PRELIMINARY TROUT CREEK RESERVOIR OPERATIONS STUDY

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Introduction

Peabody Energy Company is proposing to construct Energy Fuels Reservoir No. 2 (aka Trout Creek Reservoir) on Trout Creek, a tributary of the Yampa River. The proposed Trout Creek Reservoir is located approximately 8.5 miles southwest of Steamboat Springs, Colorado. TZA Water Engineers, Inc. (TZA) has incorporated the proposed Trout Creek Reservoir into an existing model of the Yampa River basin and conducted preliminary modeling to determine the availability of water for the reservoir and the effect of the reservoir on streamflows. This report will provide a brief overview of the model, a description of pertinent water rights, and present the initial modeling results.

Model Overview

The Colorado Decision Support System (CDSS) consists of a database of hydrologic and administrative information related to water use in Colorado, and a variety of tools and models for reviewing, reporting, and analyzing the data. The Yampa River Basin Water Resources Planning Model (Yampa Model) was developed as part of the CDSS. It is a water allocation model that determines availability of water to individual users and projects, based on hydrology, water rights, and operating rules and practices.

The Yampa Model "baseline" data set extends from the most currently available hydrologic year back to 1909. It simulates current demands, current infrastructure and projects, and the current administrative environment as if they had been in place throughout the modeled period. The Yampa Model was calibrated to the conditions that occurred during the 1975 through 2005 period; it is reported to predict streamflows on average within 1.6 percent of the historic conditions. TZA has used the Yampa Model for the purposes of this study.

Trout Creek does not have published stream gage records of historic flow. The Yampa Model baseline data set includes estimates of Trout Creek base flows based upon historic streamflow measurements at the Elk River at Clark, Colorado stream gaging station (Station 09241000). The Elk Creek basin is located immediately north of the Trout Creek basin. The estimated historic Trout Creek base flows are computed in the baseline data set as 30.7% of the Elk Creek base flows. TZA modified the baseline data set to separate the total Trout Creek base flows into two major contributing drainage basins, Trout Creek and Fish Creek. The baseline data set was separated by correlating the baseline data set with data available from within the Fish Creek basin and the Trout Creek Basin. Data sources are listed in Table 1. TZA modified the Yampa Model to separate the flows from Trout Creek and Fish Creek, allowing the flows from Fish Creek to enter the basin below the Trout Creek Reservoir site. TZA ran the Yampa Model, without including Trout Creek Reservoir, to simulate the historic streamflow at the proposed reservoir location. We have selected a study period of 1950 through 2005 as being sufficient for the purposes of this study. The resulting simulated streamflows at the reservoir site are shown in Table 2. These results include the effects of upstream diversions and consumptive use on the streamflows at the site.

TZA has modified the Yampa Model to include the ability to simulate the operation of Trout Creek Reservoir. It is currently configured with a total capacity of 13,560 acre-feet and a minimum pool of 4,654 acre-feet. The simulation presented herein has assumed a demand (reservoir release) of 500 acre-feet per month, and that the reservoir releases would flow down Trout Creek to the Yampa River. These variables can be easily modified as necessary to consider alternative configurations and demands. TZA also confirmed that the model correctly incorporates the other water rights that divert from Trout Creek.

Water Rights

Trout Creek Reservoir was decreed in Case No. W-1256-77 as Energy Fuels Reservoir No. 2. It has an appropriation date of July 8, 1977 and is senior to all water rights filed on or after December 31, 1977. The decreed amount is 30,000 acre-feet. Diligence has been maintained on this conditional decree. TZA checked the State Engineer's records and confirmed that the conditional right previously decreed for Pittsburg & Midway Coal Mining Company's Trout Creek Reservoir was cancelled and abandoned by an order of the water court dated February 11, 1997. The Pittsburg & Midway storage right would have been senior to the Trout Creek Reservoir storage right if it had been maintained. A list of the water rights within the Trout Creek basin, along with administration numbers and other pertinent information has been compiled and is included as Table 3.

Two in-stream flow rights have been decreed on Trout Creek, an upper and a lower. The corresponding case numbers are W1337-77 for the upper right and W1338-77 for the lower right. The appropriation date for both rights is September 23, 1977. They are administered as having been filed in 1977. Both rights are decreed for 5 cfs. The lower in-stream flow right ends at the confluence with Middle Creek. The Yampa Model as originally configured had the in-stream flow right continuing to the confluence with the Yampa River. The model was modified to correctly portray the in-stream flow rights. The locations of the in-stream flow rights are shown on Figure 1.

Additional conditional water rights on Trout Creek and the Yampa River downstream of Trout Creek were identified using the CDSS database. These water rights are listed in Table 4. There are several large conditional water rights downstream on the Yampa River that, if constructed, would be senior to Trout Creek Reservoir. We have not considered any conditional water rights in the modeling that has been performed at this time.

Modeled Scenarios

The Yampa Model was run for two scenarios.

A. This scenario is the baseline scenario with existing conditions. It is used to evaluate changes in the streamflow as a result of the reservoir construction and operation.

B. This scenario includes the reservoir with an active storage capacity of 13,560 acre-feet and a minimum pool size of 4,654 acre-feet. The demand on the reservoir is

assumed to be 500 acre-feet each month. The demand is modeled such that the water is released from Trout Creek Reservoir No. 2 into Trout Creek and diverted just above the confluence of Trout Creek and the Yampa River. The modeled use is assumed to be 100-percent consumptive. The reservoir is assumed to be empty at the beginning of the study period.

Results

The reservoir is able to fill and meet the 500 acre-foot monthly demand in Scenario B without drawing down to the minimum pool level of 4,654 acre-feet.

The modeled streamflows at the reservoir site for Scenario A are shown on Table 2. The reservoir outflows for Scenario B are shown on Table 5. The modeled change in streamflows below the reservoir site for Scenario B is shown on Table 6. The modeled end-of-month storage content for Scenario B is shown on Table 7. The modeled end-of-month storage content for Scenario B is shown graphically on Figure 2.

References

1. Yampa River Basin Information. Colorado's Decision Support Systems. AECOM. October, 2009.
2. Yampa River Basin Water Resources Planning Model User's Manual. Colorado's Decision Support Systems. AECOM. October, 2009.
3. Models and databases obtained from the Colorado Decision Support System webpage.

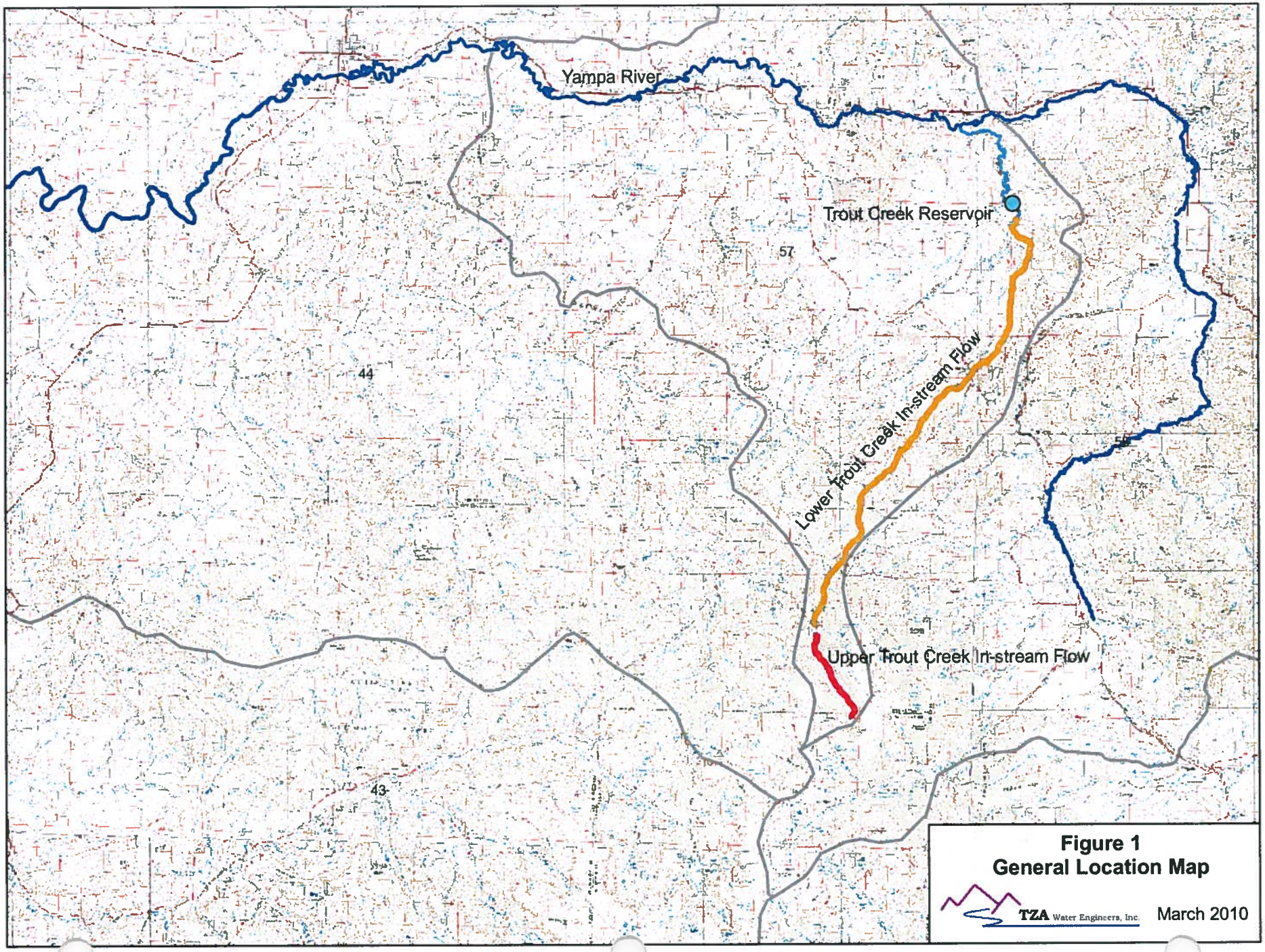

Figure 1
General Location Map

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March 2010

Figure 2
Scenario B Trout Creek Reservoir
Modeled End-of-Month Storage Content
13,560 AF, Reservoir July 8, 1977 Priority, 500 AF Monthly Demand

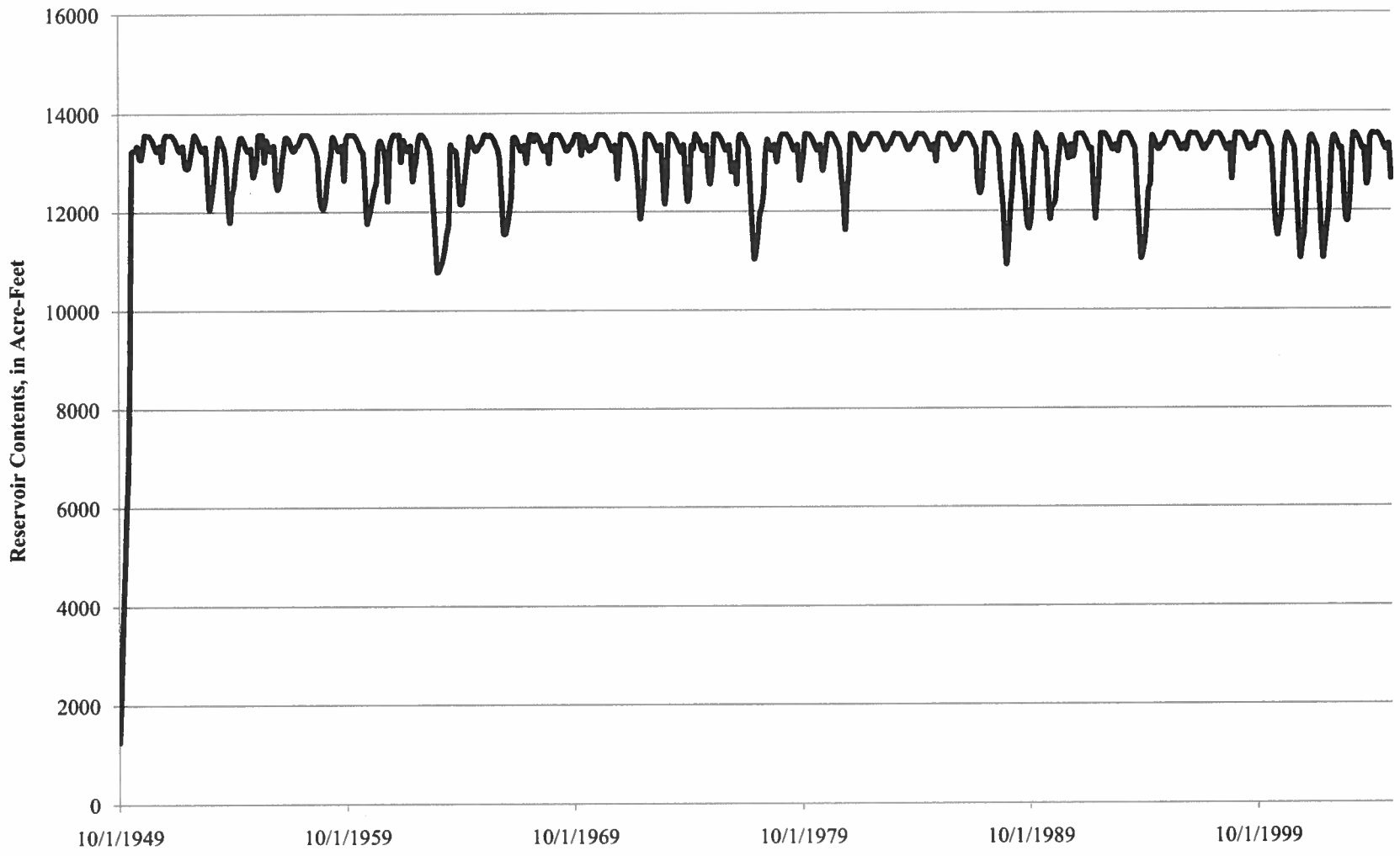

Table 1

Data Sources Considered when Developing Monthly Correlations to Divide StateMOD Trout Creek Streamflows into Two Sub-Basins: Trout Creek above Confluence with Fish Creek and Fish Creek

Data	Years
P&M Coal Trout Creek Measurements (Upstream of Spruce Hill	1988-2004
Peabody Energy Twenty Mile Coal Site 69 Streamflow Data	1981-2009
Middle Creek near Oak Creek Gage (USGS Site ID 09243700)	1975-2001
Foidel Creek near Oak Creek Gage (USGS Site ID 09243900)	1975-2001
Elk River at Clark (USGS Site ID 09241000)	1911-1916, 1918, 1920, 1932-1991, 1998-2003 (Seasonal)
Fish Creek near Milner (USGS Site ID 09244100)	1956-1973
Diversion Records (DWR)	Varies by Station

Table 2
Trout Creek Reservoir
Inflow
(acre-feet)

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
1950	1261	1004	1308	1044	1293	1344	2997	4724	7517	2539	956	461	26448
1951	577	728	1112	939	795	1178	1892	5385	5084	3678	1310	398	23076
1952	1054	726	972	858	819	970	3235	8442	8477	1508	1251	304	28616
1953	543	523	614	649	731	1199	1465	2729	5517	1354	786	0	16110
1954	54	636	731	723	903	1056	3096	3614	1086	382	779	379	13439
1955	1151	679	831	696	703	1320	3695	4378	3303	1380	755	140	19031
1956	695	701	950	892	931	1686	4873	7587	4766	1408	908	75	25472
1957	405	602	748	704	767	1117	1135	4750	9689	8615	2842	732	32106
1958	1226	1012	1275	1131	1212	1367	1647	8786	5598	656	378	446	24732
1959	533	608	823	707	737	954	1333	3301	4949	988	888	557	16377
1960	2087	1276	957	913	1027	1626	5153	4944	4764	749	277	192	23964
1961	729	643	646	584	642	1244	1156	4003	2415	498	84	1767	14411
1962	3333	1693	1673	1225	1399	1345	7684	7959	5083	2678	872	140	35082
1963	838	691	776	763	906	1181	1785	3949	2608	332	665	141	14636
1964	1	534	523	545	689	837	826	5587	4962	2250	672	144	17569
1965	113	507	742	752	822	10072	1616	6219	8559	5039	2704	1228	38372
1966	1823	624	1569	374	1559	2629	3821	5055	1943	519	475	7	20397
1967	594	662	724	731	1614	1996	1744	4807	6172	3682	807	351	23884
1968	945	783	1371	271	1117	1573	1064	3718	7394	2438	1675	343	22691
1969	1210	1038	2049	753	1498	2540	4171	7265	3101	1953	1284	1312	28173
1970	948	980	1538	1389	66	1467	1164	6885	7430	4012	1744	672	28294
1971	1822	936	1729	1842	525	2825	3154	6091	8405	3580	1450	39	32396
1972	996	1090	1855	670	1493	3228	2342	4800	3953	515	268	49	21259
1973	854	879	1813	494	1205	1771	1397	6210	5675	2773	1367	63	24500
1974	50	906	1597	419	2042	1653	2549	10409	5078	763	1108	0	26575
1975	162	655	1371	359	1088	1871	1273	5568	8522	6657	2117	113	29754
1976	401	860	1568	850	586	2059	2579	5035	2595	1317	832	168	18850
1977	617	646	310	1326	1026	974	1931	892	807	2	682	243	9453

Table 2 -- Continued
Trout Creek Reservoir
Reservoir Inflow
(acre-feet)

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
1978	705	836	845	561	727	1300	2592	6429	11116	6303	1834	364	33612
1979	869	719	948	837	570	948	2033	6859	6778	3513	1292	319	25683
1980	815	760	1004	755	1099	1113	1502	7741	7978	2811	1073	197	26847
1981	747	820	878	866	1078	1423	1964	2053	1931	274	357	61	12452
1982	1393	873	1537	882	1300	2162	2945	6547	7197	7256	3476	1557	37124
1983	2114	1782	1491	1266	1353	2597	1766	5414	10878	7705	2753	808	39927
1984	2292	1945	1824	1370	1243	661	1445	11172	10052	7472	2557	1274	43306
1985	1918	997	1768	1801	1021	724	6137	8260	5391	1763	854	367	31002
1986	1577	1036	2000	1590	1251	2146	7119	8001	9581	4605	2300	1082	42287
1987	2776	1565	1513	1669	1354	1165	3882	3090	953	99	530	799	19396
1988	1172	1034	1276	1203	1346	1072	2712	5383	4706	206	268	0	20378
1989	94	824	1161	818	1212	2196	4184	3099	1563	199	325	359	16032
1990	500	719	1015	956	1046	1425	3876	2703	4164	965	592	0	17960
1991	823	542	531	992	840	1779	1427	4931	4587	617	1094	451	18612
1992	660	866	880	1157	1273	2567	2714	4243	1197	1098	465	172	17292
1993	1051	947	1267	1243	1240	2428	3041	8351	7532	3879	1369	564	32911
1994	1269	884	1246	1157	1264	3218	3225	4563	1266	0	688	29	18806
1995	703	697	867	1019	618	2614	1679	6840	11208	9260	2219	706	38431
1996	1417	1248	1317	1437	1605	2610	3421	7982	6893	2823	916	597	32265
1997	1043	1224	1472	1506	1311	3654	2939	9091	11170	3594	2825	2887	42714
1998	3108	1562	1560	1672	1838	4794	3183	6580	5347	3876	1673	372	35564
1999	1161	1170	1295	1453	1420	3669	3891	7110	6350	2812	1299	657	32287
2000	929	738	1293	1371	1270	2416	4371	7418	2859	13	294	435	23407
2001	807	710	1183	1086	1364	2663	3505	7770	1881	0	256	0	21226
2002	872	693	1148	1060	1020	2033	2342	2729	758	197	168	342	13363
2003	874	832	760	1086	1198	2329	4264	8057	5229	1126	859	222	26835
2004	539	810	1122	1152	1161	4303	3232	4056	2070	979	443	799	20667
2005	1727	1268	1508	1502	1120	2390	4033	6839	6937	2566	1116	65	31072
Average	1053	906	1194	1001	1095	2062	2861	5829	5411	2469	1140	463	25484

*Model developed from 2009 Yampa Basin CDSS StateMod flow model

Table 3

Modeled Water Rights on Trout Creek or Tributaries to Trout Creek Upstream of Trout Creek Reservoir

Division 6, District 57

WDID	Water Right Name	Admin No	Appropriation Date	Adjudication Date	Rate Absolute (CFS)	Volume Absolute (ACFT)	Rate Conditional (CFS)	Volume Conditional (ACFT)	Rate AP/EX (ACFT)	Volume AP/EX (ACFT)
609	TROUT CREEK DITCH 2	14001.00000	1888-05-01	1892-09-22	1.66	0	0	0	0	0
517	DAVID M CHAPMAN DITCH	14011.00000	1888-05-11	1892-09-22	0	0	0	0	1.83	0
518	DAVID M CHAPMAN DITCH 2	14011.00000	1888-05-11	1892-09-22	0	0	0	0	1.83	0
576	ORNO DITCH	14011.00000	1888-05-11	1892-09-22	1.83	0	0	0	0	0
620	WILLIAM H JONES DITCH	14012.00000	1888-05-12	1892-09-22	1.66	0	0	0	0	0
552	JONES KLECKNER DITCH	14081.00000	1888-07-20	1892-09-22	2	0	0	0	0	0
608	TROUT CREEK DITCH 3	14318.00000	1889-03-14	1892-09-22	7.66	0	0	0	0	0
609	TROUT CREEK DITCH 2	14385.00000	1889-05-20	1892-09-22	1	0	0	0	0	0
513	CONNELL DITCH	14472.00000	1889-08-15	1892-09-22	2.66	0	0	0	0	0
635	KOLL DITCH	16698.16202	1894-05-11	1896-09-26	2.08	0	0	0	0	0
1224	SPRUCE HILL DITCH ALT PT	16698.16202	1894-05-11	1896-09-26	0	0	0	0	1.04	0
578	PINE GROVE DITCH	17071.14366	1889-05-01	1897-09-22	1.68	0	0	0	0	0
550	JEFFERSON DITCH	18817.00000	1901-07-09	1901-09-15	4	0	0	0	0	0
599	TEMPKE DITCH	18885.15121	1891-05-26	1902-09-15	1.33	0	0	0	0	0
517	DAVID M CHAPMAN DITCH	18885.15127	1891-06-01	1902-09-15	2.66	0	0	0	0	0
635	KOLL DITCH	18885.16202	1894-05-11	1902-09-15	1.82	0	0	0	0	0
1224	SPRUCE HILL DITCH ALT PT	18885.16202	1894-05-11	1902-09-15	0	0	0	0	0.91	0
581	REDBIRD DITCH	18885.16634	1895-07-17	1902-09-15	2.33	0	0	0	0	0
598	SPRUCE HILL DITCH	18885.18512	1900-09-07	1902-09-15	1.17	0	0	0	0	0
1224	SPRUCE HILL DITCH ALT PT	18885.18512	1900-09-07	1902-09-15	0	0	0	0	1.17	0
545	HOMESTEAD DITCH	18885.18748	1901-05-01	1902-09-15	4.66	0	0	0	0	0
609	TROUT CREEK DITCH 2	19116.00000	1902-05-04	1902-09-15	5	0	0	0	0	0
4629	RICH DITCH	19251.17083	1896-10-08	1903-09-21	3.6	0	0	0	0	0
545	HOMESTEAD DITCH	19251.19236	1902-09-01	1903-09-21	1.66	0	0	0	0	0
598	SPRUCE HILL DITCH	21092.19478	1903-05-01	1908-09-23	0.66	0	0	0	0	0
635	KOLL DITCH	21092.19509	1903-06-01	1908-09-23	2.83	0	0	0	0	0
1224	SPRUCE HILL DITCH ALT PT	21092.19509	1903-06-01	1908-09-23	0	0	0	0	1.415	0
4629	RICH DITCH	22436.22033	1910-04-29	1911-06-14	0.83	0	0	0	0	0
518	DAVID M CHAPMAN DITCH 2	22444.22035	1910-05-01	1912-07-02	0.66	0	0	0	0	0
555	LAST CHANCE DITCH	22828.19144	1902-06-01	1913-06-06	3	0	0	0	0	0
555	LAST CHANCE DITCH	23167.20672	1906-08-07	1913-06-09	4.5	0	0	0	0	0
555	LAST CHANCE DITCH	23167.21781	1909-08-20	1913-06-09	1.5	0	0	0	0	0
517	DAVID M CHAPMAN DITCH	23544.21352	1908-06-17	1914-06-19	0	0	0	0	0.58	0
518	DAVID M CHAPMAN DITCH 2	23544.21352	1908-06-17	1914-06-19	0	0	0	0	0.58	0
576	ORNO DITCH	23544.21352	1908-06-17	1914-06-19	0.58	0	0	0	0	0
561	MALE MOORE CO DITCH	23544.21829	1909-10-07	1914-06-19	7.9	0	0	0	0	0
593	SLOUGH DITCH	23544.22039	1910-05-05	1914-06-19	2.28	0	0	0	0	0
545	HOMESTEAD DITCH	25393.23101	1913-04-01	1920-06-29	4.05	0	0	0	0	0
555	LAST CHANCE DITCH	26551.22817	1912-06-21	1931-05-19	0.54	0	0	0	0	0
555	LAST CHANCE DITCH	29723.24428	1916-11-18	1931-12-05	0.75	0	0	0	0	0
4629	RICH DITCH	29923.27667	1925-10-01	1932-04-25	4	0	0	0	0	0
552	JONES KLECKNER DITCH	32711.31978	1937-07-21	1940-11-22	0.9	0	0	0	0	0
578	PINE GROVE DITCH	34139.14366	1889-05-01	1948-07-12	2.3	0	0	0	0	0
4629	RICH DITCH	34139.19621	1903-09-21	1948-07-12	3.8	0	0	0	0	0
507	BONAS DITCH	34139.19884	1904-06-10	1948-07-12	3.8	0	0	0	0	0
1013	ALEX DITCH	34139.22039	1910-05-05	1948-07-12	0	0	0	0	1.28	0
518	DAVID M CHAPMAN DITCH 2	34139.22039	1910-05-05	1948-07-12	0	0	0	0	1.28	0
593	SLOUGH DITCH	34139.22039	1910-05-05	1948-07-12	1.7	0	0	0	0	0
4629	RICH DITCH	34139.27028	1924-01-01	1948-07-12	3.26	0	0	0	0	0
561	MALE MOORE CO DITCH	34139.29371	1930-06-01	1948-07-12	4.72	0	0	0	0	0
517	DAVID M CHAPMAN DITCH	34139.31532	1936-05-01	1948-07-12	2.66	0	0	0	0	0
518	DAVID M CHAPMAN DITCH 2	39925.30102	1932-06-01	1962-11-15	1.5	0	0	0	0	0
608	TROUT CREEK DITCH 3	39925.35184	1946-05-01	1962-11-15	5	0	0	0	0	0

Table 3 -- continued
Water Rights on Trout Creek or Tributaries to Trout Creek Upstream of Trout Creek Reservoir
Division 6, District 57

WDID	Water Right Name	Admin No	Appropriation Date	Adjudication Date	Rate Absolute (CFS)	Volume Absolute (ACFT)	Rate Conditional (CFS)	Volume Conditional (ACFT)	Rate AP/EX (ACFT)	Volume AP/EX (ACFT)
576	ORNO DITCH	39925.35198	1946-05-15	1962-11-15	3.6	0	0	0	0	0
635	KOLL DITCH	39925.36280	1949-05-01	1962-11-15	6.49	0	0	0	0	0
1224	SPRUCE HILL DITCH ALT PT	39925.36280	1949-05-01	1962-11-15	0	0	0	0	3.245	0
600	THOMPSON DITCH 1	39925.36417	1949-09-15	1962-11-15	0.8	0	0	0	0	0
601	THOMPSON DITCH 2	39925.36417	1949-09-15	1962-11-15	1.1	0	0	0	0	0
4629	RICH DITCH	39925.37395	1952-05-20	1962-11-15	3.83	0	0	0	0	0
545	HOMESTEAD DITCH	39925.37529	1952-10-01	1962-11-15	5.55	0	0	0	0	0
513	CONNELL DITCH	39925.37741	1953-05-01	1962-11-15	13	0	0	0	0	0
555	LAST CHANCE DITCH	39925.38259	1954-10-01	1962-11-15	9	0	0	0	0	0
4204	ENERGY FUELS RES 2	46386.37536	1952-10-08	1977-12-31	0	0	0	0	0	1.99
4204	ENERGY FUELS RES 2	46386.45899	1975-09-01	1977-12-31	0	0	0	0	0	27.22
4204	ENERGY FUELS RES 2	46575.00000	1977-07-08	1977-12-31	0	0	0	30000	0	0
1009	TROUT CREEK MSF-LOWER	46652.00000	1977-09-23	1977-12-31	5	0	0	0	0	0
2070	TROUT CREEK MSF-UPPER	46652.00000	1977-09-23	1977-12-31	5	0	0	0	0	0
550	JEFFERSON DITCH	46721.00000	1977-12-01	1977-12-31	0	0	196	0	0	0
620	WILLIAM H JONES DITCH	46721.00000	1977-12-01	1977-12-31	0	0	125	0	0	0
3001	BURCH DITCH	48435.00000	1982-08-11	1982-12-31	2	0	0	0	0	0
4204	ENERGY FUELS RES 2	51354.00000	1990-08-08	1990-12-31	0	0	0	0	0	2171.34
576	ORNO DITCH	52960.34333	1944-01-01	1995-12-31	2.3	0	0	0	0	0
1048	FULLER DITCH	52960.45291	1974-01-01	1995-12-31	1	0	0	0	0	0
599	TEMPKE DITCH	54786.45836	1975-06-30	2000-12-31	3	0	0	0	0	0
				Whetstone Creek						
617	WHETSTONE OUTLET DITCH	19628.19116	1902-05-04	1903-09-29	0.8300	0	0	0	0	0
				Middle Creek						
750	LAST CHANCE EXT	26104.23546	1914-06-20	1921-06-24	0.5000	0	0	0	0	0
556	LIESKE DITCH	39925.36294	1949-05-15	1962-11-15	2.5000	0	0	0	0	0
565	MIDDLE CREEK DITCH	13975.00000	1888-04-05	1892-09-22	1.1600	0	0	0	0	0
				Little Trout Creek						
749	ROCKY DITCH	45655.34479	1944-05-26	1975-12-31	0.5000	0	0	0	0	0
				Purington Draw						
543	HELFENBEIN SEEPAGE DITCH	34139.31563	1936-06-01	1948-07-12	2.33	0	0	0	0	0

Diversions Modeled in Aggregate Diversion Structure

Table 4

Conditional Surface Water Rights on Trout Creek, Tributaries to Trout Creek Upstream of Trout Creek Reservoir, or Yampa River in Districts 44, 55, 56, and 57

	WD	ID	Water Right Name	Water Source	Adj Date	Appr Date	Admin No	Priority # / Case #	Use Type	Structure Type	Rate Absolute (CFS)	Volume Absolute (ACFT)	Rate Conditional (CFS)	Volume Conditional (ACFT)
Yampa River	44	3692	JUNIPER RES	YAMPA RIVER	1960-09-01	1954-06-08	38144.00000	11	1245689P	Reservoir	0	0	0	844294
	44	3692	JUNIPER RES	YAMPA RIVER	1974-12-31	1974-07-25	45496.00000	W0771	1245689P	Reservoir	0	0	0	235700
	44	4322	CROSS MTN RESERVOIR	YAMPA RIVER	1974-12-31	1974-07-25	45496.00000	W0772	1245689P	Reservoir	0	0	0	142000
	44	4322	CROSS MTN RESERVOIR	YAMPA RIVER	1979-12-31	1979-08-14	47342.00000	79CW0194	1245689P	Reservoir	0	0	0	66000
	44	3692	JUNIPER RES	YAMPA RIVER	1981-12-31	1981-02-27	47905.00000	81CW0262	1245689P	Reservoir	0	0	0	1006768
	44	4322	CROSS MTN RESERVOIR	YAMPA RIVER	1981-12-31	1981-02-27	47905.00000	81CW0265	1245689P	Reservoir	0	0	0	125500
	57	7013	COLORADO STATE PARK AUG PLAN	YAMPA RIVER	2003-12-31	2002-06-18	55882.55686	03CW0023	135678E	Aug Plan	0	0	0	23.47
	44	2014	JUNIPER POWER PLANT	YAMPA RIVER	1960-09-01	1954-06-08	38144.00000	87A	1245689P	Pipeline, Tunnel	0	0	1000	0
	44	588	DEADMAN BENCH CANAL	YAMPA RIVER	1960-09-01	1954-06-08	38144.00000	87	1245689P	Ditch	0	0	550	0
	44	2004	CROSS MTN PENSTOCK & PP	YAMPA RIVER	1975-12-31	1974-07-25	45655.45496	W0792	1245689P	Pipeline, Tunnel	0	0	2200	0
	44	2029	YAMPA RIVER MILK CK PL	YAMPA RIVER	1976-12-31	1975-09-25	46020.45923	W0987-76	14568P	Pipeline, Tunnel	0	0	400	0
	44	2014	JUNIPER POWER PLANT	YAMPA RIVER	1979-12-31	1979-08-14	47342.00000	79CW0195	1245689P	Pipeline, Tunnel	0	0	5000	0
	44	2004	CROSS MTN PENSTOCK & PP	YAMPA RIVER	1979-12-31	1979-08-14	47342.00000	79CW0196	1245689P	Pipeline, Tunnel	0	0	3100	0
	44	2014	JUNIPER POWER PLANT	YAMPA RIVER	1979-12-31	1979-12-05	47455.00000	79CW0205	1245689P	Pipeline, Tunnel	0	0	1000	0
	44	851	MORGAN DITCH	YAMPA RIVER	1994-12-31	1994-05-16	52731.00000	94CW0147	19	Ditch	0	0	7	0
	57	519	DENNIS & BLEWITT D	YAMPA RIVER	1995-12-31	1995-01-09	52969.00000	95CW0002	1	Ditch	0	0	2	0
												TOTAL	13259	2420285
Trout Creek	57	4204	ENERGY FUELS RES 2	TROUT CK	1977-12-31	1977-07-08	46575.00000		12346789AP	Reservoir	0	0	0	30000
	57	3627	MARCIA POND	TROUT CK	1998-12-31	1998-12-31	54421.00000		1569W	Reservoir	0	0	0	10
	57	3692	SIMILLION POND NO. 1	TROUT CK	2005-12-31	2005-06-01	56765.00000		56789W	Reservoir	0	0	0	5
	57	550	JEFFERSON DITCH	TROUT CK	1977-12-31	1977-12-01	46721.00000		12346789A	Ditch	0	0	196	0
	57	620	WILLIAM H JONES DITCH	TROUT CK	1977-12-31	1977-12-01	46721.00000		12346789A	Ditch	0	0	125	0
	57	1206	CREEK RANCH HG NO. 1	TROUT CK	1999-12-31	1999-12-30	54785.00000		1	Ditch	0	0	3.5	0
	57	1207	CREEK RANCH HG NO. 2	TROUT CK	1999-12-31	1999-12-30	54785.00000		1	Ditch	0	0	2.5	0
	57	1209	BAKER LAKE FEEDER D	TROUT CK	1999-12-31	1999-12-30	54785.00000		E	Ditch	0	0	0.25	0
	57	1208	HEADQUARTERS LAKE FD	TROUT CK	1999-12-31	1999-12-30	54785.00000		E	Ditch	0	0	0.25	0
	57	768	SPRING DALE POND NO. 1	TRIBUTARIES-TROUT	2007-12-31	1997-09-29	57343.53963	07CW0056	156789W	Reservoir	0	0	0	2.5
	57	770	POWERLINE POND NO. 1	TRIBUTARIES-TROUT	2007-12-31	2005-12-15	57343.56962	07CW0056	156789W	Reservoir	0	0	0	3
	57	769	SPRING DALE POND NO. 2	TRIBUTARIES-TROUT	2007-12-31	1997-09-29	57343.53963	07CW0056	156789W	Reservoir	0	0	0	4
	57	3521	TROY'S POND	TRIBUTARIES-TROUT	1998-12-31	1998-09-01	54300.00000	98CW0075	1569W	Reservoir	0	0	0	5
	57	3610	DEERWOOD POND	TRIBUTARIES-TROUT	1999-12-31	1999-04-09	54520.00000	99CW0013	156789A	Reservoir	0	0	0	13.6
	57	3610	DEERWOOD POND	TRIBUTARIES-TROUT	2001-12-31	2001-06-13	55316.00000	01CW0081	156789AE	Reservoir	0	0	0	13.6
	57	3622	REDTAIL POND NO. 1	WHETSTONE CK	1996-12-31	1965-06-01	53325.42155	96CW0082	569W	Reservoir	0	1	0	1
	57	3585	WHETSTONE RES	WHETSTONE CK	2000-12-31	2000-12-02	55123.00000	00CW0078	1569A	Reservoir	0	0	0	126.24
Conditional Water Rights Senior to Trout Creek Reservoir												TOTAL	328	30184

Table 5
Trout Creek Reservoir
Reservoir Outflow
Scenario B 13,560 AF Reservoir, July 8, 1977 Priority Date, 500 AF Monthly Demand
(acre-feet)

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
1950	0	0	0	0	32	500	500	500	7169	2226	651	500	12076
1951	500	500	862	939	795	1178	1845	5267	4864	3365	1004	500	21618
1952	530	625	972	858	819	970	3187	8324	8257	1194	946	500	27181
1953	500	500	500	500	528	1199	1418	2611	5297	1040	500	500	15093
1954	500	500	500	500	500	770	3049	3496	866	500	1279	500	12960
1955	500	500	500	500	500	1227	3648	4260	3083	1067	500	500	16784
1956	500	500	500	892	931	2186	4326	7470	4546	1095	603	500	24048
1957	500	500	500	500	500	1048	1088	4631	9470	8301	2536	505	30080
1958	1030	910	1275	1131	1212	1367	1600	8668	5378	500	878	500	24446
1959	500	500	500	500	500	542	1286	3183	4729	674	583	1057	14553
1960	1166	1175	957	913	1027	1626	5106	4826	4544	500	777	692	23309
1961	500	500	500	500	500	500	923	3885	2195	500	584	500	11587
1962	3067	1591	1673	1225	1399	1845	7137	7842	4863	2364	566	640	34211
1963	500	500	500	641	906	1181	1738	3831	2388	500	1165	641	14491
1964	501	500	500	500	500	500	500	3794	4748	1936	500	500	14979
1965	500	500	500	500	500	9704	1569	6101	8339	4725	2398	1001	36337
1966	1626	522	1569	500	1527	2629	3774	4937	1723	500	975	507	20788
1967	500	500	500	500	500	1920	1697	4689	5952	3368	502	500	21129
1968	500	556	1371	500	982	1573	1017	3600	7174	2124	1370	500	21265
1969	632	937	2049	753	1498	2540	4124	7147	2881	1640	978	1084	26261
1970	751	878	1538	1389	500	1057	1117	6767	7210	3698	1438	500	26842
1971	1571	834	1729	1842	525	2825	3107	5973	8185	3266	1145	500	31500
1972	500	601	1855	670	1494	3228	2295	4682	3733	500	500	500	20559
1973	500	500	759	500	1205	1771	1350	6092	5455	2459	1061	500	22152
1974	500	500	604	500	2042	1653	2502	10291	4858	500	752	500	25203
1975	500	500	500	500	800	1871	1226	5450	8302	6343	1811	500	28303
1976	500	500	929	850	586	2059	2532	4917	2375	1003	527	500	17277
1977	500	500	810	500	945	974	1884	774	587	502	1182	743	9899

Table 5 -- Continued
Trout Creek Reservoir
Reservoir Outflow
Scenario B 13,560 AF Reservoir, July 8, 1977 Priority Date, 500 AF Monthly Demand
(acre-feet)

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
1978	500	500	500	500	500	500	2113	6312	10896	5989	1529	500	30339
1979	500	500	884	837	570	948	1986	6741	6558	3199	986	819	24527
1980	500	500	565	755	1099	1113	1455	7623	7758	2497	767	500	25132
1981	500	500	629	866	1078	1423	1916	1935	1711	500	550	561	12169
1982	500	500	770	882	1300	2162	2898	6429	6977	6942	3171	1330	33860
1983	1918	1680	1491	1266	1353	2597	1718	5296	10658	7391	2448	581	38397
1984	2096	1843	1824	1370	1243	661	1397	11054	9832	7158	2251	1047	41776
1985	1722	895	1768	1801	1021	724	6090	8142	5171	1450	548	500	29832
1986	1021	935	2000	1590	1251	2146	7072	7883	9361	4291	1995	855	40399
1987	2580	1463	1513	1669	1354	1165	3835	2972	733	500	500	500	18784
1988	500	509	1276	1203	1346	1072	2665	5265	4486	500	500	500	19822
1989	551	500	500	500	500	1774	4144	2981	1343	500	500	687	14480
1990	500	500	500	500	500	1425	3828	2585	3944	651	1092	500	16525
1991	500	500	500	500	500	1396	1380	4813	4367	500	592	500	16047
1992	500	500	842	1157	1273	2567	2667	4125	977	784	965	672	17029
1993	500	500	500	1243	1240	2428	2993	8233	7312	3565	1063	500	30078
1994	910	782	1246	1157	1264	3218	3178	4445	1046	500	1188	529	19460
1995	500	500	500	500	500	1611	1633	6722	10988	8946	1914	500	34814
1996	1200	1146	1317	1437	1605	2610	3373	7864	6673	2509	610	500	30845
1997	718	1122	1472	1506	1311	3654	2892	8973	10950	3280	2520	2659	41055
1998	2912	1460	1560	1672	1838	4794	3135	6462	5127	3562	1367	872	34762
1999	500	810	1295	1453	1420	3669	3843	6992	6130	2498	993	500	30104
2000	662	636	1293	1371	1270	2416	4324	7300	2639	500	794	500	23705
2001	500	500	500	500	1170	2663	3458	7652	1661	500	756	500	20360
2002	500	500	500	500	500	1922	2295	2611	538	568	668	842	11945
2003	500	500	500	500	500	2174	4216	7939	5009	813	1359	722	24731
2004	500	500	500	500	1154	4303	3184	3938	1850	665	943	500	18538
2005	806	1168	1508	1502	1120	2390	3986	6721	6717	2252	811	565	29545
Average	803	698	950	872	956	1964	2736	5607	5189	2311	1091	645	23821
Minimum 1950-2005	0	0	0	0	32	500	500	500	538	500	500	500	--

*Model developed from 2009 Yampa Basin CDSS StateMod flow model

Table 6
Trout Creek Reservoir
Change in Trout Creek Flows below Reservoir
Scenario B 13,560 AF Reservoir, July 8, 1977 Priority Date, 500 AF Monthly Demand
(acre-feet)

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
1950	-1261	-1004	-1308	-1044	-1261	-844	-2497	-4224	-349	-313	-306	39	-14371
1951	-77	-228	-251	0	0	0	-47	-118	-220	-314	-306	102	-1457
1952	-524	-102	0	0	0	0	-47	-118	-220	-314	-306	196	-1435
1953	-43	-23	-114	-149	-203	0	-47	-118	-220	-314	-286	500	-1017
1954	447	-136	-231	-223	-403	-286	-47	-118	-220	118	500	121	-479
1955	-651	-179	-331	-196	-203	-94	-47	-118	-220	-314	-255	360	-2247
1956	-195	-201	-450	0	0	500	-547	-117	-220	-314	-305	425	-1424
1957	95	-102	-248	-204	-267	-68	-47	-119	-220	-314	-305	-227	-2027
1958	-196	-102	0	0	0	0	-47	-118	-220	-156	500	54	-285
1959	-33	-108	-323	-207	-237	-412	-47	-118	-220	-314	-305	500	-1824
1960	-921	-101	0	0	0	0	-47	-118	-220	-249	500	500	-655
1961	-229	-143	-146	-84	-142	-744	-233	-118	-220	2	500	-1267	-2824
1962	-266	-102	0	0	0	500	-547	-117	-220	-314	-306	500	-872
1963	-338	-191	-276	-123	0	0	-47	-118	-220	168	500	500	-144
1964	500	-34	-23	-45	-189	-337	-326	-1793	-214	-314	-172	356	-2590
1965	387	-7	-242	-252	-322	-367	-47	-118	-220	-314	-306	-227	-2035
1966	-196	-102	0	127	-32	0	-47	-118	-220	-19	500	500	392
1967	-94	-162	-224	-231	-1114	-76	-47	-118	-220	-314	-306	149	-2755
1968	-445	-227	0	229	-135	0	-47	-118	-220	-314	-306	157	-1426
1969	-579	-101	0	0	0	0	-47	-118	-220	-314	-306	-227	-1912
1970	-196	-102	0	0	434	-410	-47	-118	-220	-314	-306	-172	-1451
1971	-251	-102	0	0	0	0	-47	-118	-220	-314	-306	461	-896
1972	-496	-489	1	0	0	0	-47	-118	-220	-15	232	451	-700
1973	-354	-379	-1054	6	0	0	-47	-118	-220	-314	-306	437	-2348
1974	450	-406	-993	81	0	0	-47	-118	-220	-263	-356	500	-1372
1975	338	-155	-871	141	-287	0	-47	-118	-220	-314	-306	387	-1452
1976	99	-360	-639	0	0	0	-47	-118	-220	-314	-305	332	-1573
1977	-117	-146	500	-826	-81	0	-47	-118	-220	500	500	500	446

Table 6 -- Continued
Trout Creek Reservoir
Change in Trout Creek Flows below Reservoir
Scenario B 13,560 AF Reservoir, July 8, 1977 Priority Date, 500 AF Monthly Demand
(acre-feet)

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
1978	-205	-336	-345	-61	-227	-800	-479	-117	-220	-314	-306	136	-3273
1979	-369	-219	-64	0	0	0	-47	-118	-220	-314	-306	500	-1156
1980	-315	-260	-438	0	0	0	-47	-118	-220	-314	-306	303	-1715
1981	-247	-320	-250	0	0	0	-47	-118	-220	226	193	500	-283
1982	-893	-373	-767	0	0	0	-47	-118	-220	-314	-305	-227	-3265
1983	-196	-102	0	0	0	0	-47	-118	-220	-314	-306	-227	-1530
1984	-196	-102	0	0	0	0	-47	-118	-220	-314	-306	-227	-1530
1985	-196	-102	0	0	0	0	-47	-118	-220	-314	-306	133	-1170
1986	-555	-101	0	0	0	0	-47	-118	-220	-314	-306	-227	-1888
1987	-196	-102	0	0	0	0	-47	-118	-220	401	-30	-299	-612
1988	-672	-525	0	0	0	0	-47	-118	-220	295	232	500	-556
1989	457	-324	-661	-318	-712	-422	-41	-118	-220	301	175	328	-1553
1990	1	-219	-515	-456	-546	0	-47	-118	-220	-314	500	500	-1435
1991	-323	-42	-31	-492	-340	-383	-47	-118	-220	-117	-502	49	-2565
1992	-160	-366	-38	0	0	0	-47	-118	-220	-314	500	500	-263
1993	-551	-447	-767	0	0	0	-47	-118	-220	-314	-306	-64	-2834
1994	-359	-102	0	0	0	0	-47	-118	-220	500	500	500	654
1995	-203	-197	-367	-519	-118	-1003	-47	-118	-220	-314	-306	-206	-3617
1996	-217	-102	0	0	0	0	-47	-118	-220	-314	-306	-97	-1421
1997	-326	-102	0	0	0	0	-47	-118	-220	-314	-306	-227	-1659
1998	-196	-102	0	0	0	0	-47	-118	-220	-314	-306	500	-803
1999	-661	-360	0	0	0	0	-47	-118	-220	-314	-306	-157	-2183
2000	-266	-102	0	0	0	0	-47	-118	-220	487	500	65	298
2001	-307	-210	-683	-586	-194	0	-47	-118	-220	500	500	500	-866
2002	-372	-193	-648	-560	-520	-110	-47	-118	-220	371	500	500	-1418
2003	-374	-332	-260	-586	-698	-155	-47	-118	-220	-314	500	500	-2104
2004	-39	-310	-622	-652	-7	0	-47	-118	-220	-314	500	-299	-2129
2005	-922	-101	0	0	0	0	-47	-118	-220	-314	-305	500	-1527
1950-2005 Average	-250	-208	-244	-129	-139	-98	-125	-221	-222	-158	-49	181	-1663

Data calculated as Table 5- Table 2

Table 7
Trout Creek Reservoir End-of-Month Reservoir Contents
Scenario B 13,560 AF Reservoir, July 8, 1977 Priority Date, 500 AF Monthly Demand
(acre-feet)

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Average
1950	1253	2259	3596	4686	5960	6774	9184	13211	13247	13255	13333	13098	8321
1951	13074	13309	13560	13560	13560	13513	13442	13340	13246	13255	13333	13036	13352
1952	13459	13560	13560	13560	13560	13513	13442	13340	13246	13255	13333	12943	13397
1953	12886	12916	13115	13357	13560	13513	13442	13340	13246	13255	13314	12620	13214
1954	12075	12219	12533	12848	13274	13513	13442	13340	13246	12825	12104	11797	12768
1955	12351	12537	12952	13240	13467	13513	13442	13340	13246	13255	13282	12728	13113
1956	12823	13032	13560	13560	13560	13013	13443	13340	13246	13255	13333	12639	13234
1957	12459	12569	12903	13200	13491	13513	13442	13340	13246	13255	13333	13364	13176
1958	13458	13560	13560	13560	13560	13513	13442	13340	13246	13098	12375	12132	13237
1959	12068	12183	12589	12888	13148	13513	13442	13340	13246	13255	13333	12639	12970
1960	13459	13560	13560	13560	13560	13513	13442	13340	13246	13190	12466	11778	13223
1961	11910	12061	12290	12464	12629	13327	13442	13340	13246	12940	12219	13294	12764
1962	13458	13560	13560	13560	13560	13013	13443	13340	13246	13255	13333	12639	13331
1963	12877	13076	13437	13560	13560	13513	13442	13340	13246	12775	12055	11370	13021
1964	10778	10819	10919	11048	11257	11551	11767	13347	13246	13255	13200	12651	11986
1965	12165	12179	12504	12848	13193	13513	13442	13340	13246	13255	13333	13364	13032
1966	13458	13560	13560	13528	13560	13513	13442	13340	13246	12961	12239	11553	13163
1967	11552	11722	12027	12347	13484	13513	13442	13340	13246	13255	13333	12989	12854
1968	13333	13560	13560	13425	13560	13513	13442	13340	13246	13255	13333	12981	13379
1969	13459	13560	13560	13560	13560	13513	13442	13340	13246	13255	13333	13364	13433
1970	13458	13560	13560	13560	13150	13513	13442	13340	13246	13255	13333	13309	13394
1971	13458	13560	13560	13560	13560	13513	13442	13340	13246	13255	13333	12670	13375
1972	13070	13560	13560	13560	13560	13513	13442	13340	13246	12957	12502	11863	13181
1973	12120	12506	13560	13560	13560	13513	13442	13340	13246	13255	13333	12702	13178
1974	12154	12567	13560	13560	13560	13513	13442	13340	13246	13204	13333	12639	13176
1975	12203	12365	13320	13273	13560	13513	13442	13340	13246	13255	13333	12752	13133
1976	12553	12921	13560	13560	13560	13513	13442	13340	13246	13255	13333	12807	13257
1977	12824	12977	12561	13479	13560	13513	13442	13340	13246	12445	11727	11046	12847

Table 7
Trout Creek Reservoir End-of-Month Reservoir Contents
Scenario B 13,560 AF Reservoir, July 8, 1977 Priority Date, 500 AF Monthly Demand
(acre-feet)

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Average
1978	11159	11502	11928	12078	12328	13081	13443	13340	13246	13255	13333	13002	12641
1979	13270	13497	13560	13560	13560	13513	13442	13340	13246	13255	13333	12639	13351
1980	12854	13122	13560	13560	13560	13513	13442	13340	13246	13255	13333	12836	13302
1981	12983	13310	13560	13560	13560	13513	13442	13340	13246	12717	12303	11616	13096
1982	12413	12793	13560	13560	13560	13513	13442	13340	13246	13255	13333	13364	13282
1983	13458	13560	13560	13560	13560	13513	13442	13340	13246	13255	13333	13364	13433
1984	13458	13560	13560	13560	13560	13513	13442	13340	13246	13255	13333	13364	13433
1985	13458	13560	13560	13560	13560	13513	13442	13340	13246	13255	13333	13005	13403
1986	13459	13560	13560	13560	13560	13513	13442	13340	13246	13255	13333	13364	13433
1987	13458	13560	13560	13560	13560	13513	13442	13340	13246	12544	12353	12463	13217
1988	13035	13560	13560	13560	13560	13513	13442	13340	13246	12649	12197	11512	13098
1989	10919	11253	11995	12403	13138	13513	13442	13340	13246	12643	12247	11732	12489
1990	11635	11861	12458	13006	13560	13513	13442	13340	13246	13255	12530	11842	12807
1991	12068	12118	12231	12814	13177	13513	13442	13340	13246	13058	13334	13090	12952
1992	13149	13522	13560	13560	13560	13513	13442	13340	13246	13255	12530	11842	13210
1993	12296	12751	13560	13560	13560	13513	13442	13340	13246	13255	13333	13201	13255
1994	13458	13560	13560	13560	13560	13513	13442	13340	13246	12445	11727	11046	13038
1995	11157	11361	11808	12416	12557	13514	13442	13340	13246	13255	13333	13343	12731
1996	13458	13560	13560	13560	13560	13513	13442	13340	13246	13255	13333	13234	13422
1997	13458	13560	13560	13560	13560	13513	13442	13340	13246	13255	13333	13364	13433
1998	13458	13560	13560	13560	13560	13513	13442	13340	13246	13255	13333	12639	13372
1999	13200	13560	13560	13560	13560	13513	13442	13340	13246	13255	13333	13294	13405
2000	13458	13560	13560	13560	13560	13513	13442	13340	13246	12458	11740	11492	13077
2001	11704	11921	12687	13366	13560	13513	13442	13340	13246	12445	11727	11046	12666
2002	11325	11525	12255	12906	13450	13513	13442	13340	13246	12445	11727	11046	12518
2003	11327	11666	12007	12684	13405	13513	13442	13340	13246	13255	12530	11842	12688
2004	11785	12103	12808	13554	13560	13513	13442	13340	13246	13255	12530	12639	12981
2005	13459	13560	13560	13560	13560	13513	13442	13340	13246	13255	13333	12639	13372
Average	12473	12686	12964	13131	13277	13329	13336	13338	13246	13098	12922	12547	13029
Min 1951-2005	10778	10819	10919	11048	11257	11551	11767	13340	13246	12445	11727	11046	--

*Model developed from 2009 Yampa Basin CDSS StateMod flow model