (ac-ft)

Month/Year	Inflows												Outflows										Mass Balance	
	Groundwater Flow In from Storage	Stream Loss to Aquifer	Precipitation Recharge	Surface Water Irrigation Return Flow Recharge	Groundwater Irrigation Return Flow Recharge	Canal Seepage Recharge	Augmentation Recharge Ponds	Reservoir Seepage Recharge	Alluvial Underflow In	Net Bedrock Flux	Net Lateral Boundary Flow	Total In	Groundwater Flow Out to Storage	Alluvial Underflow out below Julesburg	Stream Gain from Aquifer	Agricultural Irrigation Pumping	M&I Pumping	Augmentation Pumping	Alfalfa ET	Subirrigated Meadow ET	Phreatophyte ET	Total Out	In Minus Out	% Error
Apr. 1973	10,314	38,083	20,211	5,205	2	9,143	0	2,572	1,007	1,354	39,624	127,513	35,616	301	78,253	7	3,494	0	2	1	9,979	127,653	-141	-0.11
May 1973	4,229	89,892	24,146	24,914	315	17,385	0	2,658	1,040	1,398	40,725	206,703	119,402	548	64,032	876	4,106	0	59	95	18,200	207,317	-614	-0.30
Jun. 1973	40,989	28,168	7,768	81,746	25,149	63,959	0	2,572	1,007	1,350	39,656	292,365	83,167	366	109,066	71,308	5,241	0	3,180	2,144	18,019	292,491	-126	-0.04
Jul. 1973	58,498	25,660	16,426	110,472	42,061	75,800	0	2,658	1,040	1,394	42,036	376,044	83,523	270	150,460	113,428	6,145	0	3,462	2,782	16,210	376,280	-236	-0.06
Aug. 1973	78,135	20,635	4,592	102,046	59,873	63,782	0	2,658	1,040	1,394	43,343	377,499	41,848	208	150,792	157,589	5,332	0	5,477	4,226	11,972	377,443	56	0.01
Sep. 1973	29,720	35,890	24,252	37,927	15,878	23,313	0	2,572	1,007	1,348	42,862	214,770	36,654	259	112,874	47,285	4,351	0	1,374	1,537	10,540	214,874	-104	-0.05
Oct. 1973	61,304	24,322	3,744	7,774	10,357	7,238	0	2,658	1,040	1,394	44,584	164,414	10,315	282	106,197	31,528	3,361	0	2,031	2,465	8,048	164,228	185	0.11
Nov. 1973	44,242	20,519	3,628	2,291	14	11,618	0	2,572	1,007	1,349	42,830	130,069	19,106	262	103,427	39	2,419	0	0	5	4,612	129,870	199	0.15
Dec. 1973	36,345	22,765	4,797	3,290	0	14,535	0	2,658	1,040	1,395	43,771	130,596	17,437	280	105,989	0	2,349	0	0	0	4,374	130,430	166	0.13
Jan. 1974	33,817	22,860	1,991	1,860	0	8,828	0	2,658	1,040	1,376	43,169	117,599	12,164	304	97,995	0	2,450	0	0	0	4,264	117,177	422	0.36
Feb. 1974	31,844	19,685	1,440	736	0	11,258	0	2,400	940	1,244	38,405	107,952	10,237	270	90,080	0	2,483	0	0	0	4,455	107,524	428	0.40
Mar. 1974	26,112	23,846	5,226	3,190	0	19,805	0	2,658	1,040	1,377	41,870	125,124	15,877	279	98,144	0	2,948	0	0	0	7,719	124,967	157	0.13
Apr. 1974	13,195	31,624	13,761	5,872	319	15,207	0	2,572	1,007	1,332	40,021	124,910	24,371	285	86,090	821	3,598	0	45	61	9,681	124,953	-43	-0.03
May 1974	38,528	18,935	1,227	77,203	19,919	54,504	0	2,658	1,040	1,377	41,299	256,689	59,582	238	117,692	58,618	4,378	0	3,423	2,248	10,662	256,840	-151	-0.06
Jun. 1974	30,226	30,432	21,345	85,926	28,941	62,644	0	2,572	1,007	1,331	40,560	304,984	81,329	217	117,818	82,372	5,299	0	3,093	1,825	13,183	305,137	-153	-0.05
Jul. 1974	59,370	30,732	14,680	110,604	56,296	64,544	0	2,658	1,040	1,375	43,076	384,376	65,956	201	136,948	152,056	6,294	0	5,031	3,776	14,111	384,373	3	0.00
Aug. 1974	49,207	22,675	5,144	96,224	45,886	55,943	0	2,658	1,040	1,376	44,356	324,508	39,197	145	137,550	123,659	5,331	0	3,990	3,161	11,410	324,443	65	0.02
Sep. 1974	46,180	23,180	4,852	40,572	22,836	32,350	0	2,572	1,007	1,316	43,720	218,584	17,585	143	115,476	67,247	4,387	0	2,059	2,313	9,094	218,304	280	0.13
Oct. 1974	43,700	23,776	7,748	17,029	7,226	23,588	0	2,658	1,040	1,359	45,350	173,475	21,420	160	117,073	21,832	3,389	0	1,063	1,450	6,967	173,353	122	0.07
Nov. 1974	46,494	19,982	2,311	4,777	29	18,723	0	2,572	1,007	1,315	43,577	140,787	23,325	175	110,500	98	2,413	0	7	7	4,155	140,680	108	0.08
Dec. 1974	41,028	20,605	467	4,100	0	16,521	0	2,658	1,040	1,359	44,472	132,251	18,231	217	107,314	0	2,345	0	0	0	4,036	132,144	107	0.08
Jan. 1975	36,120	21,017	434	3,587	0	12,003	0	2,658	1,040	1,360	43,761	121,981	13,208	236	101,809	0	2,457	0	0	0	3,859	121,569	413	0.34
Feb. 1975	32,495	19,577	879	1,348	0	12,485	0	2,400	940	1,229	38,918	110,270	12,581	224	90,775	0	2,493	0	0	0	4,148	110,220	50	0.05
Mar. 1975	32,708	21,257	2,489	2,904	0	17,115	0	2,658	1,040	1,360	42,384	123,916	12,315	230	101,090	0	2,896	0	0	0	7,097	123,627	288	0.23
Apr. 1975	12,089	27,540	11,285	15,032	24	20,242	0	2,572	1,007	1,316	40,470	131,578	24,483	231	94,624	73	3,539	0	1	2	8,624	131,577	0	0.00
May 1975	2,768	40,066	40,371	75,962	1,462	41,919	0	2,658	1,040	1,358	41,727	249,329	116,067	269	113,082	4,427	4,117	0	169	100	11,295	249,526	-197	-0.08
Jun. 1975	25,022	34,110	13,668	62,074	22,540	53,811	0	2,572	1,007	1,311	40,817	256,933	64,434	277	102,722	65,957	5,069	0	2,238	1,493	14,875	257,066	-133	-0.05
Jul. 1975	37,329	29,375	18,262	138,818	40,796	80,404	0	2,658	1,040	1,344	43,298	393,325	111,446	247	143,868	111,385	6,068	0	2,742	1,812	15,674	393,243	82	0.02
Aug. 1975	46,977	24,120	10,139	109,794	43,957	64,346	0	2,658	1,040	1,345	44,862	349,237	53,495	204	152,492	119,796	5,167	0	3,339	2,321	12,528	349,344	-106	-0.03
Sep. 1975	48,368	18,628	3,438	58,665	25,318	44,904	0	2,572	1,007	1,302	44,559	248,760	13,866	162	142,614	74,262	4,302	0	2,323	2,047	9,197	248,774	-14	-0.01
Oct. 1975	63,498	18,731	2,341	18,190	6,423	20,859	0	2,658	1,040	1,346	46,296	181,382	15,370	159	132,929	20,109	3,364	0	970	1,490	6,899	181,290	93	0.05



Table C-1. Simulated Monthly Groundwater Budgets (ac-ft)

Month/Year	Inflows												Outflows										Mass Balance	
	Groundwater Flow In from Storage	Stream Loss to Aquifer	Precipitation Recharge	Surface Water Irrigation Return Flow Recharge	Groundwater Irrigation Return Flow Recharge	Canal Seepage Recharge	Augmentation Recharge Ponds	Reservoir Seepage Recharge	Alluvial Underflow In	Net Bedrock Flux	Net Lateral Boundary Flow	Total In	Groundwater Flow Out to Storage	Alluvial Underflow out below Julesburg	Stream Gain from Aquifer	Agricultural Irrigation Pumping	M&I Pumping	Augmentation Pumping	Alfalfa ET	Subirrigated Meadow ET	Phreatophyte ET	Total Out	In Minus Out	% Error
Nov. 1975	47,701	21,701	4,085	5,055	0	17,095	0	2,572	1,007	1,302	44,461	144,980	22,134	193	115,797	0	2,419	0	0	0	4,268	144,811	168	0.12
Dec. 1975	43,631	21,146	1,644	4,284	0	17,783	0	2,658	1,040	1,346	45,388	138,921	18,552	225	113,465	0	2,366	0	0	0	4,137	138,744	177	0.13
Jan. 1976	38,646	21,730	1,024	4,542	0	14,164	0	2,658	1,040	1,347	44,711	129,862	14,419	250	108,578	0	2,469	0	0	0	3,986	129,703	159	0.12
Feb. 1976	35,225	19,123	1,222	4,638	0	16,883	0	2,486	973	1,260	41,195	123,005	10,945	222	104,618	0	2,599	0	0	0	4,250	122,635	370	0.30
Mar. 1976	32,207	22,516	2,372	4,181	0	18,996	0	2,658	1,040	1,347	43,294	128,611	12,320	238	105,522	0	2,958	0	0	0	7,256	128,293	317	0.25
Apr. 1976	13,686	26,359	11,927	24,248	208	21,967	0	2,572	1,007	1,303	41,364	144,642	28,665	223	102,907	663	3,695	0	29	64	8,590	144,835	-194	-0.13
May 1976	9,422	29,619	21,026	62,845	6,138	38,604	0	2,658	1,040	1,346	42,558	215,256	60,477	214	120,387	18,618	4,317	0	376	380	10,429	215,198	58	0.03
Jun. 1976	55,367	22,804	7,065	90,313	30,855	52,416	0	2,572	1,007	1,295	41,614	305,307	60,608	100	125,035	96,594	5,397	0	3,263	2,061	12,184	305,240	67	0.02
Jul. 1976	66,141	31,981	13,964	99,321	51,491	57,490	0	2,658	1,040	1,333	44,179	369,597	53,584	-22	131,345	157,754	6,449	0	3,680	2,697	13,908	369,395	202	0.05
Aug. 1976	52,829	29,863	10,112	88,759	45,990	57,827	0	2,658	1,040	1,333	45,329	335,739	37,971	-62	131,676	141,658	5,430	0	3,891	3,165	11,750	335,479	261	0.08
Sep. 1976	33,900	32,158	15,782	48,315	25,280	35,181	0	2,572	1,007	1,290	44,707	240,191	22,039	-44	120,671	80,067	4,490	0	1,694	1,902	9,176	239,996	195	0.08
Oct. 1976	56,719	21,812	3,601	11,923	5,017	25,629	0	2,658	1,040	1,333	46,411	176,144	22,300	23	125,539	16,250	3,452	0	756	1,197	6,709	176,225	-82	-0.05
Nov. 1976	48,407	19,841	603	4,168	0	20,159	0	2,572	1,007	1,291	44,522	142,570	21,591	64	114,503	0	2,442	0	0	0	4,002	142,603	-33	-0.02
Dec. 1976	42,642	21,097	343	2,213	0	18,282	0	2,658	1,040	1,334	45,369	134,979	18,329	95	110,129	0	2,384	0	0	0	3,874	134,811	167	0.12
Jan. 1977	36,308	21,942	727	3,984	0	14,880	0	2,658	1,040	1,335	44,616	127,491	15,954	132	105,078	0	2,486	0	0	0	3,733	127,383	109	0.09
Feb. 1977	31,675	18,503	314	3,879	0	15,395	0	2,400	940	1,206	39,636	113,949	10,507	124	96,949	0	2,516	0	0	0	3,898	113,994	-45	-0.04
Mar. 1977	32,146	24,119	3,051	3,709	0	13,035	0	2,658	1,040	1,335	43,134	124,228	12,951	167	100,816	0	2,954	0	0	0	7,023	123,911	317	0.26
Apr. 1977	10,994	31,722	19,708	25,351	1,389	23,778	0	2,572	1,007	1,292	41,200	159,012	40,500	167	100,985	4,597	3,627	0	340	505	8,402	159,123	-111	-0.07
May 1977	33,980	26,748	14,123	53,842	17,143	33,085	0	2,658	1,040	1,334	42,440	226,394	34,144	168	116,096	56,347	4,358	0	3,059	2,078	10,086	226,334	60	0.03
Jun. 1977	67,230	28,932	11,122	77,636	45,009	48,098	0	2,572	1,007	1,291	41,495	324,392	41,776	64	113,535	142,162	5,277	0	5,873	3,313	12,143	324,143	248	0.08
Jul. 1977	66,879	39,423	22,326	69,231	58,737	45,877	0	2,658	1,040	1,333	43,720	351,225	32,947	-31	111,363	178,436	6,274	0	4,422	3,555	13,722	350,687	539	0.15
Aug. 1977	56,014	29,939	10,607	75,178	48,188	47,610	0	2,658	1,040	1,326	44,381	316,939	25,820	-48	117,523	148,789	5,286	0	4,039	3,826	11,247	316,481	458	0.14
Sep. 1977	68,453	20,632	1,459	43,116	32,095	29,062	0	2,572	1,007	1,280	43,345	243,021	5,491	-22	114,775	102,519	4,502	0	3,428	4,042	8,113	242,847	173	0.07
Oct. 1977	47,673	20,099	739	25,596	5,596	20,029	0	2,658	1,040	1,324	44,806	169,560	24,439	14	113,925	18,893	3,436	0	713	2,048	6,179	169,647	-87	-0.05
Nov. 1977	43,051	22,547	1,854	4,640	21	14,075	0	2,572	1,007	1,282	42,990	134,038	27,547	59	99,947	73	2,423	0	0	24	3,842	133,914	124	0.09
Dec. 1977	40,475	20,079	695	3,504	0	17,222	0	2,658	1,040	1,325	43,896	130,895	19,899	80	104,776	0	2,360	0	0	0	3,633	130,748	147	0.11
Jan. 1978	32,991	22,061	1,712	3,156	0	14,235	0	2,658	1,040	1,325	43,233	122,412	18,051	112	98,043	0	2,462	0	0	0	3,505	122,172	240	0.20
Feb. 1978	30,423	19,058	1,191	2,029	0	14,683	0	2,400	940	1,197	38,479	110,400	13,903	111	90,034	0	2,444	0	0	0	3,706	110,196	204	0.18
Mar. 1978	31,622	21,793	1,165	1,524	3	16,566	0	2,658	1,040	1,326	41,950	119,646	13,527	124	96,257	9	2,835	0	0	2	6,528	119,282	364	0.30
Apr. 1978	15,270	26,608	9,671	22,080	2,987	19,069	0	2,572	1,007	1,283	40,111	140,657	26,529	129	90,593	10,018	3,605	0	754	1,103	7,894	140,626	30	0.02
May 1978	2,738	40,239	34,646	38,120	6,343	44,536	0	2,658	1,040	1,324	41,361	213,005	77,382	151	98,328	20,963	4,289	0	908	440	10,610	213,071	-66	-0.03



Table C-1. Simulated Monthly Groundwater Budgets (ac-ft)

Month/Year	Inflows												Outflows										Mass Balance	
	Groundwater Flow In from Storage	Stream Loss to Aquifer	Precipitation Recharge	Surface Water Irrigation Return Flow Recharge	Groundwater Irrigation Return Flow Recharge	Canal Seepage Recharge	Augmentation Recharge Ponds	Reservoir Seepage Recharge	Alluvial Underflow In	Net Bedrock Flux	Net Lateral Boundary Flow	Total In	Groundwater Flow Out to Storage	Alluvial Underflow out below Julesburg	Stream Gain from Aquifer	Agricultural Irrigation Pumping	M&I Pumping	Augmentation Pumping	Alfalfa ET	Subirrigated Meadow ET	Phreatophyte ET	Total Out	In Minus Out	% Error
Jun. 1978	28,390	31,892	14,662	89,734	24,084	68,413	0	2,572	1,007	1,281	40,498	302,531	94,122	76	108,372	76,970	5,406	0	2,651	1,879	13,146	302,623	-91	-0.03
Jul. 1978	83,341	24,917	7,246	113,276	53,996	67,418	0	2,658	1,040	1,323	43,111	398,327	64,109	-39	136,636	169,980	6,482	0	4,435	3,112	13,592	398,307	20	0.00
Aug. 1978	55,174	27,925	8,354	98,827	42,583	57,268	0	2,658	1,040	1,324	44,561	339,714	48,036	-96	136,368	132,809	5,536	0	3,367	2,210	11,372	339,602	112	0.03
Sep. 1978	79,934	18,420	375	47,903	36,079	32,331	0	2,572	1,007	1,282	44,034	263,936	6,257	-121	124,313	114,650	4,656	0	3,101	2,673	8,152	263,683	254	0.10
Oct. 1978	37,827	25,071	10,481	23,650	3,651	22,250	0	2,658	1,040	1,325	45,653	173,607	33,116	-41	117,306	11,892	3,531	0	396	895	6,458	173,551	56	0.03
Nov. 1978	48,775	20,852	1,089	2,715	1	16,289	0	2,572	1,007	1,282	43,772	138,354	25,275	12	106,726	3	2,425	0	0	1	3,931	138,372	-18	-0.01
Dec. 1978	38,491	22,266	2,611	3,454	0	15,957	0	2,658	1,040	1,325	44,654	132,455	21,059	54	105,113	0	2,369	0	0	0	3,804	132,398	57	0.04
Jan. 1979	34,723	22,207	1,253	4,711	0	14,330	0	2,658	1,040	1,273	43,935	126,130	19,594	97	100,257	0	2,472	0	0	0	3,675	126,094	36	0.03
Feb. 1979	29,335	20,289	555	3,075	0	10,854	0	2,400	940	1,150	39,062	107,661	12,735	112	88,360	0	2,498	0	0	0	3,966	107,670	-10	-0.01
Mar. 1979	29,454	24,228	7,786	1,552	0	20,442	562	2,658	1,040	1,273	42,532	131,527	20,324	117	101,223	0	2,937	0	0	0	6,832	131,433	95	0.07
Apr. 1979	15,370	28,235	11,800	9,744	219	29,053	3,754	2,572	1,007	1,231	40,643	143,627	34,657	122	96,041	788	3,659	0	66	105	8,314	143,751	-124	-0.09
May 1979	4,664	45,885	28,489	36,489	3,886	39,425	2,026	2,658	1,040	1,271	41,776	207,608	90,198	222	87,392	12,209	4,279	0	543	446	12,712	208,001	-393	-0.19
Jun. 1979	14,096	60,816	24,548	60,458	16,102	46,339	1,341	2,572	1,007	1,228	40,513	269,021	106,831	358	83,196	51,028	5,396	0	1,921	1,429	19,099	269,257	-236	-0.09
Jul. 1979	81,187	22,223	10,793	121,888	39,376	76,454	464	2,658	1,040	1,270	42,701	400,054	82,700	121	161,142	128,379	6,548	0	3,752	2,641	14,856	400,139	-85	-0.02
Aug. 1979	17,263	37,210	30,089	76,076	23,217	52,866	532	2,658	1,040	1,268	43,937	286,156	59,434	124	128,958	75,525	5,405	0	1,753	1,306	13,874	286,378	-222	-0.08
Sep. 1979	84,571	20,033	5,215	47,115	37,705	37,144	644	2,572	1,007	1,228	43,355	280,590	7,872	34	131,945	121,126	4,647	0	2,770	2,684	9,246	280,325	264	0.09
Oct. 1979	45,830	22,409	7,092	24,799	6,581	26,615	993	2,658	1,040	1,267	45,010	184,297	20,856	76	128,475	21,760	3,531	0	1,029	1,485	6,941	184,153	143	0.08
Nov. 1979	40,712	25,009	5,813	6,471	1	14,524	404	2,572	1,007	1,222	43,269	141,005	27,397	145	106,456	3	2,461	0	0	0	4,467	140,928	77	0.05
Dec. 1979	38,678	25,704	3,021	4,525	0	11,311	381	2,658	1,040	1,263	44,224	132,806	22,966	205	102,656	0	2,381	0	0	0	4,500	132,708	98	0.07
Jan. 1980	34,172	25,207	3,200	4,100	0	8,634	1,365	2,658	1,040	1,264	43,605	125,245	19,055	234	98,822	0	2,509	0	0	0	4,354	124,974	272	0.22
Feb. 1980	29,970	23,360	1,728	3,991	0	9,996	813	2,486	973	1,183	40,212	114,712	16,748	234	89,969	0	2,600	0	0	0	4,880	114,431	280	0.24
Mar. 1980	28,352	26,057	5,033	2,312	0	15,138	901	2,658	1,040	1,264	42,289	125,043	17,000	253	96,297	0	2,947	0	0	0	8,321	124,818	226	0.18
Apr. 1980	12,968	40,793	14,124	8,720	9	12,504	1,994	2,572	1,007	1,223	40,411	136,327	42,318	314	78,903	23	3,629	0	0	4	11,383	136,573	-246	-0.18
May 1980	3,725	88,847	22,677	26,473	1,426	29,438	2,531	2,658	1,040	1,263	41,361	221,439	123,928	581	69,672	4,163	4,228	0	91	215	19,222	222,100	-661	-0.30
Jun. 1980	50,420	27,898	5,435	97,572	28,852	83,243	1,435	2,572	1,007	1,222	40,077	339,733	96,530	393	118,305	93,425	5,480	0	3,129	2,703	19,929	339,894	-161	-0.05
Jul. 1980	84,851	25,392	15,150	115,912	42,233	82,431	496	2,658	1,040	1,262	42,397	413,822	73,555	140	171,060	138,727	6,549	0	4,272	3,081	16,498	413,883	-61	-0.01
Aug. 1980	69,800	23,132	9,060	100,928	40,132	63,641	626	2,658	1,040	1,262	43,653	355,931	41,538	51	158,440	130,394	5,532	0	4,221	2,882	12,912	355,971	-39	-0.01
Sep. 1980	72,411	21,733	5,904	49,586	31,245	41,722	601	2,572	1,007	1,222	43,121	271,125	7,714	41	139,781	103,680	4,603	0	2,942	2,818	9,312	270,890	235	0.09
Oct. 1980	55,985	18,349	1,754	28,456	6,094	26,918	384	2,658	1,040	1,258	44,849	187,745	19,006	91	134,996	20,523	3,524	0	949	1,462	6,982	187,534	211	0.11
Nov. 1980	49,115	20,755	1,756	7,671	11	19,232	530	2,572	1,007	1,215	43,128	146,993	26,712	162	113,231	40	2,462	0	0	8	4,383	146,999	-6	0.00
Dec. 1980	48,345	20,160	252	5,238	0	16,286	210	2,658	1,040	1,257	44,122	139,568	19,956	207	112,616	0	2,402	0	0	0	4,235	139,416	152	0.11



Table C-1. Simulated Monthly Groundwater Budgets (ac-ft)

Month/Year	Inflows												Outflows										Mass Balance	
	Groundwater Flow In from Storage	Stream Loss to Aquifer	Precipitation Recharge	Surface Water Irrigation Return Flow Recharge	Groundwater Irrigation Return Flow Recharge	Canal Seepage Recharge	Augmentation Recharge Ponds	Reservoir Seepage Recharge	Alluvial Underflow In	Net Bedrock Flux	Net Lateral Boundary Flow	Total In	Groundwater Flow Out to Storage	Alluvial Underflow out below Julesburg	Stream Gain from Aquifer	Agricultural Irrigation Pumping	M&I Pumping	Augmentation Pumping	Alfalfa ET	Subirrigated Meadow ET	Phreatophyte ET	Total Out	In Minus Out	% Error
Jan. 1981	37,909	21,162	788	6,653	0	16,986	3,323	2,658	1,040	1,257	43,526	135,301	19,241	239	109,142	0	2,528	0	0	0	4,062	135,213	88	0.07
Feb. 1981	35,524	17,777	812	6,988	0	17,961	4,279	2,400	940	1,136	38,753	126,570	17,631	210	102,151	0	2,320	0	0	0	4,147	126,460	111	0.09
Mar. 1981	26,242	25,440	9,255	7,565	6	18,066	7,000	2,658	1,040	1,256	42,281	140,808	24,530	225	106,007	16	2,518	0	0	1	7,453	140,750	57	0.04
Apr. 1981	26,882	25,364	10,747	22,990	7,193	21,799	2,006	2,572	1,007	1,215	40,443	162,218	18,957	213	103,665	23,932	3,247	0	1,705	1,909	8,611	162,240	-22	-0.01
May 1981	4,960	37,625	34,180	48,301	6,486	33,633	5,234	2,658	1,040	1,253	41,624	216,994	66,346	256	111,391	22,042	3,819	0	1,246	723	11,322	217,145	-150	-0.07
Jun. 1981	56,317	27,202	10,207	64,918	33,782	46,244	3,897	2,572	1,007	1,213	40,501	287,858	35,975	229	112,774	112,599	4,460	0	5,344	3,245	13,190	287,816	42	0.01
Jul. 1981	46,609	30,374	20,742	93,497	34,597	57,899	1,369	2,658	1,040	1,252	42,559	332,598	62,752	139	131,251	113,577	5,661	0	2,954	1,913	14,210	332,457	141	0.04
Aug. 1981	49,786	26,027	10,962	81,412	37,034	52,774	1,351	2,658	1,040	1,253	43,472	307,768	31,432	70	133,298	120,003	5,113	0	3,555	2,651	11,568	307,690	78	0.03
Sep. 1981	66,247	20,022	3,190	52,357	29,807	36,061	1,672	2,572	1,007	1,213	42,757	256,904	14,196	83	126,205	98,393	4,270	0	2,283	2,424	8,509	256,365	539	0.21
Oct. 1981	40,883	23,232	5,973	27,188	5,011	25,733	1,024	2,658	1,040	1,254	44,389	178,385	25,707	121	122,788	17,234	3,381	0	927	1,317	6,683	178,157	227	0.13
Nov. 1981	49,074	19,790	853	4,297	159	19,544	554	2,572	1,007	1,215	42,666	141,731	24,838	162	109,613	552	2,474	0	0	85	4,069	141,792	-61	-0.04
Dec. 1981	42,129	21,607	1,310	2,574	0	15,358	838	2,658	1,040	1,249	43,575	132,339	20,398	197	105,177	0	2,407	0	0	0	4,000	132,179	161	0.12
Jan. 1982	36,119	21,237	823	4,704	0	13,986	403	2,658	1,040	1,248	42,953	125,171	17,063	220	101,216	0	2,490	0	0	0	3,852	124,842	329	0.26
Feb. 1982	31,626	18,277	419	4,172	0	15,576	412	2,400	940	1,128	38,247	113,197	12,870	197	93,495	0	2,310	0	0	0	4,039	112,911	286	0.25
Mar. 1982	34,596	20,273	1,701	3,909	0	15,251	898	2,658	1,040	1,249	41,711	123,285	11,268	207	101,954	0	2,558	0	0	0	6,992	122,980	306	0.25
Apr. 1982	23,536	19,540	2,651	26,083	1,035	18,518	644	2,572	1,007	1,209	39,905	136,701	17,073	193	103,889	3,533	3,338	0	150	397	8,043	136,617	83	0.06
May 1982	5,304	35,549	27,566	54,836	6,752	36,747	413	2,658	1,040	1,247	41,086	213,199	68,286	214	106,275	22,839	3,885	0	747	429	10,612	213,288	-89	-0.04
Jun. 1982	13,964	32,888	26,698	59,482	12,557	50,326	951	2,572	1,007	1,206	40,074	241,724	68,584	229	110,740	42,279	4,446	0	1,607	842	13,180	241,907	-184	-0.08
Jul. 1982	38,053	30,422	19,897	110,983	29,689	71,280	869	2,658	1,040	1,245	42,385	348,522	96,446	230	127,985	99,200	5,681	0	2,432	1,475	15,127	348,575	-53	-0.02
Aug. 1982	47,694	24,868	11,792	99,268	35,366	70,806	1,062	2,658	1,040	1,245	43,604	339,403	50,509	145	148,546	117,610	5,135	0	3,345	2,145	11,850	339,284	119	0.04
Sep. 1982	27,906	26,876	15,829	47,646	20,084	45,144	2,548	2,572	1,007	1,204	43,159	233,976	21,899	118	128,262	67,601	4,229	0	1,266	1,275	9,282	233,931	45	0.02
Oct. 1982	46,211	21,978	6,370	16,064	3,599	34,200	3,920	2,658	1,040	1,245	44,908	182,193	27,409	145	130,777	12,340	3,339	0	468	865	6,973	182,315	-122	-0.07
Nov. 1982	46,101	19,847	2,410	3,760	0	19,341	6,804	2,572	1,007	1,206	43,208	146,255	24,372	163	115,071	0	2,462	0	0	0	4,234	146,302	-46	-0.03
Dec. 1982	40,045	26,865	2,858	5,170	0	8,983	2,485	2,658	1,040	1,246	44,142	135,493	24,946	257	103,202	0	2,420	0	0	0	4,549	135,375	118	0.09
Jan. 1983	37,856	23,700	199	7,562	0	7,211	1,917	2,658	1,040	1,247	43,512	126,902	18,174	287	101,450	0	2,489	0	0	0	4,395	126,795	106	0.08
Feb. 1983	32,857	19,974	404	6,134	0	8,189	5,709	2,400	940	1,127	38,734	116,469	17,059	260	92,175	0	2,307	0	0	0	4,602	116,402	67	0.06
Mar. 1983	19,663	30,760	11,271	5,466	0	17,862	7,047	2,658	1,040	1,246	42,209	139,222	34,435	303	93,440	0	2,513	0	0	0	8,604	139,294	-72	-0.05
Apr. 1983	9,501	47,471	21,141	6,448	4	12,778	7,665	2,572	1,007	1,205	40,380	150,173	56,783	383	78,200	10	3,108	0	0	1	12,140	150,624	-451	-0.30
May 1983	4,144	69,664	30,102	23,143	85	16,959	9,516	2,658	1,040	1,235	41,428	199,975	101,302	531	76,399	296	3,833	0	9	13	18,121	200,504	-529	-0.26
Jun. 1983	5,195	80,726	27,483	46,645	5,391	30,476	6,011	2,572	1,007	1,194	39,963	246,661	118,323	663	81,526	17,379	4,340	0	422	569	24,088	247,310	-648	-0.26
Jul. 1983	61,431	31,901	15,135	112,861	36,092	80,883	2,426	2,658	1,040	1,233	41,876	387,535	94,910	364	138,077	119,867	5,656	0	3,280	2,167	23,278	387,599	-65	-0.02





Table C-1. Simulated Monthly Groundwater Budgets (ac-ft)

Month/Year	Inflows												Outflows										Mass Balance	
	Groundwater Flow In from Storage	Stream Loss to Aquifer	Precipitation Recharge	Surface Water Irrigation Return Flow Recharge	Groundwater Irrigation Return Flow Recharge	Canal Seepage Recharge	Augmentation Recharge Ponds	Reservoir Seepage Recharge	Alluvial Underflow In	Net Bedrock Flux	Net Lateral Boundary Flow	Total In	Groundwater Flow Out to Storage	Alluvial Underflow out below Julesburg	Stream Gain from Aquifer	Agricultural Irrigation Pumping	M&I Pumping	Augmentation Pumping	Alfalfa ET	Subirrigated Meadow ET	Phreatophyte ET	Total Out	In Minus Out	% Error
Aug. 1983	66,020	26,174	15,351	98,344	37,149	76,947	2,934	2,658	1,040	1,232	43,084	370,932	54,669	197	166,025	122,511	5,158	0	4,058	2,415	15,933	370,966	-34	-0.01
Sep. 1983	74,217	17,895	1,959	52,049	25,059	42,722	1,865	2,572	1,007	1,194	42,814	263,352	10,346	162	149,120	83,654	4,312	0	2,421	2,330	10,961	263,306	47	0.02
Oct. 1983	61,848	19,216	2,265	20,207	3,037	19,686	5,944	2,658	1,040	1,234	44,664	181,801	21,002	218	137,225	10,539	3,429	0	42	863	8,188	181,507	294	0.16
Nov. 1983	48,504	22,581	6,500	5,043	2	11,275	7,178	2,572	1,007	1,195	43,027	148,882	22,577	252	118,332	7	2,495	0	0	0	5,034	148,697	185	0.12
Dec. 1983	51,371	22,219	1,853	933	0	6,695	3,541	2,658	1,040	1,235	43,971	135,517	15,624	289	111,912	0	2,450	0	0	0	4,941	135,217	300	0.22
Jan. 1984	47,377	22,266	1,186	636	0	2,533	2,655	2,658	1,040	1,236	43,351	124,939	11,522	307	105,548	0	2,524	0	0	0	4,712	124,614	325	0.26
Feb. 1984	36,319	21,881	2,612	1,411	0	6,027	2,796	2,486	973	1,157	39,968	115,629	11,110	292	96,061	0	2,422	0	0	0	5,208	115,093	536	0.46
Mar. 1984	35,698	22,709	5,571	3,248	0	18,096	3,359	2,658	1,040	1,237	42,031	135,647	14,990	281	109,441	0	2,553	0	0	0	8,326	135,592	55	0.04
Apr. 1984	14,108	41,098	21,005	3,191	5	17,271	4,980	2,572	1,007	1,196	40,157	146,590	46,008	349	85,606	13	3,161	0	0	1	11,693	146,830	-241	-0.16
May 1984	6,927	47,154	11,384	30,983	4,753	35,526	7,966	2,658	1,040	1,235	41,223	190,849	68,848	439	84,899	15,529	4,053	0	325	527	16,815	191,435	-587	-0.31
Jun. 1984	37,348	30,507	14,577	74,936	23,754	61,475	3,558	2,572	1,007	1,195	40,118	291,048	67,742	339	114,458	80,898	4,504	0	2,952	1,857	18,360	291,111	-62	-0.02
Jul. 1984	76,369	22,744	12,593	126,191	41,893	95,147	1,105	2,658	1,040	1,235	42,511	423,484	90,187	126	166,716	138,887	5,710	0	3,670	2,074	16,169	423,539	-55	-0.01
Aug. 1984	32,236	36,208	16,969	98,264	32,022	74,681	2,769	2,658	1,040	1,234	43,820	341,902	69,334	147	138,522	108,177	5,089	0	3,350	1,834	15,719	342,171	-269	-0.08
Sep. 1984	53,617	22,823	3,710	50,454	22,478	36,283	2,436	2,572	1,007	1,195	43,404	239,979	10,443	175	132,519	76,821	4,294	0	2,323	1,674	11,385	239,634	345	0.14
Oct. 1984	37,747	37,855	22,332	9,736	1,108	14,342	5,396	2,658	1,040	1,234	45,162	178,610	45,649	289	115,771	3,740	3,301	0	29	122	9,780	178,682	-72	-0.04
Nov. 1984	54,415	21,003	430	3,814	0	9,748	6,246	2,572	1,007	1,196	43,445	143,875	18,947	291	116,345	0	2,414	0	0	0	5,608	143,605	271	0.19
Dec. 1984	56,205	19,527	1,402	4,650	0	15,017	2,897	2,658	1,040	1,236	44,349	148,983	17,291	287	123,954	0	2,371	0	0	0	4,899	148,803	180	0.12
Jan. 1985	44,856	21,568	2,222	5,026	0	10,848	1,727	2,658	1,040	1,215	43,726	134,886	13,623	298	113,648	0	2,436	0	0	0	4,633	134,639	247	0.18
Feb. 1985	35,678	19,733	1,100	6,512	0	10,480	1,525	2,400	940	1,098	38,911	118,378	12,323	273	98,170	0	2,239	0	0	0	4,930	117,936	442	0.37
Mar. 1985	46,938	19,384	1,497	2,349	2	24,651	6,154	2,658	1,040	1,216	42,358	148,247	15,288	244	122,342	5	2,508	0	0	1	7,802	148,190	57	0.04
Apr. 1985	10,963	27,937	15,478	25,351	2,151	30,635	7,131	2,572	1,007	1,171	40,529	164,924	36,453	245	107,145	7,630	3,306	0	319	374	9,576	165,049	-124	-0.08
May 1985	19,275	36,680	14,652	43,463	14,567	38,322	7,527	2,658	1,040	1,207	41,825	221,216	46,709	318	100,790	51,176	4,015	0	2,815	1,819	13,693	221,335	-119	-0.05
Jun. 1985	31,888	27,299	14,213	100,398	23,933	70,597	3,725	2,572	1,007	1,168	41,064	317,862	84,363	274	126,276	83,040	4,711	0	2,612	1,305	15,368	317,950	-87	-0.03
Jul. 1985	34,836	32,438	27,893	104,001	28,332	71,156	1,340	2,658	1,040	1,205	43,563	348,461	70,524	171	154,655	97,405	5,837	0	2,739	1,563	15,666	348,562	-101	-0.03
Aug. 1985	70,943	19,533	2,988	105,373	41,021	70,615	2,483	2,658	1,040	1,202	44,554	362,411	41,677	69	161,208	136,323	5,230	0	3,652	2,098	12,032	362,289	121	0.03
Sep. 1985	30,307	28,432	15,142	44,171	10,329	34,426	4,395	2,572	1,007	1,163	43,798	215,742	32,364	158	130,477	36,963	4,223	0	859	864	9,923	215,831	-89	-0.04
Oct. 1985	47,669	23,755	5,549	11,811	1,472	22,615	9,386	2,658	1,040	1,202	45,366	172,523	31,284	207	124,481	5,152	3,328	0	0	319	7,820	172,592	-68	-0.04
Nov. 1985	44,013	23,053	4,603	3,149	0	15,038	6,352	2,572	1,007	1,164	43,534	144,484	23,591	233	113,273	0	2,479	0	0	0	4,830	144,407	77	0.05
Dec. 1985	43,230	24,138	2,632	5,409	0	6,667	3,044	2,658	1,040	1,202	44,462	134,483	19,231	279	107,585	0	2,435	0	0	0	4,821	134,351	132	0.10
Jan. 1986	45,564	22,015	463	2,480	0	6,061	2,244	2,658	1,040	1,201	43,826	127,551	13,154	288	106,785	0	2,526	0	0	0	4,501	127,253	298	0.23
Feb. 1986	38,366	18,586	1,505	3,309	0	13,619	1,645	2,400	940	1,085	39,003	120,460	12,279	238	100,859	0	2,350	0	0	0	4,531	120,258	202	0.17



Table C-1. Simulated Monthly Groundwater Budgets (ac-ft)

Month/Year	Inflows												Outflows										Mass Balance	
	Groundwater Flow In from Storage	Stream Loss to Aquifer	Precipitation Recharge	Surface Water Irrigation Return Flow Recharge	Groundwater Irrigation Return Flow Recharge	Canal Seepage Recharge	Augmentation Recharge Ponds	Reservoir Seepage Recharge	Alluvial Underflow In	Net Bedrock Flux	Net Lateral Boundary Flow	Total In	Groundwater Flow Out to Storage	Alluvial Underflow out below Julesburg	Stream Gain from Aquifer	Agricultural Irrigation Pumping	M&I Pumping	Augmentation Pumping	Alfalfa ET	Subirrigated Meadow ET	Phreatophyte ET	Total Out	In Minus Out	% Error
Mar. 1986	37,834	20,078	1,509	5,868	20	22,642	9,236	2,658	1,040	1,202	42,511	144,597	17,004	239	116,773	63	2,709	0	0	2	7,618	144,408	189	0.13
Apr. 1986	15,245	36,818	17,212	8,521	1,480	16,539	6,997	2,572	1,007	1,162	40,677	148,231	38,753	302	89,958	5,098	3,301	0	73	130	10,648	148,263	-32	-0.02
May 1986	22,207	24,944	14,779	62,811	9,373	51,254	5,224	2,658	1,040	1,200	42,014	237,504	53,850	228	134,197	32,535	4,156	0	793	548	11,266	237,573	-68	-0.03
Jun. 1986	29,211	40,843	14,562	82,669	23,297	59,387	6,744	2,572	1,007	1,155	41,193	302,641	88,546	319	104,098	82,317	4,671	0	3,597	1,923	17,228	302,699	-59	-0.02
Jul. 1986	61,331	23,332	10,556	129,406	36,727	86,138	1,191	2,658	1,040	1,190	43,665	397,236	79,295	137	166,199	125,263	5,953	0	3,399	1,988	15,036	397,268	-32	-0.01
Aug. 1986	57,669	23,081	7,622	99,221	37,122	64,135	1,369	2,658	1,040	1,191	44,796	339,905	35,610	114	156,098	124,608	5,350	0	3,636	1,991	12,256	339,664	241	0.07
Sep. 1986	46,885	25,004	6,805	48,315	19,422	32,315	3,372	2,572	1,007	1,153	44,077	230,927	13,930	188	131,349	67,690	4,406	0	1,914	1,364	9,894	230,736	191	0.08
Oct. 1986	42,673	27,803	12,340	13,326	3,103	18,805	6,450	2,658	1,040	1,191	45,662	175,052	27,051	218	124,360	11,097	3,421	0	406	672	7,781	175,006	46	0.03
Nov. 1986	46,050	21,389	2,962	3,852	0	19,923	6,029	2,572	1,007	1,153	43,892	148,829	25,464	214	115,918	0	2,489	0	0	0	4,642	148,727	101	0.07
Dec. 1986	43,358	22,654	1,566	5,665	0	15,369	3,230	2,658	1,040	1,192	44,859	141,592	20,795	258	113,436	0	2,435	0	0	0	4,549	141,472	119	0.08
Jan. 1987	37,532	22,432	1,295	7,069	0	12,708	2,529	2,658	1,040	1,187	44,226	132,677	15,426	271	109,828	0	2,517	0	0	0	4,305	132,347	330	0.25
Feb. 1987	28,816	21,442	4,580	4,488	0	13,932	5,557	2,400	940	1,072	39,371	122,598	16,153	242	99,059	0	2,349	0	0	0	4,546	122,348	249	0.20
Mar. 1987	29,103	27,301	4,195	3,682	0	10,754	9,677	2,658	1,040	1,187	42,913	132,510	19,313	307	101,443	0	2,569	0	0	0	8,571	132,203	307	0.23
Apr. 1987	20,020	26,207	6,107	9,568	702	24,479	10,520	2,572	1,007	1,149	41,071	143,402	25,860	290	101,005	2,690	3,306	0	63	68	10,130	143,412	-10	-0.01
May 1987	3,517	57,005	39,588	43,731	4,475	38,232	5,629	2,658	1,040	1,184	42,355	239,414	108,072	421	94,524	15,974	4,094	0	586	276	15,976	239,923	-509	-0.21
Jun. 1987	39,741	31,833	18,261	67,369	24,906	56,901	4,518	2,572	1,007	1,146	41,305	289,558	54,573	349	120,442	87,135	4,735	0	4,178	1,354	16,895	289,660	-103	-0.04
Jul. 1987	90,093	23,296	11,129	98,185	44,415	64,424	923	2,658	1,040	1,184	43,362	380,709	45,399	185	156,779	150,710	6,265	0	4,904	1,646	14,802	380,691	18	0.00
Aug. 1987	34,925	28,666	14,371	89,655	28,197	54,732	1,427	2,658	1,040	1,184	44,057	300,912	40,223	180	139,853	97,796	5,320	0	3,414	1,139	12,936	300,861	51	0.02
Sep. 1987	50,989	22,219	5,539	38,360	17,097	30,942	3,773	2,572	1,007	1,146	43,178	216,822	7,294	185	130,673	61,186	4,361	0	2,296	982	9,613	216,590	231	0.11
Oct. 1987	43,563	21,553	5,324	19,073	3,551	27,927	7,595	2,658	1,040	1,185	44,678	178,146	21,539	176	131,256	13,157	3,500	0	595	633	7,167	178,022	124	0.07
Nov. 1987	41,295	21,843	4,889	3,740	0	22,917	8,814	2,572	1,007	1,147	42,942	151,167	25,162	202	118,986	6	2,483	0	0	0	4,351	151,190	-23	-0.02
Dec. 1987	40,429	24,368	3,082	1,815	0	12,638	3,754	2,658	1,040	1,186	43,940	134,911	19,485	252	108,175	0	2,448	0	0	0	4,417	134,778	133	0.10
Jan. 1988	44,388	25,349	2,061	1,510	0	2,283	789	2,658	1,040	1,187	43,398	124,663	17,505	299	99,705	0	2,515	0	0	0	4,432	124,456	207	0.17
Feb. 1988	32,305	23,122	1,389	3,370	0	6,912	1,128	2,486	973	1,111	40,093	112,890	12,768	291	91,986	0	2,447	0	0	0	4,970	112,461	428	0.38
Mar. 1988	32,943	23,218	4,597	2,320	0	19,597	7,095	2,658	1,040	1,188	42,250	136,906	17,667	277	108,291	0	2,575	0	0	0	7,930	136,740	166	0.12
Apr. 1988	21,235	22,082	5,195	14,570	152	27,934	10,630	2,572	1,007	1,150	40,460	146,987	25,168	238	108,558	603	3,305	0	18	17	9,012	146,918	68	0.05
May 1988	3,005	38,006	33,287	48,621	3,961	43,145	5,832	2,658	1,040	1,186	41,759	222,500	79,926	293	111,432	14,327	4,194	0	278	158	12,156	222,765	-265	-0.12
Jun. 1988	56,876	24,904	10,113	86,678	33,633	65,361	5,790	2,572	1,007	1,147	40,937	329,016	65,481	196	124,827	114,767	4,713	0	4,203	1,203	13,575	328,965	50	0.02
Jul. 1988	66,875	25,263	12,381	97,586	41,031	62,330	1,257	2,658	1,040	1,186	43,323	354,931	49,092	194	140,216	139,665	6,096	0	3,968	1,291	14,331	354,853	78	0.02
Aug. 1988	54,044	25,116	10,092	97,425	38,677	59,610	1,081	2,658	1,040	1,186	44,186	335,115	43,630	106	138,927	129,864	5,369	0	3,772	1,157	12,059	334,884	231	0.07
Sep. 1988	41,156	23,568	10,514	45,550	17,232	38,928	1,615	2,572	1,007	1,148	43,351	226,639	14,144	124	135,321	61,026	4,403	0	1,859	757	8,835	226,467	172	0.08



Table C-1. Simulated Monthly Groundwater Budgets (ac-ft)

Month/Year	Inflows												Outflows										Mass Balance	
	Groundwater Flow In from Storage	Stream Loss to Aquifer	Precipitation Recharge	Surface Water Irrigation Return Flow Recharge	Groundwater Irrigation Return Flow Recharge	Canal Seepage Recharge	Augmentation Recharge Ponds	Reservoir Seepage Recharge	Alluvial Underflow In	Net Bedrock Flux	Net Lateral Boundary Flow	Total In	Groundwater Flow Out to Storage	Alluvial Underflow out below Julesburg	Stream Gain from Aquifer	Agricultural Irrigation Pumping	M&I Pumping	Augmentation Pumping	Alfalfa ET	Subirrigated Meadow ET	Phreatophyte ET	Total Out	In Minus Out	% Error
Oct. 1988	56,582	19,073	441	21,957	8,171	27,644	905	2,658	1,040	1,187	44,938	184,596	11,934	142	129,586	29,899	3,581	0	1,705	941	6,678	184,465	130	0.07
Nov. 1988	48,159	20,912	845	3,948	67	18,302	1,916	2,572	1,007	1,150	43,203	142,079	24,252	166	110,508	249	2,567	0	0	12	4,185	141,939	141	0.10
Dec. 1988	39,843	25,689	2,614	2,278	0	11,917	4,511	2,658	1,040	1,188	44,200	135,939	24,854	236	103,905	0	2,482	0	0	0	4,339	135,817	122	0.09
Jan. 1989	35,974	24,583	3,063	2,902	0	10,124	2,943	2,658	1,040	1,188	43,632	128,106	18,166	261	102,670	0	2,562	0	0	0	4,167	127,826	280	0.22
Feb. 1989	30,521	20,926	1,889	2,087	0	10,801	3,965	2,400	940	1,074	38,915	113,518	13,517	240	92,619	0	2,372	0	0	0	4,440	113,188	330	0.29
Mar. 1989	36,454	20,552	1,517	1,314	0	18,957	8,520	2,658	1,040	1,189	42,481	134,681	15,715	236	108,570	0	2,620	0	0	0	7,403	134,543	139	0.10
Apr. 1989	22,750	22,234	6,157	23,575	2,892	22,940	3,459	2,572	1,007	1,151	40,681	149,417	18,674	211	108,087	10,424	3,315	0	162	111	8,409	149,394	23	0.02
May 1989	24,591	27,406	13,883	73,860	13,578	43,871	909	2,658	1,040	1,190	42,034	245,021	59,609	202	118,755	49,172	4,001	0	2,019	565	10,545	244,869	153	0.06
Jun. 1989	19,720	29,971	23,466	58,038	16,193	53,106	2,285	2,572	1,007	1,151	41,054	248,564	47,176	184	121,548	59,275	4,458	0	2,839	736	12,516	248,731	-167	-0.07
Jul. 1989	44,906	32,828	19,646	108,059	35,959	59,741	783	2,658	1,040	1,188	43,218	350,027	74,199	89	131,423	119,382	5,890	0	3,016	1,249	14,713	349,960	66	0.02
Aug. 1989	40,391	26,217	15,098	83,319	28,808	54,477	405	2,658	1,040	1,189	44,112	297,715	34,483	78	141,995	100,227	5,158	0	3,048	982	11,705	297,675	39	0.01
Sep. 1989	31,534	25,970	15,079	35,041	13,416	36,425	7,191	2,572	1,007	1,150	43,316	212,701	21,057	95	128,309	48,088	4,348	0	1,333	667	8,823	212,722	-21	-0.01
Oct. 1989	38,715	23,087	4,143	19,304	5,125	25,441	11,420	2,658	1,040	1,189	44,864	176,986	24,357	137	121,342	19,119	3,462	0	887	665	7,020	176,990	-4	0.00
Nov. 1989	50,769	18,632	386	2,562	58	19,501	2,269	2,572	1,007	1,152	43,125	142,031	19,591	145	115,389	210	2,520	0	0	6	4,142	142,003	28	0.02
Dec. 1989	41,854	22,379	1,544	2,368	0	13,947	527	2,658	1,040	1,191	44,101	131,608	17,162	195	107,537	0	2,433	0	0	0	4,122	131,449	160	0.12
Jan. 1990	34,658	23,585	2,927	3,006	0	13,716	4,807	2,658	1,040	1,191	43,523	131,110	19,284	226	104,978	0	2,544	0	0	0	3,997	131,029	82	0.06
Feb. 1990	29,390	20,857	946	2,387	0	10,980	5,752	2,400	940	1,076	38,817	113,546	14,985	218	91,369	0	2,399	0	0	0	4,329	113,299	247	0.22
Mar. 1990	19,306	30,197	11,243	2,545	0	17,653	14,142	2,658	1,040	1,190	42,412	142,386	33,309	266	98,074	0	2,654	0	0	0	8,142	142,444	-59	-0.04
Apr. 1990	15,172	25,828	6,745	12,562	431	21,365	8,512	2,572	1,007	1,152	40,696	136,041	24,380	254	97,338	1,484	3,215	0	5	8	9,540	136,223	-182	-0.13
May 1990	15,129	26,434	14,685	65,414	5,640	40,591	1,333	2,658	1,040	1,190	42,027	216,141	57,665	226	122,060	20,624	4,069	0	246	155	10,999	216,044	98	0.05
Jun. 1990	68,211	20,845	4,449	75,637	33,753	62,644	4,092	2,572	1,007	1,152	41,061	315,423	48,885	157	123,850	119,368	4,515	0	4,378	1,403	12,642	315,197	226	0.07
Jul. 1990	31,872	33,223	24,202	95,486	24,721	57,229	957	2,658	1,040	1,190	43,331	315,908	70,397	126	131,261	89,145	5,566	0	3,315	1,164	14,936	315,909	-2	0.00
Aug. 1990	33,187	28,443	16,805	94,944	26,747	51,642	1,394	2,658	1,040	1,189	44,190	302,239	44,758	89	141,949	94,237	4,973	0	2,847	1,024	12,366	302,241	-1	0.00
Sep. 1990	43,135	24,231	11,945	51,983	24,843	39,478	3,062	2,572	1,007	1,151	43,412	246,819	10,874	85	132,495	86,984	4,262	0	1,979	906	9,191	246,776	42	0.02
Oct. 1990	44,105	23,112	6,496	14,209	3,763	26,943	11,120	2,658	1,040	1,189	45,045	179,681	26,894	141	126,808	14,421	3,365	0	505	571	7,095	179,798	-117	-0.07
Nov. 1990	46,255	21,163	3,993	3,322	24	22,264	4,564	2,572	1,007	1,151	43,323	149,637	27,717	167	114,850	110	2,492	0	0	6	4,323	149,664	-27	-0.02
Dec. 1990	46,849	21,238	569	1,491	0	13,914	892	2,658	1,040	1,194	44,353	134,198	18,126	214	108,918	0	2,515	0	0	0	4,257	134,030	168	0.13
Jan. 1991	39,154	22,791	1,195	2,179	0	8,720	4,063	2,658	1,040	1,195	43,803	126,797	18,654	244	100,978	0	2,585	0	0	0	4,171	126,632	164	0.13
Feb. 1991	35,240	18,123	179	903	0	13,727	7,347	2,400	940	1,080	39,076	119,015	14,512	217	97,484	0	2,342	0	0	0	4,324	118,879	135	0.11
Mar. 1991	31,240	21,163	2,403	3,308	0	18,532	14,990	2,658	1,040	1,196	42,670	139,201	20,213	235	108,695	0	2,610	0	0	0	7,433	139,185	16	0.01
Apr. 1991	17,785	23,312	7,755	29,310	2,156	21,903	3,428	2,572	1,007	1,157	40,838	151,224	24,982	206	105,150	8,383	3,284	0	260	251	8,594	151,109	115	0.08



Table C-1. Simulated Monthly Groundwater Budgets (ac-ft)

Month/Year	Inflows												Outflows										Mass Balance	
	Groundwater Flow In from Storage	Stream Loss to Aquifer	Precipitation Recharge	Surface Water Irrigation Return Flow Recharge	Groundwater Irrigation Return Flow Recharge	Canal Seepage Recharge	Augmentation Recharge Ponds	Reservoir Seepage Recharge	Alluvial Underflow In	Net Bedrock Flux	Net Lateral Boundary Flow	Total In	Groundwater Flow Out to Storage	Alluvial Underflow out below Julesburg	Stream Gain from Aquifer	Agricultural Irrigation Pumping	M&I Pumping	Augmentation Pumping	Alfalfa ET	Subirrigated Meadow ET	Phreatophyte ET	Total Out	In Minus Out	% Error
May 1991	20,365	28,351	18,360	60,031	11,538	40,381	565	2,658	1,040	1,195	42,093	226,578	50,831	219	114,985	43,181	4,133	0	1,736	604	10,800	226,489	88	0.04
Jun. 1991	32,166	34,688	19,842	60,866	23,709	59,679	8,299	2,572	1,007	1,156	41,039	285,023	67,633	229	106,947	86,551	4,603	0	3,773	1,018	14,341	285,096	-73	-0.03
Jul. 1991	37,498	34,058	23,667	104,038	30,719	64,073	619	2,658	1,040	1,192	43,248	342,810	73,069	43	140,267	105,073	5,869	0	2,640	1,019	14,844	342,823	-13	0.00
Aug. 1991	38,998	27,160	14,264	96,579	30,879	60,097	1,238	2,658	1,040	1,192	44,163	318,267	45,672	13	144,411	106,650	5,254	0	2,883	966	12,317	318,165	102	0.03
Sep. 1991	40,501	23,047	8,261	45,706	18,018	35,689	7,310	2,572	1,007	1,154	43,411	226,678	14,386	84	131,450	64,338	4,418	0	1,859	892	9,297	226,725	-47	-0.02
Oct. 1991	48,389	21,584	4,929	14,464	5,116	20,470	13,479	2,658	1,040	1,194	45,071	178,394	21,446	132	125,050	19,538	3,488	0	1,018	579	7,179	178,429	-35	-0.02
Nov. 1991	46,023	21,694	6,710	3,576	0	24,350	1,289	2,572	1,007	1,155	43,408	151,784	27,073	134	117,600	0	2,640	0	0	0	4,272	151,719	65	0.04
Dec. 1991	43,101	19,553	393	3,906	0	20,882	5,638	2,658	1,040	1,194	44,470	142,837	19,998	169	115,963	0	2,514	0	0	0	4,107	142,751	86	0.06
Jan. 1992	35,514	25,142	3,374	4,297	0	9,800	4,477	2,658	1,040	1,195	43,931	131,428	22,586	232	101,693	0	2,587	0	0	0	4,214	131,312	116	0.09
Feb. 1992	32,902	20,544	365	2,902	0	10,754	7,085	2,486	973	1,119	40,607	119,738	15,857	232	96,221	0	2,490	0	0	0	4,663	119,463	275	0.23
Mar. 1992	20,028	30,930	11,597	1,308	0	16,668	13,492	2,658	1,040	1,195	42,857	141,773	33,275	277	97,154	0	2,601	0	0	0	8,523	141,830	-57	-0.04
Apr. 1992	24,442	21,661	5,124	15,556	4,327	25,097	11,465	2,572	1,007	1,156	41,089	153,496	15,634	225	107,012	16,584	3,333	0	896	560	9,220	153,464	31	0.02
May 1992	48,800	21,199	6,534	72,166	19,553	47,917	406	2,658	1,040	1,195	42,498	263,966	47,244	195	126,437	71,750	4,101	0	2,638	797	10,685	263,846	119	0.05
Jun. 1992	27,316	28,888	25,993	61,342	17,632	52,016	1,757	2,572	1,007	1,156	41,585	261,264	47,664	212	125,904	66,543	4,487	0	2,929	866	12,818	261,423	-159	-0.06
Jul. 1992	44,238	27,859	17,751	93,134	28,942	57,262	1,116	2,658	1,040	1,193	43,776	318,971	51,693	209	140,434	103,182	5,725	0	2,757	1,023	13,856	318,878	93	0.03
Aug. 1992	18,313	32,616	22,971	88,653	21,782	51,272	5,069	2,658	1,040	1,193	44,537	290,104	60,386	180	133,811	75,868	5,106	0	1,607	670	12,581	290,209	-106	-0.04
Sep. 1992	52,871	18,083	1,610	46,290	18,029	33,510	6,773	2,572	1,007	1,155	43,616	225,516	10,743	126	132,991	64,523	4,366	0	2,541	1,153	9,019	225,461	55	0.02
Oct. 1992	39,097	20,856	4,018	23,649	3,891	23,367	13,084	2,658	1,040	1,197	45,132	177,990	22,842	180	128,545	14,776	3,459	0	521	606	7,012	177,940	50	0.03
Nov. 1992	39,729	20,718	4,340	4,572	0	21,666	9,577	2,572	1,007	1,160	43,404	148,744	26,642	184	115,140	0	2,478	0	0	0	4,261	148,706	39	0.03
Dec. 1992	42,955	23,250	1,852	2,872	0	10,288	3,588	2,658	1,040	1,199	44,457	134,160	22,637	249	104,282	0	2,482	0	0	0	4,386	134,036	124	0.09
Jan. 1993	40,282	22,066	1,146	1,952	0	7,697	3,484	2,658	1,040	1,200	43,901	125,426	17,457	269	100,627	0	2,697	0	0	0	4,214	125,264	162	0.13
Feb. 1993	30,111	19,990	3,308	2,354	0	11,040	3,900	2,400	940	1,084	39,179	114,306	14,648	238	92,078	0	2,582	0	0	0	4,435	113,981	325	0.28
Mar. 1993	33,108	22,036	2,491	1,111	0	14,061	7,770	2,658	1,040	1,200	42,796	128,271	16,489	268	100,753	0	2,594	0	0	0	7,820	127,924	347	0.27
Apr. 1993	13,529	28,806	14,171	7,842	17	21,087	15,017	2,572	1,007	1,161	40,992	146,201	31,647	254	101,585	55	3,405	0	4	4	9,255	146,211	-10	-0.01
May 1993	22,946	23,896	11,871	63,434	8,638	45,804	480	2,658	1,040	1,199	42,319	224,286	54,517	224	122,159	31,734	4,216	0	438	195	10,708	224,190	95	0.04
Jun. 1993	26,049	29,206	19,731	70,102	18,804	61,820	5,002	2,572	1,007	1,159	41,334	276,785	65,430	205	121,339	69,304	4,571	0	2,324	664	13,038	276,876	-91	-0.03
Jul. 1993	52,671	26,633	11,833	114,281	33,455	69,207	564	2,658	1,040	1,198	43,688	357,226	69,249	118	143,542	119,612	5,891	0	3,324	1,340	14,115	357,189	37	0.01
Aug. 1993	41,788	24,975	11,993	100,863	28,079	53,535	992	2,658	1,040	1,197	44,790	311,910	48,237	108	146,097	96,998	5,315	0	2,325	965	11,843	311,888	22	0.01
Sep. 1993	29,809	28,669	14,087	41,428	13,226	29,359	10,012	2,572	1,007	1,159	44,110	215,438	27,638	162	123,903	47,925	4,429	0	1,134	589	9,679	215,459	-22	-0.01
Oct. 1993	33,003	28,517	14,570	12,797	1,818	18,427	11,597	2,658	1,040	1,197	45,785	171,410	31,248	216	121,511	6,961	3,728	0	121	193	7,557	171,534	-124	-0.07
Nov. 1993	41,874	20,859	4,182	4,253	0	27,811	5,992	2,572	1,007	1,159	44,028	153,736	30,792	200	115,602	0	2,683	0	0	0	4,446	153,724	12	0.01



Table C-1. Simulated Monthly Groundwater Budgets (ac-ft)

Month/Year	Inflows												Outflows										Mass Balance	
	Groundwater Flow In from Storage	Stream Loss to Aquifer	Precipitation Recharge	Surface Water Irrigation Return Flow Recharge	Groundwater Irrigation Return Flow Recharge	Canal Seepage Recharge	Augmentation Recharge Ponds	Reservoir Seepage Recharge	Alluvial Underflow In	Net Bedrock Flux	Net Lateral Boundary Flow	Total In	Groundwater Flow Out to Storage	Alluvial Underflow out below Julesburg	Stream Gain from Aquifer	Agricultural Irrigation Pumping	M&I Pumping	Augmentation Pumping	Alfalfa ET	Subirrigated Meadow ET	Phreatophyte ET	Total Out	In Minus Out	% Error
Dec. 1993	42,454	20,022	985	5,953	0	19,350	2,594	2,658	1,040	1,198	45,028	141,282	18,445	229	115,768	0	2,474	0	0	0	4,242	141,158	124	0.09
Jan. 1994	39,773	22,153	2,129	2,691	0	11,733	4,395	2,658	1,040	1,199	44,428	132,199	16,896	254	108,066	0	2,717	0	0	0	4,095	132,027	172	0.13
Feb. 1994	33,907	20,303	1,375	977	0	11,103	4,136	2,400	940	1,084	39,627	115,851	14,690	238	93,951	0	2,169	0	0	0	4,422	115,470	381	0.33
Mar. 1994	30,352	20,986	1,479	7,617	0	21,797	9,408	2,658	1,040	1,200	43,264	139,802	21,054	246	108,642	0	2,290	0	0	0	7,539	139,771	31	0.02
Apr. 1994	12,407	27,267	12,009	27,067	551	26,923	5,920	2,572	1,007	1,161	41,441	158,324	38,139	226	105,410	2,273	3,350	0	87	62	8,923	158,470	-146	-0.09
May 1994	33,445	23,783	7,870	71,625	16,416	53,237	783	2,658	1,040	1,199	42,805	254,861	55,150	196	121,721	60,875	3,780	0	1,731	624	10,733	254,809	52	0.02
Jun. 1994	61,891	24,797	8,868	87,486	35,255	61,712	623	2,572	1,007	1,161	41,832	327,203	53,858	144	121,835	126,977	4,405	0	5,343	1,504	12,886	326,954	249	0.08
Jul. 1994	72,744	23,851	9,179	91,777	38,898	51,409	567	2,658	1,040	1,200	44,068	337,392	37,308	51	139,101	135,822	5,964	0	3,854	1,338	13,533	336,971	420	0.12
Aug. 1994	72,991	27,256	11,096	70,733	43,561	43,478	341	2,658	1,040	1,199	44,788	319,142	19,020	-43	128,877	148,759	5,351	0	3,903	1,219	11,407	318,492	650	0.20
Sep. 1994	62,569	21,413	4,319	43,068	25,632	31,050	989	2,572	1,007	1,161	43,737	237,518	7,431	-20	120,840	91,797	4,805	0	2,763	1,269	8,436	237,321	197	0.08
Oct. 1994	34,050	33,532	17,531	13,018	4,117	20,315	17,577	2,658	1,040	1,199	45,204	190,242	47,179	101	115,079	15,848	3,794	0	816	510	7,070	190,395	-153	-0.08
Nov. 1994	47,994	20,121	2,413	3,624	0	19,234	2,431	2,572	1,007	1,161	43,423	143,980	26,457	106	110,627	0	2,637	0	0	0	4,112	143,939	41	0.03
Dec. 1994	44,776	20,055	1,359	3,143	0	20,945	523	2,658	1,040	1,201	44,419	140,119	21,310	137	112,173	0	2,547	0	0	0	3,890	140,058	62	0.04
Jan. 1995	38,355	20,434	1,041	2,398	0	17,388	616	2,658	1,040	1,164	43,837	128,930	16,171	152	106,089	0	2,684	0	0	0	3,684	128,782	148	0.12
Feb. 1995	31,954	19,705	2,156	936	0	14,298	611	2,400	940	1,051	39,106	113,157	13,496	151	92,817	0	2,447	0	0	0	3,956	112,867	290	0.26
Mar. 1995	33,230	20,833	1,645	2,458	0	17,084	2,286	2,658	1,040	1,164	42,719	125,118	14,026	165	101,040	0	2,736	0	0	0	6,898	124,865	253	0.20
Apr. 1995	10,387	31,467	17,522	16,423	0	21,838	14,188	2,572	1,007	1,126	40,931	157,462	45,388	193	100,171	0	3,315	0	0	0	8,564	157,630	-168	-0.11
May 1995	1,330	58,674	34,870	29,519	357	38,421	18,854	2,658	1,040	1,161	42,199	229,084	122,382	329	86,507	1,311	4,218	0	2	7	14,472	229,229	-145	-0.06
Jun. 1995	4,855	93,759	33,887	29,931	6,824	29,668	13,581	2,572	1,007	1,121	40,899	258,104	126,143	568	76,457	26,317	4,994	0	1,235	418	22,655	258,786	-682	-0.26
Jul. 1995	58,853	34,557	9,489	93,093	35,436	78,075	6,692	2,658	1,040	1,159	42,801	363,852	80,282	380	121,493	127,496	6,158	0	4,383	1,549	22,185	363,927	-75	-0.02
Aug. 1995	100,508	19,330	4,914	111,856	42,421	74,871	1,522	2,658	1,040	1,160	43,780	404,061	53,086	136	180,623	146,107	5,432	0	4,294	1,568	12,841	404,087	-26	-0.01
Sep. 1995	22,732	27,995	18,735	63,422	13,365	45,190	7,579	2,572	1,007	1,117	43,410	247,125	41,268	180	141,885	47,613	4,435	0	964	542	10,313	247,199	-74	-0.03
Oct. 1995	57,905	21,159	3,844	10,588	4,125	21,382	11,225	2,658	1,040	1,155	45,380	180,463	21,659	210	131,186	15,106	3,327	0	476	618	7,837	180,419	43	0.02
Nov. 1995	54,804	19,036	2,404	1,192	62	18,287	8,435	2,572	1,007	1,118	43,794	152,712	20,824	211	124,580	191	2,370	0	0	11	4,479	152,666	46	0.03
Dec. 1995	47,204	19,889	356	1,041	0	17,909	6,035	2,658	1,040	1,157	44,854	142,143	17,980	234	117,024	0	2,400	0	0	0	4,309	141,947	196	0.14
Jan. 1996	41,184	23,035	2,206	1,310	0	9,229	5,247	2,658	1,040	1,157	44,347	131,413	18,673	263	105,311	0	2,734	0	0	0	4,257	131,237	176	0.13
Feb. 1996	35,157	20,369	408	1,832	0	9,152	4,536	2,486	973	1,083	41,035	117,031	12,010	254	97,052	0	2,641	0	0	0	4,695	116,652	379	0.32
Mar. 1996	30,040	23,469	4,436	2,394	0	16,994	9,700	2,658	1,040	1,158	43,305	135,194	16,452	264	107,957	0	2,569	0	0	0	7,802	135,045	149	0.11
Apr. 1996	17,493	21,367	5,542	31,369	1,037	28,551	6,408	2,572	1,007	1,121	41,538	158,005	27,503	222	114,220	3,879	3,380	0	131	84	8,653	158,072	-67	-0.04
May 1996	8,632	32,359	24,139	81,301	7,316	54,954	4,284	2,658	1,040	1,157	43,094	260,934	94,466	237	122,844	27,599	4,074	0	264	103	11,597	261,184	-250	-0.10
Jun. 1996	39,748	29,547	15,826	69,760	24,750	68,962	12,387	2,572	1,007	1,117	42,387	308,064	70,908	156	122,683	91,561	4,655	0	3,063	869	14,212	308,107	-43	-0.01





Table C-1. Simulated Monthly Groundwater Budgets (ac-ft)

Month/Year	Inflows												Outflows										Mass Balance	
	Groundwater Flow In from Storage	Stream Loss to Aquifer	Precipitation Recharge	Surface Water Irrigation Return Flow Recharge	Groundwater Irrigation Return Flow Recharge	Canal Seepage Recharge	Augmentation Recharge Ponds	Reservoir Seepage Recharge	Alluvial Underflow In	Net Bedrock Flux	Net Lateral Boundary Flow	Total In	Groundwater Flow Out to Storage	Alluvial Underflow out below Julesburg	Stream Gain from Aquifer	Agricultural Irrigation Pumping	M&I Pumping	Augmentation Pumping	Alfalfa ET	Subirrigated Meadow ET	Phreatophyte ET	Total Out	In Minus Out	% Error
Jul. 1996	41,908	30,156	20,737	108,270	29,553	72,492	1,493	2,658	1,040	1,150	44,827	354,285	67,027	69	155,533	106,555	6,518	0	2,940	1,077	14,585	354,303	-18	-0.01
Aug. 1996	48,091	24,533	11,173	97,608	30,412	60,515	1,600	2,658	1,040	1,150	45,747	324,526	38,775	97	154,736	108,674	5,386	0	3,432	1,394	11,979	324,473	54	0.02
Sep. 1996	30,438	36,139	20,110	36,678	13,956	28,693	9,190	2,572	1,007	1,112	44,954	224,850	32,192	197	124,414	50,984	4,383	0	1,402	732	10,562	224,867	-17	-0.01
Oct. 1996	54,314	21,527	3,202	10,650	6,314	26,433	11,135	2,658	1,040	1,150	46,549	184,973	18,732	200	129,951	23,430	3,560	0	670	712	7,646	184,902	71	0.04
Nov. 1996	53,742	18,357	1,201	2,933	3	23,067	8,392	2,572	1,007	1,114	44,719	157,108	23,804	181	126,158	12	2,590	0	0	0	4,357	157,101	6	0.00
Dec. 1996	46,738	21,726	263	2,308	0	11,294	6,044	2,658	1,040	1,152	45,692	138,916	18,557	231	112,719	0	2,877	0	0	0	4,358	138,741	175	0.13
Jan. 1997	42,535	23,174	2,082	1,248	0	6,946	3,448	2,658	1,040	1,153	45,087	129,370	16,152	257	106,089	0	2,469	0	0	0	4,212	129,179	192	0.15
Feb. 1997	32,812	19,842	1,947	1,545	0	11,317	6,787	2,400	940	1,042	40,223	118,855	14,137	227	97,261	0	2,425	0	0	0	4,422	118,472	383	0.32
Mar. 1997	33,667	21,814	1,533	2,618	0	15,926	12,723	2,658	1,040	1,154	43,925	137,057	16,309	248	109,706	0	2,942	0	0	0	7,718	136,923	134	0.10
Apr. 1997	12,763	25,927	11,898	25,736	8	27,502	11,414	2,572	1,007	1,116	42,125	162,068	39,963	228	109,650	31	3,085	0	1	0	9,109	162,067	1	0.00
May 1997	13,289	26,521	15,256	89,635	6,803	64,006	2,356	2,658	1,040	1,153	43,566	266,283	94,579	206	130,335	25,880	4,019	0	261	266	11,060	266,606	-323	-0.12
Jun. 1997	27,921	65,067	23,475	45,770	19,281	45,638	14,719	2,572	1,007	1,112	42,508	289,070	92,802	425	92,015	74,595	4,545	0	3,308	1,762	19,922	289,372	-302	-0.10
Jul. 1997	53,583	30,744	27,187	117,940	26,292	71,602	2,375	2,658	1,040	1,147	44,800	379,368	94,836	190	165,053	94,334	5,768	0	1,637	1,320	16,465	379,603	-236	-0.06
Aug. 1997	29,368	37,087	28,027	62,039	26,314	56,989	6,376	2,658	1,040	1,145	45,762	296,804	39,851	185	140,654	92,568	5,045	0	2,621	1,393	14,506	296,822	-18	-0.01
Sep. 1997	55,171	23,029	7,519	52,812	26,710	43,948	5,650	2,572	1,007	1,109	44,934	264,461	11,121	154	138,087	95,539	4,204	0	2,663	1,998	10,389	264,155	306	0.12
Oct. 1997	36,279	30,544	15,901	17,144	3,947	23,132	8,937	2,658	1,040	1,145	46,586	187,312	30,699	231	128,204	14,989	3,681	0	534	666	8,313	187,317	-5	0.00
Nov. 1997	48,625	22,818	2,064	2,177	0	13,987	5,764	2,572	1,007	1,109	44,861	144,985	21,320	253	115,410	1	2,834	0	0	0	5,037	144,855	129	0.09
Dec. 1997	46,279	23,184	2,028	2,079	0	10,636	5,989	2,658	1,040	1,147	45,835	140,876	18,310	281	114,833	0	2,422	0	0	0	4,821	140,666	209	0.15
Jan. 1998	45,585	23,781	548	1,335	0	4,337	3,272	2,658	1,040	1,148	45,262	128,965	14,970	311	105,751	0	3,030	0	0	0	4,689	128,750	215	0.17
Feb. 1998	37,015	19,532	1,757	1,416	0	12,422	5,742	2,400	940	1,038	40,367	122,628	13,844	265	100,747	0	2,806	0	0	0	4,782	122,444	184	0.15
Mar. 1998	29,464	24,536	3,128	2,987	0	15,220	11,795	2,658	1,040	1,149	44,041	136,019	16,748	297	106,862	0	3,152	0	0	0	8,578	135,638	381	0.28
Apr. 1998	8,914	31,369	11,269	19,104	323	28,988	17,081	2,572	1,007	1,112	42,197	163,936	48,137	315	99,838	1,098	3,742	0	18	10	11,072	164,229	-293	-0.18
May 1998	17,406	28,615	14,505	62,809	11,502	62,785	7,986	2,658	1,040	1,149	43,490	253,946	69,372	300	121,227	44,134	4,525	0	595	575	13,325	254,052	-106	-0.04
Jun. 1998	43,927	23,915	11,081	85,677	21,898	63,139	6,482	2,572	1,007	1,111	42,548	303,355	57,754	276	138,977	82,631	5,076	0	2,778	1,457	14,526	303,477	-122	-0.04
Jul. 1998	25,858	34,784	31,990	114,050	22,474	71,132	3,214	2,658	1,040	1,146	45,091	353,437	90,217	219	152,629	83,491	6,372	0	2,581	1,518	16,614	353,641	-204	-0.06
Aug. 1998	69,332	21,495	7,715	89,888	34,138	65,295	3,642	2,658	1,040	1,146	46,120	342,470	30,816	146	163,229	124,294	5,745	0	3,631	2,009	12,528	342,399	72	0.02
Sep. 1998	59,457	22,041	5,780	54,304	25,734	43,510	6,113	2,572	1,007	1,109	45,359	266,985	11,413	105	143,020	93,198	4,821	0	2,772	2,104	9,505	266,936	49	0.02
Oct. 1998	41,270	30,982	15,093	13,235	4,718	18,750	15,692	2,658	1,040	1,146	47,037	191,621	32,065	227	128,090	17,980	3,680	0	672	784	8,104	191,602	19	0.01
Nov. 1998	51,767	19,680	2,468	2,071	160	20,852	14,521	2,572	1,007	1,109	45,340	161,547	26,568	213	126,627	579	2,839	0	11	34	4,625	161,495	52	0.03
Dec. 1998	48,326	21,644	1,654	1,170	0	13,531	6,504	2,658	1,040	1,147	46,344	144,018	18,921	250	117,308	0	2,791	0	0	0	4,548	143,817	201	0.14
Jan. 1999	44,832	21,543	1,123	1,468	0	10,815	4,282	2,658	1,040	1,148	45,736	134,646	15,229	265	112,144	0	2,495	0	0	0	4,289	134,420	226	0.17





Table C-1. Simulated Monthly Groundwater Budgets (ac-ft)																								
Month/Year	Inflows												Outflows										Mass Balance	
	Groundwater Flow In from Storage	Stream Loss to Aquifer	Precipitation Recharge	Surface Water Irrigation Return Flow Recharge	Groundwater Irrigation Return Flow Recharge	Canal Seepage Recharge	Augmentation Recharge Ponds	Reservoir Seepage Recharge	Alluvial Underflow In	Net Bedrock Flux	Net Lateral Boundary Flow	Total In	Groundwater Flow Out to Storage	Alluvial Underflow out below Julesburg	Stream Gain from Aquifer	Agricultural Irrigation Pumping	M&I Pumping	Augmentation Pumping	Alfalfa ET	Subirrigated Meadow ET	Phreatophyte ET	Total Out	In Minus Out	% Error
Feb. 1999	39,329	18,794	597	1,113	0	8,821	3,804	2,400	940	1,037	40,787	117,623	11,539	242	98,838	0	2,355	0	0	0	4,497	117,471	153	0.13
Mar. 1999	36,498	19,986	1,293	6,977	0	18,956	13,273	2,658	1,040	1,149	44,524	146,354	15,900	253	119,835	0	2,625	0	0	0	7,590	146,203	151	0.10
Apr. 1999	3,243	41,499	41,961	22,660	0	29,496	14,234	2,572	1,007	1,108	42,768	200,549	82,476	289	104,677	2	3,105	0	0	0	10,318	200,867	-318	-0.16
May 1999	10,361	54,136	19,970	28,533	6,124	33,824	13,893	2,658	1,040	1,144	44,032	215,716	78,677	425	90,532	24,353	3,914	0	1,226	933	16,335	216,394	-678	-0.31
Jun. 1999	35,409	39,987	13,327	62,339	24,926	56,131	9,179	2,572	1,007	1,107	42,616	288,600	61,259	416	102,850	94,919	4,393	0	3,367	1,896	19,731	288,831	-231	-0.08
Jul. 1999	85,805	24,196	15,516	108,235	38,093	76,767	3,252	2,658	1,040	1,145	44,660	401,367	65,344	183	170,253	138,416	5,703	0	3,483	1,940	16,088	401,411	-44	-0.01
Aug. 1999	23,776	34,693	23,919	79,826	26,209	56,819	8,841	2,658	1,040	1,144	45,536	304,461	46,708	265	139,066	94,424	4,959	0	2,462	1,419	15,309	304,611	-150	-0.05
Sep. 1999	39,470	27,773	17,631	35,623	15,648	29,922	8,019	2,572	1,007	1,107	44,803	223,573	14,728	253	133,566	57,599	4,086	0	1,162	780	11,297	223,471	102	0.05
Oct. 1999	59,601	20,300	2,623	12,907	4,573	21,175	13,729	2,658	1,040	1,145	46,531	186,281	21,226	253	134,262	17,082	3,347	0	645	1,100	8,249	186,165	116	0.06
Nov. 1999	52,363	19,429	1,306	2,237	299	14,089	9,347	2,572	1,007	1,109	44,825	148,582	18,130	257	121,458	1,040	2,475	0	0	78	4,869	148,308	275	0.18
Dec. 1999	47,331	22,217	917	1,749	0	8,893	5,505	2,658	1,040	1,147	45,834	137,291	16,126	306	113,443	0	2,373	0	0	0	4,845	137,093	198	0.14
Jan. 2000	43,389	21,726	983	1,387	0	10,092	7,406	2,658	1,040	1,114	45,294	135,090	15,760	315	111,481	0	2,647	0	0	0	4,611	134,814	276	0.20
Feb. 2000	37,983	20,069	1,219	1,277	0	10,026	4,637	2,486	973	1,043	41,859	121,572	11,237	298	102,146	0	2,588	0	0	0	5,048	121,317	255	0.21
Mar. 2000	28,018	23,841	6,141	3,100	3	16,303	18,601	2,658	1,040	1,114	44,165	144,984	20,191	307	113,282	10	2,746	0	0	2	8,382	144,921	63	0.04
Apr. 2000	21,708	23,344	8,307	23,517	4,603	29,213	17,948	2,572	1,007	1,078	42,363	175,658	23,397	267	119,232	18,590	3,394	0	671	895	9,278	175,722	-64	-0.04
May 2000	36,222	26,773	14,963	62,891	16,557	50,311	4,223	2,658	1,040	1,113	43,740	260,492	49,851	227	127,521	64,883	4,183	0	1,877	886	10,942	260,370	122	0.05
Jun. 2000	72,044	22,659	6,792	86,003	35,683	58,642	957	2,572	1,007	1,077	42,780	330,218	46,238	99	129,651	131,280	4,664	0	3,808	1,765	12,462	329,967	251	0.08
Jul. 2000	89,445	28,169	9,810	85,937	51,560	51,982	803	2,658	1,040	1,102	44,936	367,442	27,246	-46	131,075	182,038	5,721	0	5,139	2,443	13,652	367,268	174	0.05
Aug. 2000	60,331	33,084	15,358	75,268	42,541	47,614	726	2,658	1,040	1,092	45,493	325,205	25,332	-90	125,782	150,836	5,361	0	4,172	1,998	11,545	324,937	269	0.08
Sep. 2000	40,227	26,537	12,278	40,333	17,269	31,751	390	2,572	1,007	1,057	44,488	217,908	17,409	16	120,551	63,924	4,403	0	1,671	1,009	8,734	217,717	191	0.09
Oct. 2000	44,781	24,088	7,704	16,759	4,120	26,668	1,301	2,658	1,040	1,093	46,110	176,321	29,460	72	120,235	15,399	3,476	0	315	640	6,758	176,354	-33	-0.02
Nov. 2000	46,240	20,930	2,066	2,135	0	19,768	1,554	2,572	1,007	1,058	44,424	141,754	25,888	105	108,390	0	3,103	0	0	0	4,167	141,652	102	0.07
Dec. 2000	42,017	21,044	1,268	1,301	0	15,455	2,525	2,658	1,040	1,094	45,470	133,874	19,825	142	106,763	0	3,081	0	0	0	3,998	133,808	65	0.05
Jan. 2001	34,314	23,228	2,030	1,560	0	13,386	9,721	2,658	1,040	1,095	44,930	133,962	25,588	181	101,411	0	2,837	0	0	0	3,916	133,933	29	0.02
Feb. 2001	26,868	21,440	1,846	1,810	0	11,410	11,333	2,400	940	989	40,097	119,132	22,452	183	89,500	0	2,634	0	0	0	4,287	119,056	76	0.06
Mar. 2001	26,137	22,459	3,767	4,670	0	19,531	16,603	2,658	1,040	1,085	43,813	141,763	23,246	186	108,178	0	2,926	0	0	0	7,242	141,778	-15	-0.01
Apr. 2001	10,403	31,159	16,816	9,508	1,033	23,482	32,635	2,572	1,007	1,046	42,038	171,700	48,799	236	106,539	3,582	3,389	0	122	96	9,244	172,007	-307	-0.18
May 2001	6,673	38,468	30,466	35,811	7,074	41,828	15,650	2,658	1,040	1,078	43,366	224,113	68,976	273	108,567	28,874	4,089	0	1,583	474	11,794	224,630	-517	-0.23
Jun. 2001	77,164	23,897	9,146	66,946	35,969	49,749	9,911	2,572	1,007	1,044	42,237	319,641	36,859	220	122,686	134,379	4,698	0	5,809	2,247	12,533	319,432	210	0.07
Jul. 2001	36,470	36,488	29,493	93,015	31,414	57,647	1,894	2,658	1,040	1,077	44,341	335,538	72,083	166	123,905	113,664	5,854	0	3,359	1,928	14,527	335,487	51	0.02
Aug. 2001	69,625	24,877	8,206	84,985	41,336	55,195	1,289	2,658	1,040	1,078	45,029	335,318	29,443	63	131,931	148,433	5,467	0	5,524	2,792	11,469	335,121	197	0.06



Table C-1. Simulated Monthly Groundwater Budgets (ac-ft)																								
Month/Year	Inflows												Outflows										Mass Balance	
	Groundwater Flow In from Storage	Stream Loss to Aquifer	Precipitation Recharge	Surface Water Irrigation Return Flow Recharge	Groundwater Irrigation Return Flow Recharge	Canal Seepage Recharge	Augmentation Recharge Ponds	Reservoir Seepage Recharge	Alluvial Underflow In	Net Bedrock Flux	Net Lateral Boundary Flow	Total In	Groundwater Flow Out to Storage	Alluvial Underflow out below Julesburg	Stream Gain from Aquifer	Agricultural Irrigation Pumping	M&I Pumping	Augmentation Pumping	Alfalfa ET	Subirrigated Meadow ET	Phreatophyte ET	Total Out	In Minus Out	% Error
Sep. 2001	45,029	25,145	10,217	42,209	22,321	34,694	8,554	2,572	1,007	1,043	44,126	236,917	13,087	133	121,548	83,276	4,636	0	3,391	2,014	8,774	236,859	58	0.02
Oct. 2001	42,111	20,439	3,024	21,775	5,320	25,945	17,172	2,658	1,040	1,079	45,746	186,308	27,090	165	125,985	20,201	3,919	0	1,004	1,153	6,751	186,268	40	0.02
Nov. 2001	39,160	21,509	3,817	4,071	31	18,720	11,781	2,572	1,007	1,044	44,060	147,774	29,828	194	110,340	110	3,115	0	0	19	4,174	147,779	-6	0.00
Dec. 2001	44,888	20,066	348	1,498	0	17,342	4,447	2,658	1,040	1,075	45,118	138,480	21,862	214	109,329	0	3,025	0	0	0	3,983	138,414	66	0.05
Jan. 2002	36,335	20,123	1,611	2,623	0	19,953	4,918	2,658	1,040	1,071	44,608	134,938	20,187	216	107,776	0	2,965	0	0	0	3,736	134,880	58	0.04
Feb. 2002	31,049	18,794	893	1,400	0	14,379	4,964	2,400	940	967	39,854	115,642	14,192	204	93,897	0	3,021	0	0	0	4,040	115,354	288	0.25
Mar. 2002	27,901	21,889	2,675	2,411	0	16,029	6,318	2,658	1,040	1,071	43,609	125,601	13,760	224	101,088	0	3,280	0	0	0	7,132	125,484	117	0.09
Apr. 2002	27,295	19,179	1,655	25,713	4,582	21,576	13,523	2,572	1,007	1,037	41,842	159,980	20,344	226	106,642	18,437	4,143	0	1,180	798	8,176	159,946	34	0.02
May 2002	41,600	25,208	9,906	57,587	18,084	35,885	1,173	2,658	1,040	1,072	43,053	237,266	37,180	209	109,845	70,998	4,770	0	2,677	1,214	10,129	237,022	244	0.10
Jun. 2002	81,277	29,712	13,664	56,159	39,557	36,835	555	2,572	1,007	1,036	41,732	304,107	23,709	188	104,077	150,160	4,794	238	6,484	2,314	11,825	303,790	317	0.10
Jul. 2002	137,631	27,459	4,778	52,828	65,347	34,890	288	2,658	1,040	1,072	43,411	371,402	9,547	87	100,523	229,967	5,875	746	7,905	3,745	12,773	371,167	235	0.06
Aug. 2002	96,549	33,588	12,623	38,063	50,808	23,356	255	2,658	1,040	1,071	43,523	303,533	6,704	0	92,945	177,714	5,391	1,228	5,461	2,946	10,743	303,132	401	0.13
Sep. 2002	58,152	26,639	6,652	30,399	25,840	20,114	228	2,572	1,007	1,037	42,215	214,854	9,656	-19	89,198	95,563	4,851	1,550	3,065	2,225	8,060	214,149	705	0.33
Oct. 2002	29,115	26,948	8,425	27,130	2,625	18,224	1,355	2,658	1,040	1,072	43,604	162,196	47,026	21	92,998	10,521	3,806	579	468	379	6,393	162,191	5	0.00
Nov. 2002	40,368	20,442	1,486	2,412	0	13,581	2,791	2,572	1,007	1,035	42,024	127,718	31,236	66	89,122	0	3,125	373	0	0	3,868	127,791	-72	-0.06
Dec. 2002	35,494	19,136	159	2,747	0	15,918	6,218	2,658	1,040	1,065	43,061	127,495	25,681	123	94,411	0	3,311	317	0	0	3,678	127,521	-26	-0.02
Jan. 2003	31,008	19,724	453	3,033	0	13,860	8,161	2,658	1,040	1,065	42,578	123,580	24,810	154	91,676	0	3,087	187	0	0	3,533	123,445	135	0.11
Feb. 2003	25,183	19,528	2,132	896	0	11,310	7,486	2,400	940	962	38,047	108,884	21,394	158	80,404	0	2,824	171	0	0	3,868	108,820	64	0.06
Mar. 2003	15,993	26,583	10,195	3,076	1	19,200	10,573	2,658	1,040	1,064	41,659	132,041	35,232	219	86,580	3	2,858	178	0	3	7,057	132,130	-89	-0.07
Apr. 2003	12,290	29,094	16,435	22,737	4,163	32,297	2,333	2,572	1,007	1,029	40,122	164,078	45,426	215	88,087	17,260	3,063	0	1,171	705	8,336	164,262	-184	-0.11
May 2003	22,677	31,496	17,359	38,207	14,053	45,933	4,051	2,658	1,040	1,063	41,549	220,087	49,613	211	95,979	56,499	3,343	0	2,869	1,071	10,468	220,053	34	0.02
Jun. 2003	24,992	29,923	17,076	66,680	18,988	67,935	5,572	2,572	1,007	1,027	40,648	276,420	74,653	183	107,931	73,438	3,796	203	2,722	1,002	12,619	276,548	-128	-0.05
Jul. 2003	97,637	23,944	6,593	84,447	47,356	53,944	374	2,658	1,040	1,062	42,819	361,874	39,568	59	120,251	173,587	5,142	776	6,638	2,756	13,015	361,792	82	0.02
Aug. 2003	47,321	33,762	18,796	77,138	35,048	47,374	789	2,658	1,040	1,061	43,493	308,481	44,794	-96	114,422	125,890	4,751	1,704	3,496	2,293	11,204	308,459	22	0.01
Sep. 2003	41,459	20,747	4,029	44,597	15,722	35,363	423	2,572	1,007	1,028	42,540	209,486	16,017	-53	113,633	60,611	4,044	2,869	2,632	1,305	8,324	209,381	105	0.05
Oct. 2003	36,484	19,249	1,690	29,495	6,578	27,101	15,530	2,658	1,040	1,063	44,085	184,973	27,490	-6	116,477	26,488	3,619	1,600	1,846	1,068	6,423	185,006	-33	-0.02
Nov. 2003	46,346	19,339	1,067	3,178	18	16,385	3,345	2,572	1,007	1,030	42,463	136,750	28,736	42	100,058	68	2,858	1,115	0	7	3,920	136,805	-54	-0.04
Dec. 2003	38,312	20,431	1,451	1,705	0	15,935	5,756	2,658	1,040	1,064	43,513	131,865	24,441	101	99,530	0	3,018	929	0	0	3,818	131,837	27	0.02
Jan. 2004	33,180	19,892	1,262	1,370	0	16,624	13,301	2,658	1,040	1,065	43,003	133,395	25,440	136	100,847	0	2,928	472	0	0	3,626	133,449	-55	-0.04
Feb. 2004	23,662	18,806	1,775	3,699	0	17,477	14,960	2,486	973	996	39,761	124,596	23,257	146	94,001	0	2,780	374	0	0	4,036	124,593	2	0.00
Mar. 2004	28,337	20,480	1,671	3,857	172	11,773	9,913	2,658	1,040	1,066	41,998	122,965	20,516	206	91,386	674	2,853	220	3	108	7,034	123,000	-35	-0.03



Table C-1. Simulated Monthly Groundwater Budgets (ac-ft)

Month/Year	Inflows												Outflows										Mass Balance	
	Groundwater Flow In from Storage	Stream Loss to Aquifer	Precipitation Recharge	Surface Water Irrigation Return Flow Recharge	Groundwater Irrigation Return Flow Recharge	Canal Seepage Recharge	Augmentation Recharge Ponds	Reservoir Seepage Recharge	Alluvial Underflow In	Net Bedrock Flux	Net Lateral Boundary Flow	Total In	Groundwater Flow Out to Storage	Alluvial Underflow out below Julesburg	Stream Gain from Aquifer	Agricultural Irrigation Pumping	M&I Pumping	Augmentation Pumping	Alfalfa ET	Subirrigated Meadow ET	Phreatophyte ET	Total Out	In Minus Out	% Error
Apr. 2004	14,250	27,202	13,712	38,186	4,352	26,153	1,615	2,572	1,007	1,030	40,323	170,401	45,204	202	92,600	18,640	3,288	0	1,400	646	8,387	170,366	35	0.02
May 2004	29,035	27,222	14,169	60,708	14,355	37,841	1,193	2,658	1,040	1,064	41,631	230,915	45,294	174	108,833	58,728	3,803	112	2,919	919	10,157	230,940	-25	-0.01
Jun. 2004	26,932	30,537	18,898	63,954	18,355	43,434	994	2,572	1,007	1,028	40,555	248,265	47,918	154	104,868	74,676	3,807	178	2,911	1,194	12,505	248,210	55	0.02
Jul. 2004	49,357	28,406	13,936	76,144	29,650	51,868	785	2,658	1,040	1,062	42,458	297,365	39,705	93	116,453	115,196	4,967	1,318	3,827	1,752	13,774	297,083	282	0.09
Aug. 2004	35,946	28,536	14,374	74,140	26,036	49,874	3,246	2,658	1,040	1,062	42,985	279,898	38,930	-23	119,227	98,034	4,511	2,650	3,012	1,764	11,703	279,807	91	0.03
Sep. 2004	23,580	24,532	12,752	61,178	13,298	39,079	3,292	2,572	1,007	1,028	42,017	224,336	31,508	-18	121,523	52,686	3,926	3,005	1,570	1,577	8,715	224,493	-157	-0.07
Oct. 2004	28,786	22,981	8,167	26,250	5,479	32,379	14,516	2,658	1,040	1,063	43,610	186,929	34,380	27	118,005	22,060	3,112	504	1,208	810	6,886	186,992	-63	-0.03
Nov. 2004	47,598	19,995	3,932	3,721	6	19,321	4,951	2,572	1,007	1,029	42,085	146,215	29,546	87	109,171	23	2,453	910	2	1	4,145	146,339	-124	-0.08
Dec. 2004	41,277	19,463	799	1,776	0	18,794	6,697	2,658	1,040	1,064	43,151	136,719	23,082	144	106,094	0	2,675	799	0	0	3,984	136,778	-58	-0.04
Jan. 2005	34,088	20,268	2,055	1,225	0	18,646	11,492	2,658	1,040	1,065	42,679	135,215	24,039	163	103,436	0	3,037	869	0	0	3,753	135,296	-82	-0.06
Feb. 2005	28,762	17,262	596	1,927	0	16,749	15,906	2,400	940	962	38,139	123,642	22,531	167	93,356	0	2,745	830	0	0	4,015	123,644	-2	0.00
Mar. 2005	26,593	20,644	3,276	2,766	2	19,481	11,451	2,658	1,040	1,065	41,740	130,716	18,797	202	100,476	4	3,095	1,096	0	1	7,021	130,691	24	0.02
Apr. 2005	6,350	32,536	18,594	21,822	596	28,348	33,119	2,572	1,007	1,029	40,097	186,070	71,368	254	98,866	2,409	3,548	353	81	274	9,135	186,289	-219	-0.12
May 2005	13,982	27,207	13,208	62,194	8,456	59,968	13,246	2,658	1,040	1,063	41,460	244,482	77,965	245	113,233	34,799	4,412	480	1,247	999	11,113	244,494	-11	0.00
Jun. 2005	11,057	42,962	30,349	55,670	12,555	56,751	44,590	2,572	1,007	1,027	40,511	299,050	112,794	328	111,830	50,851	4,652	331	1,671	1,141	15,967	299,564	-514	-0.17
Jul. 2005	88,779	22,360	8,343	90,098	32,411	57,447	1,149	2,658	1,040	1,062	42,640	347,986	47,660	250	144,028	127,536	6,173	164	4,662	3,321	14,268	348,063	-77	-0.02
Aug. 2005	44,239	26,395	11,797	83,312	24,661	51,824	2,197	2,658	1,040	1,062	43,400	292,585	38,481	100	135,473	94,690	5,127	794	3,550	2,384	11,839	292,438	147	0.05
Sep. 2005	53,833	20,007	2,918	52,042	19,706	35,308	2,641	2,572	1,007	1,028	42,537	233,600	10,332	41	126,417	77,256	4,885	657	2,942	2,286	8,783	233,599	1	0.00
Oct. 2005	19,307	32,989	23,482	19,617	1,613	32,369	27,738	2,658	1,040	1,061	44,191	206,066	62,657	133	124,598	6,796	3,499	509	216	478	7,372	206,258	-192	-0.09
Nov. 2005	50,194	18,444	1,491	6,705	220	21,557	1,859	2,572	1,007	1,028	42,658	147,735	23,145	181	116,202	877	2,945	0	47	73	4,287	147,757	-22	-0.01
Dec. 2005	42,603	19,398	973	3,873	0	16,660	5,967	2,658	1,040	1,063	43,702	137,938	18,766	223	111,807	0	2,990	0	0	0	4,113	137,900	38	0.03
Jan. 2006	34,996	18,172	454	5,282	0	20,276	14,174	2,658	1,040	1,064	43,147	141,263	20,819	226	113,376	0	3,036	0	0	0	3,774	141,230	33	0.02
Feb. 2006	30,612	17,250	1,010	4,582	0	16,468	5,757	2,400	940	962	38,502	118,483	14,167	207	97,136	0	2,746	0	0	0	4,007	118,262	220	0.19
Mar. 2006	23,685	23,468	4,710	3,303	3	14,994	18,309	2,658	1,040	1,064	42,074	135,310	24,246	283	100,245	6	3,098	0	0	1	7,438	135,317	-7	-0.01
Apr. 2006	33,765	19,912	3,655	28,983	6,518	25,305	13,443	2,572	1,007	1,030	40,341	176,532	23,382	263	110,529	26,983	3,550	0	1,670	1,843	8,305	176,523	9	0.01
May 2006	44,471	23,239	6,423	63,228	18,591	41,269	1,191	2,658	1,040	1,064	41,620	244,795	39,077	237	111,530	74,697	4,412	0	2,968	1,517	10,117	244,555	240	0.10
Jun. 2006	93,970	22,643	4,808	66,031	39,282	46,134	1,018	2,572	1,007	1,031	40,613	319,108	31,305	212	107,318	154,024	4,656	108	5,829	3,451	11,759	318,661	447	0.14
Jul. 2006	52,359	33,316	17,630	68,719	33,780	46,552	1,127	2,658	1,040	1,064	42,623	300,868	35,281	43	108,598	129,194	6,132	766	4,279	2,888	13,426	300,608	260	0.09
Aug. 2006	42,073	32,181	13,177	63,576	28,587	39,898	1,336	2,658	1,040	1,063	43,121	268,710	24,382	-60	111,362	108,698	5,117	1,010	3,816	2,641	11,449	268,416	294	0.11
Sep. 2006	31,291	23,403	8,043	46,395	9,888	30,716	1,945	2,572	1,007	1,029	42,096	198,384	24,728	-7	114,512	41,227	4,871	1,368	1,595	1,772	8,352	198,418	-34	-0.02
Oct. 2006	24,386	25,971	10,897	31,871	2,544	27,439	5,897	2,658	1,040	1,063	43,635	177,400	41,923	25	113,097	10,618	3,485	697	372	622	6,685	177,525	-124	-0.07



Table C-1. Simulated Monthly Groundwater Budgets (ac-ft)

Month/Year	Inflows												Outflows										Mass Balance	
	Groundwater Flow In from Storage	Stream Loss to Aquifer	Precipitation Recharge	Surface Water Irrigation Return Flow Recharge	Groundwater Irrigation Return Flow Recharge	Canal Seepage Recharge	Augmentation Recharge Ponds	Reservoir Seepage Recharge	Alluvial Underflow In	Net Bedrock Flux	Net Lateral Boundary Flow	Total In	Groundwater Flow Out to Storage	Alluvial Underflow out below Julesburg	Stream Gain from Aquifer	Agricultural Irrigation Pumping	M&I Pumping	Augmentation Pumping	Alfalfa ET	Subirrigated Meadow ET	Phreatophyte ET	Total Out	In Minus Out	% Error
Nov. 2006	47,161	18,465	1,127	5,693	3	19,387	2,292	2,572	1,007	1,030	42,042	140,778	26,047	66	106,730	13	2,937	945	0	1	3,946	140,685	93	0.07
Dec. 2006	31,824	24,631	6,482	3,466	0	17,869	5,097	2,658	1,040	1,064	43,080	137,212	27,878	127	99,513	0	2,983	2,750	0	0	3,948	137,200	12	0.01
Jan. 2007	34,153	25,637	2,375	1,807	0	15,488	12,122	2,658	1,040	1,064	42,557	138,902	25,649	171	98,079	0	2,680	8,613	0	0	3,763	138,955	-53	-0.04
Feb. 2007	25,871	21,913	1,045	3,416	0	18,217	13,443	2,400	940	962	38,002	126,209	21,143	160	90,492	0	2,340	8,006	0	0	3,980	126,121	88	0.07
Mar. 2007	20,244	23,299	3,770	4,154	9	31,519	23,254	2,658	1,040	1,065	41,547	152,558	36,158	186	101,038	24	2,531	5,483	0	3	7,088	152,510	48	0.03
Apr. 2007	5,917	33,268	19,180	18,420	354	39,034	36,614	2,572	1,007	1,029	39,888	197,284	77,114	231	102,715	1,387	2,916	3,799	82	249	9,062	197,555	-271	-0.14
May 2007	8,876	48,945	20,878	52,593	7,738	58,391	63,576	2,658	1,040	1,062	41,195	306,953	140,073	352	106,522	32,665	3,947	7,461	1,547	867	13,819	307,252	-299	-0.10
Jun. 2007	46,276	25,488	9,695	72,189	21,661	73,165	23,080	2,572	1,007	1,028	40,237	316,397	71,659	333	130,773	87,615	4,768	1,477	3,748	2,121	14,121	316,614	-218	-0.07
Jul. 2007	60,625	27,994	16,725	82,607	27,048	56,952	2,532	2,658	1,040	1,062	42,421	321,663	52,217	260	135,793	105,340	6,052	856	3,557	2,847	14,854	321,776	-113	-0.04
Aug. 2007	35,595	32,089	21,802	75,871	22,819	57,147	4,111	2,658	1,040	1,061	43,202	297,395	47,603	139	138,064	87,594	5,202	1,209	3,259	2,415	11,941	297,426	-31	-0.01
Sep. 2007	36,814	22,500	7,429	53,033	15,543	41,504	3,861	2,572	1,007	1,027	42,406	227,696	17,321	100	129,917	61,371	4,953	789	1,917	2,467	8,939	227,775	-79	-0.03
Oct. 2007	31,396	22,767	5,951	31,330	4,481	29,872	14,855	2,658	1,040	1,062	44,121	189,533	29,704	117	126,187	18,747	3,365	2,544	805	1,103	7,026	189,599	-66	-0.03
Nov. 2007	54,554	19,103	734	3,052	109	16,727	7,640	2,572	1,007	1,029	42,607	149,134	26,657	187	113,584	462	2,710	1,207	0	62	4,265	149,133	1	0.00
Dec. 2007	38,461	23,970	4,694	1,860	0	17,442	21,395	2,658	1,040	1,063	43,718	156,301	28,991	241	114,463	0	2,968	5,628	0	0	4,114	156,406	-105	-0.07
Jan. 2008	37,085	22,778	609	1,605	0	18,152	25,977	2,658	1,040	1,064	43,211	154,180	25,279	245	114,064	0	3,108	7,665	0	0	3,833	154,195	-15	-0.01
Feb. 2008	29,646	22,463	1,305	2,119	0	21,929	21,054	2,486	973	996	39,985	142,956	23,822	243	104,647	0	2,749	7,028	0	0	4,339	142,828	127	0.09
Mar. 2008	28,624	22,101	1,648	2,006	0	17,690	23,272	2,658	1,040	1,065	42,208	142,313	21,493	267	105,953	0	2,816	4,169	0	0	7,478	142,176	137	0.10
Apr. 2008	14,389	22,536	6,533	28,059	426	28,081	21,672	2,572	1,007	1,030	40,468	166,774	37,594	274	112,265	1,726	3,292	2,651	141	318	8,716	166,977	-203	-0.12
May 2008	21,507	24,922	11,682	67,195	8,707	43,294	4,576	2,658	1,040	1,064	41,683	228,329	55,148	274	118,991	35,528	4,198	1,174	1,273	864	10,840	228,290	39	0.02
Jun. 2008	42,741	25,289	11,947	77,939	20,887	58,924	2,536	2,572	1,007	1,030	40,669	285,541	61,674	179	117,953	82,775	5,025	837	2,509	1,376	13,123	285,451	90	0.03
Jul. 2008	66,530	26,777	11,467	81,037	30,796	51,178	2,199	2,658	1,040	1,064	42,895	317,642	42,271	102	127,091	119,381	6,650	943	3,800	2,642	14,638	317,517	124	0.04
Aug. 2008	12,910	42,802	41,929	66,776	10,490	43,247	10,731	2,658	1,040	1,061	43,671	277,315	88,254	18	127,737	40,290	5,579	1,447	603	546	13,174	277,647	-333	-0.12
Sep. 2008	35,534	22,205	10,751	46,331	13,061	38,526	8,739	2,572	1,007	1,027	42,825	222,579	20,009	-50	133,455	51,334	4,948	898	1,447	1,310	9,270	222,622	-43	-0.02
Oct. 2008	32,116	21,710	6,373	25,503	3,987	32,104	22,000	2,658	1,040	1,062	44,532	193,085	31,113	30	132,002	16,644	3,106	1,441	738	969	7,203	193,247	-162	-0.08
Nov. 2008	56,305	18,777	1,502	2,161	161	16,045	5,273	2,572	1,007	1,028	42,957	147,788	22,830	121	115,737	642	2,776	1,215	0	83	4,376	147,779	10	0.01
Dec. 2008	44,935	22,124	2,151	2,524	0	17,956	10,152	2,658	1,040	1,063	44,039	148,643	21,787	173	113,726	0	2,865	5,756	0	0	4,189	148,497	146	0.10
Jan. 2009	41,049	21,775	1,101	2,282	0	21,121	12,713	2,658	1,040	1,064	43,491	148,295	21,887	193	112,457	0	2,811	6,960	0	0	3,903	148,212	84	0.06
Feb. 2009	33,151	19,121	616	2,079	0	16,364	14,354	2,400	940	962	38,817	128,804	16,846	189	98,809	0	2,618	6,141	0	0	4,144	128,747	57	0.04
Mar. 2009	21,307	22,873	2,869	5,449	1	22,767	36,552	2,658	1,040	1,065	42,450	159,030	34,056	264	109,275	3	2,742	5,139	0	0	7,642	159,122	-91	-0.06
Apr. 2009	4,229	37,487	24,952	23,581	284	31,613	55,571	2,572	1,007	1,028	40,813	223,137	86,757	318	115,539	1,115	3,023	6,500	134	139	9,981	223,505	-368	-0.16
May 2009	15,329	28,865	17,243	63,268	8,930	59,002	20,288	2,658	1,040	1,062	42,231	259,915	74,749	351	128,749	36,148	3,887	1,501	1,465	1,079	12,128	260,056	-140	-0.05



Table C-1. Simulated Monthly Groundwater Budgets (ac-ft)

Month/Year	Inflows												Outflows										Mass Balance	
	Groundwater Flow In from Storage	Stream Loss to Aquifer	Precipitation Recharge	Surface Water Irrigation Return Flow Recharge	Groundwater Irrigation Return Flow Recharge	Canal Seepage Recharge	Augmentation Recharge Ponds	Reservoir Seepage Recharge	Alluvial Underflow In	Net Bedrock Flux	Net Lateral Boundary Flow	Total In	Groundwater Flow Out to Storage	Alluvial Underflow out below Julesburg	Stream Gain from Aquifer	Agricultural Irrigation Pumping	M&I Pumping	Augmentation Pumping	Alfalfa ET	Subirrigated Meadow ET	Phreatophyte ET	Total Out	In Minus Out	% Error
Jun. 2009	16,922	49,357	29,919	42,501	13,761	50,935	65,112	2,572	1,007	1,027	41,172	314,285	112,793	501	117,137	56,257	3,815	1,655	2,482	1,129	19,009	314,777	-493	-0.16
Jul. 2009	45,156	30,739	24,554	88,820	20,582	63,604	19,098	2,658	1,040	1,060	43,222	340,534	78,920	388	155,934	79,629	5,363	526	1,857	1,241	16,962	340,820	-286	-0.08
Aug. 2009	46,468	23,523	13,604	79,223	18,454	53,348	8,863	2,658	1,040	1,060	43,962	292,203	44,819	341	155,011	70,686	4,521	311	2,010	1,658	13,014	292,370	-167	-0.06
Sep. 2009	34,929	23,210	9,620	49,360	12,579	41,737	14,440	2,572	1,007	1,026	43,089	233,569	21,725	325	143,551	49,526	4,529	796	1,602	1,649	9,887	233,590	-22	-0.01
Oct. 2009	20,953	27,844	15,594	26,196	688	34,534	51,577	2,658	1,040	1,061	44,768	226,913	58,935	391	152,472	2,781	2,815	1,074	71	241	8,235	227,015	-102	-0.05
Nov. 2009	47,813	20,224	2,278	5,410	0	19,052	22,687	2,572	1,007	1,027	43,231	165,302	27,677	406	126,390	0	2,908	2,979	0	0	4,856	165,217	85	0.05
Dec. 2009	51,470	23,244	2,619	3,388	0	13,450	10,537	2,658	1,040	1,062	44,398	153,866	21,346	434	118,595	0	3,085	5,628	0	0	4,724	153,812	54	0.04
Jan. 2010	48,325	20,993	327	7,095	0	20,385	15,342	2,658	1,040	1,063	43,941	161,170	22,472	394	124,008	0	2,509	7,508	0	0	4,197	161,088	82	0.05
Feb. 2010	35,577	19,615	1,894	5,792	0	18,409	18,602	2,400	940	961	39,267	143,456	17,633	336	112,036	0	2,287	6,654	0	0	4,398	143,345	111	0.08
Mar. 2010	20,790	24,023	3,990	8,294	3	27,318	51,026	2,658	1,040	1,064	42,954	183,160	45,901	433	119,620	6	2,542	6,607	0	1	8,173	183,283	-123	-0.07
Apr. 2010	6,024	36,211	22,716	22,081	210	30,590	41,267	2,572	1,007	1,028	41,260	204,966	76,730	515	107,928	718	2,950	5,702	44	88	10,925	205,599	-634	-0.31
May 2010	13,005	33,884	16,306	40,393	6,987	40,860	28,949	2,658	1,040	1,061	42,467	227,610	62,669	546	111,846	27,879	3,690	3,942	1,558	1,324	14,611	228,065	-454	-0.20
Jun. 2010	24,897	41,659	26,209	64,101	18,218	52,633	18,359	2,572	1,007	1,026	41,239	291,920	79,893	581	108,887	72,264	4,336	1,063	3,410	2,429	19,336	292,197	-278	-0.10
Jul. 2010	79,315	24,877	14,996	91,721	25,888	63,500	3,744	2,658	1,040	1,060	43,301	352,099	51,082	418	170,283	101,679	5,658	197	3,581	3,353	15,899	352,149	-50	-0.01
Aug. 2010	46,203	24,882	14,063	85,530	22,748	57,437	7,103	2,658	1,040	1,060	44,076	306,800	38,082	313	156,177	87,821	5,046	203	3,374	2,789	12,943	306,748	52	0.02
Sep. 2010	79,063	16,855	808	49,860	22,779	40,048	4,515	2,572	1,007	1,027	43,261	261,793	5,646	270	145,691	89,541	4,687	110	3,010	3,377	9,285	261,617	176	0.07
Oct. 2010	37,722	19,843	4,357	32,169	6,359	32,546	23,601	2,658	1,040	1,062	44,994	206,352	27,230	335	138,351	26,359	3,029	409	1,312	1,919	7,378	206,322	30	0.01
Nov. 2010	60,425	17,961	1,854	4,187	42	21,842	7,005	2,572	1,007	1,028	43,425	161,349	24,160	369	128,081	187	2,856	1,223	0	29	4,368	161,273	75	0.05
Dec. 2010	51,036	19,566	1,096	2,852	0	19,920	12,602	2,658	1,040	1,063	44,566	156,400	20,678	379	124,138	0	2,795	4,216	0	0	4,204	156,409	-9	-0.01
Jan. 2011	42,614	22,984	1,738	2,414	0	15,017	12,964	2,658	1,040	1,064	44,071	146,563	21,169	384	111,658	0	2,846	6,182	0	0	4,131	146,370	193	0.13
Feb. 2011	30,172	21,488	2,147	2,913	0	15,378	18,638	2,400	940	961	39,389	134,427	20,111	349	100,232	0	2,584	6,427	0	0	4,484	134,186	241	0.18
Mar. 2011	26,169	19,963	979	6,366	47	23,859	41,302	2,658	1,040	1,065	43,087	166,535	29,030	376	121,658	127	2,644	5,126	0	38	7,635	166,634	-99	-0.06
Apr. 2011	16,461	25,169	10,577	37,888	1,821	27,579	24,433	2,572	1,007	1,030	41,316	189,853	41,990	434	121,595	7,590	3,075	5,028	388	787	9,091	189,978	-125	-0.07
May 2011	4,038	36,986	32,504	46,460	3,785	44,774	29,672	2,658	1,040	1,062	42,603	245,583	84,044	531	124,244	16,316	3,869	2,545	1,136	649	12,564	245,898	-315	-0.13
Jun. 2011	47,811	30,179	10,172	60,555	24,462	68,266	23,804	2,572	1,007	1,028	41,543	311,398	70,793	527	114,162	97,958	4,242	1,350	3,632	2,304	16,438	311,405	-7	0.00
Jul. 2011	37,610	38,297	20,200	85,382	26,361	78,492	9,788	2,658	1,040	1,061	43,719	344,607	80,533	537	125,538	106,022	5,313	949	3,250	2,717	19,752	344,611	-4	0.00
Aug. 2011	78,319	18,683	6,968	86,253	27,029	66,148	2,742	2,658	1,040	1,062	44,579	335,480	34,191	419	168,400	106,527	4,905	441	4,245	3,414	13,031	335,572	-92	-0.03
Sep. 2011	47,751	21,549	9,130	45,838	16,458	43,945	12,861	2,572	1,007	1,027	43,805	245,946	16,292	365	144,009	66,253	4,337	359	2,261	2,318	9,744	245,938	8	0.00
Oct. 2011	28,996	25,010	13,869	27,067	4,183	34,150	27,806	2,658	1,040	1,061	45,577	211,417	39,055	389	141,391	17,253	3,479	626	703	1,072	7,627	211,593	-176	-0.08
Nov. 2011	56,186	18,456	2,324	4,821	23	23,327	11,463	2,572	1,007	1,028	43,980	165,187	25,458	395	129,907	80	3,171	1,570	0	15	4,535	165,131	56	0.03
Dec. 2011	48,822	23,599	2,137	3,961	0	12,957	9,851	2,658	1,040	1,063	45,147	151,234	24,855	443	113,801	0	3,198	4,079	0	0	4,699	151,074	160	0.11



Table C-1. Simulated Monthly Groundwater Budgets (ac-ft)

Month/Year	Inflows												Outflows										Mass Balance	
	Groundwater Flow In from Storage	Stream Loss to Aquifer	Precipitation Recharge	Surface Water Irrigation Return Flow Recharge	Groundwater Irrigation Return Flow Recharge	Canal Seepage Recharge	Augmentation Recharge Ponds	Reservoir Seepage Recharge	Alluvial Underflow In	Net Bedrock Flux	Net Lateral Boundary Flow	Total In	Groundwater Flow Out to Storage	Alluvial Underflow out below Julesburg	Stream Gain from Aquifer	Agricultural Irrigation Pumping	M&I Pumping	Augmentation Pumping	Alfalfa ET	Subirrigated Meadow ET	Phreatophyte ET	Total Out	In Minus Out	% Error
Jan. 2012	43,666	23,006	412	4,351	0	15,501	16,006	2,658	1,040	1,064	44,649	152,353	24,245	446	113,285	0	2,933	6,898	0	0	4,469	152,276	76	0.05
Feb. 2012	29,220	24,671	3,952	6,294	0	14,827	18,843	2,486	973	995	41,292	143,554	25,368	420	103,086	0	2,574	6,953	0	0	5,083	143,484	70	0.05
Mar. 2012	33,939	20,156	328	5,864	894	21,479	33,909	2,658	1,040	1,064	43,573	164,906	21,750	432	120,983	3,827	2,695	6,346	293	589	8,043	164,958	-52	-0.03
Apr. 2012	40,483	24,236	10,508	35,774	9,802	29,743	16,288	2,572	1,007	1,029	41,769	213,211	27,546	434	122,191	41,810	3,736	3,360	2,447	2,425	9,150	213,099	112	0.05
May 2012	59,677	22,605	9,400	56,668	19,730	38,599	3,315	2,658	1,040	1,064	43,034	257,790	28,705	403	127,045	80,341	4,688	570	3,075	1,982	10,985	257,793	-3	0.00
Jun. 2012	111,987	22,360	6,217	56,948	43,277	45,684	2,319	2,572	1,007	1,029	41,794	335,194	17,087	336	118,591	169,981	5,205	429	6,463	4,778	12,337	335,208	-14	0.00
Jul. 2012	68,191	30,214	16,042	62,021	36,694	46,536	2,574	2,658	1,040	1,063	43,564	310,598	23,527	87	117,257	140,011	5,868	1,717	4,549	3,983	13,606	310,605	-7	0.00
Aug. 2012	99,517	20,666	2,282	53,000	39,580	37,586	1,869	2,658	1,040	1,064	43,867	303,129	7,427	-49	114,922	152,512	5,419	2,381	5,127	4,561	10,845	303,143	-15	0.00
Sep. 2012	36,992	27,109	11,763	39,922	10,489	26,296	2,023	2,572	1,007	1,029	42,711	201,912	29,779	7	108,530	42,318	5,160	4,328	1,392	1,880	8,498	201,893	19	0.01
Oct. 2012	36,522	21,364	7,291	25,113	2,744	24,935	7,770	2,658	1,040	1,064	44,213	174,713	33,193	50	117,323	11,272	3,148	2,135	260	762	6,529	174,672	41	0.02
Nov. 2012	48,156	19,820	1,273	2,632	53	15,044	2,292	2,572	1,007	1,030	42,563	136,441	27,665	123	99,240	192	2,753	2,179	0	25	4,100	136,276	165	0.12
Dec. 2012	42,982	22,550	976	755	0	10,263	7,949	2,658	1,040	1,065	43,620	133,860	23,910	198	97,971	0	2,759	4,880	0	0	4,064	133,782	77	0.06

