Calibration/Validation of the Central Platte OPSTUDY Model

1 Introduction.

This section describes the calibration and validation of the Central Platte River OPSTUDY model (OPSTUDY model). Monthly time-step data produced by the OPSTUDY model was compared to monthly data from a historic period of record. This historic period of record contained several management decisions not simulated by the OPSTUDY model. Hence, exact replication of the historic conditions was not possible. The results of the calibration and the validation analyses are discussed in this section; they are listed in **Tables 1 through 30** and shown graphically in **Figures 1 through 30** A summary of the analysis is given in **Table 31**.

2 Selection of Calibration and Validation Periods.

The object of the OPSTUDY model is to simulate the Central Platte River using 1997 levels of development for a hydrologic period of interest. The hydrologic period chosen for the calibration/validation analysis is 1975 through 1994. 1975-1994 was chosen because significant new project development and operational changes were limited in the greater Platte River basin upstream of Grand Island, Nebraska during this period. In other words, the state of development along the river during this time period is essentially the same as the 1997 level of development. The hydrologic period was further broken down into calibration and validation periods. The period 1985-1994 was chosen as the calibration period; the period 1975-1984 was chosen as the validation period.

3 Calibration/Validation Analysis.

3.1 General Operating Criteria. The analyses use historic flows at Julesburg, CO, on the South Platte River and historic flows at Lewellen, NE (inflow into Lake CcConaughy), on the North Platte River as boundary conditions. In addition, there are periods after 1974 when the elevation limits imposed by the Federal Energy Regulatory Commission in 1974 are exceeded and the model is allowed to match these historic elevations. After the model makes releases from Lake McConaughy, the three main canal diversions (Korty, Sutherland, Tri-County) may divert up to capacity or the flow available considering an efficiency factor and any other downstream demands that may require flow to bypass the canals.

3.2 Discussion of Results

3.2.1 Calibration. Detailed results of the calibration analysis are presented in tabular form in **Tables 1 through 15** and in graphic form in **Figures 1 through 15**. Discussions for specific variable groups are in later sub-sections within this report. A summary of the calibration results are shown in **Table 31**. The summary shows the correlation (R-squared), the standard error, the average difference between calculated values and historic (calculated - historic), and the difference as a percentage of the average historic value (average difference / average historic value).

3.2.1.1 Lake McConaughy End-of Month Content. The calibration results

for Lake McConaughy End-of-Month Content are tabulated in **Table 1** and shown graphically in **Figure 1**. **Table 1** shows the computed values, the historic values, and the difference between computed and historic (computed - historic). This format is repeated for **Tables 2 through 30**. **Figure 1** has the R-squared and standard error values printed in the lower left corner. This format is repeated for **Figures 2 through 30**. The differences between computed and historic values over the calibration period are mostly positive, and the differences are reasonable with no obvious "busts". In addition, there is a high correlation between the computed and the historic values (high R-squared) with a reasonable standard error.

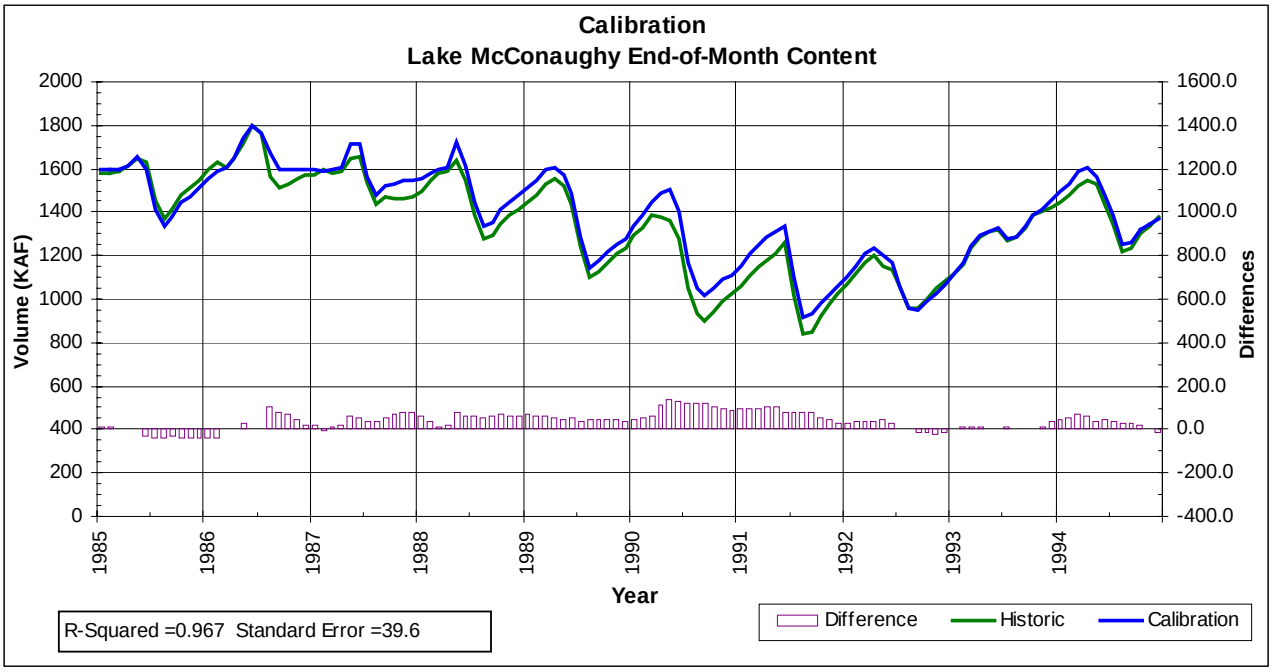

Figure 1. Lake McConaughy end of month content, calibration period.

Table 1. Lake McConaughy end of month content, calibration peroiod.

Computed Values (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1985	1594.1	1594.1	1594.1	1613.0	1657.3	1599.0	1415.9	1333.8	1380.7	1447.0	1473.5	1511.5
1986	1557.6	1590.7	1607.0	1644.0	1743.1	1802.0	1768.0	1668.6	1594.1	1594.1	1594.1	1594.1
1987	1594.1	1589.4	1594.1	1609.1	1710.7	1712.6	1566.9	1480.9	1519.9	1532.2	1543.7	1548.0
1988	1557.0	1580.4	1594.1	1609.1	1719.7	1610.1	1447.2	1333.2	1356.6	1410.8	1447.9	1478.1
1989	1516.7	1544.3	1594.1	1609.1	1568.8	1489.0	1282.0	1146.3	1174.2	1220.0	1256.1	1273.6
1990	1339.7	1384.7	1446.6	1490.5	1504.6	1406.2	1166.3	1051.3	1018.4	1053.0	1090.6	1111.3
1991	1154.8	1207.7	1252.8	1282.9	1314.7	1335.6	1098.9	919.4	932.0	980.0	1024.4	1056.0
1992	1101.7	1149.5	1205.9	1238.3	1198.2	1169.6	1058.4	958.2	946.2	989.7	1028.4	1068.9
1993	1116.2	1167.6	1247.7	1298.1	1314.5	1324.7	1278.1	1286.2	1333.8	1388.7	1411.8	1451.9
1994	1497.9	1531.3	1588.1	1609.1	1561.8	1488.8	1384.0	1249.3	1264.5	1316.3	1341.1	1370.3
AVERAGE	1403.0	1434.0	1472.5	1500.3	1529.3	1493.8	1346.6	1242.7	1252.0	1293.2	1321.2	1346.4
MEDIAN	1507.3	1537.8	1591.1	1609.1	1565.3	1488.9	1333.0	1267.8	1299.2	1352.5	1376.5	1411.1
MINIMUM	1101.7	1149.5	1205.9	1238.3	1198.2	1169.6	1058.4	919.4	932.0	980.0	1024.4	1056.0
MAXIMUM	1594.1	1594.1	1607.0	1644.0	1743.1	1802.0	1768.0	1668.6	1594.1	1594.1	1594.1	1594.1

Historic Values (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1985	1581.0	1579.0	1587.0	1613.0	1650.0	1627.0	1453.0	1370.0	1414.0	1482.0	1509.0	1548.0
1986	1593.0	1633.0	1607.0	1644.0	1711.0	1802.0	1768.0	1565.0	1512.0	1526.0	1551.0	1570.0
1987	1573.0	1598.0	1583.0	1591.0	1647.0	1659.0	1534.0	1441.0	1468.0	1460.0	1465.0	1471.0
1988	1495.0	1546.0	1580.0	1588.0	1641.0	1548.0	1388.0	1279.0	1291.0	1341.0	1383.0	1412.0
1989	1449.0	1482.0	1532.0	1554.0	1520.0	1433.0	1242.0	1100.0	1125.0	1171.0	1211.0	1237.0
1990	1294.0	1331.0	1383.0	1375.0	1364.0	1279.0	1047.0	930.8	896.1	945.3	993.6	1024.0
1991	1060.0	1109.0	1153.0	1176.0	1209.0	1257.0	1021.0	840.3	852.2	922.6	983.0	1027.9
1992	1071.4	1116.1	1171.1	1201.6	1154.9	1136.6	1058.3	953.6	962.0	1004.3	1049.5	1082.5
1993	1116.0	1157.0	1233.0	1289.0	1309.0	1319.0	1267.0	1284.0	1331.0	1383.0	1401.0	1419.0
1994	1449.0	1476.0	1518.0	1548.0	1526.0	1444.0	1344.0	1218.0	1233.0	1299.0	1339.0	1380.0
AVERAGE	1368.1	1402.7	1434.7	1458.0	1473.2	1450.5	1312.2	1198.2	1208.4	1253.4	1288.5	1317.1
MEDIAN	1449.0	1479.0	1525.0	1551.0	1523.0	1438.5	1305.5	1248.5	1262.0	1320.0	1361.0	1396.0
MINIMUM	1060.0	1109.0	1153.0	1176.0	1154.9	1136.6	1021.0	840.3	852.2	922.6	983.0	1024.0
MAXIMUM	1593.0	1633.0	1607.0	1644.0	1711.0	1802.0	1768.0	1565.0	1512.0	1526.0	1551.0	1570.0

Differences (Calibration - Historic) (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1985	13.1	15.1	7.1	0.0	7.3	-28.0	-37.1	-36.2	-33.3	-35.0	-35.5	-36.5
1986	-35.4	-42.3	0.0	0.0	32.1	0.0	0.0	103.6	82.1	68.1	43.1	24.1
1987	21.1	-8.6	11.1	18.1	63.7	53.6	32.9	39.9	51.9	72.2	78.7	77.0
1988	62.0	34.4	14.1	21.1	78.7	62.1	59.2	54.2	65.6	69.8	64.9	66.1
1989	67.7	62.3	62.1	55.1	48.8	56.0	40.0	46.3	49.2	49.0	45.1	36.6
1990	45.7	53.7	63.6	115.5	140.6	127.2	119.3	120.5	122.3	107.7	97.0	87.3
1991	94.8	98.7	99.8	106.9	105.7	78.6	77.9	79.1	79.8	57.4	41.4	28.1
1992	30.3	33.4	34.8	36.7	43.3	33.0	0.1	4.6	-15.8	-14.6	-21.1	-13.6
1993	0.2	10.6	14.7	9.1	5.5	5.7	11.1	2.2	2.8	5.7	10.8	32.9
1994	48.9	55.3	70.1	61.1	35.8	44.8	40.0	31.3	31.5	17.3	2.1	-9.7
AVERAGE	34.8	31.3	37.7	42.4	56.2	43.3	34.3	44.6	43.6	39.8	32.7	29.2
MEDIAN	38.0	33.9	24.8	28.9	46.1	49.2	36.5	43.1	50.6	53.2	42.3	30.5
MINIMUM	-35.4	-42.3	0.0	0.0	5.5	-28.0	-37.1	-36.2	-33.3	-35.0	-35.5	-36.5
MAXIMUM	94.8	98.7	99.8	115.5	140.6	127.2	119.3	120.5	122.3	107.7	97.0	87.3

3.2.1.2 North Platte River Flows. Three locations were evaluated on the North Platte River. These are Lake McConaughy Total Outflow, North Platte River at Keystone, NE,

and North Platte River at North Platte, NE. The calibration results for these locations are tabulated in **Tables 2 through 4** and shown graphically in **Figures 2 through 4**. **Figures 2 through 4** show similar (but not identical) patterns of higher summer flows at all three locations.

The R-squared for the North Platte River at Keystone and at North Platte are slightly lower than that for the Lake McConaughy Total Outflow. This can be explained by the presence of the Keystone Diversion Dam immediately upstream of the Keystone gage. The effect of the Keystone Diversion is easily discerned in 1985. In 1985, the Lake McConaughy outflow is close to historic, but the North Platte River at Keystone is noticeably less than historic. This difference is translated downstream to the North Platte River at North Platte.

The differences for all three locations show mixed results, but two systematic patterns are observed. One pattern is the under prediction of May releases from Lake McConaughy and the subsequent over prediction in June and July. The other systematic pattern is the over prediction of North Platte River at Keystone July flows.

The only "bust" occurs between July and October of 1986. During this period, damaged areas of the erosion protection for Lake McConaughy were being repaired. Therefore, it was necessary to lower lake levels (**Figure 1**), which meant higher than usual releases in July and August and lower releases in September and October as the lake was being raised back to its normal operating level. This was not modeled as it was a departure from the usual operation of Lake McConaughy.

In April of 1990, water was released from Lake McConaughy for environmental purposes. This extra release demonstrates how discrepancies in Lake McConaughy outflow propagate through the system and are discernable at downstream locations. In other words, a single error in the Lake McConaughy outflow can cause correlation problems throughout the system as the error is propagated downstream. For example, this difference in flow is also present at the two other North Platte gages presented in this section of the calibration.

Table 2. Lake McConaughy outflow, calibration period.

Computed Values (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1985	96.4	80.5	164.5	73.1	24.6	120.1	215.1	123.9	55.2	47.8	48.6	44.8
1986	45.8	56.8	74.1	139.0	90.1	185.4	261.0	171.1	220.7	175.2	147.0	116.1
1987	82.4	75.0	40.4	76.7	22.7	76.1	188.7	169.7	65.3	71.0	65.6	62.4
1988	58.0	56.5	59.4	59.9	28.0	155.7	186.8	144.2	49.6	43.8	43.2	38.4
1989	34.7	36.3	25.3	37.7	89.9	98.1	209.6	166.1	33.0	30.1	32.8	38.7
1990	12.3	11.1	12.3	20.4	42.1	118.9	254.7	154.5	68.7	36.6	34.0	36.3
1991	17.5	11.1	15.1	16.9	31.2	87.2	261.3	193.9	41.9	24.6	27.2	32.8
1992	16.3	11.5	12.3	12.1	55.6	74.1	157.2	132.6	54.3	20.4	26.1	13.7
1993	12.3	11.1	12.3	11.9	37.4	54.8	93.3	71.0	39.0	40.0	36.9	29.4
1994	25.9	26.9	13.5	29.2	88.8	113.4	166.1	171.9	43.8	46.4	46.0	43.5
AVERAGE	40.2	37.7	42.9	47.7	51.0	108.4	199.4	149.9	67.2	53.6	50.7	45.6
MEDIAN	30.3	31.6	20.2	33.5	39.8	105.8	199.2	160.3	52.0	41.9	40.1	38.6
MINIMUM	12.3	11.1	12.3	11.9	22.7	54.8	93.3	71.0	33.0	20.4	26.1	13.7
MAXIMUM	96.4	80.5	164.5	139.0	90.1	185.4	261.3	193.9	220.7	175.2	147.0	116.1

Historic Values (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1985	109.5	82.5	156.5	66.0	31.9	84.8	205.9	124.5	58.1	45.9	48.0	43.9
1986	46.9	49.7	116.4	139.0	122.2	153.4	261.0	274.9	199.4	161.4	122.1	97.2
1987	79.4	45.3	60.1	83.8	68.4	66.1	168.2	176.9	77.4	91.4	72.3	60.7
1988	43.1	28.9	39.1	67.0	85.7	139.3	184.2	139.5	61.2	48.1	38.4	39.7
1989	36.3	31.0	25.3	30.8	83.7	105.4	193.7	172.5	36.0	30.1	29.0	30.2
1990	21.5	19.1	22.3	72.5	67.5	105.8	247.6	156.1	71.2	22.6	22.9	27.0
1991	25.1	15.2	16.3	24.2	30.2	60.4	261.1	195.9	42.8	1.8	11.7	19.4
1992	19.0	14.5	13.7	13.6	62.5	63.7	125.1	136.3	34.2	21.9	18.8	21.1
1993	26.6	21.5	16.4	6.4	33.9	55.1	98.7	62.1	39.7	42.9	42.1	51.6
1994	41.9	33.4	28.4	20.4	63.7	122.5	161.5	163.4	44.0	32.4	30.7	31.7
AVERAGE	44.9	34.1	49.4	52.4	65.0	95.7	190.7	160.2	66.4	49.8	43.6	42.3
MEDIAN	39.1	29.9	26.8	48.4	65.6	95.1	189.0	159.8	51.1	37.6	34.6	35.7
MINIMUM	19.0	14.5	13.7	6.4	30.2	55.1	98.7	62.1	34.2	1.8	11.7	19.4
MAXIMUM	109.5	82.5	156.5	139.0	122.2	153.4	261.1	274.9	199.4	161.4	122.1	97.2

Differences (Calibration - Historic) (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1985	-13.1	-2.0	8.0	7.1	-7.3	35.3	9.2	-0.6	-2.9	1.9	0.6	0.9
1986	-1.1	7.1	-42.3	0.0	-32.1	32.0	0.0	-103.8	21.3	13.8	24.9	18.9
1987	3.0	29.7	-19.7	-7.1	-45.7	10.0	20.5	-7.2	-12.1	-20.4	-6.7	1.7
1988	14.9	27.6	20.3	-7.1	-57.7	16.4	2.6	4.7	-11.6	-4.3	4.8	-1.3
1989	-1.6	5.3	0.1	6.9	6.2	-7.3	15.9	-6.4	-3.0	0.0	3.8	8.5
1990	-9.2	-8.0	-10.0	-52.1	-25.4	13.1	7.1	-1.6	-2.5	14.0	11.1	9.3
1991	-7.6	-4.1	-1.2	-7.3	1.0	26.8	0.2	-2.0	-0.9	22.8	15.5	13.4
1992	-2.7	-3.0	-1.4	-1.5	-6.9	10.4	32.1	-3.7	20.1	-1.5	7.3	-7.4
1993	-14.3	-10.4	-4.1	5.5	3.5	-0.3	-5.4	8.9	-0.7	-2.9	-5.2	-22.2
1994	-16.0	-6.5	-14.9	8.8	25.1	-9.1	4.6	8.5	-0.2	14.0	15.3	11.8
AVERAGE	-4.8	3.6	-6.5	-4.7	-13.9	12.7	8.7	-10.3	0.7	3.7	7.2	3.4
MEDIAN	-5.1	-2.5	-2.7	-0.8	-7.1	11.7	5.9	-1.8	-1.7	1.0	6.1	5.1
MINIMUM	-16.0	-10.4	-42.3	-52.1	-57.7	-9.1	-5.4	-103.8	-12.1	-20.4	-6.7	-22.2
MAXIMUM	14.9	29.7	20.3	8.8	25.1	35.3	32.1	8.9	21.3	22.8	24.9	18.9

Table 3. North Platte River at Keystone, calibration period.

Computed Values (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1985	16.4	8.2	41.5	7.3	12.3	33.4	116.3	51.3	9.7	0.0	0.0	0.0
1986	0.0	0.0	0.0	31.9	9.3	66.4	138.0	87.9	101.7	175.2	28.0	0.0
1987	0.0	0.0	0.0	1.3	10.4	17.8	103.8	70.7	6.8	0.2	0.0	0.0
1988	0.0	0.0	0.0	0.7	8.1	66.4	94.9	61.1	9.5	0.1	0.0	0.0
1989	0.0	0.0	0.0	2.2	15.0	32.4	118.9	75.6	2.7	0.1	0.0	0.0
1990	0.0	0.0	0.0	1.3	8.4	40.4	142.0	68.4	9.4	0.0	0.0	0.0
1991	0.0	0.0	0.0	0.9	6.0	28.0	153.3	94.8	6.8	24.6	0.0	0.0
1992	0.0	0.0	0.0	0.2	7.3	23.1	74.3	63.9	9.4	0.4	0.0	0.0
1993	0.0	0.0	0.0	0.0	5.1	11.7	48.7	14.7	7.7	0.2	0.0	0.0
1994	0.0	0.0	0.0	2.4	8.0	37.6	86.4	78.3	11.1	0.0	0.0	0.0
AVERAGE	1.6	0.8	4.2	4.8	9.0	35.7	107.7	66.7	17.5	20.1	2.8	0.0
MEDIAN	0.0	0.0	0.0	1.3	8.3	32.9	110.1	69.6	9.4	0.2	0.0	0.0
MINIMUM	0.0	0.0	0.0	0.0	5.1	11.7	48.7	14.7	2.7	0.0	0.0	0.0
MAXIMUM	16.4	8.2	41.5	31.9	15.0	66.4	153.3	94.8	101.7	175.2	28.0	0.0

Historic Values (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1985	48.3	33.3	68.3	6.0	7.6	37.4	103.1	41.6	7.3	0.8	0.0	0.0
1986	0.0	0.3	16.0	52.7	34.9	66.0	156.2	173.6	139.1	153.1	35.4	3.0
1987	3.6	0.1	0.0	2.5	8.2	24.1	70.8	86.7	8.1	0.1	0.0	0.0
1988	0.0	0.0	0.0	1.9	17.9	68.3	76.2	51.8	8.0	0.2	0.0	0.0
1989	0.0	0.0	0.0	2.1	16.7	30.5	101.0	77.6	4.5	1.3	0.5	0.0
1990	0.0	0.0	0.0	20.8	12.5	37.2	138.6	65.1	19.6	2.0	1.7	1.6
1991	1.5	1.4	1.2	1.7	4.5	33.9	150.6	90.5	6.0	0.0	0.0	0.0
1992	0.0	0.0	0.0	0.1	11.3	17.6	45.4	42.5	14.1	3.6	0.9	0.0
1993	0.0	0.0	0.0	0.0	6.1	8.7	32.7	17.9	8.1	1.9	0.9	0.0
1994	0.0	0.0	0.0	0.5	9.7	28.5	76.8	73.9	7.3	1.6	1.9	1.5
AVERAGE	5.3	3.5	8.6	8.8	12.9	35.2	95.1	72.1	22.2	16.5	4.1	0.6
MEDIAN	0.0	0.0	0.0	2.0	10.5	32.2	88.9	69.5	8.1	1.5	0.7	0.0
MINIMUM	0.0	0.0	0.0	0.0	4.5	8.7	32.7	17.9	4.5	0.0	0.0	0.0
MAXIMUM	48.3	33.3	68.3	52.7	34.9	68.3	156.2	173.6	139.1	153.1	35.4	3.0

Differences (Calibration - Historic) (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1985	-31.9	-25.1	-26.8	1.3	4.7	-4.0	13.2	9.7	2.4	-0.8	0.0	0.0
1986	0.0	-0.3	-16.0	-20.8	-25.6	0.4	-18.2	-85.7	-37.4	22.1	-7.4	-3.0
1987	-3.6	-0.1	0.0	-1.2	2.2	-6.3	33.0	-16.0	-1.3	0.1	0.0	0.0
1988	0.0	0.0	0.0	-1.2	-9.8	-1.9	18.7	9.3	1.5	-0.1	0.0	0.0
1989	0.0	0.0	0.0	0.1	-1.7	1.9	17.9	-2.0	-1.8	-1.2	-0.5	0.0
1990	0.0	0.0	0.0	-19.5	-4.1	3.2	3.4	3.3	-10.2	-2.0	-1.7	-1.6
1991	-1.5	-1.4	-1.2	-0.8	1.5	-5.9	2.7	4.3	0.8	24.6	0.0	0.0
1992	0.0	0.0	0.0	0.1	-4.0	5.5	28.9	21.4	-4.7	-3.2	-0.9	0.0
1993	0.0	0.0	0.0	0.0	-1.0	3.0	16.0	-3.2	-0.4	-1.7	-0.9	0.0
1994	0.0	0.0	0.0	1.9	-1.7	9.1	9.6	4.4	3.8	-1.6	-1.9	-1.5
AVERAGE	-3.7	-2.7	-4.4	-4.0	-3.9	0.5	12.5	-5.4	-4.7	3.6	-1.3	-0.6
MEDIAN	0.0	0.0	0.0	-0.4	-1.7	1.2	14.6	3.8	-0.9	-1.0	-0.7	0.0
MINIMUM	-31.9	-25.1	-26.8	-20.8	-25.6	-6.3	-18.2	-85.7	-37.4	-3.2	-7.4	-3.0
MAXIMUM	0.0	0.0	0.0	1.9	4.7	9.1	33.0	21.4	3.8	24.6	0.0	0.0

Table 4. North Platte River at North Platte, calibration period.

Computed Values (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1985	41.4	23.0	71.0	25.6	29.1	23.9	104.4	53.5	30.6	25.2	21.1	23.1
1986	23.2	24.3	21.2	54.2	35.3	58.4	125.8	85.3	126.0	213.5	61.1	26.6
1987	21.2	20.2	28.9	23.6	22.8	16.2	93.8	74.1	25.9	23.3	25.7	24.5
1988	22.4	24.6	26.9	24.2	30.1	58.3	99.5	66.1	28.0	21.3	19.6	21.4
1989	22.8	18.4	22.4	17.5	16.0	35.2	91.7	79.3	23.4	18.2	20.7	19.9
1990	22.5	19.2	23.2	11.5	26.8	27.6	121.7	59.7	20.3	19.0	20.3	20.2
1991	23.0	20.0	21.3	19.9	27.8	27.8	118.2	79.1	23.2	45.3	22.9	23.0
1992	22.9	22.6	32.5	20.4	17.1	32.2	69.5	70.7	19.5	19.7	19.9	19.8
1993	21.2	18.3	28.7	23.4	20.9	26.8	44.7	25.1	18.4	22.5	24.1	21.9
1994	20.7	17.5	21.7	20.7	15.5	33.0	82.5	69.0	23.6	20.0	20.7	21.6
AVERAGE	24.1	20.8	29.8	24.1	24.1	33.9	95.2	66.2	33.9	42.8	25.6	22.2
MEDIAN	22.7	20.1	25.1	22.1	24.8	30.0	96.7	69.9	23.5	21.9	20.9	21.8
MINIMUM	20.7	17.5	21.2	11.5	15.5	16.2	44.7	25.1	18.4	18.2	19.6	19.8
MAXIMUM	41.4	24.6	71.0	54.2	35.3	58.4	125.8	85.3	126.0	213.5	61.1	26.6

Historic Values (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1985	73.3	48.1	97.8	24.3	24.4	27.9	91.2	43.8	28.2	26.0	21.1	23.1
1986	23.2	24.6	37.2	75.0	60.9	58.0	144.0	171.0	163.4	191.4	68.5	29.6
1987	24.8	20.3	28.9	24.8	20.6	22.5	60.8	90.1	27.2	23.2	25.7	24.5
1988	22.4	24.6	26.9	25.4	39.9	60.2	80.8	56.8	26.5	21.4	19.6	21.4
1989	22.8	18.4	22.4	17.4	17.7	33.2	73.8	81.2	25.3	19.4	21.2	19.8
1990	22.5	19.2	23.2	31.0	30.9	24.4	118.3	56.4	30.6	21.0	21.9	21.8
1991	24.6	21.3	22.5	20.7	26.2	33.7	115.5	74.7	22.3	20.7	22.9	23.0
1992	22.9	22.6	32.5	20.3	21.1	26.7	40.6	49.3	24.2	22.9	20.8	19.8
1993	21.2	18.3	28.7	23.4	21.9	23.8	28.7	28.3	18.8	24.2	25.0	21.9
1994	20.7	17.5	21.7	18.8	17.2	23.9	72.9	64.6	19.8	21.6	22.6	23.1
AVERAGE	27.8	23.5	34.2	28.1	28.1	33.4	82.7	71.6	38.6	39.2	26.9	22.8
MEDIAN	22.9	20.8	27.8	23.9	23.1	27.3	77.3	60.7	25.9	22.2	22.3	22.5
MINIMUM	20.7	17.5	21.7	17.4	17.2	22.5	28.7	28.3	18.8	19.4	19.6	19.8
MAXIMUM	73.3	48.1	97.8	75.0	60.9	60.2	144.0	171.0	163.4	191.4	68.5	29.6

Differences (Calibration - Historic) (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1985	-31.9	-25.1	-26.8	1.3	4.7	-4.0	13.2	9.7	2.4	-0.8	0.0	0.0
1986	0.0	-0.3	-16.0	-20.8	-25.6	0.4	-18.2	-85.7	-37.4	22.1	-7.4	-3.0
1987	-3.6	-0.1	0.0	-1.2	2.2	-6.3	33.0	-16.0	-1.3	0.1	0.0	0.0
1988	0.0	0.0	0.0	-1.2	-9.8	-1.9	18.7	9.3	1.5	-0.1	0.0	0.0
1989	0.0	0.0	0.0	0.1	-1.7	2.0	17.9	-1.9	-1.9	-1.2	-0.5	0.1
1990	0.0	0.0	0.0	-19.5	-4.1	3.2	3.4	3.3	-10.3	-2.0	-1.6	-1.6
1991	-1.6	-1.3	-1.2	-0.8	1.6	-5.9	2.7	4.4	0.9	24.6	0.0	0.0
1992	0.0	0.0	0.0	0.1	-4.0	5.5	28.9	21.4	-4.7	-3.2	-0.9	0.0
1993	0.0	0.0	0.0	0.0	-1.0	3.0	16.0	-3.2	-0.4	-1.7	-0.9	0.0
1994	0.0	0.0	0.0	1.9	-1.7	9.1	9.6	4.4	3.8	-1.6	-1.9	-1.5
AVERAGE	-3.7	-2.7	-4.4	-4.0	-3.9	0.5	12.5	-5.4	-4.7	3.6	-1.3	-0.6
MEDIAN	0.0	0.0	0.0	-0.4	-1.7	1.2	14.6	3.8	-0.8	-1.0	-0.7	0.0
MINIMUM	-31.9	-25.1	-26.8	-20.8	-25.6	-6.3	-18.2	-85.7	-37.4	-3.2	-7.4	-3.0
MAXIMUM	0.0	0.0	0.0	1.9	4.7	9.1	33.0	21.4	3.8	24.6	0.0	0.1

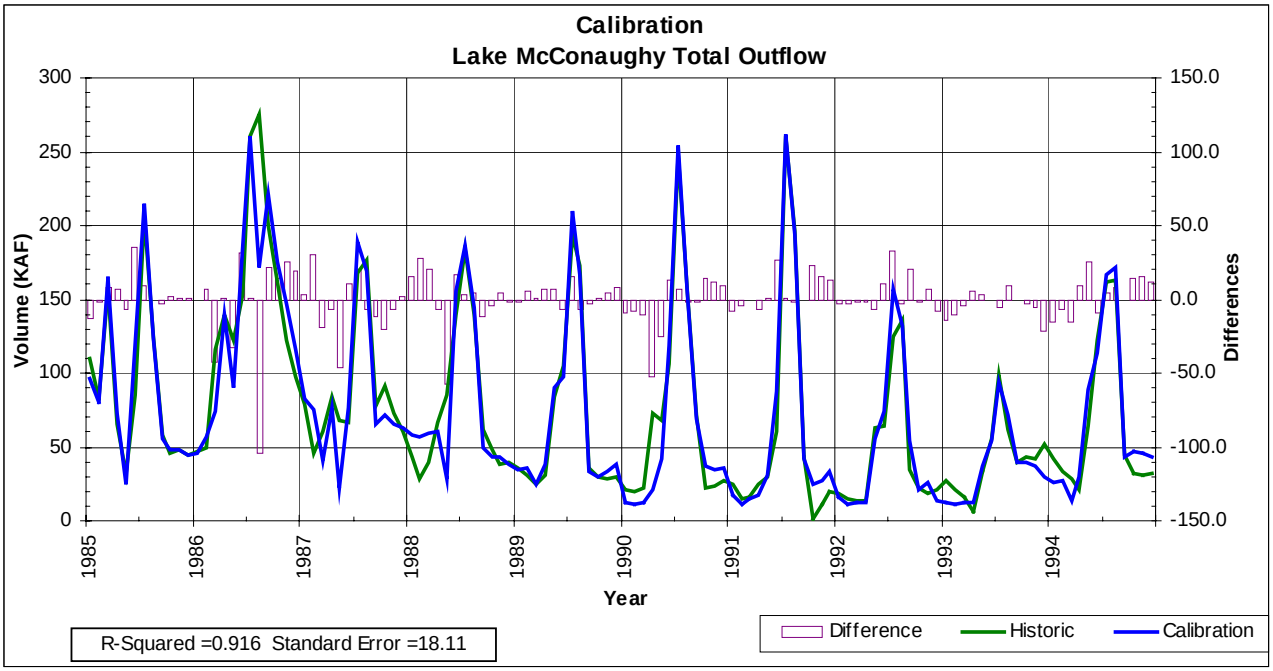

Figure 2. Lake McConaughy outflow, calibration period.

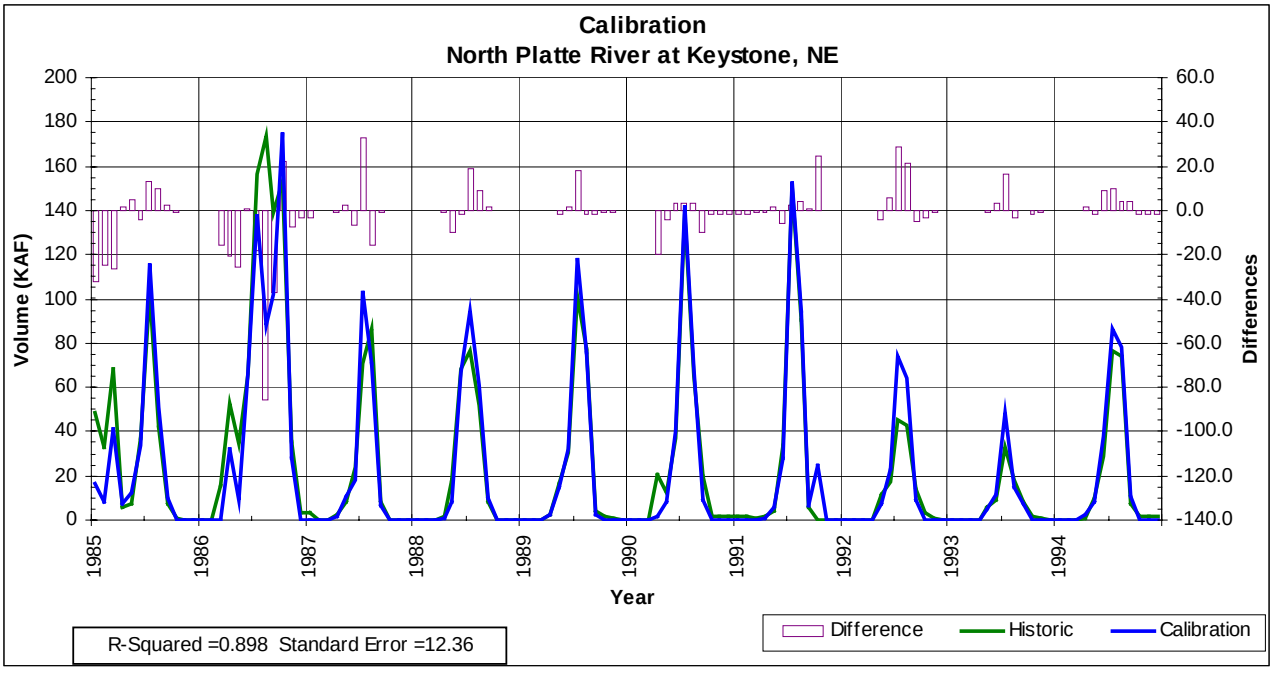

Figure 3. North Platte River at Keystone, calibration period.

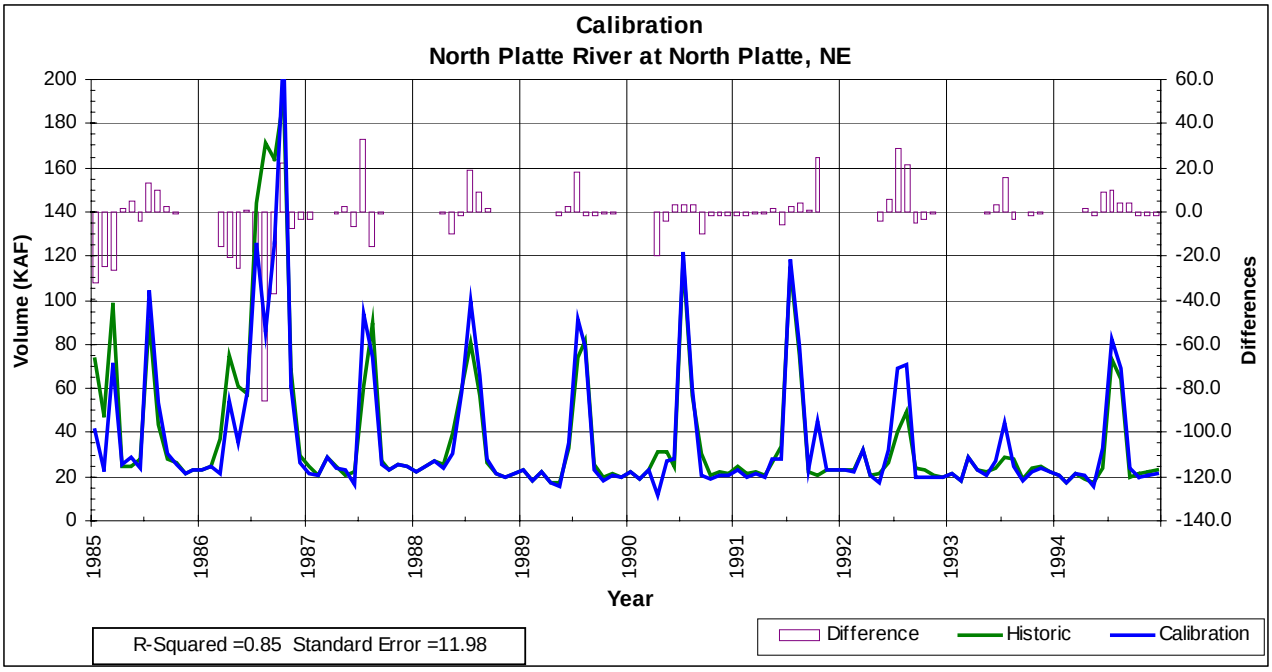

Figure 4. North Platte River at North Platte, calibration period.

3.2.1.3 Diversions. Three canal diversions were evaluated: the Keystone Diversion from the North Platte River into the Sutherland Supply Canal; the Korty Diversion from the South Platte River, which also supplies water to the Sutherland Canal: and the Central Diversion into the Central Nebraska Public Power and Irrigation District (CNPPID) Canal, also known as the Tri-County Canal. Both the Keystone and Korty diversions serve the Sutherland Canal. Therefore, the flows are not independent and changes in how one is operated affect the operations of the other diversion. The operation of the Central Diversion is independent of the other two diversions. The calibration results for these locations are tabulated in **Tables 5 through 7** and shown graphically in **Figures 5 through 7**. As **Figure 5 through 7** demonstrate, the computed and historic flows generally match well with respect to the timing of the high and low flows. The one exception is the summer of 1986. The differences in June through September 1986 are connected with the previously discussed repair of the erosion protection for Kingsley Dam. Both the Keystone and Central modeled diversions are less than historic for April 1990. This demonstrates the propagation of the original discrepancy in the Lake McConaughy outflow.

With respect to the Korty Diversion, the timing of the high and low flows match reasonably well in most cases. The one major discrepancy in 1986 corresponds to that for the Keystone Diversion, and is likewise related to maintenance activities at Lake McConaughy. **Figures 5 and 6** also show that the high flow points at the Keystone Diversion generally coincide with the low points at the Korty Diversion. This is consistent with their use as joint providers of water to the Sutherland Canal and the preference for the relatively sediment free water from the Keystone Diversion.

With respect to the Central Diversion, **Figure 7** shows that the match between the historic and

computed values, while not highly accurate, is satisfactory. The "R-squared" value is high and the distribution of the discrepancies is fairly random. There appears to be no effect at this location caused by the upstream maintenance and repair situations in 1986, but the April 1990 discrepancy in Lake McConaughy outflow is also reflected at the Central Diversion.

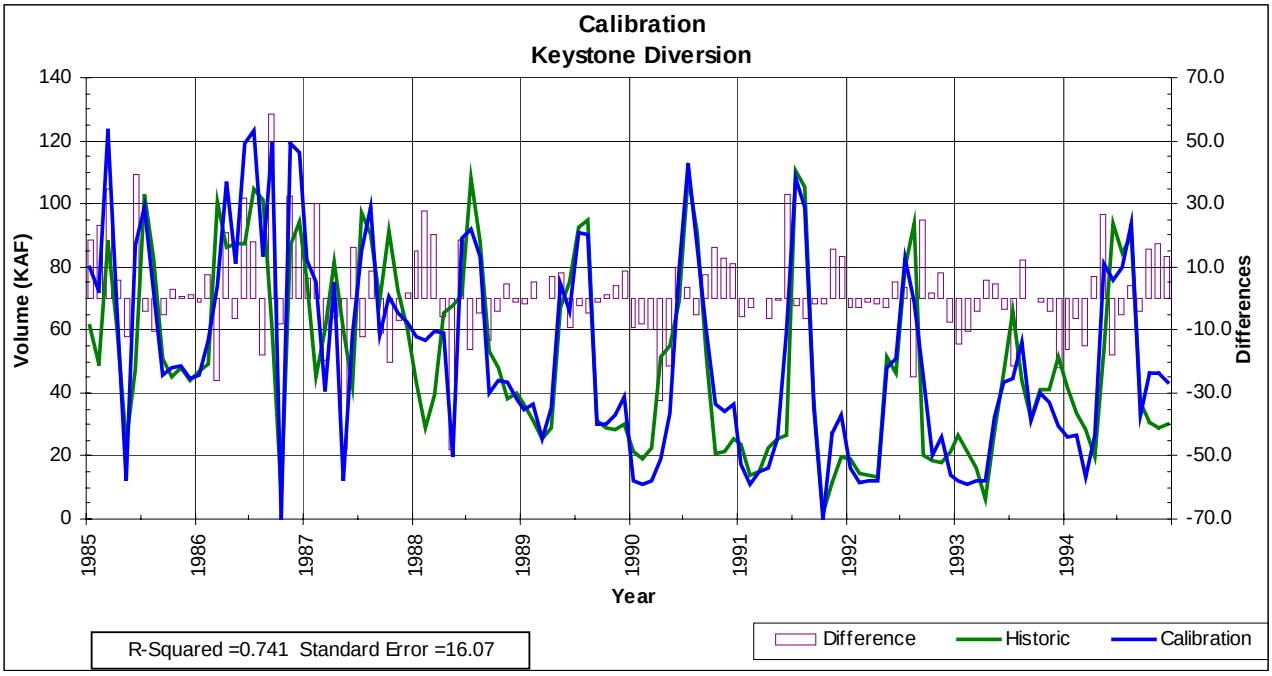

Figure 5. Sutherland canal keystone diversion, calibration period.

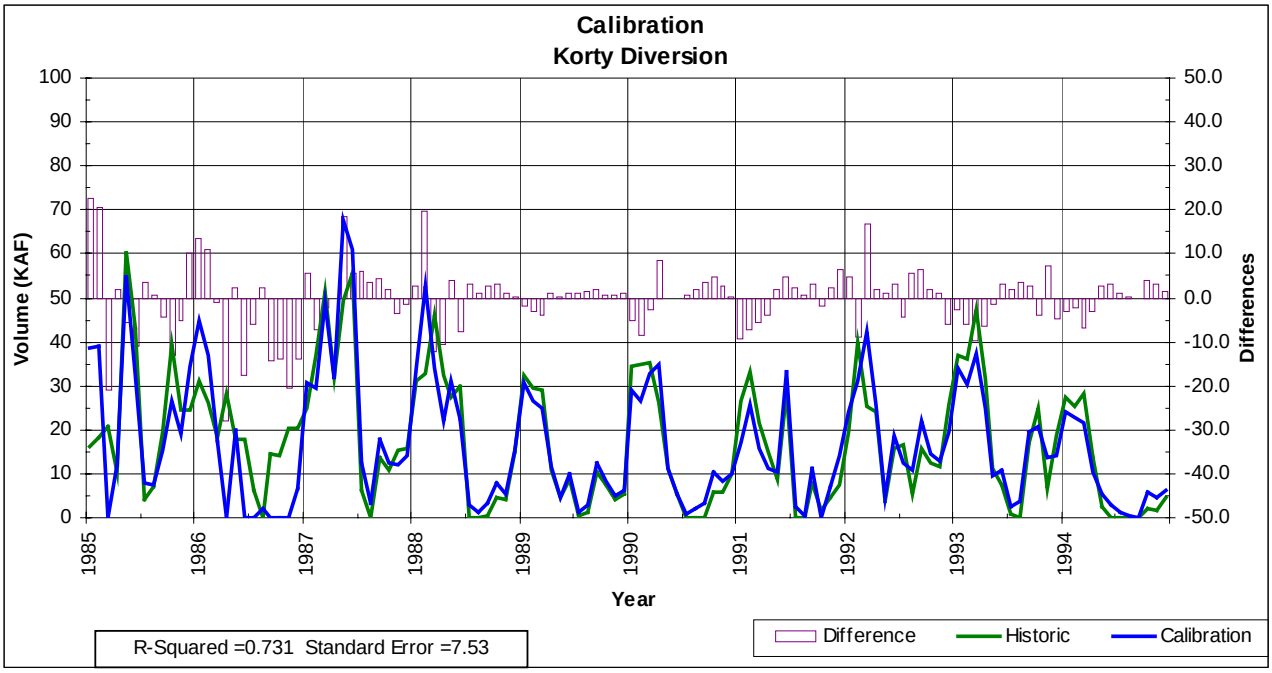

Figure 6. Sutherland canal korty diversion, calibration period.

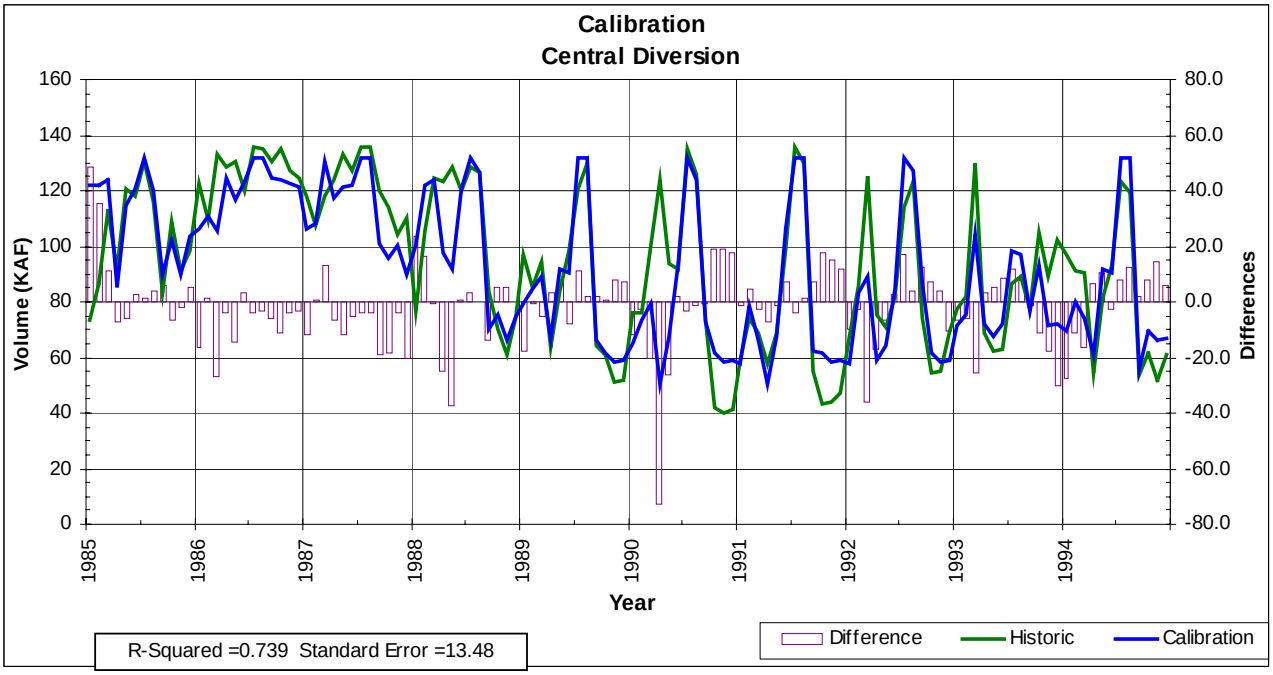

Figure 7. Tri-county (Central) canal diversion, calibration period.

Table 5. Sutherland canal keystone diversion, calibration period.

Computed Values (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1985	80.0	72.3	123.0	65.8	12.3	86.7	98.8	72.6	45.5	47.8	48.6	44.8
1986	45.8	56.8	74.1	107.1	80.8	119.0	123.0	83.2	119.0	0.0	119.0	116.1
1987	82.4	75.0	40.4	75.4	12.3	58.3	85.0	98.9	58.5	70.8	65.6	62.4
1988	58.0	56.5	59.4	59.2	19.9	89.3	91.9	83.1	40.1	43.7	43.2	38.4
1989	34.7	36.3	25.3	35.5	74.9	65.7	90.7	90.5	30.3	30.0	32.8	38.7
1990	12.3	11.1	12.3	19.1	33.7	78.5	112.7	86.1	59.3	36.6	34.0	36.3
1991	17.5	11.1	15.1	16.0	25.2	59.3	108.0	99.1	35.1	0.0	27.2	32.8
1992	16.3	11.5	12.3	11.9	48.3	51.0	82.9	68.7	44.9	20.0	26.1	13.7
1993	12.3	11.1	12.3	11.9	32.3	43.1	44.6	56.3	31.3	39.8	36.9	29.4
1994	25.9	26.9	13.5	26.8	80.8	75.8	79.7	93.6	32.7	46.4	46.0	43.5
AVERAGE	38.5	36.9	38.8	42.9	42.1	72.7	91.7	83.2	49.7	33.5	47.9	45.6
MEDIAN	30.3	31.6	20.2	31.2	33.0	70.8	91.3	84.7	42.5	38.2	40.1	38.6
MINIMUM	12.3	11.1	12.3	11.9	12.3	43.1	44.6	56.3	30.3	0.0	26.1	13.7
MAXIMUM	82.4	75.0	123.0	107.1	80.8	119.0	123.0	99.1	119.0	70.8	119.0	116.1

Historic Values (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1985	61.2	49.2	88.2	60.0	24.3	47.4	102.8	82.9	50.8	45.1	48.0	43.9
1986	46.9	49.4	100.4	86.3	87.3	87.4	104.8	101.3	60.3	8.3	86.7	94.2
1987	75.8	45.2	60.1	81.3	60.2	42.0	97.4	90.2	69.3	91.3	72.3	60.7
1988	43.1	28.9	39.1	65.1	67.8	71.0	108.0	87.7	53.2	47.9	38.4	39.7
1989	36.3	31.0	25.3	28.7	67.0	74.9	92.7	95.0	31.5	28.8	28.5	30.2
1990	21.5	19.1	22.3	51.6	55.0	68.6	109.0	91.1	51.5	20.6	21.2	25.4
1991	23.6	13.8	15.1	22.5	25.7	26.5	110.4	105.4	36.7	1.8	11.7	19.4
1992	19.0	14.5	13.7	13.5	51.2	46.1	79.7	93.8	20.1	18.3	17.9	21.1
1993	26.6	21.5	16.4	6.4	27.8	46.4	66.1	44.2	31.6	41.0	41.2	51.6
1994	41.9	33.4	28.4	19.9	53.9	93.9	84.7	89.5	36.8	30.8	28.8	30.2
AVERAGE	39.6	30.6	40.9	43.5	52.0	60.4	95.6	88.1	44.2	33.4	39.5	41.6
MEDIAN	39.1	29.9	26.8	40.2	54.4	58.0	100.1	90.6	43.8	29.8	33.6	35.0
MINIMUM	19.0	13.8	13.7	6.4	24.3	26.5	66.1	44.2	20.1	1.8	11.7	19.4
MAXIMUM	75.8	49.4	100.4	86.3	87.3	93.9	110.4	105.4	69.3	91.3	86.7	94.2

Differences (Calibration - Historic) (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1985	18.8	23.1	34.8	5.8	-12.0	39.3	-4.0	-10.3	-5.3	2.7	0.6	0.9
1986	-1.1	7.4	-26.3	20.8	-6.5	31.6	18.2	-18.1	58.7	-8.3	32.3	21.9
1987	6.6	29.8	-19.7	-5.9	-47.9	16.3	-12.4	8.7	-10.8	-20.5	-6.7	1.7
1988	14.9	27.6	20.3	-5.9	-47.9	18.3	-16.1	-4.6	-13.1	-4.2	4.8	-1.3
1989	-1.6	5.3	0.1	6.8	7.9	-9.2	-2.0	-4.5	-1.2	1.2	4.3	8.5
1990	-9.2	-8.0	-10.0	-32.5	-21.3	9.9	3.7	-5.0	7.8	16.0	12.8	10.9
1991	-6.1	-2.7	0.0	-6.5	-0.5	32.8	-2.4	-6.3	-1.6	-1.8	15.5	13.4
1992	-2.7	-3.0	-1.4	-1.6	-2.9	4.9	3.2	-25.1	24.8	1.7	8.2	-7.4
1993	-14.3	-10.4	-4.1	5.5	4.5	-3.3	-21.5	12.1	-0.3	-1.2	-4.3	-22.2
1994	-16.0	-6.5	-14.9	6.9	26.9	-18.1	-5.0	4.1	-4.1	15.6	17.2	13.3
AVERAGE	-1.1	6.3	-2.1	-0.7	-10.0	12.2	-3.8	-4.9	5.5	0.1	8.5	4.0
MEDIAN	-2.1	1.3	-2.7	2.0	-4.7	13.1	-3.2	-4.8	-1.4	0.0	6.5	5.1
MINIMUM	-16.0	-10.4	-26.3	-32.5	-47.9	-18.1	-21.5	-25.1	-13.1	-20.5	-6.7	-22.2
MAXIMUM	18.8	29.8	34.8	20.8	26.9	39.3	18.2	12.1	58.7	16.0	32.3	21.9

Table 6. Sutherland canal korty diversion, calibration period.

Computed Values (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1985	38.5	38.8	0.0	12.2	55.0	32.3	7.9	7.6	15.2	26.4	19.0	34.3
1986	44.9	37.1	17.3	0.0	19.9	0.0	0.0	2.2	0.0	0.0	0.0	6.8
1987	30.5	29.5	49.1	31.7	67.6	60.8	12.5	3.4	17.8	12.3	12.1	14.1
1988	34.0	52.7	33.9	22.0	31.2	22.5	3.0	1.2	3.4	7.7	5.3	15.3
1989	30.6	26.4	25.0	11.8	4.7	10.0	1.4	3.0	12.4	8.3	4.9	6.1
1990	29.2	26.4	32.6	34.8	11.2	5.3	0.8	2.0	3.4	10.5	8.5	10.0
1991	17.2	25.9	15.7	11.0	10.4	33.4	2.5	0.5	11.2	0.0	6.9	14.1
1992	24.0	31.0	42.2	25.8	4.7	18.7	12.5	10.9	22.1	14.4	12.8	19.6
1993	34.0	30.2	37.3	25.1	9.7	10.8	2.5	3.7	19.6	20.7	13.8	14.1
1994	24.1	23.0	21.5	10.4	5.4	3.0	1.1	0.4	0.0	6.0	4.6	6.1
AVERAGE	30.7	32.1	27.5	18.5	22.0	19.7	4.4	3.5	10.5	10.6	8.8	14.1
MEDIAN	30.6	29.9	28.8	17.1	10.8	14.8	2.5	2.6	11.8	9.4	7.7	14.1
MINIMUM	17.2	23.0	0.0	0.0	4.7	0.0	0.0	0.4	0.0	0.0	0.0	6.1
MAXIMUM	44.9	52.7	49.1	34.8	67.6	60.8	12.5	10.9	22.1	26.4	19.0	34.3

Historic Values (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1985	16.0	18.1	20.8	10.3	60.4	43.2	4.2	7.0	19.5	39.5	24.3	24.3
1986	31.3	26.1	18.2	28.1	17.8	17.7	6.1	0.0	14.5	14.1	20.5	20.5
1987	25.1	36.8	51.4	31.9	49.3	55.4	6.4	0.0	13.5	10.6	15.5	15.6
1988	31.1	32.9	46.2	32.5	27.2	30.0	0.0	0.0	0.6	4.5	4.2	15.0
1989	32.5	29.6	29.0	10.8	4.4	8.8	0.2	1.4	10.5	7.5	4.1	5.2
1990	34.5	35.0	35.3	26.2	11.2	5.3	0.0	0.0	0.0	5.7	5.9	9.9
1991	26.6	33.2	21.5	15.1	8.6	28.7	0.2	0.0	8.0	1.7	4.6	7.6
1992	19.4	40.0	25.4	23.9	3.6	15.7	16.8	5.2	15.7	12.5	11.8	25.5
1993	36.8	36.1	47.2	31.4	11.2	7.6	0.7	0.0	16.9	24.8	6.7	18.9
1994	27.3	25.3	28.3	13.6	2.5	0.0	0.0	0.0	0.0	2.0	1.5	4.5
AVERAGE	28.1	31.3	32.3	22.4	19.6	21.2	3.5	1.4	9.9	12.3	9.9	14.7
MEDIAN	29.2	33.1	28.6	25.1	11.2	16.7	0.5	0.0	12.0	9.1	6.3	15.3
MINIMUM	16.0	18.1	18.2	10.3	2.5	0.0	0.0	0.0	0.0	1.7	1.5	4.5
MAXIMUM	36.8	40.0	51.4	32.5	60.4	55.4	16.8	7.0	19.5	39.5	24.3	25.5

Differences (Calibration - Historic) (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1975	22.5	20.7	-20.8	1.9	-5.4	-10.9	3.7	0.6	-4.3	-13.1	-5.3	10.0
1976	13.6	11.0	-0.9	-28.1	2.1	-17.7	-6.1	2.2	-14.5	-14.1	-20.5	-13.7
1977	5.4	-7.3	-2.3	-0.2	18.3	5.4	6.1	3.4	4.3	1.7	-3.4	-1.5
1978	2.9	19.8	-12.3	-10.5	4.0	-7.5	3.0	1.2	2.8	3.2	1.1	0.3
1979	-1.9	-3.2	-4.0	1.0	0.3	1.2	1.2	1.6	1.9	0.8	0.8	0.9
1980	-5.3	-8.6	-2.7	8.6	0.0	0.0	0.8	2.0	3.4	4.8	2.6	0.1
1981	-9.4	-7.3	-5.8	-4.1	1.8	4.7	2.3	0.5	3.2	-1.7	2.3	6.5
1982	4.6	-9.0	16.8	1.9	1.1	3.0	-4.3	5.7	6.4	1.9	1.0	-5.9
1983	-2.8	-5.9	-9.9	-6.3	-1.5	3.2	1.8	3.7	2.7	-4.1	7.1	-4.8
1984	-3.2	-2.3	-6.8	-3.2	2.9	3.0	1.1	0.4	0.0	4.0	3.1	1.6
AVERAGE	2.6	0.8	-4.9	-3.9	2.3	-1.6	1.0	2.1	0.6	-1.7	-1.1	-0.6
MEDIAN	0.5	-4.5	-4.9	-1.7	1.4	2.1	1.5	1.8	2.7	1.2	1.0	0.2
MINIMUM	-9.4	-9.0	-20.8	-28.1	-5.4	-17.7	-6.1	0.4	-14.5	-14.1	-20.5	-13.7
MAXIMUM	22.5	20.7	16.8	8.6	18.3	5.4	6.1	5.7	6.4	4.8	7.1	10.0

Table 7. Tri-county (Central) canal diversion, calibration period.

Computed Values (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1985	121.7	121.9	123.7	85.2	115.0	120.8	131.8	120.1	89.6	102.3	89.7	103.8
1986	106.1	110.8	105.9	124.3	116.4	123.5	132.1	131.6	124.7	124.2	122.8	121.6
1987	106.0	108.1	130.7	117.4	121.4	121.8	131.7	131.6	101.0	95.7	100.4	89.7
1988	100.3	121.7	124.0	97.8	91.5	120.8	131.7	126.8	70.2	75.4	66.5	74.6
1989	79.6	84.5	89.2	66.9	91.5	90.2	131.6	131.6	66.1	61.5	58.6	58.9
1990	64.8	73.5	79.6	50.8	67.6	93.8	131.9	124.1	72.6	61.5	58.6	58.9
1991	57.7	78.9	66.1	50.8	67.6	106.5	131.9	131.6	62.3	61.5	58.6	58.9
1992	57.7	83.2	89.2	58.7	64.5	84.6	131.5	127.0	86.7	61.5	58.6	58.9
1993	71.3	75.7	104.2	72.1	67.6	71.9	98.5	96.8	76.4	93.4	71.2	72.2
1994	69.7	80.1	74.0	61.1	91.5	90.2	131.5	131.5	55.5	69.5	66.5	66.6
AVERAGE	83.5	93.8	98.7	78.5	89.5	102.4	128.4	125.3	80.5	80.7	75.2	76.4
MEDIAN	75.5	83.9	96.7	69.5	91.5	100.2	131.7	129.3	74.5	72.5	66.5	69.4
MINIMUM	57.7	73.5	66.1	50.8	64.5	71.9	98.5	96.8	55.5	61.5	58.6	58.9
MAXIMUM	121.7	121.9	130.7	124.3	121.4	123.5	132.1	131.6	124.7	124.2	122.8	121.6

Historic Values (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1985	73.3	86.4	112.8	92.1	120.6	118.2	130.4	116.3	83.4	109.0	91.4	98.4
1986	122.8	109.3	133.1	128.2	130.8	120.2	135.8	135.2	130.5	135.2	126.9	124.8
1987	118.0	107.7	117.8	123.7	133.4	127.2	135.5	135.7	120.0	113.8	104.5	110.3
1988	76.9	105.5	124.6	123.0	128.8	120.1	128.4	126.6	83.9	70.0	61.2	74.5
1989	97.4	85.0	94.5	63.3	83.8	98.1	120.5	129.7	64.1	60.9	51.0	51.8
1990	76.3	75.9	100.3	123.7	93.7	92.0	135.3	125.7	73.6	42.2	39.8	41.2
1991	59.2	74.4	68.9	57.8	68.9	99.3	136.0	130.1	55.2	43.6	43.7	47.3
1992	67.4	85.8	125.2	75.5	70.8	82.2	114.3	123.2	74.4	54.5	55.0	69.5
1993	77.6	81.7	129.9	68.6	62.5	63.3	86.7	89.0	77.7	104.8	89.0	102.4
1994	97.0	91.0	90.7	54.7	81.1	93.1	123.5	119.3	53.5	61.8	52.1	60.9
AVERAGE	86.6	90.3	109.8	91.1	97.4	101.4	124.6	123.1	81.6	79.6	71.5	78.1
MEDIAN	77.3	86.1	115.3	83.8	88.7	98.7	129.4	126.1	76.1	65.9	58.1	72.0
MINIMUM	59.2	74.4	68.9	54.7	62.5	63.3	86.7	89.0	53.5	42.2	39.8	41.2
MAXIMUM	122.8	109.3	133.1	128.2	133.4	127.2	136.0	135.7	130.5	135.2	126.9	124.8

Differences (Calibration - Historic) (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1985	48.4	35.5	10.9	-6.9	-5.6	2.6	1.4	3.8	6.2	-6.7	-1.7	5.4
1986	-16.7	1.5	-27.2	-3.9	-14.4	3.3	-3.7	-3.6	-5.8	-11.0	-4.1	-3.2
1987	-12.0	0.4	12.9	-6.3	-12.0	-5.4	-3.8	-4.1	-19.0	-18.1	-4.1	-20.6
1988	23.4	16.2	-0.6	-25.2	-37.3	0.7	3.3	0.2	-13.7	5.4	5.3	0.1
1989	-17.8	-0.5	-5.3	3.6	7.7	-7.9	11.1	1.9	2.0	0.6	7.6	7.1
1990	-11.5	-2.4	-20.7	-72.9	-26.1	1.8	-3.3	-1.6	-1.0	19.3	18.8	17.7
1991	-1.5	4.5	-2.8	-7.0	-1.3	7.2	-4.1	1.5	7.1	18.0	14.9	11.7
1992	-9.7	-2.6	-36.0	-16.8	-6.3	2.4	17.2	3.8	12.3	7.1	3.6	-10.6
1993	-6.3	-6.0	-25.7	3.5	5.1	8.6	11.8	7.8	-1.3	-11.4	-17.8	-30.2
1994	-27.3	-10.9	-16.7	6.4	10.4	-2.9	8.0	12.2	2.0	7.7	14.4	5.7
AVERAGE	-3.1	3.6	-11.1	-12.6	-8.0	1.0	3.8	2.2	-1.1	1.1	3.7	-1.7
MEDIAN	-10.6	0.0	-11.0	-6.6	-5.9	2.1	2.3	1.7	0.5	3.0	4.5	2.7
MINIMUM	-27.3	-10.9	-36.0	-72.9	-37.3	-7.9	-4.1	-4.1	-19.0	-18.1	-17.8	-30.2
MAXIMUM	48.4	35.5	12.9	6.4	10.4	8.6	17.2	12.2	12.3	19.3	18.8	17.7

3.2.1.4 Returns. Three hydropower returns were evaluated: the Sutherland Canal Return at North Platte; the Jeffrey Return to the Platte River; and the Johnson #2 Return, or J2 Return to the Platte River. The Jeffrey and J2 returns are from the Tri-County Canal, and

are therefore not entirely independent of each other. Moreover, the Jeffrey Return is primarily used to satisfy downstream irrigation demand during low-flow conditions in the Platte River. The calibration results for these locations are tabulated in **Tables 8 through 10**, respectively; and shown graphically in **Figures 8 through 10**, respectively.

Return flows simulated by the model are affected by diversions into the canal, other returns from the canal, and the operation of the reservoirs along the canal. Therefore, it is not unexpected that the correlations for the returns are not as high as those for the diversions. The Sutherland Canal Return correlation and standard error and pattern of flows, **Figure 8**, are similar to those for the Keystone diversion.

Figure 9 shows a somewhat weak R-squared value and a general tendency for the model to under-predict flow through the Jeffrey Return for both higher and lower flows. The model does, however, generally have the timing right for the peak flows through the return. **Figure 10** shows a somewhat higher R-squared for the J2 Return than for the Jeffrey Return, and a more mixed distribution of the differences between modeled and historic values. As is also the case for the Jeffrey Return, the model generally has the timing right for the peak flows through the J2 Return. Both the high percentage difference and the somewhat weak R-squared value for the Jeffrey Return are a bit misleading, as indicated by the low actual differences. Even the highest flows through the Jeffrey Return are quite low compared to flows at other points along the river, such that even a small computational difference can generate an apparently large statistical error. For the J2 Return, the percentage difference and the R-squared value, while not outstanding, are of a magnitude suggesting acceptable representation in the model.

Table 8. Sutherland canal hydro return, calibration period.

Computed Values (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1985	100.5	95.0	107.0	62.3	50.4	91.2	90.2	78.9	49.0	63.2	57.1	63.4
1986	73.1	78.7	77.1	89.8	83.8	91.2	102.4	83.0	102.2	0.0	108.2	106.1
1987	95.0	88.7	75.2	89.8	63.0	91.2	83.3	96.2	63.2	72.0	67.2	60.9
1988	74.3	92.9	78.9	65.3	34.1	84.3	81.4	82.2	33.3	40.6	38.1	38.6
1989	48.1	49.3	38.1	33.2	62.7	50.0	79.3	89.4	32.5	27.8	27.4	30.0
1990	24.7	25.4	33.0	39.4	28.0	57.8	95.3	85.1	50.8	36.5	32.2	31.4
1991	18.0	24.9	19.5	14.0	18.7	66.2	93.1	94.1	35.8	0.0	23.8	32.0
1992	23.5	29.9	42.1	24.2	36.1	44.3	81.7	78.4	54.7	23.9	28.6	18.7
1993	29.4	29.0	37.4	23.5	25.2	29.4	45.6	63.1	40.0	49.6	40.4	28.7
1994	33.1	37.2	23.6	23.7	69.3	53.0	70.8	89.8	23.4	41.7	40.2	34.6
AVERAGE	52.0	55.1	53.2	46.5	47.1	65.9	82.3	84.0	48.5	35.5	46.3	44.4
MEDIAN	40.6	43.3	40.1	36.3	43.3	62.0	82.5	84.1	44.5	38.6	39.2	33.3
MINIMUM	18.0	24.9	19.5	14.0	18.7	29.4	45.6	63.1	23.4	0.0	23.8	18.7
MAXIMUM	100.5	95.0	107.0	89.8	83.8	91.2	102.4	96.2	102.2	72.0	108.2	106.1

Historic Values (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1985	76.1	50.2	88.4	61.3	56.0	73.7	92.3	89.3	50.2	74.4	65.4	56.1
1986	62.4	68.4	90.9	94.4	91.4	75.9	98.1	94.2	67.1	14.1	86.4	97.9
1987	98.1	78.2	79.7	97.2	94.8	78.9	96.3	90.5	78.3	80.6	64.6	71.4
1988	50.6	41.3	70.4	82.6	76.2	78.1	87.2	90.0	43.4	29.6	29.8	32.0
1989	55.4	48.0	40.9	22.8	46.2	57.2	89.0	91.3	25.0	25.3	17.7	19.5
1990	35.5	35.6	52.4	88.7	50.3	52.7	92.4	90.0	42.0	22.1	14.1	19.1
1991	23.6	23.6	25.4	21.6	19.7	38.7	90.5	92.7	27.2	8.3	5.7	11.2
1992	24.7	36.6	54.9	35.0	37.3	46.6	77.5	82.8	28.4	13.3	22.2	32.7
1993	41.2	41.0	61.6	18.9	20.6	20.6	50.2	42.3	35.2	56.4	47.5	58.1
1994	56.5	46.9	44.2	17.7	47.5	59.4	72.4	84.2	24.4	27.2	18.9	21.7
AVERAGE	52.4	47.0	60.9	54.0	54.0	58.2	84.6	84.7	42.1	35.1	37.2	42.0
MEDIAN	53.0	44.1	58.3	48.1	48.9	58.3	89.8	90.0	38.6	26.3	26.0	32.3
MINIMUM	23.6	23.6	25.4	17.7	19.7	20.6	50.2	42.3	24.4	8.3	5.7	11.2
MAXIMUM	98.1	78.2	90.9	97.2	94.8	78.9	98.1	94.2	78.3	80.6	86.4	97.9

Differences (Calibration - Historic) (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1985	24.4	44.8	18.6	1.0	-5.6	17.5	-2.1	-10.4	-1.2	-11.2	-8.3	7.3
1986	10.7	10.3	-13.8	-4.6	-7.6	15.3	4.3	-11.2	35.1	-14.1	21.8	8.2
1987	-3.1	10.5	-4.5	-7.4	-31.8	12.3	-13.0	5.7	-15.1	-8.6	2.6	-10.5
1988	23.7	51.6	8.5	-17.3	-42.1	6.2	-5.8	-7.8	-10.1	11.0	8.3	6.6
1989	-7.3	1.3	-2.8	10.4	16.5	-7.2	-9.7	-1.9	7.5	2.5	9.7	10.5
1990	-10.8	-10.2	-19.4	-49.3	-22.3	5.1	2.9	-4.9	8.8	14.4	18.1	12.3
1991	-5.6	1.3	-5.9	-7.6	-1.0	27.5	2.6	1.4	8.6	-8.3	18.1	20.8
1992	-1.2	-6.7	-12.8	-10.8	-1.2	-2.3	4.2	-4.4	26.3	10.6	6.4	-14.0
1993	-11.8	-12.0	-24.2	4.6	4.6	8.8	-4.6	20.8	4.8	-6.8	-7.1	-29.4
1994	-23.4	-9.7	-20.6	6.0	21.8	-6.4	-1.6	5.6	-1.0	14.5	21.3	12.9
AVERAGE	-0.4	8.1	-7.7	-7.5	-6.9	7.7	-2.3	-0.7	6.4	0.4	9.1	2.5
MEDIAN	-4.3	1.3	-9.3	-6.0	-3.4	7.5	-1.8	-3.1	6.1	-2.1	9.0	7.7
MINIMUM	-23.4	-12.0	-24.2	-49.3	-42.1	-7.2	-13.0	-11.2	-15.1	-14.1	-8.3	-29.4
MAXIMUM	24.4	51.6	18.6	10.4	21.8	27.5	4.3	20.8	35.1	14.5	21.8	20.8

Table 9. Tri-county canal Jeffrey hydro return, calibration period.

Computed Values (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1985	0.0	0.0	0.0	0.0	0.0	0.0	3.4	27.0	0.0	0.0	0.0	0.0
1986	0.0	0.0	0.0	0.0	0.0	0.0	0.0	27.1	0.0	0.0	0.0	0.0
1987	0.0	0.0	0.0	0.0	0.0	0.0	1.7	20.4	0.0	0.0	0.0	0.0
1988	0.0	0.0	0.0	0.0	0.0	0.0	0.0	21.7	3.4	0.0	0.0	0.0
1989	0.0	0.0	0.0	0.0	0.0	12.7	27.4	23.1	0.0	0.0	0.0	0.0
1990	0.0	0.0	0.0	0.0	0.0	9.9	0.0	19.1	9.0	0.7	0.0	0.0
1991	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.7	6.3	0.0	0.0	0.0
1992	0.0	0.0	0.0	0.0	3.5	14.1	3.4	3.8	10.1	0.0	0.0	0.0
1993	0.0	0.0	0.0	0.0	0.1	7.1	18.5	13.8	0.0	0.0	0.0	0.0
1994	0.0	0.0	0.0	0.0	0.0	12.1	13.4	21.1	0.0	0.0	0.0	0.0
AVERAGE	0.0	0.0	0.0	0.0	0.4	5.6	6.8	18.9	2.9	0.1	0.0	0.0
MEDIAN	0.0	0.0	0.0	0.0	0.0	3.6	2.6	20.8	0.0	0.0	0.0	0.0
MINIMUM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.8	0.0	0.0	0.0	0.0
MAXIMUM	0.0	0.0	0.0	0.0	3.5	14.1	27.4	27.1	10.1	0.7	0.0	0.0

Historic Values (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1985	0.0	3.7	0.0	0.0	0.0	6.7	16.0	25.8	6.1	0.0	0.0	0.0
1986	4.9	1.0	0.0	0.1	0.0	0.0	1.5	0.0	0.0	0.0	0.0	0.0
1987	0.0	0.0	0.0	0.0	0.0	2.2	19.6	11.1	0.0	0.0	2.2	0.0
1988	0.0	2.9	0.0	0.0	2.1	13.5	16.0	23.1	5.8	0.6	0.0	0.3
1989	1.1	2.2	1.3	0.5	6.4	15.1	23.4	21.4	2.0	1.3	0.6	0.6
1990	0.4	0.4	0.5	0.4	1.8	16.5	7.4	17.9	5.2	0.7	0.5	0.4
1991	0.7	0.4	0.4	0.3	1.3	5.6	2.5	15.7	6.8	0.8	0.6	0.5
1992	0.0	0.0	0.0	0.0	3.7	12.2	23.7	17.9	13.1	0.0	0.0	0.0
1993	0.0	0.0	0.0	0.0	1.2	7.3	16.4	20.1	1.5	0.0	0.0	0.0
1994	0.0	0.0	0.0	0.0	3.5	14.9	14.5	18.6	0.5	0.0	0.0	0.0
AVERAGE	0.7	1.1	0.2	0.1	2.0	9.4	14.1	17.2	4.1	0.3	0.4	0.2
MEDIAN	0.0	0.4	0.0	0.0	1.5	9.8	16.0	18.2	3.6	0.0	0.0	0.0
MINIMUM	0.0	0.0	0.0	0.0	0.0	0.0	1.5	0.0	0.0	0.0	0.0	0.0
MAXIMUM	4.9	3.7	1.3	0.5	6.4	16.5	23.7	25.8	13.1	1.3	2.2	0.6

Differences (Calibration - Historic) (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1985	0.0	-3.7	0.0	0.0	0.0	-6.7	-12.6	1.2	-6.1	0.0	0.0	0.0
1986	-4.9	-1.0	0.0	-0.1	0.0	0.0	-1.5	27.1	0.0	0.0	0.0	0.0
1987	0.0	0.0	0.0	0.0	0.0	-2.2	-17.9	9.3	0.0	0.0	-2.2	0.0
1988	0.0	-2.9	0.0	0.0	-2.1	-13.5	-16.0	-1.4	-2.4	-0.6	0.0	-0.3
1989	-1.1	-2.2	-1.3	-0.5	-6.4	-2.4	4.0	1.7	-2.0	-1.3	-0.6	-0.6
1990	-0.4	-0.4	-0.5	-0.4	-1.8	-6.6	-7.4	1.2	3.8	0.0	-0.5	-0.4
1991	-0.7	-0.4	-0.4	-0.3	-1.3	-5.6	-2.5	-4.0	-0.5	-0.8	-0.6	-0.5
1992	0.0	0.0	0.0	0.0	-0.2	1.9	-20.3	-14.1	-3.0	0.0	0.0	0.0
1993	0.0	0.0	0.0	0.0	-1.1	-0.2	2.1	-6.3	-1.5	0.0	0.0	0.0
1994	0.0	0.0	0.0	0.0	-3.5	-2.8	-1.1	2.5	-0.5	0.0	0.0	0.0
AVERAGE	-0.7	-1.1	-0.2	-0.1	-1.6	-3.8	-7.3	1.7	-1.2	-0.3	-0.4	-0.2
MEDIAN	0.0	-0.4	0.0	0.0	-1.2	-2.6	-5.0	1.2	-1.0	0.0	0.0	0.0
MINIMUM	-4.9	-3.7	-1.3	-0.5	-6.4	-13.5	-20.3	-14.1	-6.1	-1.3	-2.2	-0.6
MAXIMUM	0.0	0.0	0.0	0.0	0.0	1.9	4.0	27.1	3.8	0.0	0.0	0.0

Table 10. Tri-county canal J2 hydro return, calibration period.

Computed Values (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1985	96.0	97.5	91.1	48.0	63.4	54.1	23.7	11.3	55.6	77.6	68.7	80.4
1986	82.2	87.6	74.4	84.6	58.8	38.1	20.3	23.0	90.2	97.7	99.5	96.8
1987	82.0	85.3	97.7	78.7	67.5	51.6	42.6	17.3	70.5	71.5	78.6	67.5
1988	77.0	97.1	91.4	57.3	34.9	17.8	29.9	14.9	37.9	52.8	47.0	53.5
1989	58.6	64.3	58.8	29.3	33.0	7.1	18.0	6.2	32.6	39.9	39.7	39.0
1990	45.5	54.6	49.8	13.4	13.5	12.8	7.1	8.0	20.7	39.3	39.7	39.0
1991	39.3	59.3	37.2	12.9	16.2	25.9	2.5	9.5	29.4	39.9	39.7	39.0
1992	39.3	63.0	58.8	20.1	6.3	10.7	58.8	23.5	10.2	39.9	39.7	39.0
1993	51.3	56.5	72.8	35.2	18.3	11.6	43.1	26.5	47.5	69.3	51.4	51.3
1994	49.9	60.4	44.6	23.8	38.4	6.1	30.9	8.3	24.4	47.3	47.0	46.1
AVERAGE	62.1	72.6	67.7	40.3	35.0	23.6	27.7	14.9	41.9	57.5	55.1	55.2
MEDIAN	55.0	63.7	65.8	32.3	34.0	15.3	26.8	13.1	35.3	50.1	47.0	48.7
MINIMUM	39.3	54.6	37.2	12.9	6.3	6.1	2.5	6.2	10.2	39.3	39.7	39.0
MAXIMUM	96.0	97.5	97.7	84.6	67.5	54.1	58.8	26.5	90.2	97.7	99.5	96.8

Historic Values (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1985	55.2	64.8	90.9	65.2	69.1	47.4	11.2	11.0	48.7	82.2	53.5	73.2
1986	90.5	88.8	108.0	95.2	74.2	41.3	24.5	49.8	93.6	101.8	91.2	102.1
1987	95.3	93.8	99.7	87.5	78.0	56.0	24.8	26.2	84.3	78.9	74.5	84.2
1988	57.7	71.2	101.3	79.2	67.9	15.2	12.9	18.1	44.2	38.8	31.2	47.3
1989	74.5	65.8	72.5	24.2	13.6	15.4	11.9	8.7	29.2	26.6	29.5	43.7
1990	57.9	57.9	68.4	88.5	37.8	8.9	0.0	15.3	18.2	27.2	35.3	32.1
1991	42.3	60.7	41.9	16.0	21.2	19.7	0.9	5.4	19.2	13.7	32.6	32.6
1992	52.1	72.4	98.2	48.5	26.7	37.0	49.3	51.4	28.8	45.3	38.4	53.8
1993	60.2	70.3	98.2	41.6	13.1	16.3	35.7	18.9	65.4	83.1	79.2	85.3
1994	80.7	85.7	77.8	31.7	27.3	14.3	24.0	3.5	30.9	35.6	39.6	47.4
AVERAGE	66.6	73.2	85.7	57.8	42.9	27.2	19.5	20.8	46.3	53.3	50.5	60.2
MEDIAN	59.1	70.8	94.6	56.9	32.6	18.0	18.4	16.7	37.6	42.0	39.0	50.6
MINIMUM	42.3	57.9	41.9	16.0	13.1	8.9	0.0	3.5	18.2	13.7	29.5	32.1
MAXIMUM	95.3	93.8	108.0	95.2	78.0	56.0	49.3	51.4	93.6	101.8	91.2	102.1

Differences (Calibration - Historic) (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1985	40.8	32.7	0.2	-17.2	-5.7	6.7	12.5	0.3	6.9	-4.6	15.2	7.2
1986	-8.3	-1.2	-33.6	-10.6	-15.4	-3.2	-4.2	-26.8	-3.4	-4.1	8.3	-5.3
1987	-13.3	-8.5	-2.0	-8.8	-10.5	-4.4	17.8	-8.9	-13.8	-7.4	4.1	-16.7
1988	19.3	25.9	-9.9	-21.9	-33.0	2.6	17.0	-3.2	-6.3	14.0	15.8	6.2
1989	-15.9	-1.5	-13.7	5.1	19.4	-8.3	6.1	-2.5	3.4	13.3	10.2	-4.7
1990	-12.4	-3.3	-18.6	-75.1	-24.3	3.9	7.1	-7.3	2.5	12.1	4.4	6.9
1991	-3.0	-1.4	-4.7	-3.1	-5.0	6.2	1.6	4.1	10.2	26.2	7.1	6.4
1992	-12.8	-9.4	-39.4	-28.4	-20.4	-26.3	9.5	-27.9	-18.6	-5.4	1.3	-14.8
1993	-8.9	-13.8	-25.4	-6.4	5.2	-4.7	7.4	7.6	-17.9	-13.8	-27.8	-34.0
1994	-30.8	-25.3	-33.2	-7.9	11.1	-8.2	6.9	4.8	-6.5	11.7	7.4	-1.3
AVERAGE	-4.5	-0.6	-18.1	-17.4	-7.9	-3.6	8.2	-6.0	-4.4	4.2	4.6	-5.0
MEDIAN	-10.7	-2.4	-16.2	-9.7	-8.1	-3.8	7.2	-2.9	-4.9	3.8	7.3	-3.0
MINIMUM	-30.8	-25.3	-39.4	-75.1	-33.0	-26.3	-4.2	-27.9	-18.6	-13.8	-27.8	-34.0
MAXIMUM	40.8	32.7	0.2	5.1	19.4	6.7	17.8	7.6	10.2	26.2	15.8	7.2

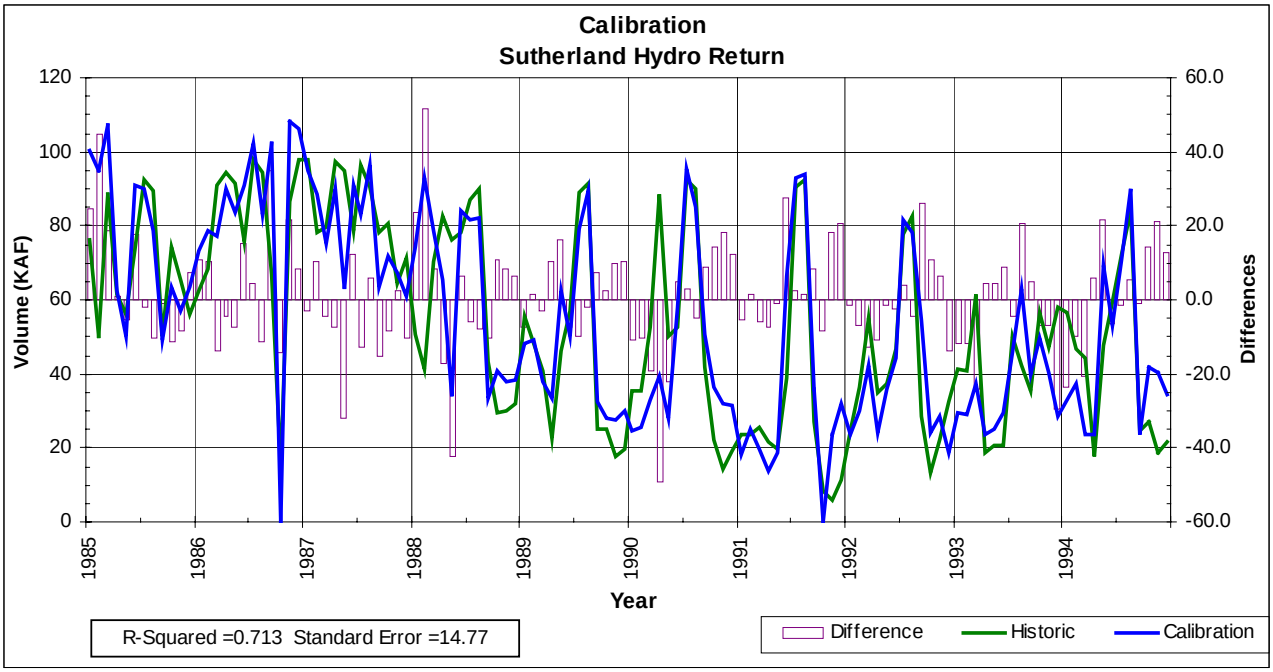

Figure 8. Sutherland canal hydro return, calibration period.

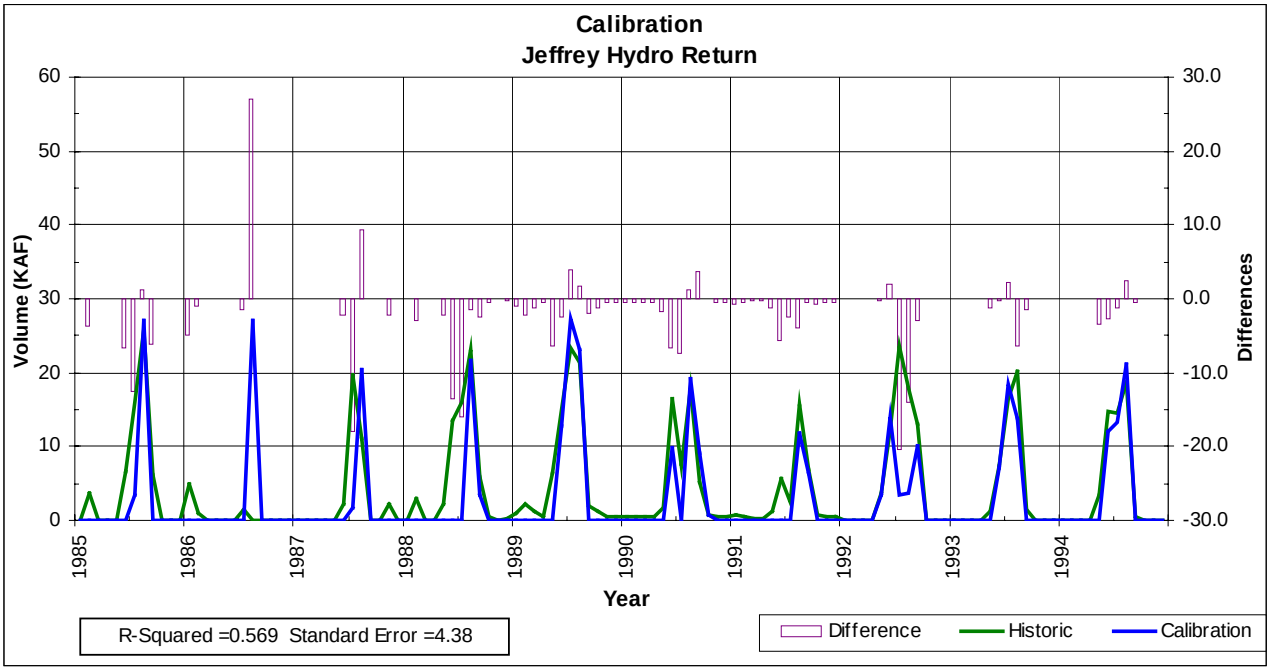

Figure 9. Tri-county canal Jeffrey hydro return, calibration period.

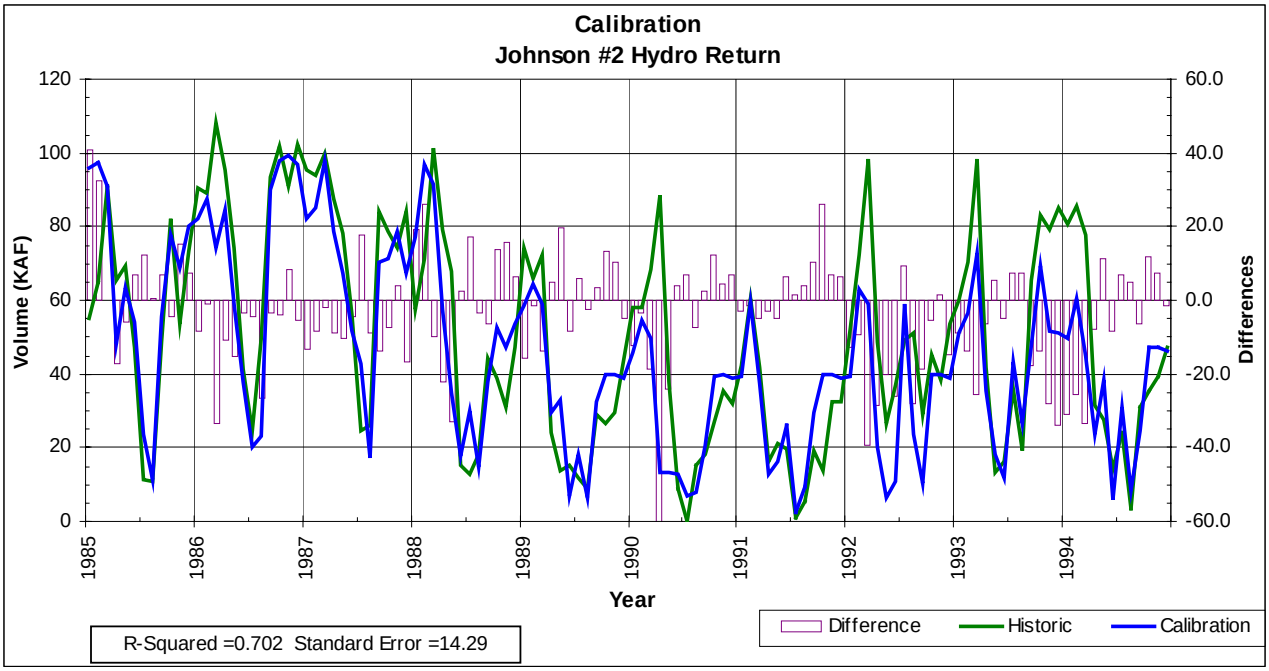

Figure 10. Tri-county canal J2 hydro return, calibration period.

3.2.1.5 Platte River Main Stem. Flows at five locations were considered: confluence of the North and South Platte Rivers, or Total Platte River Flow at North Platte, NE; Flow Passing the Central Diversion Dam; Platte River near Cozad, NE; Platte River near Overton, NE; and Platte River near Grand Island, NE. The calibration results for these locations are tabulated in **Tables 11 through 15**, respectively; and shown graphically in **Figures 11 through 15**, respectively. The results show close matches between computed and historic flows at most locations, with the exception of the summer and fall of 1986 and April of 1990. The causes of these discrepancies were discussed in **Section 3.2.1.2**.

Table 11. Flow below the confluence of the North Platte and South Platte Rivers at North Platte, calibration period.

Computed Values (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1985	179.2	185.8	241.4	96.9	141.0	160.3	204.5	142.7	94.9	112.8	96.5	122.4
1986	145.7	149.4	118.0	258.0	144.5	323.9	250.9	176.5	271.6	256.0	214.1	176.5
1987	145.4	139.8	156.4	147.0	197.7	220.3	189.4	178.1	108.7	103.2	106.4	100.0
1988	131.2	179.7	141.5	112.2	98.4	164.2	191.2	157.8	69.2	70.7	65.4	71.7
1989	92.4	90.2	87.8	59.7	89.5	95.2	178.8	175.8	62.5	52.6	54.6	56.4
1990	64.7	63.7	70.4	53.6	67.6	94.8	223.5	151.3	75.2	61.5	59.5	61.5
1991	60.9	73.5	58.8	48.0	59.3	119.9	220.4	180.3	63.6	60.3	54.1	60.7
1992	57.6	83.3	91.6	59.2	62.7	87.6	168.5	158.1	91.4	61.5	57.0	56.3
1993	79.8	77.3	111.9	71.4	64.0	68.4	102.4	102.6	74.9	93.8	73.2	71.9
1994	77.6	76.8	69.0	60.4	94.7	95.2	163.0	167.7	54.5	66.4	67.4	68.1
AVERAGE	103.5	112.0	114.7	96.6	101.9	143.0	189.3	159.1	96.7	93.9	84.8	84.6
MEDIAN	86.1	86.8	101.8	65.9	92.1	107.6	190.3	162.9	75.1	68.6	66.4	69.9
MINIMUM	57.6	63.7	58.8	48.0	59.3	68.4	102.4	102.6	54.5	52.6	54.1	56.3
MAXIMUM	179.2	185.8	241.4	258.0	197.7	323.9	250.9	180.3	271.6	256.0	214.1	176.5

Historic Values (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1985	209.2	186.9	228.8	96.5	136.5	135.9	197.1	144.0	89.4	111.7	99.5	125.1
1986	148.6	150.4	146.9	255.3	179.9	290.5	258.7	275.6	259.4	233.9	179.2	157.5
1987	157.5	122.0	158.6	155.3	245.6	219.7	175.5	191.7	129.4	113.4	100.4	109.1
1988	110.3	147.9	120.9	120.2	154.2	152.4	181.3	157.6	80.6	63.0	58.2	65.3
1989	97.8	85.8	86.6	50.1	74.9	101.6	171.8	181.3	58.8	52.0	46.2	46.7
1990	70.2	65.3	87.0	130.9	94.0	86.5	218.1	154.9	80.1	53.9	45.5	50.9
1991	58.6	66.2	60.1	52.2	60.6	103.2	217.5	175.0	57.3	42.4	38.3	46.4
1992	63.5	81.0	121.2	71.9	69.0	87.3	131.1	146.7	76.3	55.9	52.5	64.3
1993	88.8	83.4	126.2	60.5	58.9	59.8	92.9	88.7	73.1	98.1	88.2	96.5
1994	97.7	84.3	82.8	49.4	77.5	95.5	156.1	158.1	51.8	57.5	51.1	58.3
AVERAGE	110.2	107.3	121.9	104.2	115.1	133.2	180.0	167.4	95.6	88.2	75.9	82.0
MEDIAN	97.7	85.1	121.0	84.2	85.7	102.4	178.4	157.8	78.2	60.3	55.3	64.8
MINIMUM	58.6	65.3	60.1	49.4	58.9	59.8	92.9	88.7	51.8	42.4	38.3	46.4
MAXIMUM	209.2	186.9	228.8	255.3	245.6	290.5	258.7	275.6	259.4	233.9	179.2	157.5

Differences (Calibration - Historic) (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1985	-30.0	-1.1	12.6	0.4	4.5	24.4	7.4	-1.3	5.5	1.1	-3.0	-2.7
1986	-2.9	-1.0	-28.9	2.7	-35.4	33.4	-7.8	-99.1	12.2	22.1	34.9	19.0
1987	-12.1	17.8	-2.2	-8.3	-47.9	0.6	13.9	-13.6	-20.7	-10.2	6.0	-9.1
1988	20.9	31.8	20.6	-8.0	-55.8	11.8	9.9	0.2	-11.4	7.7	7.2	6.4
1989	-5.4	4.4	1.2	9.6	14.6	-6.4	7.0	-5.5	3.7	0.6	8.4	9.7
1990	-5.5	-1.6	-16.6	-77.3	-26.4	8.3	5.4	-3.6	-4.9	7.6	14.0	10.6
1991	2.3	7.3	-1.3	-4.2	-1.3	16.7	2.9	5.3	6.3	17.9	15.8	14.3
1992	-5.9	2.3	-29.6	-12.7	-6.3	0.3	37.4	11.4	15.1	5.6	4.5	-8.0
1993	-9.0	-6.1	-14.3	11.0	5.1	8.6	9.5	13.9	1.8	-4.3	-15.0	-24.6
1994	-20.1	-7.5	-13.8	11.0	17.2	-0.3	6.9	9.6	2.7	8.9	16.3	9.8
AVERAGE	-6.8	4.6	-7.2	-7.6	-13.2	9.7	9.3	-8.3	1.0	5.7	8.9	2.5
MEDIAN	-5.7	0.7	-8.0	-1.9	-3.8	8.5	7.2	-0.5	3.2	6.6	7.8	8.1
MINIMUM	-30.0	-7.5	-29.6	-77.3	-55.8	-6.4	-7.8	-99.1	-20.7	-10.2	-15.0	-24.6
MAXIMUM	20.9	31.8	20.6	11.0	17.2	33.4	37.4	13.9	15.1	22.1	34.9	19.0

Table 12. Flow passing the Tri-county (Central) diversion, calibration period.

Computed Values (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1985	57.5	63.9	117.7	11.7	26.0	39.5	72.8	22.6	5.3	10.5	6.8	18.6
1986	39.6	38.6	12.1	133.8	28.0	200.4	118.8	44.9	146.9	131.8	91.3	54.9
1987	39.4	31.7	25.7	29.6	76.3	98.6	57.7	46.5	7.7	7.5	6.0	10.3
1988	30.9	58.0	17.6	14.5	6.8	43.4	59.5	31.0	0.0	0.0	0.0	0.0
1989	12.8	5.7	0.0	0.0	0.0	5.0	47.1	44.2	0.0	0.0	0.0	0.0
1990	0.0	0.0	0.0	2.8	0.0	1.0	91.6	27.2	2.5	0.0	0.9	2.6
1991	3.2	0.0	0.0	0.0	0.0	13.4	88.5	48.7	1.3	0.0	0.0	1.8
1992	0.0	0.1	2.4	0.5	0.0	3.0	36.9	31.2	4.7	0.0	0.0	0.0
1993	8.5	1.6	7.7	0.0	0.0	0.0	3.9	5.8	0.0	0.5	2.0	0.0
1994	7.9	0.0	0.0	0.0	3.1	5.0	31.5	36.1	0.0	0.0	0.9	1.6
AVERAGE	20.0	20.0	18.3	19.3	14.0	40.9	60.8	33.8	16.8	15.0	10.8	9.0
MEDIAN	10.7	3.7	5.1	1.7	1.6	9.2	58.6	33.7	1.9	0.0	0.9	1.7
MINIMUM	0.0	0.0	0.0	0.0	0.0	0.0	3.9	5.8	0.0	0.0	0.0	0.0
MAXIMUM	57.5	63.9	117.7	133.8	76.3	200.4	118.8	48.7	146.9	131.8	91.3	54.9

Historic Values (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1985	135.9	100.5	116.0	4.4	15.9	17.7	66.7	27.7	6.0	2.7	8.1	26.7
1986	25.8	41.1	13.8	127.1	49.1	170.3	122.9	140.4	128.9	98.7	52.3	32.7
1987	39.5	14.3	40.8	31.6	112.2	92.5	40.0	56.0	9.4	0.0	0.0	0.0
1988	33.4	42.4	0.0	0.0	25.4	32.3	52.9	31.0	0.0	0.0	0.0	0.0
1989	0.4	0.8	0.0	0.0	0.0	3.5	51.3	51.6	0.0	0.0	0.0	0.0
1990	0.0	0.0	0.0	7.2	0.3	0.0	82.8	29.3	6.5	11.7	5.7	9.7
1991	0.0	0.0	0.0	0.0	0.0	3.9	81.5	44.9	2.2	0.0	0.0	0.0
1992	0.0	0.0	0.0	0.0	0.0	5.1	16.8	23.5	1.9	1.5	0.0	0.0
1993	11.2	1.7	0.0	0.0	0.0	0.0	6.2	0.0	0.0	0.0	0.0	0.0
1994	0.7	0.0	0.0	0.0	0.0	2.4	32.6	38.8	0.0	0.0	0.0	0.0
AVERAGE	24.7	20.1	17.1	17.0	20.3	32.8	55.4	44.3	15.5	11.5	6.6	6.9
MEDIAN	6.0	1.3	0.0	0.0	0.2	4.5	52.1	34.9	2.0	0.0	0.0	0.0
MINIMUM	0.0	0.0	0.0	0.0	0.0	0.0	6.2	0.0	0.0	0.0	0.0	0.0
MAXIMUM	135.9	100.5	116.0	127.1	112.2	170.3	122.9	140.4	128.9	98.7	52.3	32.7

Differences (Calibration - Historic) (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1985	-78.4	-36.6	1.7	7.3	10.1	21.8	6.1	-5.1	-0.7	7.8	-1.3	-8.1
1986	13.8	-2.5	-1.7	6.7	-21.1	30.1	-4.1	-95.5	18.0	33.1	39.0	22.2
1987	-0.1	17.4	-15.1	-2.0	-35.9	6.1	17.7	-9.5	-1.7	7.5	6.0	10.3
1988	-2.5	15.6	17.6	14.5	-18.6	11.1	6.6	0.0	0.0	0.0	0.0	0.0
1989	12.4	4.9	0.0	0.0	0.0	1.5	-4.2	-7.4	0.0	0.0	0.0	0.0
1990	0.0	0.0	0.0	-4.4	-0.3	1.0	8.8	-2.1	-4.0	-11.7	-4.8	-7.1
1991	3.2	0.0	0.0	0.0	0.0	9.5	7.0	3.8	-0.8	0.0	0.0	1.8
1992	0.0	0.1	2.4	0.5	0.0	-2.1	20.1	7.7	2.8	-1.5	0.0	0.0
1993	-2.7	-0.1	7.7	0.0	0.0	0.0	-2.3	5.8	0.0	0.5	2.0	0.0
1994	7.2	0.0	0.0	0.0	3.1	2.6	-1.1	-2.7	0.0	0.0	0.9	1.6
AVERAGE	-4.7	-0.1	1.3	2.3	-6.3	8.2	5.5	-10.5	1.4	3.6	4.2	2.1
MEDIAN	0.0	0.0	0.0	0.0	0.0	4.4	6.4	-2.4	0.0	0.0	0.0	0.0
MINIMUM	-78.4	-36.6	-15.1	-4.4	-35.9	-2.1	-4.2	-95.5	-4.0	-11.7	-4.8	-8.1
MAXIMUM	13.8	17.4	17.6	14.5	10.1	30.1	20.1	7.7	18.0	33.1	39.0	22.2

Table 13. Platte River at Cozad, calibration period.

Computed Values (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1985	62.8	97.2	144.5	33.4	37.4	26.7	3.1	3.1	8.8	28.2	22.0	25.3
1986	54.5	73.8	40.6	168.2	61.8	183.5	44.9	3.1	154.1	169.9	112.1	76.0
1987	60.3	53.6	51.7	63.6	88.3	116.9	7.2	9.5	14.1	22.0	28.8	32.9
1988	39.6	92.3	49.9	38.8	31.5	6.1	17.5	4.4	4.9	15.8	15.9	20.2
1989	27.2	24.4	31.3	16.9	2.6	7.9	5.2	5.6	13.5	14.1	14.5	14.6
1990	21.4	15.2	24.6	23.1	21.3	3.5	9.1	10.2	4.5	3.8	5.6	4.3
1991	15.2	16.2	15.5	16.0	29.7	16.5	11.6	5.2	4.8	10.1	14.6	16.4
1992	21.4	19.9	37.3	18.0	4.3	4.0	6.0	16.1	5.9	11.5	14.0	16.6
1993	20.4	19.3	62.8	26.6	8.5	5.7	8.2	6.3	11.0	20.8	18.5	22.4
1994	25.7	23.1	22.7	17.0	10.8	4.2	13.3	8.2	8.8	9.3	14.8	18.0
AVERAGE	34.9	43.5	48.1	42.2	29.6	37.5	12.6	7.2	23.0	30.6	26.1	24.7
MEDIAN	26.5	23.8	39.0	24.9	25.5	7.0	8.7	6.0	8.8	15.0	15.4	19.1
MINIMUM	15.2	15.2	15.5	16.0	2.6	3.5	3.1	3.1	4.5	3.8	5.6	4.3
MAXIMUM	62.8	97.2	144.5	168.2	88.3	183.5	44.9	16.1	154.1	169.9	112.1	76.0

Historic Values (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1985	141.2	137.5	142.8	26.1	27.3	11.6	9.6	6.9	15.6	20.4	23.3	33.4
1986	45.6	77.3	42.3	161.6	82.9	153.4	50.5	71.5	136.1	136.8	73.1	53.8
1987	60.4	36.2	66.8	65.6	124.2	113.0	7.4	9.7	15.8	14.1	20.9	21.4
1988	42.1	79.6	28.6	21.5	52.2	8.5	26.9	5.8	5.1	14.1	14.0	14.3
1989	15.8	21.7	26.2	11.2	2.2	8.7	5.3	11.3	13.7	15.4	14.3	12.6
1990	15.8	14.8	21.0	28.0	23.3	3.7	7.8	11.0	4.8	10.3	14.2	12.8
1991	12.1	13.8	14.4	13.5	30.9	12.7	7.1	5.3	6.1	10.9	14.3	14.3
1992	17.6	14.9	30.9	13.8	4.5	4.2	6.2	22.5	6.1	13.0	13.1	14.0
1993	23.1	19.4	51.4	19.2	9.6	5.9	8.4	6.5	9.4	13.7	15.8	16.8
1994	18.5	19.7	19.9	12.3	7.5	4.4	15.5	8.4	8.6	8.1	12.9	13.8
AVERAGE	39.2	43.5	44.4	37.3	36.5	32.6	14.5	15.9	22.1	25.7	21.6	20.7
MEDIAN	20.8	20.7	29.8	20.3	25.3	8.6	8.1	9.1	9.0	13.9	14.3	14.3
MINIMUM	12.1	13.8	14.4	11.2	2.2	3.7	5.3	5.3	4.8	8.1	12.9	12.6
MAXIMUM	141.2	137.5	142.8	161.6	124.2	153.4	50.5	71.5	136.1	136.8	73.1	53.8

Differences (Calibration - Historic) (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1985	-78.4	-40.3	1.7	7.3	10.1	15.1	-6.5	-3.8	-6.8	7.8	-1.3	-8.1
1986	8.9	-3.5	-1.7	6.6	-21.1	30.1	-5.6	-68.4	18.0	33.1	39.0	22.2
1987	-0.1	17.4	-15.1	-2.0	-35.9	3.9	-0.2	-0.2	-1.7	7.9	7.9	11.5
1988	-2.5	12.7	21.3	17.3	-20.7	-2.4	-9.4	-1.4	-0.2	1.7	1.9	5.9
1989	11.4	2.7	5.1	5.7	0.4	-0.8	-0.1	-5.7	-0.2	-1.3	0.2	2.0
1990	5.6	0.4	3.6	-4.9	-2.0	-0.2	1.3	-0.8	-0.3	-6.5	-8.6	-8.5
1991	3.1	2.4	1.1	2.5	-1.2	3.8	4.5	-0.1	-1.3	-0.8	0.3	2.1
1992	3.8	5.0	6.4	4.2	-0.2	-0.2	-0.2	-6.4	-0.2	-1.5	0.9	2.6
1993	-2.7	-0.1	11.4	7.4	-1.1	-0.2	-0.2	-0.2	1.6	7.1	2.7	5.6
1994	7.2	3.4	2.8	4.7	3.3	-0.2	-2.2	-0.2	0.2	1.2	1.9	4.2
AVERAGE	-4.4	0.0	3.6	4.9	-6.9	4.9	-1.9	-8.7	0.9	4.9	4.5	3.9
MEDIAN	3.5	2.6	3.2	5.2	-1.2	-0.2	-0.2	-1.1	-0.2	1.4	1.4	3.4
MINIMUM	-78.4	-40.3	-15.1	-4.9	-35.9	-2.4	-9.4	-68.4	-6.8	-6.5	-8.6	-8.5
MAXIMUM	11.4	17.4	21.3	17.3	10.1	30.1	4.5	-0.1	18.0	33.1	39.0	22.2

Table 14. Platte River at Overton, calibration period.

Computed Values (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1985	166.9	193.1	261.8	101.1	125.0	92.0	40.9	26.2	75.8	120.9	112.7	115.3
1986	180.3	180.2	120.4	227.7	139.0	230.9	77.0	58.3	252.0	270.3	224.6	192.2
1987	160.9	162.2	168.2	159.4	165.2	196.7	70.3	40.0	101.7	115.6	134.0	132.5
1988	151.0	226.0	169.9	111.9	79.8	29.4	72.6	41.3	53.8	81.5	66.4	85.2
1989	90.7	98.5	122.6	51.2	47.2	33.3	41.0	27.7	61.9	57.7	55.1	51.2
1990	72.4	74.9	82.4	34.5	48.3	28.1	24.2	37.1	33.1	47.4	46.6	45.1
1991	62.2	81.0	68.2	44.3	73.2	63.4	27.2	28.6	40.6	58.3	62.6	71.3
1992	65.1	80.7	110.9	44.3	6.8	3.5	55.4	4.3	6.1	59.2	59.2	66.7
1993	96.0	76.9	150.7	77.8	42.5	36.6	79.4	48.8	53.8	99.9	72.8	82.7
1994	74.4	80.0	83.3	60.1	63.2	20.5	59.8	31.1	40.3	57.7	63.7	76.0
AVERAGE	112.0	125.4	133.8	91.2	79.0	73.4	54.8	34.3	71.9	96.9	89.8	91.8
MEDIAN	93.4	89.8	121.5	69.0	68.2	35.0	57.6	34.1	53.8	70.4	65.1	79.4
MINIMUM	62.2	74.9	68.2	34.5	6.8	3.5	24.2	4.3	6.1	47.4	46.6	45.1
MAXIMUM	180.3	226.0	261.8	227.7	165.2	230.9	79.4	58.3	252.0	270.3	224.6	192.2

Historic Values (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1985	204.6	200.7	259.9	111.0	120.5	70.2	35.0	29.7	75.7	117.8	98.8	116.2
1986	179.7	184.9	155.7	231.8	175.4	204.0	86.8	153.6	237.5	241.2	177.3	175.3
1987	174.3	153.3	185.3	170.2	211.6	197.3	52.7	49.1	117.2	115.1	122.0	137.7
1988	134.2	187.4	158.6	116.5	133.5	29.2	65.0	45.9	60.3	65.8	48.7	73.0
1989	95.3	97.2	131.2	40.5	27.4	42.5	35.0	36.0	58.8	45.7	44.7	54.0
1990	79.2	77.8	97.5	114.6	74.6	24.4	15.8	45.2	30.9	41.8	50.8	46.7
1991	62.2	80.0	71.9	45.0	79.4	53.3	21.1	24.7	31.7	32.9	55.2	62.8
1992	74.2	85.2	143.9	68.5	27.4	29.9	46.0	38.6	24.9	66.0	57.0	78.8
1993	107.6	90.8	164.6	76.8	38.4	41.5	72.2	41.4	70.3	106.6	98.0	111.1
1994	98.0	102.0	113.7	63.3	48.9	28.9	55.1	26.5	46.6	44.7	54.4	73.2
AVERAGE	120.9	125.9	148.2	103.8	93.7	72.1	48.5	49.1	75.4	87.8	80.7	92.9
MEDIAN	102.8	99.6	149.8	93.9	77.0	42.0	49.4	40.0	59.6	65.9	56.1	76.0
MINIMUM	62.2	77.8	71.9	40.5	27.4	24.4	15.8	24.7	24.9	32.9	44.7	46.7
MAXIMUM	204.6	200.7	259.9	231.8	211.6	204.0	86.8	153.6	237.5	241.2	177.3	175.3

Differences (Calibration - Historic) (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1985	-37.7	-7.6	1.9	-9.9	4.5	21.8	5.9	-3.5	0.1	3.1	13.9	-0.9
1986	0.6	-4.7	-35.3	-4.1	-36.4	26.9	-9.8	-95.3	14.5	29.1	47.3	16.9
1987	-13.4	8.9	-17.1	-10.8	-46.4	-0.6	17.6	-9.1	-15.5	0.5	12.0	-5.2
1988	16.8	38.6	11.3	-4.6	-53.7	0.2	7.6	-4.6	-6.5	15.7	17.7	12.2
1989	-4.6	1.3	-8.6	10.7	19.8	-9.2	6.0	-8.3	3.1	12.0	10.4	-2.8
1990	-6.8	-2.9	-15.1	-80.1	-26.3	3.7	8.4	-8.1	2.2	5.6	-4.2	-1.6
1991	0.0	1.0	-3.7	-0.7	-6.2	10.1	6.1	3.9	8.9	25.4	7.4	8.5
1992	-9.1	-4.5	-33.0	-24.2	-20.6	-26.4	9.4	-34.3	-18.8	-6.8	2.2	-12.1
1993	-11.6	-13.9	-13.9	1.0	4.1	-4.9	7.2	7.4	-16.5	-6.7	-25.2	-28.4
1994	-23.6	-22.0	-30.4	-3.2	14.3	-8.4	4.7	4.6	-6.3	13.0	9.3	2.8
AVERAGE	-8.9	-0.6	-14.4	-12.6	-14.7	1.3	6.3	-14.7	-3.5	9.1	9.1	-1.1
MEDIAN	-8.0	-3.7	-14.5	-4.4	-13.4	-0.2	6.7	-6.4	-3.1	8.8	9.9	-1.3
MINIMUM	-37.7	-22.0	-35.3	-80.1	-53.7	-26.4	-9.8	-95.3	-18.8	-6.8	-25.2	-28.4
MAXIMUM	16.8	38.6	11.3	10.7	19.8	26.9	17.6	7.4	14.5	29.1	47.3	16.9

Table 15. Platte River at Grand Island, calibration period.

Computed Values (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1985	138.4	200.9	283.3	128.0	151.1	103.2	49.2	46.5	91.0	142.3	101.8	130.2
1986	171.7	186.0	138.7	211.6	166.4	206.9	76.8	28.6	221.5	264.8	216.3	175.2
1987	141.6	155.5	207.3	210.1	158.7	231.3	99.0	35.5	81.0	104.0	128.5	107.1
1988	130.2	231.1	164.8	110.1	73.9	30.8	76.0	43.4	44.1	76.8	70.9	87.7
1989	91.2	94.9	114.4	53.7	44.1	47.4	79.9	26.3	96.0	66.0	64.1	41.7
1990	113.1	89.6	108.4	30.4	78.7	43.4	17.2	27.1	18.3	33.9	43.0	41.9
1991	48.4	86.4	70.7	39.9	72.4	91.8	14.0	14.1	23.8	44.1	58.2	67.4
1992	71.8	84.6	107.4	49.7	2.6	7.9	57.3	0.0	0.0	47.1	52.6	61.2
1993	64.7	58.7	260.2	97.2	73.2	60.1	181.8	80.7	76.7	105.1	83.8	83.9
1994	64.8	70.0	134.5	75.1	64.8	37.6	86.5	36.2	30.8	65.2	61.9	75.6
AVERAGE	103.6	125.8	159.0	100.6	88.6	86.0	73.8	33.8	68.3	94.9	88.1	87.2
MEDIAN	102.2	92.3	136.6	86.2	73.6	53.8	76.4	32.1	60.4	71.4	67.5	79.8
MINIMUM	48.4	58.7	70.7	30.4	2.6	7.9	14.0	0.0	0.0	33.9	43.0	41.7
MAXIMUM	171.7	231.1	283.3	211.6	166.4	231.3	181.8	80.7	221.5	264.8	216.3	175.2

Historic Values (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1985	176.1	208.5	282.0	137.9	146.6	81.4	43.3	50.0	90.9	139.2	88.7	131.1
1986	171.1	190.7	174.6	217.1	202.8	180.0	86.6	123.9	207.0	235.7	169.0	158.3
1987	155.0	146.6	225.0	220.9	205.1	231.9	81.4	44.6	96.5	103.7	116.5	105.6
1988	113.4	192.5	153.5	114.7	127.6	30.6	68.4	48.0	50.6	62.2	54.0	75.5
1989	95.8	93.6	123.6	44.6	25.1	57.6	74.0	34.7	93.1	55.6	54.5	44.5
1990	119.9	92.5	124.1	112.0	105.8	40.7	8.9	35.3	16.3	30.0	48.1	43.5
1991	48.4	85.4	75.0	42.1	79.4	82.6	8.0	10.3	15.1	20.3	51.6	58.9
1992	80.9	89.1	141.0	75.3	23.2	34.3	47.9	28.2	21.7	56.5	51.2	73.3
1993	76.3	72.6	274.7	97.7	69.2	65.0	174.6	73.2	93.1	113.4	109.8	112.3
1994	88.4	92.0	165.5	79.8	51.0	46.0	81.9	31.6	37.1	52.2	53.4	73.2
AVERAGE	112.5	126.4	173.9	114.2	103.6	85.0	67.5	48.0	72.1	86.9	79.7	87.6
MEDIAN	104.6	93.1	159.5	104.8	92.6	61.3	71.2	39.9	70.8	59.3	54.3	74.4
MINIMUM	48.4	72.6	75.0	42.1	23.2	30.6	8.0	10.3	15.1	20.3	48.1	43.5
MAXIMUM	176.1	208.5	282.0	220.9	205.1	231.9	174.6	123.9	207.0	235.7	169.0	158.3

Differences (Calibration - Historic) (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1985	-37.7	-7.6	1.3	-9.9	4.5	21.8	5.9	-3.5	0.1	3.1	13.1	-0.9
1986	0.6	-4.7	-35.9	-5.5	-36.4	26.9	-9.8	-95.3	14.5	29.1	47.3	16.9
1987	-13.4	8.9	-17.7	-10.8	-46.4	-0.6	17.6	-9.1	-15.5	0.3	12.0	1.5
1988	16.8	38.6	11.3	-4.6	-53.7	0.2	7.6	-4.6	-6.5	14.6	16.9	12.2
1989	-4.6	1.3	-9.2	9.2	19.0	-10.2	5.9	-8.4	2.9	10.4	9.6	-2.8
1990	-6.8	-2.9	-15.7	-81.6	-27.1	2.7	8.3	-8.2	2.0	3.9	-5.1	-1.6
1991	0.0	1.0	-4.3	-2.2	-7.0	9.2	6.0	3.8	8.7	23.8	6.6	8.5
1992	-9.1	-4.5	-33.6	-25.6	-20.6	-26.4	9.4	-28.2	-21.7	-9.4	1.4	-12.1
1993	-11.6	-13.9	-14.5	-0.5	4.0	-4.9	7.2	7.5	-16.4	-8.3	-26.0	-28.4
1994	-23.6	-22.0	-31.0	-4.7	13.8	-8.4	4.6	4.6	-6.3	13.0	8.5	2.4
AVERAGE	-8.9	-0.6	-14.9	-13.6	-15.0	1.0	6.3	-14.2	-3.8	8.1	8.4	-0.4
MEDIAN	-7.9	-3.7	-15.1	-5.1	-13.8	-0.2	6.6	-6.4	-3.1	7.1	9.0	0.3
MINIMUM	-37.7	-22.0	-35.9	-81.6	-53.7	-26.4	-9.8	-95.3	-21.7	-9.4	-26.0	-28.4
MAXIMUM	16.8	38.6	11.3	9.2	19.0	26.9	17.6	7.5	14.5	29.1	47.3	16.9

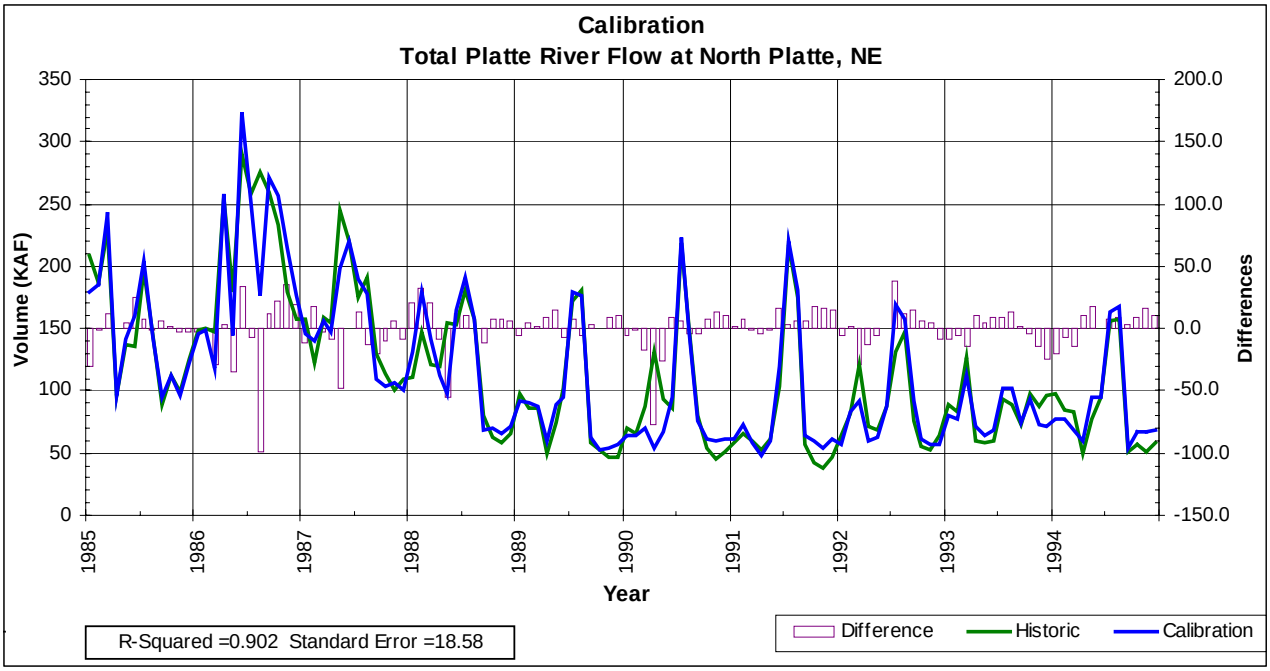

Figure 11. Flow below the confluence of the North Platte and South Platte Rivers at North Platte, calibration period.

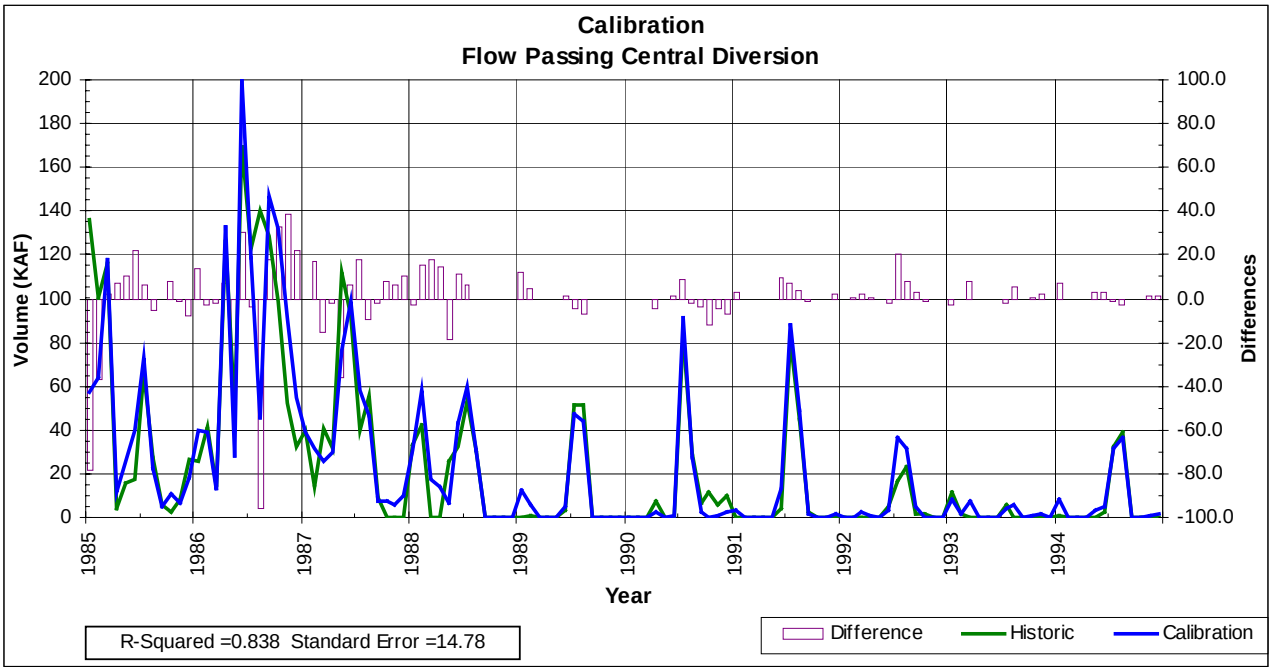

Figure 12. Flow passing the Tri-county (Central) diversion, calibration period.

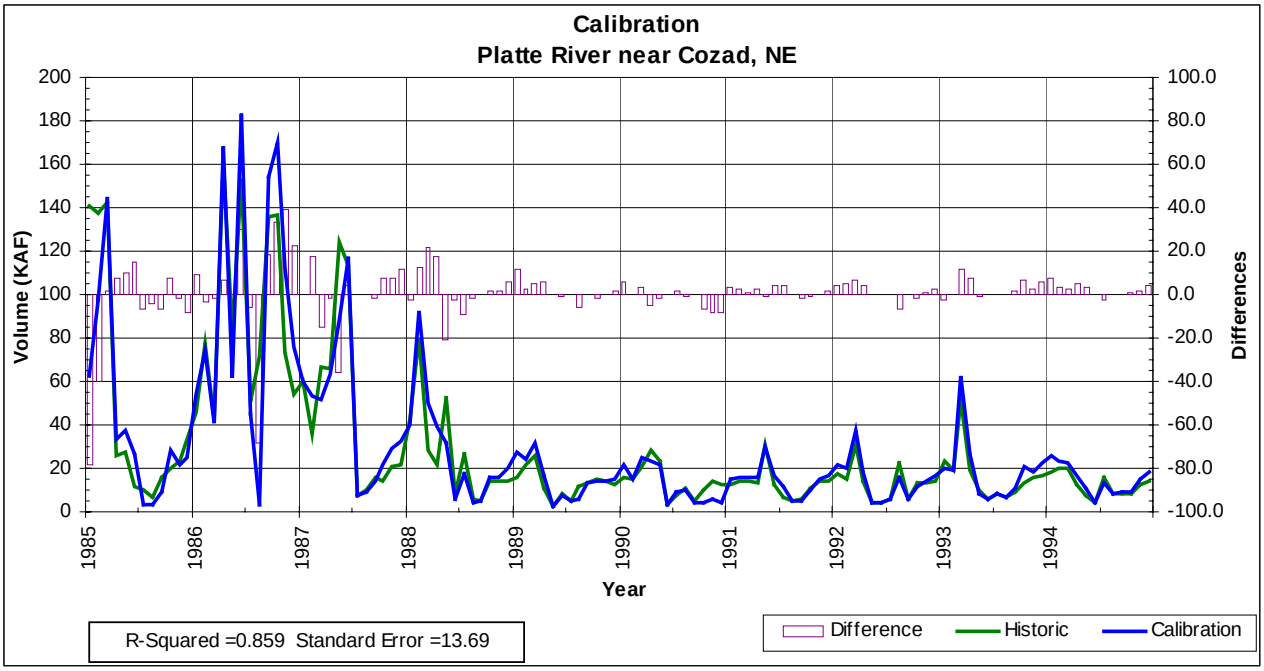

Figure 13. Platte River at Cozad, calibration period.

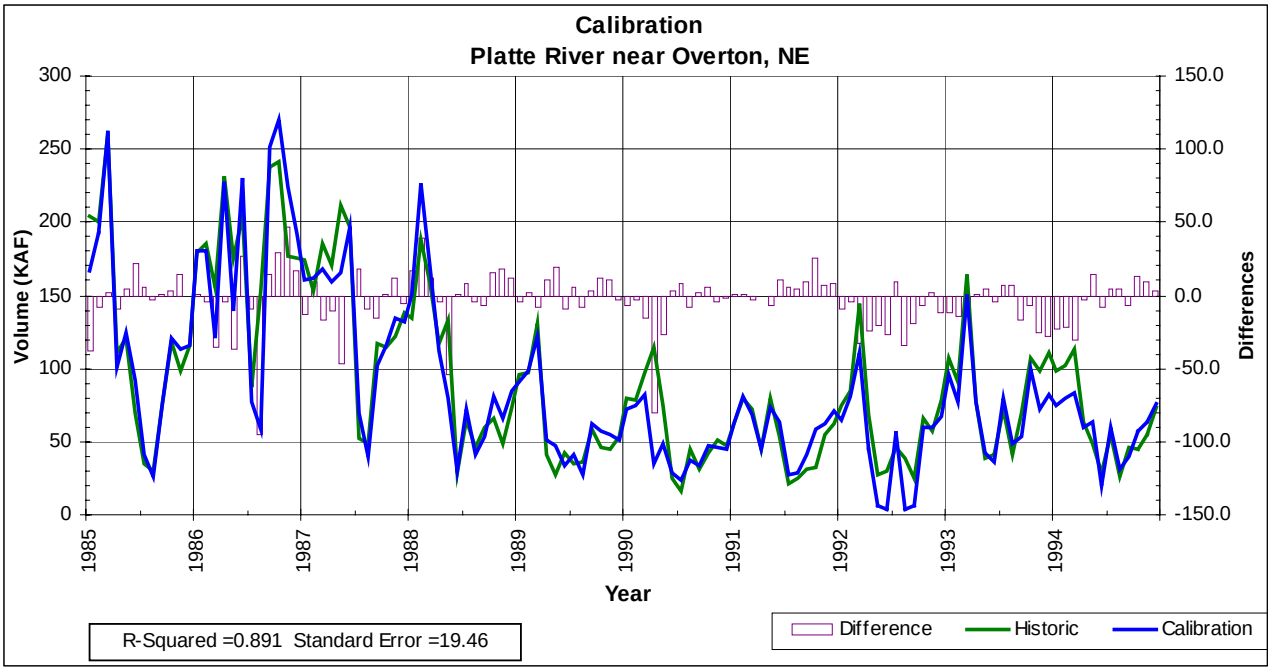

Figure 14. Platte River at Overton, calibration period.

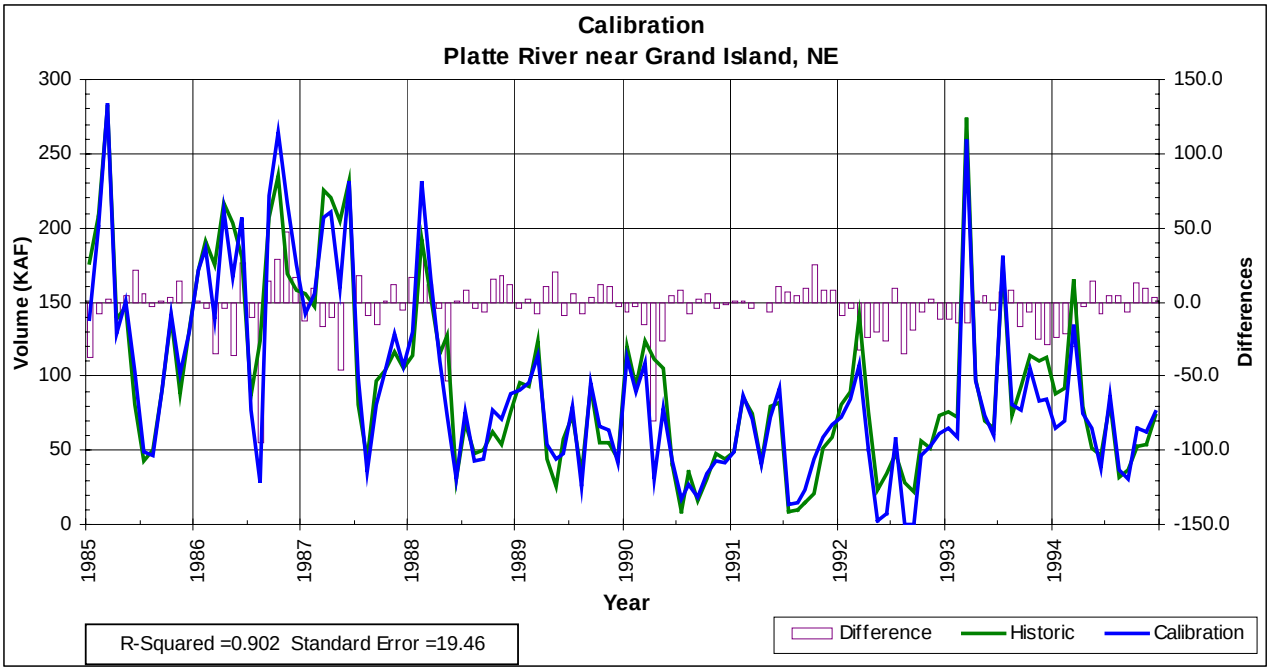

Figure 15. Platte River at Grand Island, calibration period

3.2.2 Validation. The results of the validation analysis are presented in tabular form in **Tables 16 through 30**, and in graphic form in **Figures 16 through 30**. Discussions for specific variable groups are in later sub-sections within this report. A summary of the validation results are shown in **Table 31**. The summary shows the correlation (R-squared), the standard error, the average difference between calculated values and historic (calculated - historic), and the difference as a percentage of the average historic value (average difference / average historic value).

3.2.2.1 Lake McConaughy End-of Month Content. The validation results for Lake McConaughy End-of-Month Content are tabulated in **Table 16** and shown graphically in **Figure 16**. **Figure 16** shows a slightly lower "R-squared" and a slightly higher Standard Error than the calibration results. Computed values are somewhat systematically higher than historic values from 1977 through 1979 and somewhat systematically lower than historic values from 1981 through 1983. All statistical quantities are well within a reasonable range.

Table 16. Lake McConaughy end of month content, validation peroiod.

Computed Values (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1975	1494.9	1523.3	1592.6	1644.0	1662.1	1672.2	1523.2	1365.9	1340.3	1395.5	1444.5	1493.2
1976	1540.8	1575.4	1607.0	1644.0	1648.5	1585.7	1372.4	1217.1	1200.7	1269.8	1308.9	1344.6
1977	1362.9	1412.8	1490.7	1564.0	1574.8	1541.0	1336.1	1240.8	1238.5	1279.2	1314.0	1335.6
1978	1341.6	1375.3	1442.3	1469.9	1487.1	1462.1	1281.1	1169.5	1160.9	1205.4	1258.1	1304.5
1979	1329.2	1393.7	1484.4	1544.7	1560.6	1588.6	1489.9	1412.5	1434.2	1462.7	1488.5	1522.3
1980	1542.1	1585.1	1635.0	1638.0	1765.0	1786.0	1547.4	1407.0	1408.8	1436.1	1464.0	1490.9
1981	1519.8	1539.7	1575.2	1608.7	1624.7	1548.4	1384.0	1356.7	1348.7	1389.0	1422.5	1446.2
1982	1457.5	1494.7	1524.9	1533.5	1541.4	1520.3	1370.9	1290.8	1311.1	1363.2	1415.7	1456.6
1983	1497.4	1532.1	1596.8	1617.0	1856.4	1891.0	1882.0	1711.0	1576.0	1625.5	1631.9	1631.7
1984	1594.1	1594.1	1594.1	1593.0	1673.0	1777.0	1759.0	1668.6	1670.0	1708.0	1661.0	1594.1
AVERAGE	1468.0	1502.6	1554.3	1585.7	1639.4	1637.2	1494.6	1384.0	1368.9	1413.4	1440.9	1462.0
MEDIAN	1496.2	1527.7	1583.9	1600.9	1636.6	1587.2	1437.0	1361.3	1344.5	1392.3	1433.5	1473.8
MINIMUM	1329.2	1375.3	1442.3	1469.9	1487.1	1462.1	1281.1	1169.5	1160.9	1205.4	1258.1	1304.5
MAXIMUM	1594.1	1594.1	1635.0	1644.0	1856.4	1891.0	1882.0	1711.0	1670.0	1708.0	1661.0	1631.7

Historic Values (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1975	1482.0	1509.0	1584.0	1644.0	1676.0	1690.0	1528.0	1372.0	1310.0	1364.0	1421.0	1456.0
1976	1504.0	1559.0	1607.0	1644.0	1670.0	1559.0	1344.0	1232.0	1216.0	1295.0	1330.0	1367.0
1977	1388.0	1443.0	1504.0	1567.0	1579.0	1520.0	1310.0	1230.0	1213.0	1247.0	1275.0	1300.0
1978	1317.0	1360.0	1429.0	1469.0	1485.0	1432.0	1251.0	1148.0	1128.0	1160.0	1192.0	1230.0
1979	1254.0	1293.0	1372.0	1427.0	1464.0	1499.0	1419.0	1337.0	1372.0	1429.0	1482.0	1526.0
1980	1553.0	1601.0	1635.0	1638.0	1765.0	1786.0	1562.0	1411.0	1408.0	1442.6	1469.0	1501.2
1981	1537.0	1565.0	1610.0	1644.0	1679.0	1624.0	1469.0	1453.0	1424.0	1477.0	1499.0	1518.0
1982	1531.0	1565.0	1598.0	1618.0	1650.0	1658.0	1523.0	1440.0	1437.0	1518.0	1553.0	1570.0
1983	1587.0	1604.0	1638.0	1673.0	1901.0	1891.0	1882.0	1711.0	1576.0	1702.0	1771.0	1702.0
1984	1673.0	1607.0	1570.0	1593.0	1673.0	1777.0	1759.0	1685.0	1670.0	1708.0	1661.0	1593.0
AVERAGE	1482.6	1510.6	1554.7	1591.7	1654.2	1643.6	1504.7	1401.9	1375.4	1434.3	1465.3	1476.3
MEDIAN	1517.5	1562.0	1591.0	1628.0	1671.5	1641.0	1496.0	1391.5	1390.0	1435.8	1475.5	1509.6
MINIMUM	1254.0	1293.0	1372.0	1427.0	1464.0	1432.0	1251.0	1148.0	1128.0	1160.0	1192.0	1230.0
MAXIMUM	1673.0	1607.0	1638.0	1673.0	1901.0	1891.0	1882.0	1711.0	1670.0	1708.0	1771.0	1702.0

Differences (Validation - Historic) (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1975	12.9	14.3	8.6	0.0	-13.9	-17.8	-4.8	-6.1	30.3	31.5	23.5	37.2
1976	36.8	16.4	0.0	0.0	-21.5	26.7	28.4	-14.9	-15.3	-25.2	-21.1	-22.4
1977	-25.1	-30.2	-13.3	-3.0	-4.2	21.0	26.1	10.8	25.5	32.2	39.0	35.6
1978	24.6	15.3	13.3	0.9	2.1	30.1	30.1	21.5	32.9	45.4	66.1	74.5
1979	75.2	100.7	112.4	117.7	96.6	89.6	70.9	75.5	62.2	33.7	6.5	-3.7
1980	-10.9	-15.9	0.0	0.0	0.0	0.0	-14.6	-4.0	0.8	-6.5	-5.0	-10.3
1981	-17.2	-25.3	-34.8	-35.3	-54.3	-75.6	-85.0	-96.3	-75.3	-88.0	-76.5	-71.8
1982	-73.5	-70.3	-73.1	-84.5	-108.6	-137.7	-152.1	-149.2	-125.9	-154.8	-137.3	-113.4
1983	-89.6	-71.9	-41.2	-56.0	-44.6	0.0	0.0	0.0	0.0	-76.5	-139.1	-70.3
1984	-78.9	-12.9	24.1	0.0	0.0	0.0	0.0	-16.4	0.0	0.0	0.0	1.1
AVERAGE	-14.6	-8.0	-0.4	-6.0	-14.8	-6.4	-10.1	-17.9	-6.5	-20.8	-24.4	-14.4
MEDIAN	-14.1	-14.4	0.0	0.0	-9.1	0.0	0.0	-5.0	0.4	-3.3	-2.5	-7.0
MINIMUM	-89.6	-71.9	-73.1	-84.5	-108.6	-137.7	-152.1	-149.2	-125.9	-154.8	-139.1	-113.4
MAXIMUM	75.2	100.7	112.4	117.7	96.6	89.6	70.9	75.5	62.2	45.4	66.1	74.5

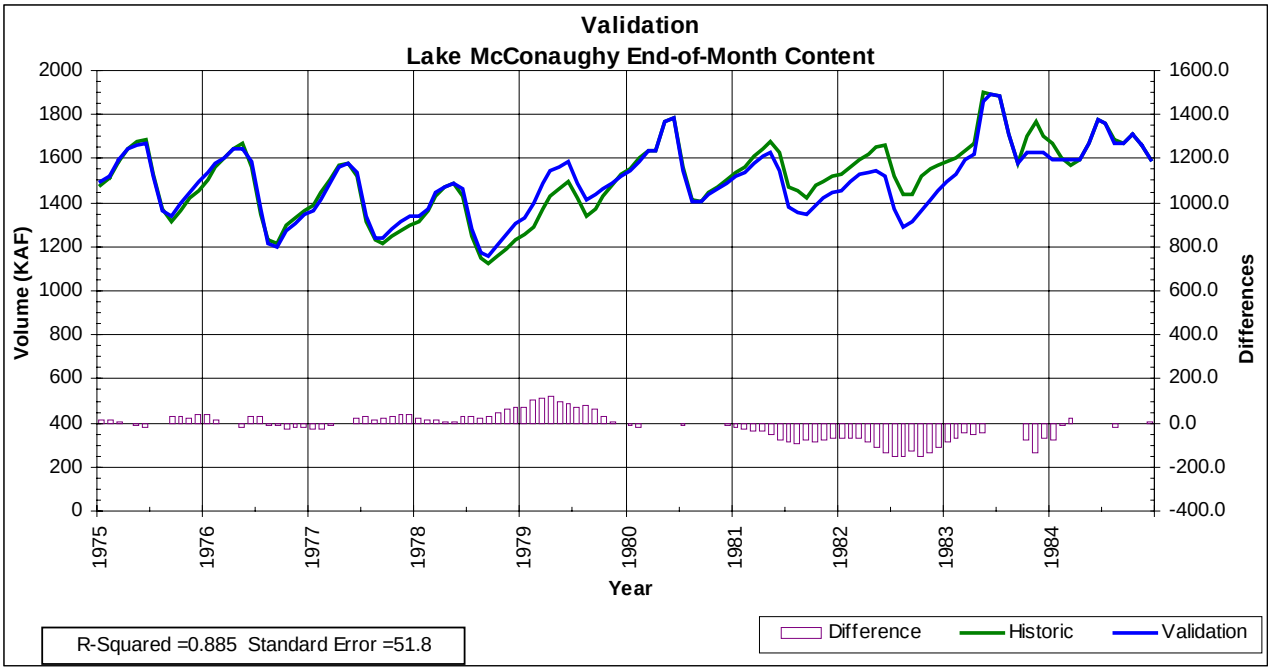

Figure 16. Lake McConaughy end of month content, validation peroiod.

3.2.2.2 North Platte River Flows. The validation results for the three North Platte River flow variables evaluated in the analysis are tabulated in **Tables 17 through 19** and shown graphically in **Figures 17 through 19**. The R-squared values for all locations are higher than those for the calibration results. There is a very close match between the computed and observed Lake McConaughy Outflow. The North Platte River at Keystone and North Platte do not track quite as well, and both show actual and percentage difference that indicate a systematic negative error, **Table 31**. The large under-predictions in 1983 and 1984 are most likely associated with the construction activities at Kingsley Dam which are discussed in **Section 3.2.2.3**. Otherwise, **Figures 17 through 19** show very good matches between validation and historic values for these locations.

Table 17. Lake McConaughy outflow, validation period.

Computed Values (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1975	29.8	25.4	31.5	47.7	77.5	76.0	213.9	189.6	74.9	42.8	38.3	37.6
1976	39.7	48.3	41.6	40.8	75.2	124.0	237.0	196.5	77.4	37.9	45.5	44.7
1977	45.1	29.7	12.3	12.0	63.6	92.3	236.7	139.8	50.9	46.5	43.4	50.6
1978	53.7	45.6	27.4	37.9	83.8	119.6	240.4	161.6	75.8	49.1	31.6	32.9
1979	43.6	11.2	12.3	16.0	49.2	35.2	143.9	138.2	55.5	56.7	51.7	48.6
1980	49.4	49.0	39.5	126.4	86.7	109.7	262.4	168.7	56.9	52.4	46.4	42.5
1981	38.9	37.9	31.6	22.5	46.9	91.8	194.4	86.6	52.2	42.4	38.5	41.0
1982	45.9	26.6	33.2	37.8	58.5	74.7	198.1	154.2	64.3	43.3	31.8	30.4
1983	27.5	26.7	12.3	60.3	67.2	396.2	390.0	487.5	440.6	80.3	84.3	84.4
1984	137.6	121.5	249.0	338.7	335.3	360.9	210.3	220.8	147.9	106.2	158.7	166.1
AVERAGE	51.1	42.2	49.1	74.0	94.4	148.0	232.7	194.4	109.6	55.8	57.0	57.9
MEDIAN	44.4	33.8	31.6	39.4	71.2	101.0	225.3	165.2	69.6	47.8	44.5	43.6
MINIMUM	27.5	11.2	12.3	12.0	46.9	35.2	143.9	86.6	50.9	37.9	31.6	30.4
MAXIMUM	137.6	121.5	249.0	338.7	335.3	396.2	390.0	487.5	440.6	106.2	158.7	166.1

Historic Values (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1975	-13.0	-1.4	5.7	8.6	13.9	3.9	-13.0	1.5	-36.5	-1.2	8.0	-13.7
1976	0.4	20.2	16.4	0.0	21.5	-48.1	-1.8	43.4	0.4	9.9	-4.0	1.3
1977	2.8	5.1	-16.9	-10.3	1.2	-25.2	-5.2	15.3	-14.8	-6.8	-6.8	3.4
1978	10.9	9.3	1.9	12.5	-1.3	-28.1	-0.2	8.5	-11.5	-12.6	-20.7	-8.5
1979	-0.7	-25.6	-11.9	-5.5	20.9	6.8	18.3	-5.0	13.1	28.4	27.1	10.2
1980	7.2	4.9	-15.9	0.0	0.0	0.0	14.6	-10.6	-4.8	7.2	-1.5	5.3
1981	6.9	8.2	9.5	0.5	19.1	21.6	9.8	11.7	-20.7	12.9	-11.4	-4.6
1982	1.8	-3.2	2.9	11.6	24.3	29.5	15.2	-2.2	-22.9	29.2	-17.4	-23.8
1983	-23.8	-17.6	-30.6	15.0	-11.3	-44.5	0.0	0.0	0.0	76.6	62.8	-68.9
1984	8.7	-66.0	-37.0	24.1	0.0	0.0	0.0	16.4	-16.3	0.0	0.0	-1.1
AVERAGE	0.1	-6.6	-7.6	5.7	8.8	-8.4	3.8	7.9	-11.4	14.4	3.6	-10.0
MEDIAN	2.3	1.8	-5.0	4.6	7.6	0.0	0.0	5.0	-13.2	8.6	-2.8	-2.9
MINIMUM	-23.8	-66.0	-37.0	-10.3	-11.3	-48.1	-13.0	-10.6	-36.5	-12.6	-20.7	-68.9
MAXIMUM	10.9	20.2	16.4	24.1	24.3	29.5	18.3	43.4	13.1	76.6	62.8	10.2

Differences (Validation - Historic) (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1975	42.8	26.8	25.8	39.1	63.6	72.1	226.9	188.1	111.4	44.0	30.3	51.3
1976	39.3	28.1	25.2	40.8	53.7	172.1	238.8	153.1	77.0	28.0	49.5	43.4
1977	42.3	24.6	29.2	22.3	62.4	117.5	241.9	124.5	65.7	53.3	50.2	47.2
1978	42.8	36.3	25.5	25.4	85.1	147.7	240.6	153.1	87.3	61.7	52.3	41.4
1979	44.3	36.8	24.2	21.5	28.3	28.4	125.6	143.2	42.4	28.3	24.6	38.4
1980	42.2	44.1	55.4	126.4	86.7	109.7	247.8	179.3	61.7	45.2	47.9	37.2
1981	32.0	29.7	22.1	22.0	27.8	70.2	184.6	74.9	72.9	29.5	49.9	45.6
1982	44.1	29.8	30.3	26.2	34.2	45.2	182.9	156.4	87.2	14.1	49.2	54.2
1983	51.3	44.3	42.9	45.3	78.5	440.7	390.0	487.5	440.6	3.7	21.5	153.3
1984	128.9	187.5	286.0	314.6	335.3	360.9	210.3	204.4	164.2	106.2	158.7	167.2
AVERAGE	51.0	48.8	56.7	68.4	85.6	156.5	228.9	186.5	121.0	41.4	53.4	67.9
MEDIAN	42.8	33.1	27.5	32.7	63.0	113.6	232.9	154.8	82.1	36.8	49.4	46.4
MINIMUM	32.0	24.6	22.1	21.5	27.8	28.4	125.6	74.9	42.4	3.7	21.5	37.2
MAXIMUM	128.9	187.5	286.0	314.6	335.3	440.7	390.0	487.5	440.6	106.2	158.7	167.2

Table 18. North Platte River at Keystone, validation period.

Computed Values (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1975	0.0	0.0	0.0	1.5	12.4	24.0	121.7	88.9	13.9	3.2	0.0	0.0
1976	0.0	0.0	0.2	4.7	11.3	45.3	126.6	97.1	14.4	37.9	0.0	0.0
1977	0.0	0.0	0.0	0.1	6.3	31.0	124.8	60.0	12.6	0.0	0.0	0.0
1978	0.0	0.0	0.0	0.6	8.8	43.9	128.2	70.0	16.7	1.0	0.0	0.0
1979	0.0	0.0	0.0	0.0	6.8	23.3	78.1	65.2	16.1	1.7	0.0	0.0
1980	0.0	0.0	0.0	19.3	9.3	22.9	150.6	87.5	12.6	0.4	0.0	0.0
1981	0.0	0.0	0.0	4.2	9.1	34.1	99.6	26.7	14.2	42.4	0.0	0.0
1982	0.0	0.0	0.0	2.6	7.0	15.2	109.9	72.0	13.7	0.0	0.0	0.0
1983	0.0	0.0	0.0	0.8	5.7	277.2	267.1	364.6	321.6	0.1	0.0	0.0
1984	57.6	46.6	126.0	231.5	212.4	241.8	108.7	100.2	28.8	3.7	39.7	43.1
AVERAGE	5.8	4.7	12.6	26.5	28.9	75.9	131.5	103.2	46.5	9.0	4.0	4.3
MEDIAN	0.0	0.0	0.0	2.1	9.0	32.6	123.3	79.8	14.3	1.4	0.0	0.0
MINIMUM	0.0	0.0	0.0	0.0	5.7	15.2	78.1	26.7	12.6	0.0	0.0	0.0
MAXIMUM	57.6	46.6	126.0	231.5	212.4	277.2	267.1	364.6	321.6	42.4	39.7	43.1

Historic Values (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1975	0.0	0.0	-0.2	1.2	-0.4	5.6	-6.1	-10.8	-14.9	-6.1	-14.5	0.0
1976	0.0	0.0	-0.1	4.6	-2.3	-27.4	-15.5	-40.0	-62.6	9.9	-30.3	-0.2
1977	0.0	-0.2	-0.6	0.1	3.2	0.2	-13.9	15.8	-1.4	-15.7	-0.9	-0.3
1978	0.0	0.0	0.0	0.6	3.1	-3.9	-3.2	18.3	-0.5	-31.5	-0.7	0.0
1979	0.0	0.0	0.0	0.0	2.2	13.4	20.7	3.6	-2.3	-0.7	-0.7	0.0
1980	-0.3	0.0	-0.4	-22.0	-49.2	-10.5	7.4	2.1	1.4	0.2	0.0	-0.1
1981	0.0	0.0	-0.1	3.7	5.3	4.2	10.4	6.8	0.8	16.1	-3.0	-0.1
1982	0.0	0.0	0.0	2.6	6.9	11.0	-7.3	5.8	-21.9	-14.1	-11.9	0.0
1983	0.0	0.0	0.0	0.8	-18.1	-52.3	-30.7	-27.9	-52.6	-3.6	-17.3	-82.0
1984	-15.3	-53.8	-74.0	-66.0	-51.2	-13.9	-2.9	-3.0	-33.0	-5.8	-30.8	-41.1
AVERAGE	-1.6	-5.4	-7.5	-7.4	-10.1	-7.4	-4.1	-2.9	-18.7	-5.1	-11.0	-12.4
MEDIAN	0.0	0.0	-0.1	0.7	0.9	-1.9	-4.7	2.9	-8.6	-4.7	-7.5	-0.1
MINIMUM	-15.3	-53.8	-74.0	-66.0	-51.2	-52.3	-30.7	-40.0	-62.6	-31.5	-30.8	-82.0
MAXIMUM	0.0	0.0	0.0	4.6	6.9	13.4	20.7	18.3	1.4	16.1	0.0	0.0

Differences (Validation - Historic) (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1975	0.0	0.0	0.2	0.3	12.8	18.4	127.8	99.7	28.8	9.3	14.5	0.0
1976	0.0	0.0	0.3	0.1	13.6	72.7	142.1	137.1	77.0	28.0	30.3	0.2
1977	0.0	0.2	0.6	0.0	3.1	30.8	138.7	44.2	14.0	15.7	0.9	0.3
1978	0.0	0.0	0.0	0.0	5.7	47.8	131.4	51.7	17.2	32.5	0.7	0.0
1979	0.0	0.0	0.0	0.0	4.6	9.9	57.4	61.6	18.4	2.4	0.7	0.0
1980	0.3	0.0	0.4	41.3	58.5	33.4	143.2	85.4	11.2	0.2	0.0	0.1
1981	0.0	0.0	0.1	0.5	3.8	29.9	89.2	19.9	13.4	26.3	3.0	0.1
1982	0.0	0.0	0.0	0.0	0.1	4.2	117.2	66.2	35.6	14.1	11.9	0.0
1983	0.0	0.0	0.0	0.0	23.8	329.5	297.8	392.5	374.2	3.7	17.3	82.0
1984	72.9	100.4	200.0	297.5	263.6	255.7	111.6	103.2	61.8	9.5	70.5	84.2
AVERAGE	7.3	10.1	20.2	34.0	39.0	83.2	135.6	106.2	65.2	14.2	15.0	16.7
MEDIAN	0.0	0.0	0.2	0.0	9.3	32.1	129.6	75.8	23.6	11.8	7.5	0.1
MINIMUM	0.0	0.0	0.0	0.0	0.1	4.2	57.4	19.9	11.2	0.2	0.0	0.0
MAXIMUM	72.9	100.4	200.0	297.5	263.6	329.5	297.8	392.5	374.2	32.5	70.5	84.2

Table 19. North Platte River at North Platte, validation period.

Computed Values (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1975	21.6	20.3	22.9	23.4	20.2	34.1	93.4	80.1	26.5	19.2	20.6	27.7
1976	22.7	25.0	23.6	25.6	23.9	33.6	110.2	92.0	34.3	59.1	23.3	22.9
1977	20.2	21.7	31.2	33.9	27.1	28.6	113.4	69.1	20.2	22.4	22.8	21.3
1978	20.1	19.6	28.6	21.9	20.0	29.6	112.0	66.7	19.1	15.6	25.2	22.3
1979	19.5	18.9	32.6	24.3	19.9	31.8	71.7	59.6	20.7	22.8	21.9	23.9
1980	22.1	22.4	21.4	41.2	27.2	26.1	123.1	90.2	24.1	19.3	21.7	20.3
1981	19.5	15.8	21.0	20.2	30.0	36.0	100.8	35.8	21.6	59.5	23.3	22.0
1982	20.2	19.5	23.0	19.4	26.6	29.1	88.8	73.9	19.0	20.9	23.8	22.2
1983	17.0	19.2	23.2	24.9	17.7	284.3	282.3	356.3	339.3	39.9	16.9	28.7
1984	83.8	80.1	139.3	257.4	241.1	248.6	99.9	92.8	46.2	26.1	60.5	65.3
AVERAGE	26.7	26.3	36.7	49.2	45.4	78.2	119.6	101.7	57.1	30.5	26.0	27.7
MEDIAN	20.2	20.0	23.4	24.6	25.3	32.7	105.5	77.0	22.9	22.6	23.1	22.6
MINIMUM	17.0	15.8	21.0	19.4	17.7	26.1	71.7	35.8	19.0	15.6	16.9	20.3
MAXIMUM	83.8	80.1	139.3	257.4	241.1	284.3	282.3	356.3	339.3	59.5	60.5	65.3

Historic Values (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1985	21.6	20.3	23.1	22.2	20.6	28.5	99.5	90.9	41.4	25.3	35.1	27.7
1986	22.7	25.0	23.7	21.0	26.2	61.0	125.7	132.0	96.9	49.2	53.6	23.1
1987	20.2	21.9	31.8	33.8	23.9	28.4	127.3	53.3	21.6	38.1	23.7	21.6
1988	20.1	19.6	28.6	21.3	16.9	33.5	115.2	48.4	19.6	47.1	25.9	22.3
1989	19.5	18.9	32.6	24.3	17.7	18.4	51.0	56.0	23.0	23.5	22.6	23.9
1990	22.4	22.4	21.8	63.2	76.4	36.6	115.7	88.1	22.7	19.1	21.7	20.4
1991	19.5	15.8	21.1	16.5	24.7	31.8	90.4	29.0	20.8	43.4	26.3	22.1
1992	20.2	19.5	23.0	16.8	19.7	18.1	96.1	68.1	40.9	35.0	35.7	22.2
1993	17.0	19.2	23.2	24.1	35.8	336.6	313.0	384.2	391.9	43.5	34.2	110.7
1994	99.1	133.9	213.3	323.4	292.3	262.5	102.8	95.8	79.2	31.9	91.3	106.4
AVERAGE	28.2	31.7	44.2	56.7	55.4	85.5	123.7	104.6	75.8	35.6	37.0	40.0
MEDIAN	20.2	20.0	23.5	23.2	24.3	32.7	109.0	78.1	32.0	36.6	30.3	22.7
MINIMUM	17.0	15.8	21.1	16.5	16.9	18.1	51.0	29.0	19.6	19.1	21.7	20.4
MAXIMUM	99.1	133.9	213.3	323.4	292.3	336.6	313.0	384.2	391.9	49.2	91.3	110.7

Differences (Validation - Historic) (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1985	0.0	0.0	-0.2	1.2	-0.4	5.6	-6.1	-10.8	-14.9	-6.1	-14.5	0.0
1986	0.0	0.0	-0.1	4.6	-2.3	-27.4	-15.5	-40.0	-62.6	9.9	-30.3	-0.2
1987	0.0	-0.2	-0.6	0.1	3.2	0.2	-13.9	15.8	-1.4	-15.7	-0.9	-0.3
1988	0.0	0.0	0.0	0.6	3.1	-3.9	-3.2	18.3	-0.5	-31.5	-0.7	0.0
1989	0.0	0.0	0.0	0.0	2.2	13.4	20.7	3.6	-2.3	-0.7	-0.7	0.0
1990	-0.3	0.0	-0.4	-22.0	-49.2	-10.5	7.4	2.1	1.4	0.2	0.0	-0.1
1991	0.0	0.0	-0.1	3.7	5.3	4.2	10.4	6.8	0.8	16.1	-3.0	-0.1
1992	0.0	0.0	0.0	2.6	6.9	11.0	-7.3	5.8	-21.9	-14.1	-11.9	0.0
1993	0.0	0.0	0.0	0.8	-18.1	-52.3	-30.7	-27.9	-52.6	-3.6	-17.3	-82.0
1994	-15.3	-53.8	-74.0	-66.0	-51.2	-13.9	-2.9	-3.0	-33.0	-5.8	-30.8	-41.1
AVERAGE	-1.6	-5.4	-7.5	-7.4	-10.1	-7.4	-4.1	-2.9	-18.7	-5.1	-11.0	-12.4
MEDIAN	0.0	0.0	-0.1	0.7	0.9	-1.9	-4.7	2.9	-8.6	-4.7	-7.5	-0.1
MINIMUM	-15.3	-53.8	-74.0	-66.0	-51.2	-52.3	-30.7	-40.0	-62.6	-31.5	-30.8	-82.0
MAXIMUM	0.0	0.0	0.0	4.6	6.9	13.4	20.7	18.3	1.4	16.1	0.0	0.0

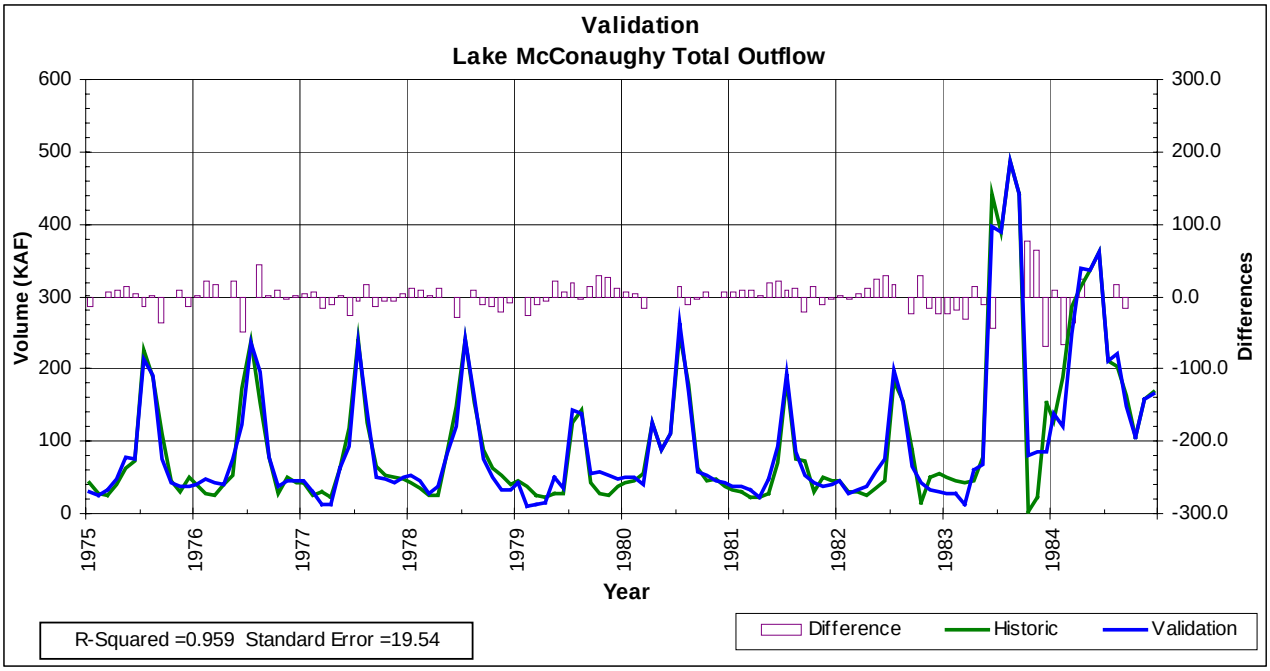

Figure 17. Lake McConaughy outflow, validation period.

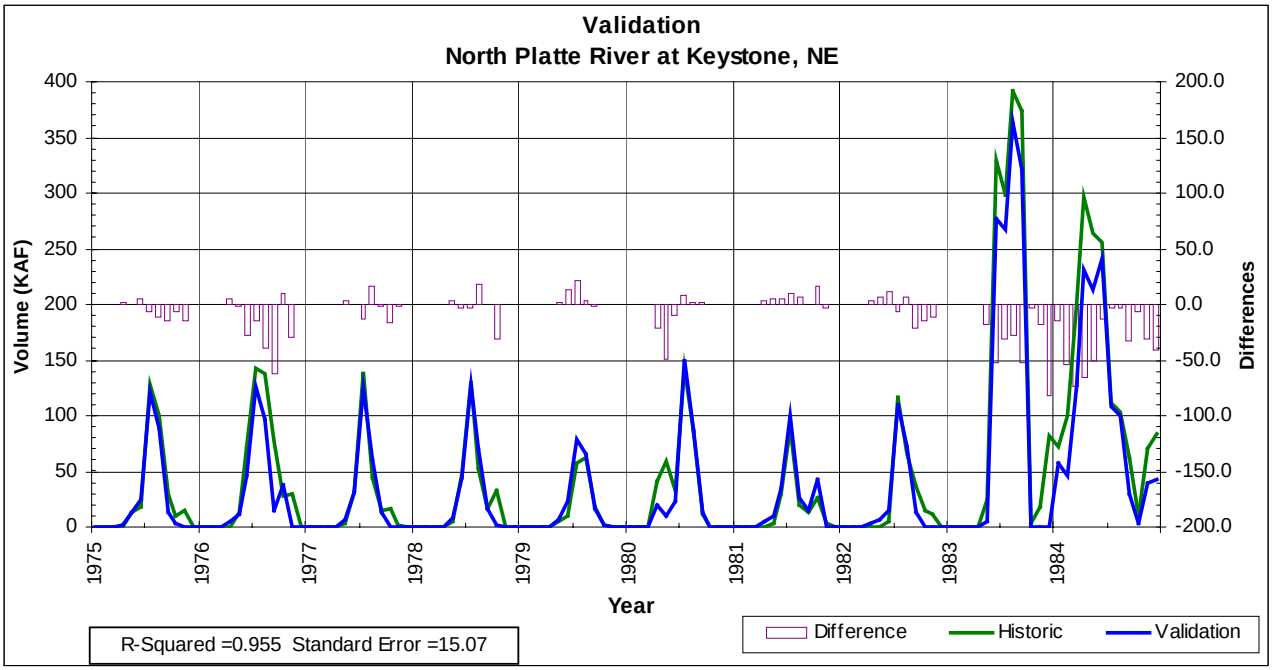

Figure 18. North Platte River at Keystone, validation period.

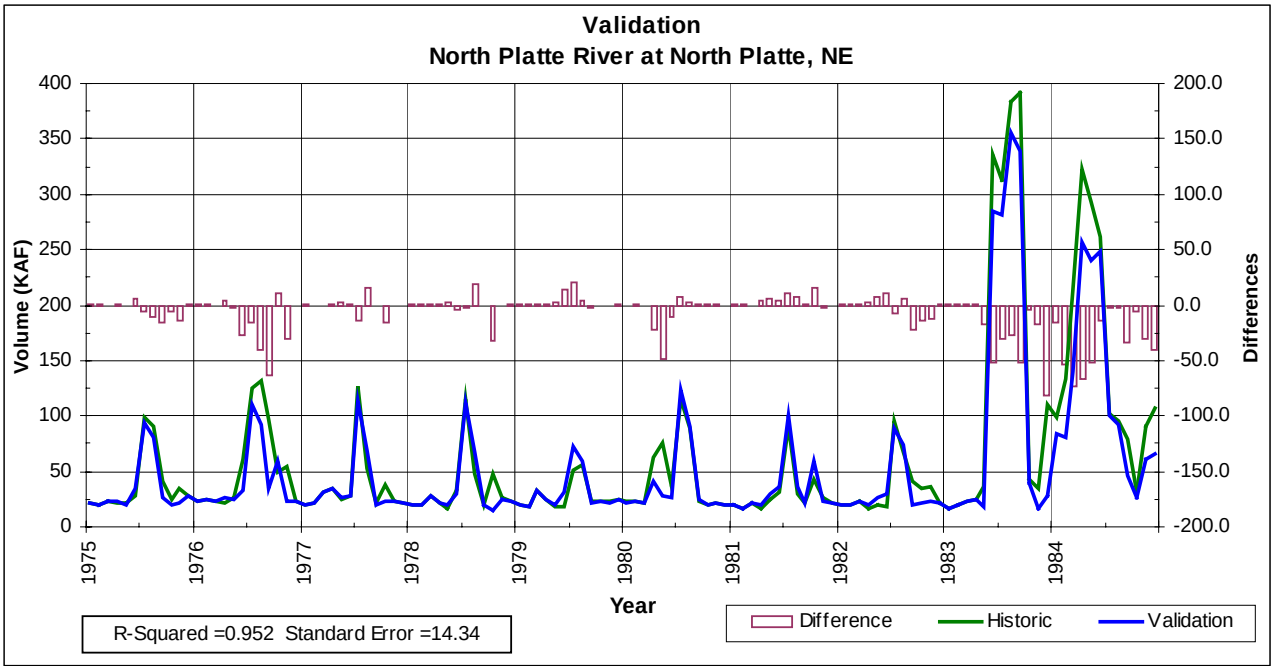

Figure 19. North Platte River at North Platte, validation period.

3.2.2.3 Diversions. The validation results for the Keystone and Korty Diversions are tabulated in **Tables 20 and 21**, respectively, and shown graphically in **Figures 20 and 21**, respectively. The R-squared value for the Keystone Diversion is significantly lower for the validation period than for the calibration period. Also, there are four significant discrepancies between the computed and historic flows through the Keystone Diversion, all characterized by sharp drops in the flow through the diversion that were not picked up by the model. The drop in the late summer and fall of 1976 can be attributed to the construction of system facilities to provide cooling water to Gerald Gentleman Steam Plant. As for the others, during the non-irrigation seasons of 1981-82, 1982-83, and 1983-84, system operations were centered around the construction of the hydropower facility at Kingsley Dam and modifications being made to the Keystone Diversion Dam. The positive values for the actual and percentage differences are consistent with these maintenance situations, none of which were modeled. These situations also explain discrepancies noted both at the North Platte River at Keystone and at the Korty Diversion. At the Korty Diversion, the interaction that exists between the operation of the two diversions causes computational discrepancies at the Keystone Diversion to manifest themselves at the Korty Diversion as well. The actual and percentage differences are not much different in magnitude than for the Keystone Diversion, but are negative instead of positive. This is consistent with the way that these diversions work as a system to supply water to the Sutherland Canal.

The validation results for the Central Diversion are tabulated in **Table 22** and shown graphically in **Figure 22**. The relatively low "R-squared" value is deceiving, since **Figure 22** shows that the match between the historic and computed values is quite good prior to 1983. The large discrepancies in 1983 and 1984 can be attributed to the previously discussed construction

activities on the North Platte River and the failure and subsequent repair of the Central Diversion Dam during the high flows of 1983.

Table 20. Sutherland canal keystone diversion, validation period.

Computed Values (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1975	29.8	25.4	31.5	46.2	65.1	52.0	92.2	100.7	61.0	39.6	38.3	37.6
1976	39.7	48.3	41.4	36.1	63.9	78.7	110.3	99.4	63.0	0.0	45.5	44.7
1977	45.1	29.7	12.3	11.9	57.3	61.3	111.9	79.7	38.3	46.5	43.4	50.6
1978	53.7	45.6	27.4	37.3	75.0	75.8	112.3	91.6	59.1	48.1	31.6	32.9
1979	43.6	11.2	12.3	16.0	42.4	11.9	65.8	72.9	39.4	55.0	51.7	48.6
1980	49.4	49.0	39.5	107.1	77.4	86.9	111.8	81.3	44.3	52.0	46.4	42.5
1981	38.9	37.9	31.6	18.3	37.8	57.7	94.8	59.9	38.0	0.0	38.5	41.0
1982	45.9	26.6	33.2	35.2	51.5	59.5	88.2	82.2	50.6	43.3	31.8	30.4
1983	27.5	26.7	12.3	59.5	61.5	119.0	123.0	123.0	119.0	80.2	84.3	84.4
1984	80.0	74.8	123.0	107.1	123.0	119.0	101.6	120.6	119.0	102.5	119.0	123.0
AVERAGE	45.4	37.5	36.5	47.5	65.5	72.2	101.2	91.1	63.2	46.7	53.1	53.6
MEDIAN	44.4	33.8	31.6	36.7	62.7	68.6	106.0	86.9	54.9	47.3	44.5	43.6
MINIMUM	27.5	11.2	12.3	11.9	37.8	11.9	65.8	59.9	38.0	0.0	31.6	30.4
MAXIMUM	80.0	74.8	123.0	107.1	123.0	119.0	123.0	123.0	119.0	102.5	119.0	123.0

Historic Values (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1975	42.8	26.8	25.6	38.8	50.8	53.7	99.1	88.4	82.6	34.7	15.8	51.3
1976	39.3	28.1	24.9	40.7	40.1	99.4	96.7	16.0	0.0	0.0	19.2	43.2
1977	42.3	24.4	28.6	22.3	59.3	86.7	103.2	80.3	51.7	37.6	49.3	46.9
1978	42.8	36.3	25.5	25.4	79.4	99.9	109.2	101.4	70.1	29.2	51.6	41.4
1979	44.3	36.8	24.2	21.5	23.7	18.5	68.2	81.6	24.0	25.9	23.9	38.4
1980	41.9	44.1	55.0	85.1	28.2	76.3	104.6	93.9	50.5	45.0	47.9	37.1
1981	32.0	29.7	22.0	21.5	24.0	40.3	95.4	55.0	59.5	3.2	46.9	45.5
1982	44.1	29.8	30.3	26.2	34.1	41.0	65.7	90.2	51.6	0.0	37.3	54.2
1983	51.3	44.3	42.9	45.3	54.7	111.2	92.2	95.0	66.4	0.0	4.2	71.3
1984	56.0	87.1	86.0	17.1	71.7	105.2	98.7	101.2	102.4	96.7	88.2	83.0
AVERAGE	43.7	38.7	36.5	34.4	46.6	73.2	93.3	80.3	55.9	27.2	38.4	51.2
MEDIAN	42.8	33.1	27.1	25.8	45.5	81.5	97.7	89.3	55.6	27.6	42.1	46.2
MINIMUM	32.0	24.4	22.0	17.1	23.7	18.5	65.7	16.0	0.0	0.0	4.2	37.1
MAXIMUM	56.0	87.1	86.0	85.1	79.4	111.2	109.2	101.4	102.4	96.7	88.2	83.0

Differences (Validation - Historic) (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1975	-13.0	-1.4	5.9	7.4	14.3	-1.7	-6.9	12.3	-21.6	4.9	22.5	-13.7
1976	0.4	20.2	16.5	-4.6	23.8	-20.7	13.6	83.4	63.0	0.0	26.3	1.5
1977	2.8	5.3	-16.3	-10.4	-2.0	-25.4	8.7	-0.6	-13.4	8.9	-5.9	3.7
1978	10.9	9.3	1.9	11.9	-4.4	-24.1	3.1	-9.8	-11.0	18.9	-20.0	-8.5
1979	-0.7	-25.6	-11.9	-5.5	18.7	-6.6	-2.4	-8.7	15.4	29.1	27.8	10.2
1980	7.5	4.9	-15.5	22.0	49.2	10.6	7.2	-12.6	-6.2	7.0	-1.5	5.4
1981	6.9	8.2	9.6	-3.2	13.8	17.4	-0.6	4.9	-21.5	-3.2	-8.4	-4.5
1982	1.8	-3.2	2.9	9.0	17.4	18.5	22.5	-8.0	-1.0	43.3	-5.5	-23.8
1983	-23.8	-17.6	-30.6	14.2	6.8	7.8	30.8	28.0	52.6	80.2	80.1	13.1
1984	24.0	-12.3	37.0	90.0	51.3	13.8	2.9	19.4	16.6	5.8	30.8	40.0
AVERAGE	1.7	-1.2	-0.1	13.1	18.9	-1.0	7.9	10.8	7.3	19.5	14.6	2.3
MEDIAN	2.3	1.8	2.4	8.2	15.9	3.1	5.2	2.2	-3.6	8.0	10.5	2.6
MINIMUM	-23.8	-25.6	-30.6	-10.4	-4.4	-25.4	-6.9	-12.6	-21.6	-3.2	-20.0	-23.8
MAXIMUM	24.0	20.2	37.0	90.0	51.3	18.5	30.8	83.4	63.0	80.2	80.1	40.0

Table 21. Sutherland canal korty diversion, validation period.

Computed Values (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1975	17.3	20.1	11.8	20.7	13.3	43.8	9.2	3.9	4.8	8.5	9.8	17.5
1976	20.9	19.5	20.1	13.4	8.4	3.7	1.2	2.0	1.9	0.0	2.6	6.5
1977	6.8	9.7	17.8	16.5	10.4	12.5	3.4	2.1	2.2	4.8	5.4	6.7
1978	7.3	10.3	11.3	7.6	5.2	10.4	0.9	1.1	1.2	1.5	3.0	4.9
1979	5.3	15.4	15.0	13.4	25.0	65.5	20.0	20.7	11.8	10.3	19.0	31.2
1980	34.6	48.6	49.7	0.0	45.6	32.2	11.1	1.4	4.2	8.1	10.6	17.5
1981	25.2	15.2	13.7	15.9	15.9	25.4	3.9	4.6	0.9	0.0	6.1	11.4
1982	10.1	15.1	14.1	7.2	9.4	11.2	13.8	2.4	9.7	8.7	11.1	26.8
1983	46.4	40.5	46.0	47.6	61.5	0.0	0.0	0.0	0.0	29.7	30.6	35.8
1984	43.0	40.2	0.0	0.0	0.0	0.0	12.2	2.3	0.0	8.2	0.0	0.0
AVERAGE	21.7	23.5	20.0	14.2	19.5	20.5	7.6	4.1	3.7	8.0	9.8	15.8
MEDIAN	19.1	17.5	14.6	13.4	11.9	11.9	6.6	2.2	2.1	8.2	8.0	14.5
MINIMUM	5.3	9.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MAXIMUM	46.4	48.6	49.7	47.6	61.5	65.5	20.0	20.7	11.8	29.7	30.6	35.8

Historic Values (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1975	23.8	30.3	16.5	30.3	11.8	44.3	7.2	3.1	1.6	6.0	4.0	23.8
1976	26.7	28.2	29.1	13.4	7.1	3.1	0.2	0.0	0.0	0.0	1.2	4.7
1977	5.3	14.4	23.2	24.6	13.6	15.4	2.7	0.0	0.0	4.2	5.2	5.6
1978	6.4	10.3	16.3	7.6	5.2	9.5	0.3	0.0	0.0	0.7	1.9	3.3
1979	2.8	17.8	21.3	19.2	35.1	70.1	24.9	21.5	17.6	14.2	27.0	50.1
1980	38.0	38.6	46.3	11.8	60.8	37.6	6.2	0.0	0.1	4.2	12.8	25.1
1981	38.1	23.2	20.0	23.9	24.3	36.5	1.1	0.0	0.0	1.7	5.3	10.1
1982	12.7	20.1	13.7	7.2	7.7	13.9	17.9	0.0	7.6	8.3	15.1	38.0
1983	44.2	48.6	68.6	65.4	58.5	6.9	25.9	26.3	2.5	0.1	43.3	17.7
1984	14.6	16.2	12.3	40.3	3.8	3.6	5.8	8.6	18.0	20.1	25.1	16.7
AVERAGE	21.3	24.8	26.7	24.4	22.8	24.1	9.2	6.0	4.7	6.0	14.1	19.5
MEDIAN	19.2	21.7	20.7	21.6	12.7	14.7	6.0	0.0	0.9	4.2	9.1	17.2
MINIMUM	2.8	10.3	12.3	7.2	3.8	3.1	0.2	0.0	0.0	0.0	1.2	3.3
MAXIMUM	44.2	48.6	68.6	65.4	60.8	70.1	25.9	26.3	18.0	20.1	43.3	50.1

Differences (Validation - Historic) (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1975	-6.5	-10.2	-4.7	-9.6	1.5	-0.5	2.0	0.8	3.2	2.5	5.8	-6.3
1976	-5.8	-8.7	-9.0	0.0	1.3	0.6	1.0	2.0	1.9	0.0	1.4	1.8
1977	1.5	-4.7	-5.4	-8.1	-3.2	-2.9	0.7	2.1	2.2	0.6	0.2	1.1
1978	0.9	0.0	-5.0	0.0	0.0	0.9	0.6	1.1	1.2	0.8	1.1	1.6
1979	2.5	-2.4	-6.3	-5.8	-10.1	-4.6	-4.9	-0.8	-5.8	-3.9	-8.0	-18.9
1980	-3.4	10.0	3.4	-11.8	-15.2	-5.4	4.9	1.4	4.1	3.9	-2.2	-7.6
1981	-12.9	-8.0	-6.3	-8.0	-8.4	-11.1	2.8	4.6	0.9	-1.7	0.8	1.3
1982	-2.6	-5.0	0.4	0.0	1.7	-2.7	-4.1	2.4	2.1	0.4	-4.0	-11.2
1983	2.2	-8.1	-22.6	-17.8	3.0	-6.9	-25.9	-26.3	-2.5	29.6	-12.7	18.1
1984	28.4	24.0	-12.3	-40.3	-3.8	-3.6	6.4	-6.3	-18.0	-11.9	-25.1	-16.7
AVERAGE	0.4	-1.3	-6.8	-10.1	-3.3	-3.6	-1.7	-1.9	-1.1	2.0	-4.3	-3.7
MEDIAN	-0.9	-4.9	-5.9	-8.1	-1.6	-3.3	0.9	1.3	1.6	0.5	-1.0	-2.6
MINIMUM	-12.9	-10.2	-22.6	-40.3	-15.2	-11.1	-25.9	-26.3	-18.0	-11.9	-25.1	-18.9
MAXIMUM	28.4	24.0	3.4	0.0	3.0	0.9	6.4	4.6	4.1	29.6	5.8	18.1

Table 22. Tri-county (Central) canal diversion, validation period.

Computed Values (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1975	64.8	76.5	74.0	88.9	91.5	124.1	131.7	131.7	83.6	69.5	71.9	79.3
1976	82.9	93.3	91.6	71.0	91.5	93.3	131.8	131.7	89.6	69.5	66.5	66.6
1977	64.8	69.4	77.0	72.1	91.5	91.8	131.9	127.1	58.2	69.5	66.5	66.6
1978	64.8	69.4	74.0	60.8	91.5	92.8	131.8	131.5	72.8	61.5	58.6	58.9
1979	57.7	55.5	77.2	60.8	91.5	122.8	131.6	131.5	74.8	87.8	97.7	103.3
1980	94.3	112.1	129.6	124.3	128.8	123.9	132.0	131.6	65.9	72.2	74.9	76.5
1981	78.9	76.0	74.0	60.8	91.5	106.2	131.7	103.4	57.7	71.7	66.5	66.6
1982	64.8	69.4	74.0	60.8	91.5	91.8	131.7	131.5	72.9	69.5	66.9	78.5
1983	95.9	99.8	107.5	123.2	125.9	133.9	134.9	134.0	132.3	121.3	128.1	121.4
1984	123.9	124.8	126.7	132.2	129.2	126.9	131.8	132.0	124.8	124.6	126.1	123.9
AVERAGE	79.3	84.6	90.6	85.5	102.4	110.8	132.1	128.6	83.3	81.7	82.4	84.2
MEDIAN	71.9	76.3	77.1	71.6	91.5	114.5	131.8	131.6	73.9	70.6	69.4	77.5
MINIMUM	57.7	55.5	74.0	60.8	91.5	91.8	131.6	103.4	57.7	61.5	58.6	58.9
MAXIMUM	123.9	124.8	129.6	132.2	129.2	133.9	134.9	134.0	132.3	124.6	128.1	123.9

Historic Values (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1975	78.2	75.8	86.0	84.4	96.0	118.1	132.7	131.7	98.7	80.6	78.3	78.0
1976	88.2	89.0	88.5	87.9	89.9	107.2	130.8	131.8	96.0	60.8	68.6	69.8
1977	72.4	69.6	83.9	82.1	77.9	100.6	132.9	119.4	73.3	68.6	70.8	65.0
1978	53.1	50.8	79.7	68.9	85.1	97.6	131.7	129.3	82.8	75.2	74.1	71.6
1979	63.6	67.5	82.5	72.5	85.4	118.2	129.8	127.9	79.4	56.4	56.9	112.5
1980	114.7	115.9	128.9	128.6	132.7	128.9	134.0	132.2	81.5	60.4	64.6	74.0
1981	88.4	80.3	74.7	63.0	80.2	93.7	134.9	115.8	61.9	60.8	64.7	83.6
1982	78.6	82.5	81.1	56.4	67.9	63.1	120.9	114.9	79.1	56.5	89.6	94.7
1983	116.1	114.2	130.8	128.8	130.8	88.5	52.0	116.8	110.4	83.9	73.1	51.7
1984	92.2	121.8	129.6	113.9	114.8	122.3	133.9	138.0	132.4	127.5	116.2	85.9
AVERAGE	84.6	86.7	96.6	88.7	96.1	103.8	123.4	125.8	89.6	73.1	75.7	78.7
MEDIAN	83.4	81.4	85.0	83.3	87.7	103.9	132.2	128.6	82.2	64.7	72.0	76.0
MINIMUM	53.1	50.8	74.7	56.4	67.9	63.1	52.0	114.9	61.9	56.4	56.9	51.7
MAXIMUM	116.1	121.8	130.8	128.8	132.7	128.9	134.9	138.0	132.4	127.5	116.2	112.5

Differences (Validation - Historic) (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1975	-13.4	0.7	-12.0	4.5	-4.5	6.0	-1.0	0.0	-15.1	-11.1	-6.4	1.3
1976	-5.3	4.3	3.1	-16.9	1.6	-13.9	1.0	-0.1	-6.4	8.7	-2.1	-3.2
1977	-7.6	-0.2	-6.9	-10.0	13.6	-8.8	-1.0	7.7	-15.1	0.9	-4.3	1.6
1978	11.7	18.6	-5.7	-8.1	6.4	-4.8	0.1	2.2	-10.0	-13.7	-15.5	-12.7
1979	-5.9	-12.0	-5.3	-11.7	6.1	4.6	1.8	3.6	-4.6	31.4	40.8	-9.2
1980	-20.4	-3.8	0.7	-4.3	-3.9	-5.0	-2.0	-0.6	-15.6	11.8	10.3	2.5
1981	-9.5	-4.3	-0.7	-2.2	11.3	12.5	-3.2	-12.4	-4.2	10.9	1.8	-17.0
1982	-13.8	-13.1	-7.1	4.4	23.6	28.7	10.8	16.6	-6.2	13.0	-22.7	-16.2
1983	-20.2	-14.4	-23.3	-5.6	-4.9	45.4	82.9	17.2	21.9	37.4	55.0	69.7
1984	31.7	3.0	-2.9	18.3	14.4	4.6	-2.1	-6.0	-7.6	-2.9	9.9	38.0
AVERAGE	-5.3	-2.1	-6.0	-3.2	6.4	6.9	8.7	2.8	-6.3	8.6	6.7	5.5
MEDIAN	-8.6	-2.0	-5.5	-5.0	6.3	4.6	-0.4	1.1	-7.0	9.8	-0.1	-1.0
MINIMUM	-20.4	-14.4	-23.3	-16.9	-4.9	-13.9	-3.2	-12.4	-15.6	-13.7	-22.7	-17.0
MAXIMUM	31.7	18.6	3.1	18.3	23.6	45.4	82.9	17.2	21.9	37.4	55.0	69.7

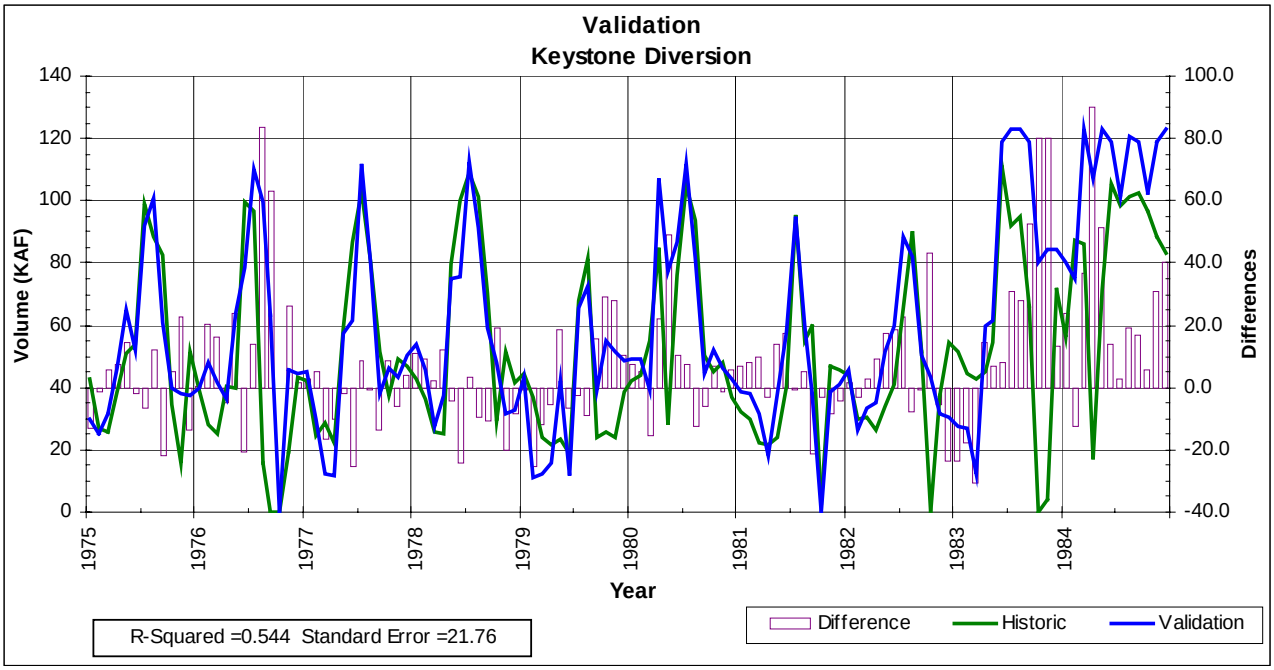

Figure 20. Sutherland canal keystone diversion, validation period.

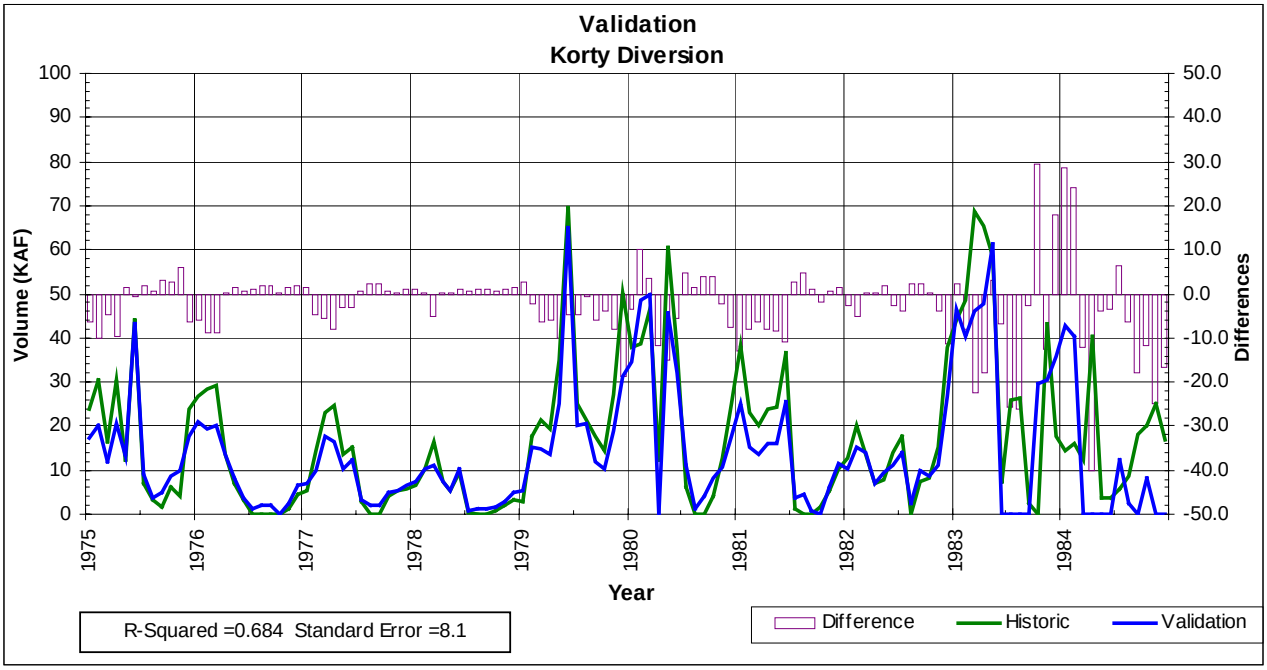

Figure 21. Sutherland canal korty diversion, validation period.

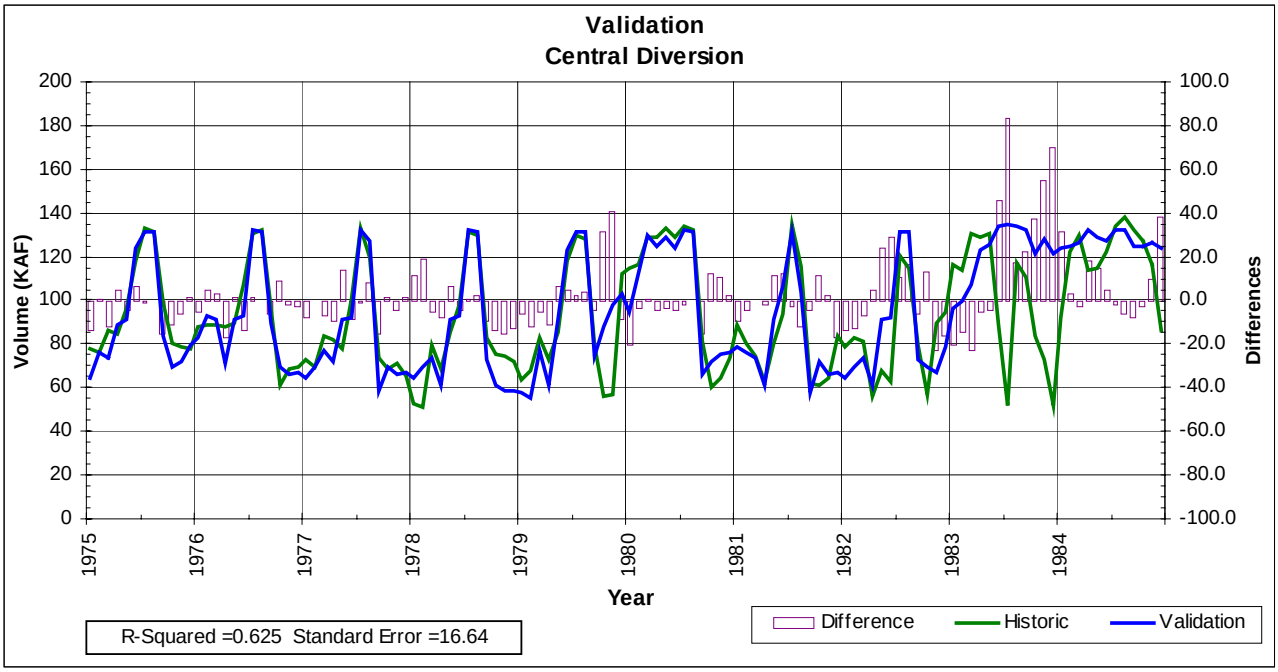

Figure 22. Sutherland canal keystone diversion, validation period.

3.2.2.4 Returns. The validation results for the Sutherland Canal, Jeffrey, and J2 Returns are tabulated in **Tables 23 through 25** and shown graphically in **Figures 23 through 25**. The Sutherland Canal return reflects the activities that occurred at the Keystone Diversion. The R-squared value and the actual and percentage differences for the Jeffrey Return seem to suggest a very poor validation result, and the R-squared value for the J2 Return would suggest at best a mediocre result. However, **Figure 23** shows that, except for two periods of under-prediction in 1984, the fit is generally quite good for the Jeffrey Return. In July and August 1984, there was an apparent over-diversion through the return in response to a low-flow condition in the Platte River. In October and November 1984, nearly all flow was diverted through the Jeffrey Return because the J2 power plant was out of service for repairs. Neither of these situations were modeled. With respect to the J2 Return, these situations show up in the form of over-prediction for both of the aforementioned time periods. There is also an over-prediction for the second half of 1983 that can be associated with the dam failure discussed in **Section 3.2.2.3**. This situation was not modeled either. These discrepancies also show up in the somewhat high actual and percentage differences for the J2 Return (**Table 31**). Otherwise, **Figure 24** shows a reasonably good fit for the J2 Return.

Table 23. Sutherland canal hydro return, validation period.

Computed Values (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1975	30.2	33.0	31.4	51.7	61.5	69.1	86.2	98.0	53.6	37.4	37.7	39.9
1976	43.4	53.8	48.8	35.3	55.4	56.4	93.8	95.5	52.8	0.0	37.7	36.2
1977	34.9	27.3	18.9	15.3	50.8	48.2	96.6	80.2	30.5	40.6	38.4	42.1
1978	43.9	42.8	27.0	31.0	63.3	60.0	95.0	88.7	48.6	38.9	24.3	23.1
1979	32.0	15.1	16.2	16.3	50.5	51.6	74.5	89.5	40.3	54.4	60.2	64.1
1980	66.5	82.0	74.9	89.8	106.0	91.2	102.3	80.9	37.8	49.3	46.6	44.7
1981	47.0	40.1	33.4	20.9	36.7	57.0	84.2	66.6	29.1	0.0	34.3	37.3
1982	38.9	29.4	35.3	28.6	44.0	45.3	86.6	82.4	48.6	41.3	32.6	42.0
1983	56.5	53.5	45.7	89.8	106.0	91.2	102.4	112.4	102.2	98.5	104.1	103.4
1984	104.9	98.4	107.0	89.8	106.0	91.2	95.5	112.4	102.2	99.3	108.2	106.1
AVERAGE	49.8	47.5	43.9	46.9	68.0	66.1	91.7	90.7	54.6	46.0	52.4	53.9
MEDIAN	43.7	41.5	34.4	33.2	58.5	58.5	94.4	89.1	48.6	41.0	38.1	42.1
MINIMUM	30.2	15.1	16.2	15.3	36.7	45.3	74.5	66.6	29.1	0.0	24.3	23.1
MAXIMUM	104.9	98.4	107.0	89.8	106.0	91.2	102.4	112.4	102.2	99.3	108.2	106.1

Historic Values (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1975	44.2	40.7	45.1	44.8	57.2	56.7	99.7	91.1	49.5	38.7	21.0	37.2
1976	39.7	46.4	47.4	49.7	43.3	47.6	83.0	60.4	0.0	0.0	6.2	33.3
1977	35.1	31.9	27.2	26.1	36.7	58.8	93.2	85.4	43.3	25.2	40.2	38.3
1978	35.1	28.2	34.9	35.0	53.1	65.8	99.1	102.1	62.2	20.3	37.1	31.6
1979	31.6	29.5	24.4	29.1	49.8	43.1	84.2	89.3	50.1	20.9	17.5	73.8
1980	81.8	66.4	67.8	98.3	82.5	78.5	102.1	97.2	55.1	32.1	36.1	43.0
1981	57.0	50.7	37.3	30.1	32.3	46.6	86.5	71.8	35.0	5.3	26.8	48.8
1982	49.6	47.4	39.1	22.1	18.7	24.6	72.0	84.1	38.6	19.2	45.5	75.0
1983	67.5	74.7	86.6	103.5	108.2	97.5	87.2	106.4	58.8	0.0	39.9	64.6
1984	47.8	84.3	84.2	53.0	55.6	72.9	92.8	103.2	102.3	99.7	101.6	93.2
AVERAGE	48.9	50.0	49.4	49.2	53.7	59.2	90.0	89.1	49.5	26.1	37.2	53.9
MEDIAN	46.0	46.9	42.1	39.9	51.5	57.8	90.0	90.2	49.8	20.6	36.6	45.9
MINIMUM	31.6	28.2	24.4	22.1	18.7	24.6	72.0	60.4	0.0	0.0	6.2	31.6
MAXIMUM	81.8	84.3	86.6	103.5	108.2	97.5	102.1	106.4	102.3	99.7	101.6	93.2

Differences (Validation - Historic) (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1975	-14.0	-7.7	-13.7	6.9	4.3	12.4	-13.5	6.9	4.1	-1.3	16.7	2.7
1976	3.7	7.4	1.4	-14.4	12.1	8.8	10.8	35.1	52.8	0.0	31.5	2.9
1977	-0.2	-4.6	-8.3	-10.8	14.1	-10.6	3.4	-5.2	-12.8	15.4	-1.8	3.8
1978	8.8	14.6	-7.9	-4.0	10.2	-5.8	-4.1	-13.4	-13.6	18.6	-12.8	-8.5
1979	0.4	-14.4	-8.2	-12.8	0.7	8.5	-9.7	0.2	-9.8	33.5	42.7	-9.7
1980	-15.3	15.6	7.1	-8.5	23.5	12.7	0.2	-16.3	-17.3	17.2	10.5	1.7
1981	-10.0	-10.6	-3.9	-9.2	4.4	10.4	-2.3	-5.2	-5.9	-5.3	7.5	-11.5
1982	-10.7	-18.0	-3.8	6.5	25.3	20.7	14.6	-1.7	10.0	22.1	-12.9	-33.0
1983	-11.0	-21.2	-40.9	-13.7	-2.2	-6.3	15.2	6.0	43.4	98.5	64.2	38.8
1984	57.1	14.1	22.8	36.8	50.4	18.3	2.7	9.2	-0.1	-0.4	6.6	12.9
AVERAGE	0.9	-2.5	-5.5	-2.3	14.3	6.9	1.7	1.6	5.1	19.8	15.2	0.0
MEDIAN	-5.1	-6.2	-5.9	-8.9	11.2	9.6	1.5	-0.7	-3.0	16.3	9.0	2.2
MINIMUM	-15.3	-21.2	-40.9	-14.4	-2.2	-10.6	-13.5	-16.3	-17.3	-5.3	-12.9	-33.0
MAXIMUM	57.1	15.6	22.8	36.8	50.4	20.7	15.2	35.1	52.8	98.5	64.2	38.8

Table 24. Tri-county canal Jeffrey hydro return, validation period.

Computed Values (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1975	0.0	0.0	0.0	0.0	0.0	0.0	12.9	12.3	6.7	0.0	0.0	0.0
1976	0.0	0.0	0.0	0.0	0.0	13.9	4.1	14.0	6.2	0.0	0.0	0.0
1977	0.0	0.0	0.0	0.0	0.0	0.6	0.0	15.9	0.1	0.0	0.0	0.0
1978	0.0	0.0	0.0	0.0	0.0	13.1	1.0	17.7	11.5	0.0	0.0	0.0
1979	0.0	0.0	0.0	0.0	0.0	0.0	0.0	17.3	12.8	0.0	0.0	0.0
1980	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.9	6.8	0.0	0.0	0.0
1981	0.0	0.0	0.0	1.3	5.2	0.0	0.0	9.9	1.5	0.0	0.0	0.0
1982	0.0	0.0	0.0	0.0	6.5	2.5	8.3	29.4	2.8	0.0	0.0	0.0
1983	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1984	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AVERAGE	0.0	0.0	0.0	0.1	1.2	3.0	2.6	13.1	4.8	0.0	0.0	0.0
MEDIAN	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.5	4.5	0.0	0.0	0.0
MINIMUM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MAXIMUM	0.0	0.0	0.0	1.3	6.5	13.9	12.9	29.4	12.8	0.0	0.0	0.0

Historic Values (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1975	0.0	0.0	0.0	0.0	5.2	11.1	4.3	17.6	9.6	0.8	0.0	0.0
1976	0.0	0.0	0.0	0.0	2.5	13.8	5.2	11.8	5.7	0.0	0.0	0.0
1977	0.0	0.0	0.0	0.0	0.0	6.9	0.7	20.3	2.9	0.0	0.1	0.0
1978	0.0	0.0	2.2	0.0	1.0	9.7	4.8	22.8	8.0	0.0	0.0	0.0
1979	0.0	0.0	1.0	0.0	1.0	3.6	18.2	20.4	12.7	0.0	0.0	0.0
1980	0.0	3.7	0.0	0.0	0.0	1.4	4.1	11.0	5.0	0.0	0.0	0.0
1981	0.0	0.0	0.0	1.1	4.2	10.5	9.6	21.1	2.9	0.0	0.0	0.0
1982	0.0	0.0	0.0	0.0	0.0	2.6	13.0	17.8	3.3	0.0	0.0	0.0
1983	7.3	2.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9
1984	0.2	8.0	0.0	0.0	0.0	0.6	12.4	13.7	0.0	45.0	46.8	22.5
AVERAGE	0.8	1.4	0.3	0.1	1.4	6.0	7.2	15.7	5.0	4.6	4.7	2.3
MEDIAN	0.0	0.0	0.0	0.0	0.5	5.3	5.0	17.7	4.2	0.0	0.0	0.0
MINIMUM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MAXIMUM	7.3	8.0	2.2	1.1	5.2	13.8	18.2	22.8	12.7	45.0	46.8	22.5

Differences (Validation - Historic) (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1975	0.0	0.0	0.0	0.0	-5.2	-11.1	8.6	-5.3	-2.9	-0.8	0.0	0.0
1976	0.0	0.0	0.0	0.0	-2.5	0.1	-1.1	2.2	0.5	0.0	0.0	0.0
1977	0.0	0.0	0.0	0.0	0.0	-6.3	-0.7	-4.4	-2.8	0.0	-0.1	0.0
1978	0.0	0.0	-2.2	0.0	-1.0	3.4	-3.8	-5.1	3.5	0.0	0.0	0.0
1979	0.0	0.0	-1.0	0.0	-1.0	-3.6	-18.2	-3.1	0.1	0.0	0.0	0.0
1980	0.0	-3.7	0.0	0.0	0.0	-1.4	-4.1	3.9	1.8	0.0	0.0	0.0
1981	0.0	0.0	0.0	0.2	1.0	-10.5	-9.6	-11.2	-1.4	0.0	0.0	0.0
1982	0.0	0.0	0.0	0.0	6.5	-0.1	-4.7	11.6	-0.5	0.0	0.0	0.0
1983	-7.3	-2.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.9
1984	-0.2	-8.0	0.0	0.0	0.0	-0.6	-12.4	-13.7	0.0	-45.0	-46.8	-22.5
AVERAGE	-0.8	-1.4	-0.3	0.0	-0.2	-3.0	-4.6	-2.5	-0.2	-4.6	-4.7	-2.3
MEDIAN	0.0	0.0	0.0	0.0	0.0	-1.0	-4.0	-3.8	0.0	0.0	0.0	0.0
MINIMUM	-7.3	-8.0	-2.2	0.0	-5.2	-11.1	-18.2	-13.7	-2.9	-45.0	-46.8	-22.5
MAXIMUM	0.0	0.0	0.0	0.2	6.5	3.4	8.6	11.6	3.5	0.0	0.0	0.0

Table 25. Tri-county canal J2 hydro return, validation period.

Computed Values (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1975	45.5	57.1	44.6	50.0	36.3	60.4	25.4	35.3	35.2	47.3	52.1	57.9
1976	61.6	72.0	61.1	34.5	35.6	6.4	24.1	20.2	38.2	47.3	47.0	46.1
1977	45.5	50.9	47.4	36.2	39.8	13.9	28.2	35.4	26.5	47.3	47.0	46.1
1978	45.5	50.9	44.6	21.0	34.6	7.9	26.8	22.8	19.6	39.9	39.7	39.0
1979	39.3	38.6	47.6	24.1	42.0	63.5	62.9	30.2	22.5	64.2	76.1	80.0
1980	71.7	88.6	96.6	83.6	71.8	49.1	18.0	20.7	24.0	49.8	54.8	55.2
1981	58.0	56.8	44.6	19.5	23.5	24.9	20.7	7.4	23.8	49.4	47.0	46.1
1982	45.5	50.9	44.6	23.7	34.1	28.6	16.4	1.4	29.2	47.3	47.4	57.1
1983	73.1	77.8	76.0	84.3	75.7	70.9	53.2	30.2	80.0	95.1	104.5	96.7
1984	98.0	99.9	93.9	94.1	85.9	65.1	21.4	18.0	71.7	98.1	102.6	99.0
AVERAGE	58.4	64.4	60.1	47.1	47.9	39.1	29.7	22.2	37.1	58.6	61.8	62.3
MEDIAN	51.8	57.0	47.5	35.4	38.1	38.9	24.8	21.8	27.9	48.4	49.8	56.2
MINIMUM	39.3	38.6	44.6	19.5	23.5	6.4	16.4	1.4	19.6	39.9	39.7	39.0
MAXIMUM	98.0	99.9	96.6	94.1	85.9	70.9	62.9	35.4	80.0	98.1	104.5	99.0

Historic Values (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1975	58.1	55.8	65.5	61.7	39.3	46.8	4.0	11.0	55.2	49.8	52.8	57.3
1976	67.6	71.5	66.0	61.6	35.4	15.5	3.9	2.8	37.8	38.8	40.1	49.6
1977	47.3	45.5	54.7	57.6	29.8	14.7	2.2	11.3	47.2	40.4	39.8	43.3
1978	49.5	45.6	55.9	39.2	19.2	6.9	4.9	1.9	24.9	39.5	39.2	50.3
1979	50.3	42.9	57.9	37.8	21.7	49.1	31.9	4.1	21.4	22.7	25.1	85.4
1980	90.3	86.1	107.0	94.7	69.2	48.3	0.0	7.6	39.4	29.6	36.8	54.6
1981	68.6	62.3	52.6	25.4	12.9	5.1	20.6	16.4	22.2	39.0	39.6	59.9
1982	58.9	64.5	62.3	21.9	8.8	3.0	1.5	3.5	36.5	20.0	57.7	74.3
1983	79.6	89.8	107.5	93.1	82.7	36.9	0.5	6.0	52.8	53.1	46.1	44.4
1984	54.2	86.2	103.3	84.2	76.2	67.7	14.2	10.5	75.4	38.1	33.8	44.1
AVERAGE	62.4	65.0	73.3	57.7	39.5	29.4	8.4	7.5	41.3	37.1	41.1	56.3
MEDIAN	58.5	63.4	63.9	59.6	32.6	26.2	4.0	6.8	38.6	38.9	39.7	52.5
MINIMUM	47.3	42.9	52.6	21.9	8.8	3.0	0.0	1.9	21.4	20.0	25.1	43.3
MAXIMUM	90.3	89.8	107.5	94.7	82.7	67.7	31.9	16.4	75.4	53.1	57.7	85.4

Differences (Validation - Historic) (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1975	-12.6	1.3	-20.9	-11.7	-3.0	13.6	21.4	24.3	-20.0	-2.5	-0.7	0.6
1976	-6.0	0.5	-4.9	-27.1	0.2	-9.1	20.2	17.4	0.4	8.5	6.9	-3.5
1977	-1.8	5.4	-7.3	-21.4	10.0	-0.8	26.0	24.1	-20.7	6.9	7.2	2.8
1978	-4.0	5.3	-11.3	-18.2	15.4	1.0	21.9	20.9	-5.3	0.4	0.5	-11.3
1979	-11.0	-4.3	-10.3	-13.7	20.3	14.4	31.0	26.1	1.1	41.5	51.0	-5.4
1980	-18.6	2.5	-10.4	-11.1	2.6	0.8	18.0	13.1	-15.4	20.2	18.0	0.6
1981	-10.6	-5.5	-8.0	-5.9	10.6	19.8	0.1	-9.0	1.6	10.4	7.4	-13.8
1982	-13.4	-13.6	-17.7	1.8	25.3	25.6	14.9	-2.1	-7.3	27.3	-10.3	-17.2
1983	-6.5	-12.0	-31.5	-8.8	-7.0	34.0	52.7	24.2	27.2	42.0	58.4	52.3
1984	43.8	13.7	-9.4	9.9	9.7	-2.6	7.2	7.5	-3.7	60.0	68.8	54.9
AVERAGE	-4.1	-0.7	-13.2	-10.6	8.4	9.7	21.3	14.7	-4.2	21.5	20.7	6.0
MEDIAN	-8.6	0.9	-10.4	-11.4	9.9	7.3	20.8	19.2	-4.5	15.3	7.3	-1.5
MINIMUM	-18.6	-13.6	-31.5	-27.1	-7.0	-9.1	0.1	-9.0	-20.7	-2.5	-10.3	-17.2
MAXIMUM	43.8	13.7	-4.9	9.9	25.3	34.0	52.7	26.1	27.2	60.0	68.8	54.9

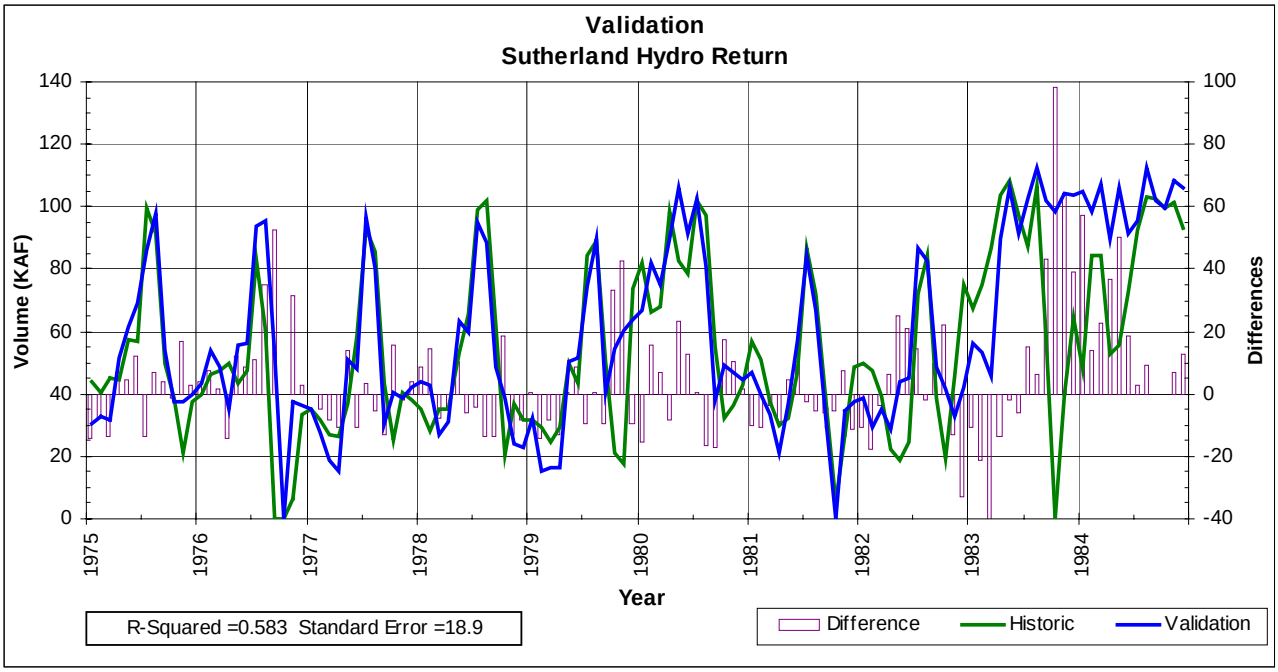

Figure 23. Sutherland canal hydro return, validation period.

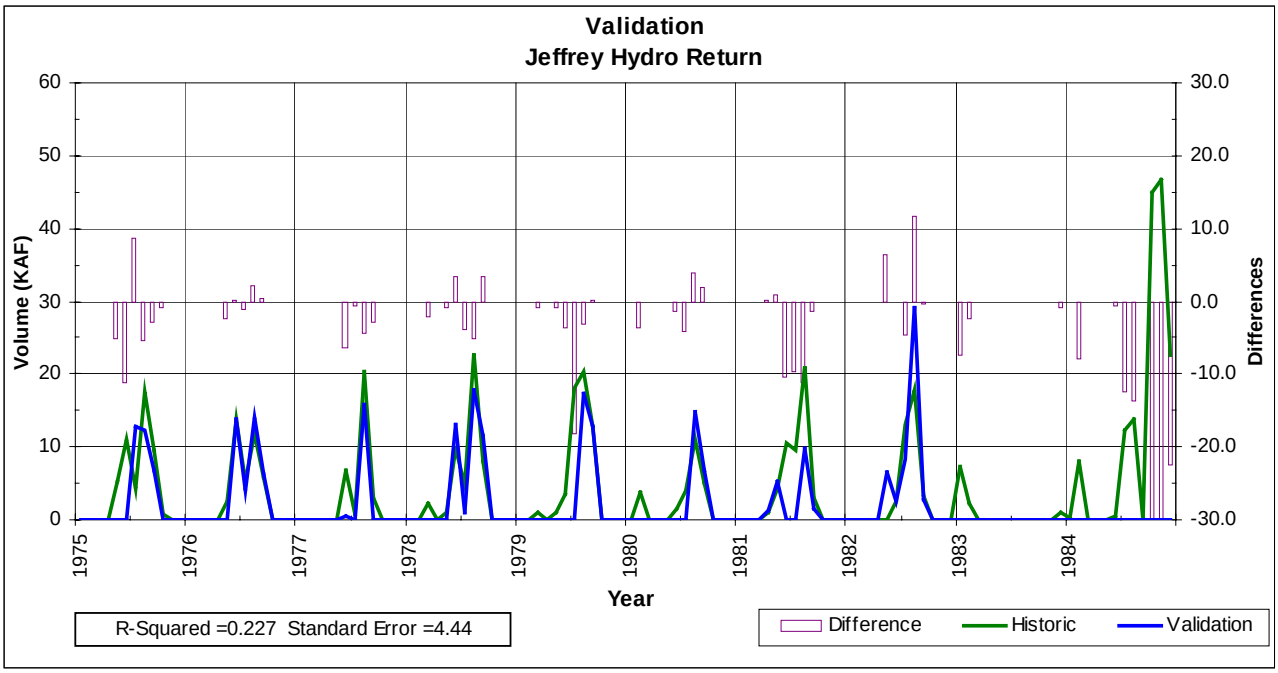

Figure 24. Tri-county canal Jeffrey hydro return, validation period.

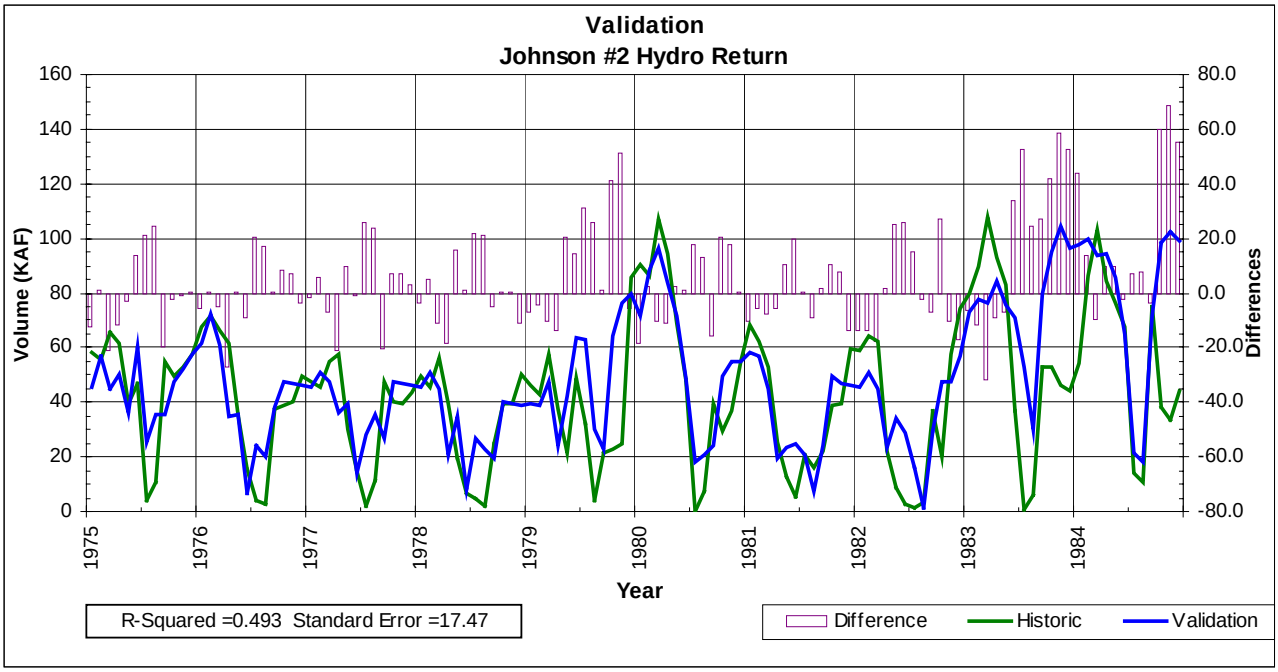

Figure 25. Tri-county canal J2 hydro return, validation period.

3.2.2.5 Platte River Main Stem. The validation results for the five locations on the Platte River main stem are tabulated in **Tables 26 through 30** and shown graphically in **Figures 26 through 30**. They show that, when the Keystone and Korty Diversion computed flows come together and are returned to the river system, most of the computational discrepancies resulting from operational irregularities cancel each other out and, from the North-South Platte confluence on downstream to Grand Island, the computed and historic flows on the Platte River are a near-exact match. All "R-squared" values exceed 0.980, and are significantly higher than those for the calibration analyses at these locations. Likewise, the actual and percentage differences are quite low for all locations except Flow Passing Central Diversion and Cozad. Both of these locations show slightly higher negative values. This is the result of an under-prediction for the second half of 1983 that can be associated with the dam failure discussed in **Section 3.2.2.3**.

Table 26. Flow below the confluence of the North Platte and South Platte Rivers at North Platte, validation period.

Computed Values (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1975	67.0	72.1	68.7	95.3	92.6	153.8	191.0	187.4	87.8	63.7	64.1	84.5
1976	83.9	99.7	91.5	71.1	90.5	99.6	211.8	195.6	94.8	69.1	67.4	65.6
1977	60.3	60.3	68.6	68.4	93.6	97.4	219.1	158.5	59.1	70.7	68.4	70.7
1978	70.7	69.4	71.2	61.6	92.9	98.8	214.7	163.1	75.4	60.7	55.4	51.6
1979	56.0	45.5	68.6	56.2	90.7	283.8	175.3	169.1	77.7	89.7	98.4	120.3
1980	118.4	155.0	154.5	258.1	643.8	348.6	236.8	179.0	67.6	72.5	78.2	80.2
1981	87.4	71.4	68.9	57.9	87.0	117.7	194.4	112.4	58.6	69.8	64.6	65.8
1982	70.7	63.8	67.2	55.8	81.5	89.4	193.4	165.1	75.5	70.7	68.9	85.9
1983	121.6	118.1	120.4	225.4	471.9	1045.6	709.4	559.0	506.2	168.1	151.1	170.5
1984	248.4	274.8	334.5	503.6	670.6	529.3	215.0	239.6	275.8	267.6	315.7	248.5
AVERAGE	98.4	103.0	111.4	145.3	241.5	286.4	256.1	212.9	137.9	100.3	103.2	104.4
MEDIAN	77.3	71.8	70.1	69.8	92.8	135.8	213.3	174.1	76.6	70.7	68.7	82.4
MINIMUM	56.0	45.5	67.2	55.8	81.5	89.4	175.3	112.4	58.6	60.7	55.4	51.6
MAXIMUM	248.4	274.8	334.5	503.6	670.6	1045.6	709.4	559.0	506.2	267.6	315.7	248.5

Historic Values (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1985	74.5	69.6	77.8	77.5	90.2	135.2	212.6	192.1	101.8	73.6	67.7	75.5
1986	74.3	83.6	81.3	80.9	82.0	118.8	217.5	202.5	106.5	59.2	67.6	64.7
1987	62.0	60.5	72.1	71.0	73.1	105.0	230.3	150.0	75.5	71.6	71.3	68.3
1988	62.8	54.8	74.0	65.0	79.6	109.5	222.6	159.3	90.7	74.4	70.0	61.7
1989	58.1	57.5	70.4	63.2	77.7	257.3	159.3	164.5	84.0	53.0	48.4	111.1
1990	130.6	149.4	151.1	276.8	654.3	341.0	234.2	194.7	87.7	59.0	65.5	71.0
1991	84.5	74.0	66.7	55.4	68.8	91.9	189.1	115.4	64.6	57.3	60.9	78.7
1992	78.8	76.9	71.4	46.7	51.0	55.0	181.9	163.4	89.5	63.2	89.7	107.7
1993	134.7	131.2	138.7	220.5	495.2	1097.4	699.2	554.6	512.9	102.8	91.6	231.7
1994	235.0	338.4	373.4	492.4	667.6	521.3	221.6	227.1	290.9	261.9	314.8	259.9
AVERAGE	99.5	109.6	117.7	144.9	234.0	283.2	256.8	212.4	150.4	87.6	94.8	113.0
MEDIAN	76.7	75.5	75.9	74.3	80.8	127.0	219.6	178.3	90.1	67.4	68.9	77.1
MINIMUM	58.1	54.8	66.7	46.7	51.0	55.0	159.3	115.4	64.6	53.0	48.4	61.7
MAXIMUM	235.0	338.4	373.4	492.4	667.6	1097.4	699.2	554.6	512.9	261.9	314.8	259.9

Differences (Validation - Historic) (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1985	-7.5	2.5	-9.1	17.8	2.4	18.6	-21.6	-4.7	-14.0	-9.9	-3.6	9.0
1986	9.6	16.1	10.2	-9.8	8.5	-19.2	-5.7	-6.9	-11.7	9.9	-0.2	0.9
1987	-1.7	-0.2	-3.5	-2.6	20.5	-7.6	-11.2	8.5	-16.4	-0.9	-2.9	2.4
1988	7.9	14.6	-2.8	-3.4	13.3	-10.7	-7.9	3.8	-15.3	-13.7	-14.6	-10.1
1989	-2.1	-12.0	-1.8	-7.0	13.0	26.5	16.0	4.6	-6.3	36.7	50.0	9.2
1990	-12.2	5.6	3.4	-18.7	-10.5	7.6	2.6	-15.7	-20.1	13.5	12.7	9.2
1991	2.9	-2.6	2.2	2.5	18.2	25.8	5.3	-3.0	-6.0	12.5	3.7	-12.9
1992	-8.1	-13.1	-4.2	9.1	30.5	34.4	11.5	1.7	-14.0	7.5	-20.8	-21.8
1993	-13.1	-13.1	-18.3	4.9	-23.3	-51.8	10.2	4.4	-6.7	65.3	59.5	-61.2
1994	13.4	-63.6	-38.9	11.2	3.0	8.0	-6.6	12.5	-15.1	5.7	0.9	-11.4
AVERAGE	-1.1	-6.6	-6.3	0.4	7.6	3.2	-0.7	0.5	-12.6	12.7	8.5	-8.7
MEDIAN	-1.9	-1.4	-3.2	0.0	10.8	7.8	-1.5	2.7	-14.0	8.7	0.3	-4.6
MINIMUM	-13.1	-63.6	-38.9	-18.7	-23.3	-51.8	-21.6	-15.7	-20.1	-13.7	-20.8	-61.2
MAXIMUM	13.4	16.1	10.2	17.8	30.5	34.4	16.0	12.5	-6.0	65.3	59.5	9.2

Table 27. Flow passing the Tri-county (Central) diversion, validation period.

Computed Values (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1975	2.3	0.0	0.0	6.3	1.0	29.7	59.4	55.7	4.2	0.0	0.0	5.2
1976	1.0	6.4	0.0	0.1	0.0	6.3	80.0	63.9	5.3	0.0	0.9	0.0
1977	0.0	0.0	0.0	0.0	2.0	5.6	87.2	31.4	1.0	1.2	1.9	4.2
1978	6.0	0.0	0.0	0.7	1.3	6.0	82.8	31.6	2.6	0.0	0.0	0.0
1979	0.0	0.0	0.0	0.0	0.0	161.0	43.7	37.5	2.8	1.9	0.7	16.9
1980	24.1	42.9	24.9	133.8	515.0	224.7	104.9	47.4	1.7	0.3	3.3	3.8
1981	8.5	0.0	0.0	0.0	0.0	11.4	62.7	9.1	0.9	0.0	0.0	0.0
1982	6.0	0.0	0.0	0.0	0.0	0.0	61.7	33.6	2.6	1.2	2.0	7.4
1983	25.7	18.3	12.8	102.2	346.0	911.8	574.5	425.0	373.9	46.8	23.0	49.1
1984	124.5	150.0	207.8	371.3	541.3	402.4	83.1	107.6	151.0	143.0	189.6	124.5
AVERAGE	19.8	21.8	24.6	61.4	140.7	175.9	124.0	84.3	54.6	19.4	22.1	21.1
MEDIAN	6.0	0.0	0.0	0.4	1.2	20.6	81.4	42.5	2.7	0.8	1.4	4.7
MINIMUM	0.0	0.0	0.0	0.0	0.0	0.0	43.7	9.1	0.9	0.0	0.0	0.0
MAXIMUM	124.5	150.0	207.8	371.3	541.3	911.8	574.5	425.0	373.9	143.0	189.6	124.5

Historic Values (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1975	0.0	0.0	0.0	0.0	0.0	17.1	79.9	60.4	3.1	0.0	0.0	0.0
1976	0.0	0.0	0.0	0.0	0.0	11.6	86.7	70.7	10.5	0.0	0.0	0.0
1977	0.0	0.0	0.0	0.0	0.0	4.4	97.4	30.6	2.2	3.0	0.5	3.3
1978	9.7	4.0	0.0	0.0	0.0	11.9	90.9	30.0	7.9	0.0	0.0	0.0
1979	0.0	0.0	0.0	0.0	0.0	139.1	29.5	36.6	4.6	0.0	0.0	0.0
1980	15.9	33.5	22.2	148.2	521.6	212.1	100.2	62.5	6.2	0.0	0.9	0.0
1981	0.0	0.0	0.0	0.0	0.0	0.0	54.2	0.0	2.7	0.0	0.0	0.0
1982	0.2	0.0	0.0	0.0	0.0	0.0	61.0	48.5	10.4	6.7	0.1	13.0
1983	18.6	17.0	7.9	91.7	364.4	1008.9	647.2	437.8	402.5	18.9	18.5	180.0
1984	142.8	216.6	243.8	378.5	552.8	399.0	87.7	89.1	158.5	134.4	198.6	174.0
AVERAGE	18.7	27.1	27.4	61.8	143.9	180.4	133.5	86.6	60.9	16.3	21.9	37.0
MEDIAN	0.1	0.0	0.0	0.0	0.0	14.5	87.2	54.5	7.1	0.0	0.1	0.0
MINIMUM	0.0	0.0	0.0	0.0	0.0	0.0	29.5	0.0	2.2	0.0	0.0	0.0
MAXIMUM	142.8	216.6	243.8	378.5	552.8	1008.9	647.2	437.8	402.5	134.4	198.6	180.0

Differences (Validation - Historic) (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1975	2.3	0.0	0.0	6.3	1.0	12.6	-20.5	-4.7	1.1	0.0	0.0	5.2
1976	1.0	6.4	0.0	0.1	0.0	-5.3	-6.7	-6.8	-5.2	0.0	0.9	0.0
1977	0.0	0.0	0.0	0.0	2.0	1.2	-10.2	0.8	-1.2	-1.8	1.4	0.9
1978	-3.7	-4.0	0.0	0.7	1.3	-5.9	-8.1	1.6	-5.3	0.0	0.0	0.0
1979	0.0	0.0	0.0	0.0	0.0	21.9	14.2	0.9	-1.8	1.9	0.7	16.9
1980	8.2	9.4	2.7	-14.4	-6.6	12.6	4.7	-15.1	-4.5	0.3	2.4	3.8
1981	8.5	0.0	0.0	0.0	0.0	11.4	8.5	9.1	-1.8	0.0	0.0	0.0
1982	5.8	0.0	0.0	0.0	0.0	0.0	0.7	-14.9	-7.8	-5.5	1.9	-5.6
1983	7.1	1.3	4.9	10.5	-18.4	-97.1	-72.7	-12.8	-28.6	27.9	4.5	-130.9
1984	-18.3	-66.6	-36.0	-7.2	-11.5	3.4	-4.6	18.5	-7.5	8.6	-9.0	-49.5
AVERAGE	1.1	-5.4	-2.8	-0.4	-3.2	-4.5	-9.5	-2.3	-6.3	3.1	0.3	-15.9
MEDIAN	1.7	0.0	0.0	0.0	0.0	2.3	-5.6	-2.0	-4.9	0.0	0.8	0.0
MINIMUM	-18.3	-66.6	-36.0	-14.4	-18.4	-97.1	-72.7	-15.1	-28.6	-5.5	-9.0	-130.9
MAXIMUM	8.5	9.4	4.9	10.5	2.0	21.9	14.2	18.5	1.1	27.9	4.5	16.9

Table 28. Platte River at Cozad, validation period.

Computed Values (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1975	19.9	11.8	13.6	27.8	6.0	33.7	3.1	5.4	4.5	4.9	4.7	20.1
1976	19.1	27.7	20.6	23.8	7.8	4.6	3.1	3.1	4.3	13.7	15.1	13.7
1977	10.5	7.7	15.9	34.5	33.2	7.1	3.7	4.0	4.2	13.7	16.9	15.9
1978	10.2	10.8	30.2	24.7	14.3	3.2	3.1	6.3	2.7	13.0	11.3	6.0
1979	10.5	5.0	23.3	17.9	9.4	146.1	25.1	4.6	5.0	13.7	15.8	36.5
1980	36.1	69.5	61.5	171.0	559.0	262.4	9.3	3.1	5.2	13.4	13.5	16.4
1981	23.0	9.9	12.0	5.9	8.8	5.1	26.3	4.2	9.2	11.7	16.0	17.6
1982	20.4	10.5	13.5	10.6	8.5	4.2	3.1	3.1	3.0	18.7	25.1	24.2
1983	69.3	41.7	45.6	129.7	378.1	941.9	569.8	364.3	358.8	92.5	30.5	17.8
1984	158.5	189.9	246.9	437.0	589.0	433.1	51.8	27.3	134.8	161.8	217.1	174.0
AVERAGE	37.8	38.5	48.3	88.3	161.4	184.1	69.8	42.5	53.2	35.7	36.6	34.2
MEDIAN	20.2	11.3	22.0	26.3	11.9	20.4	6.5	4.4	4.8	13.7	15.9	17.7
MINIMUM	10.2	5.0	12.0	5.9	6.0	3.2	3.1	3.1	2.7	4.9	4.7	6.0
MAXIMUM	158.5	189.9	246.9	437.0	589.0	941.9	569.8	364.3	358.8	161.8	217.1	174.0

Historic Values (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1975	15.0	13.3	15.7	18.7	6.8	29.9	12.2	13.6	4.7	10.0	11.0	13.3
1976	15.4	18.5	17.4	20.9	8.0	7.6	8.2	5.8	7.5	12.5	12.7	13.0
1977	12.3	14.0	21.0	35.5	27.8	10.0	11.8	5.6	6.6	13.9	13.9	13.4
1978	11.3	11.9	32.0	21.2	10.6	3.4	12.2	8.0	2.9	12.2	12.9	11.7
1979	11.7	12.2	29.6	19.8	7.9	125.5	26.4	4.8	5.2	10.2	13.6	18.0
1980	25.4	61.0	55.4	182.6	562.1	248.9	5.9	12.3	6.4	11.5	9.5	11.0
1981	11.9	11.7	13.9	5.9	9.0	1.9	24.6	4.4	10.9	12.1	16.3	16.7
1982	11.8	13.3	17.1	12.9	8.7	4.4	4.3	4.6	9.7	22.6	21.6	28.2
1983	69.5	42.7	40.7	119.2	396.5	1039.0	642.5	377.1	387.4	64.6	26.0	149.6
1984	177.0	264.5	282.9	444.2	600.5	430.3	68.8	22.5	142.3	198.2	272.9	246.0
AVERAGE	36.1	46.3	52.6	88.1	163.8	190.1	81.7	45.9	58.4	36.8	41.0	52.1
MEDIAN	13.7	13.7	25.3	21.1	9.8	20.0	12.2	6.9	7.1	12.4	13.8	15.1
MINIMUM	11.3	11.7	13.9	5.9	6.8	1.9	4.3	4.4	2.9	10.0	9.5	11.0
MAXIMUM	177.0	264.5	282.9	444.2	600.5	1039.0	642.5	377.1	387.4	198.2	272.9	246.0

Differences (Validation - Historic) (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1975	4.9	-1.5	-2.1	9.1	-0.8	3.8	-9.1	-8.2	-0.2	-5.1	-6.3	6.8
1976	3.7	9.2	3.2	2.9	-0.2	-3.0	-5.1	-2.7	-3.2	1.2	2.4	0.7
1977	-1.8	-6.3	-5.1	-1.0	5.4	-2.9	-8.1	-1.6	-2.4	-0.2	3.0	2.5
1978	-1.1	-1.1	-1.8	3.5	3.7	-0.2	-9.1	-1.7	-0.2	0.8	-1.6	-5.7
1979	-1.2	-7.2	-6.3	-1.9	1.5	20.6	-1.3	-0.2	-0.2	3.5	2.2	18.5
1980	10.7	8.5	6.1	-11.6	-3.1	13.5	3.4	-9.2	-1.2	1.9	4.0	5.4
1981	11.1	-1.8	-1.9	0.0	-0.2	3.2	1.7	-0.2	-1.7	-0.4	-0.3	0.9
1982	8.6	-2.8	-3.6	-2.3	-0.2	-0.2	-1.2	-1.5	-6.7	-3.9	3.5	-4.0
1983	-0.2	-1.0	4.9	10.5	-18.4	-97.1	-72.7	-12.8	-28.6	27.9	4.5	-131.8
1984	-18.5	-74.6	-36.0	-7.2	-11.5	2.8	-17.0	4.8	-7.5	-36.4	-55.8	-72.0
AVERAGE	1.6	-7.9	-4.3	0.2	-2.4	-6.0	-11.9	-3.3	-5.2	-1.1	-4.4	-17.9
MEDIAN	1.8	-1.7	-2.0	-0.5	-0.2	1.3	-6.6	-1.7	-2.1	0.3	2.3	0.8
MINIMUM	-18.5	-74.6	-36.0	-11.6	-18.4	-97.1	-72.7	-12.8	-28.6	-36.4	-55.8	-131.8
MAXIMUM	11.1	9.2	6.1	10.5	5.4	20.6	3.4	4.8	-0.2	27.9	4.5	18.5

Table 29. Platte River at Overton, validation period.

Computed Values (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1975	77.4	80.8	69.0	87.7	49.0	125.6	42.0	49.8	44.0	61.7	75.7	100.5
1976	104.7	115.0	100.9	79.8	57.5	11.1	33.4	26.9	44.0	66.1	71.8	77.7
1977	67.2	72.1	79.4	108.2	108.8	37.3	37.4	47.1	31.8	69.8	75.4	79.2
1978	58.5	63.0	87.3	70.8	66.5	22.5	35.1	43.1	28.7	61.2	63.5	53.0
1979	52.7	49.8	93.3	51.1	66.5	210.9	118.4	52.9	36.9	82.9	97.4	135.5
1980	133.0	168.9	181.6	269.2	601.8	334.5	36.7	26.6	35.0	72.0	77.3	77.6
1981	85.1	71.5	69.2	35.7	50.5	42.4	61.2	28.8	46.8	67.6	62.4	65.4
1982	56.2	69.1	76.8	51.5	61.8	48.8	29.1	15.5	37.9	75.1	95.8	96.7
1983	154.6	154.7	157.4	235.0	465.6	1065.8	679.9	419.3	477.0	231.3	151.1	118.8
1984	288.4	326.2	397.7	600.9	772.5	565.2	95.4	56.2	233.5	283.1	356.1	291.1
AVERAGE	107.8	117.1	131.3	159.0	230.1	246.4	116.9	76.6	101.6	107.1	112.7	109.6
MEDIAN	81.3	76.5	90.3	83.8	66.5	87.2	39.7	45.1	41.0	70.9	76.5	88.0
MINIMUM	52.7	49.8	69.0	35.7	49.0	11.1	29.1	15.5	28.7	61.2	62.4	53.0
MAXIMUM	288.4	326.2	397.7	600.9	772.5	1065.8	679.9	419.3	477.0	283.1	356.1	291.1

Historic Values (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1975	85.1	81.0	92.0	90.3	52.8	108.2	29.7	33.7	64.2	69.3	82.7	93.2
1976	107.0	105.3	102.6	104.0	57.5	23.2	18.4	12.3	46.8	56.4	62.5	80.6
1977	70.8	73.0	91.8	130.6	93.4	41.0	19.5	24.6	54.9	63.1	65.2	74.0
1978	63.6	58.8	100.4	85.5	47.4	21.7	22.3	23.9	34.2	60.0	64.6	70.0
1979	70.0	61.3	110.0	66.7	44.7	175.9	88.7	27.0	36.0	37.9	44.2	122.4
1980	140.9	157.9	185.9	291.9	602.3	320.2	15.3	22.7	51.6	49.9	55.2	71.6
1981	84.6	78.8	79.1	41.6	40.1	19.4	59.4	38.0	46.9	57.6	55.3	78.4
1982	61.0	85.5	98.1	52.0	36.7	23.4	15.4	19.1	51.9	51.7	102.6	117.9
1983	161.3	167.7	184.0	233.2	491.0	1129.0	699.9	407.9	478.4	161.4	88.2	198.4
1984	263.2	387.1	443.1	598.2	774.2	564.9	105.2	43.9	244.7	259.5	343.1	308.2
	0	0	0	0	0	0	0	0	0	0	0	0
AVERAGE	110.8	125.6	148.7	169.4	224.0	242.7	107.4	65.3	111.0	86.7	96.4	121.5
MEDIAN	84.9	83.3	101.5	97.2	55.2	74.6	26.0	25.8	51.8	58.8	64.9	86.9
MINIMUM	61.0	58.8	79.1	41.6	36.7	19.4	15.3	12.3	34.2	37.9	44.2	70.0
MAXIMUM	263.2	387.1	443.1	598.2	774.2	1129.0	699.9	407.9	478.4	259.5	343.1	308.2

Differences (Validation - Historic) (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1975	-7.7	-0.2	-23.0	-2.6	-3.8	17.4	12.3	16.1	-20.2	-7.6	-7.0	7.3
1976	-2.3	9.7	-1.7	-24.2	0.0	-12.1	15.0	14.6	-2.8	9.7	9.3	-2.9
1977	-3.6	-0.9	-12.4	-22.4	15.4	-3.7	17.9	22.5	-23.1	6.7	10.2	5.2
1978	-5.1	4.2	-13.1	-14.7	19.1	0.8	12.8	19.2	-5.5	1.2	-1.1	-17.0
1979	-17.3	-11.5	-16.7	-15.6	21.8	35.0	29.7	25.9	0.9	45.0	53.2	13.1
1980	-7.9	11.0	-4.3	-22.7	-0.5	14.3	21.4	3.9	-16.6	22.1	22.1	6.0
1981	0.5	-7.3	-9.9	-5.9	10.4	23.0	1.8	-9.2	-0.1	10.0	7.1	-13.0
1982	-4.8	-16.4	-21.3	-0.5	25.1	25.4	13.7	-3.6	-14.0	23.4	-6.8	-21.2
1983	-6.7	-13.0	-26.6	1.8	-25.4	-63.2	-20.0	11.4	-1.4	69.9	62.9	-79.6
1984	25.2	-60.9	-45.4	2.7	-1.7	0.3	-9.8	12.3	-11.2	23.6	13.0	-17.1
AVERAGE	-3.0	-8.5	-17.4	-10.4	6.0	3.7	9.5	11.3	-9.4	20.4	16.3	-11.9
MEDIAN	-5.0	-4.1	-14.9	-10.3	5.2	7.6	13.3	13.5	-8.4	16.1	9.8	-8.0
MINIMUM	-17.3	-60.9	-45.4	-24.2	-25.4	-63.2	-20.0	-9.2	-23.1	-7.6	-7.0	-79.6
MAXIMUM	25.2	11.0	-1.7	2.7	25.1	35.0	29.7	25.9	0.9	69.9	62.9	13.1

Table 30. Platte River at Grand Island, validation period.

Computed Values (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1975	66.7	72.9	80.0	89.4	55.5	126.3	50.5	38.3	33.2	37.6	52.6	104.0
1976	77.4	119.5	105.1	75.7	66.5	7.4	24.3	15.9	15.8	55.8	55.6	57.7
1977	52.1	71.0	81.1	115.9	127.5	54.2	28.5	39.0	24.2	61.4	63.9	64.5
1978	41.8	60.8	206.2	92.3	75.7	20.3	19.2	29.4	8.2	38.1	47.3	42.8
1979	44.8	38.3	148.1	87.5	96.3	157.8	130.4	51.1	21.3	69.9	95.2	136.6
1980	96.1	175.2	220.7	265.4	531.4	362.8	44.8	24.0	12.2	57.9	61.4	72.8
1981	71.8	57.8	72.5	42.7	55.5	39.6	38.9	53.3	25.8	58.3	68.2	69.2
1982	64.6	87.0	95.6	58.4	87.5	65.5	35.2	20.6	22.9	83.8	77.0	97.2
1983	132.8	155.1	164.2	214.6	464.0	947.8	644.7	372.0	389.9	235.9	154.8	129.4
1984	329.9	345.5	387.6	590.7	747.7	541.7	160.3	42.6	186.5	242.8	324.8	266.2
AVERAGE	97.8	118.3	156.1	163.3	230.8	232.3	117.7	68.6	74.0	94.2	100.1	104.0
MEDIAN	69.3	80.0	126.6	90.9	91.9	95.9	41.9	38.7	23.6	59.9	66.1	85.0
MINIMUM	41.8	38.3	72.5	42.7	55.5	7.4	19.2	15.9	8.2	37.6	47.3	42.8
MAXIMUM	329.9	345.5	387.6	590.7	747.7	947.8	644.7	372.0	389.9	242.8	324.8	266.2

Historic Values (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1975	74.4	73.1	102.8	91.4	59.2	108.5	38.2	22.1	53.4	44.2	59.0	96.7
1976	79.7	109.8	106.7	98.7	66.4	19.5	9.3	1.3	18.5	45.7	46.4	60.6
1977	55.7	71.9	92.6	137.5	111.7	57.7	10.6	16.5	47.2	54.9	54.3	59.3
1978	46.9	56.6	219.9	107.1	56.6	19.4	6.4	10.1	13.6	36.4	47.8	59.8
1979	59.8	49.8	165.4	102.7	74.4	122.3	100.8	25.2	20.3	25.4	42.8	123.5
1980	104.0	164.2	225.6	289.2	532.0	349.0	23.4	20.0	28.7	36.3	39.7	66.8
1981	71.3	65.1	82.7	48.6	45.1	16.6	37.1	62.5	25.9	49.0	61.9	82.2
1982	69.4	103.4	117.5	58.9	62.4	40.1	21.5	24.2	36.9	62.0	84.6	118.4
1983	139.5	168.1	191.4	213.4	489.4	1011.0	664.7	360.6	391.3	166.2	92.6	209.0
1984	304.7	406.4	433.6	589.5	749.4	541.4	170.1	30.3	197.7	220.8	312.4	283.3
AVERAGE	100.5	126.8	173.8	173.7	224.7	228.6	108.2	57.3	83.4	74.1	84.2	116.0
MEDIAN	72.9	88.3	141.5	104.9	70.4	83.1	30.3	23.2	32.8	47.4	56.7	89.5
MINIMUM	46.9	49.8	82.7	48.6	45.1	16.6	6.4	1.3	13.6	25.4	39.7	59.3
MAXIMUM	304.7	406.4	433.6	589.5	749.4	1011.0	664.7	360.6	391.3	220.8	312.4	283.3

Differences (Validation - Historic) (KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1975	-7.7	-0.2	-22.8	-2.0	-3.7	17.8	12.3	16.2	-20.2	-6.6	-6.4	7.3
1976	-2.3	9.7	-1.6	-23.0	0.1	-12.1	15.0	14.6	-2.7	10.1	9.2	-2.9
1977	-3.6	-0.9	-11.5	-21.6	15.8	-3.5	17.9	22.5	-23.0	6.5	9.6	5.2
1978	-5.1	4.2	-13.7	-14.8	19.1	0.9	12.8	19.3	-5.4	1.7	-0.5	-17.0
1979	-15.0	-11.5	-17.3	-15.2	21.9	35.5	29.6	25.9	1.0	44.5	52.4	13.1
1980	-7.9	11.0	-4.9	-23.8	-0.6	13.8	21.4	4.0	-16.5	21.6	21.7	6.0
1981	0.5	-7.3	-10.2	-5.9	10.4	23.0	1.8	-9.2	-0.1	9.3	6.3	-13.0
1982	-4.8	-16.4	-21.9	-0.5	25.1	25.4	13.7	-3.6	-14.0	21.8	-7.6	-21.2
1983	-6.7	-13.0	-27.2	1.2	-25.4	-63.2	-20.0	11.4	-1.4	69.7	62.2	-79.6
1984	25.2	-60.9	-46.0	1.2	-1.7	0.3	-9.8	12.3	-11.2	22.0	12.4	-17.1
AVERAGE	-2.7	-8.5	-17.7	-10.4	6.1	3.8	9.5	11.3	-9.4	20.1	15.9	-11.9
MEDIAN	-5.0	-4.1	-15.5	-10.4	5.3	7.4	13.3	13.5	-8.3	15.9	9.4	-8.0
MINIMUM	-15.0	-60.9	-46.0	-23.8	-25.4	-63.2	-20.0	-9.2	-23.0	-6.6	-7.6	-79.6
MAXIMUM	25.2	11.0	-1.6	1.2	25.1	35.5	29.6	25.9	1.0	69.7	62.2	13.1

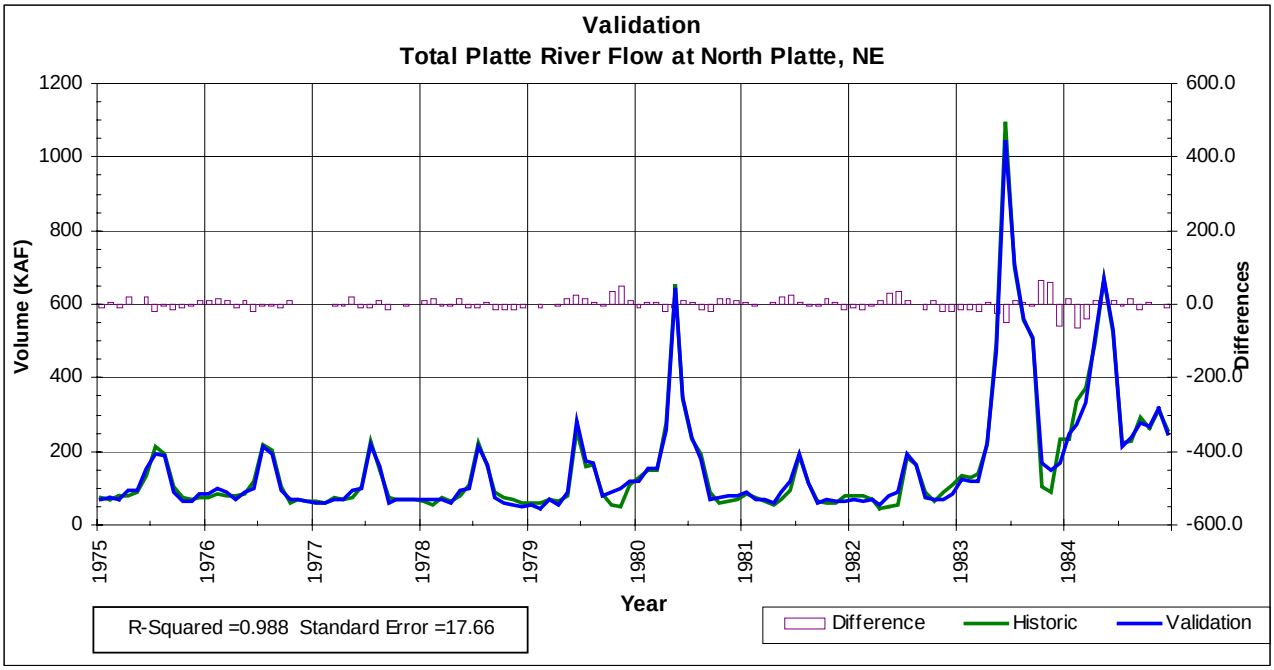

Figure 26. Flow below the confluence of the North Platte and South Platte Rivers at North Platte, validation period.

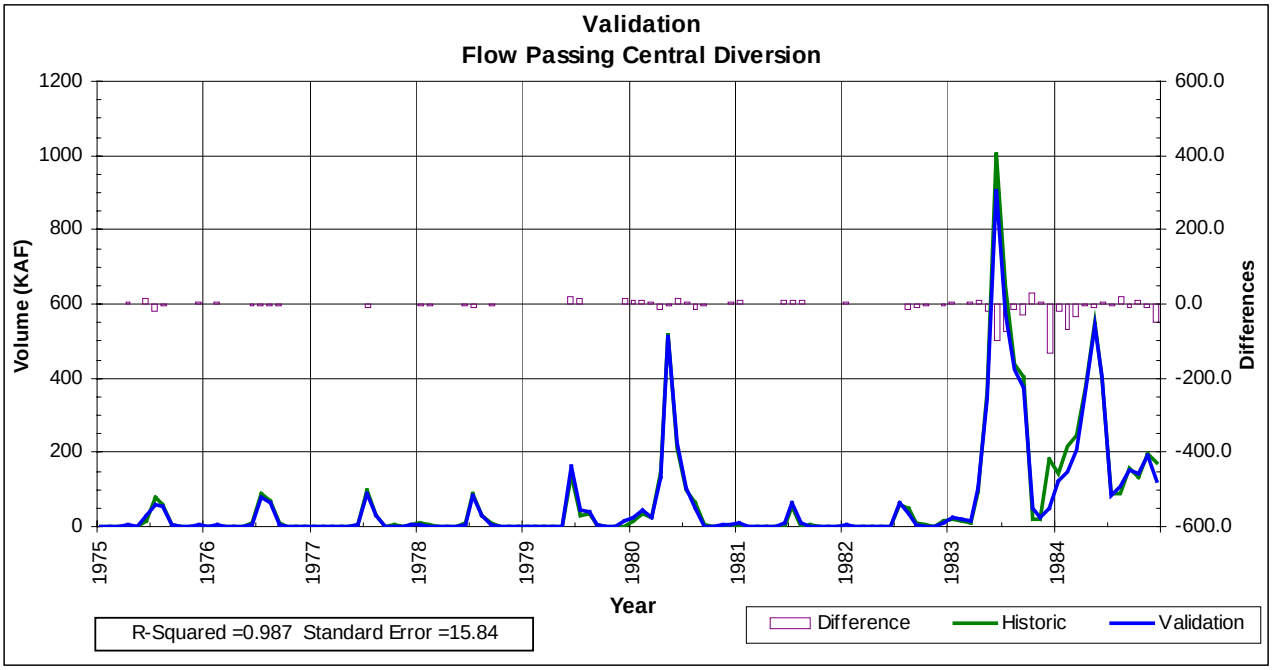

Figure 27. Flow passing the Tri-county (Central) diversion, validation period.

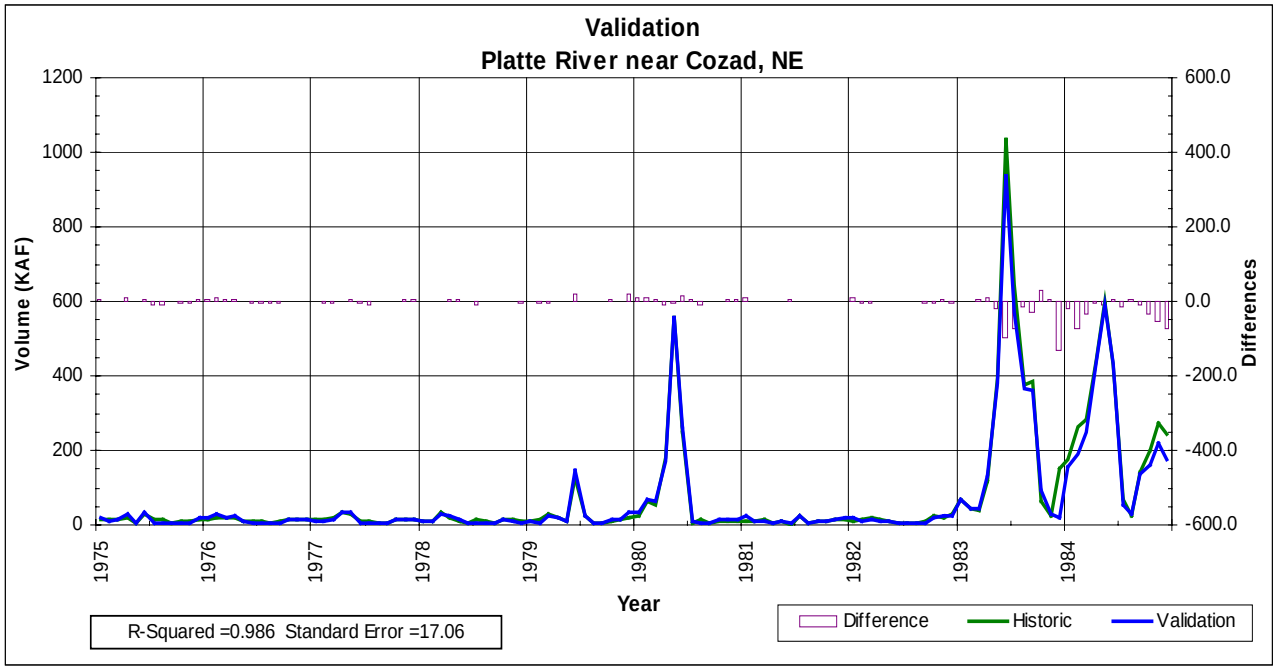

Figure 28. Platte River at Cozad, validation period.

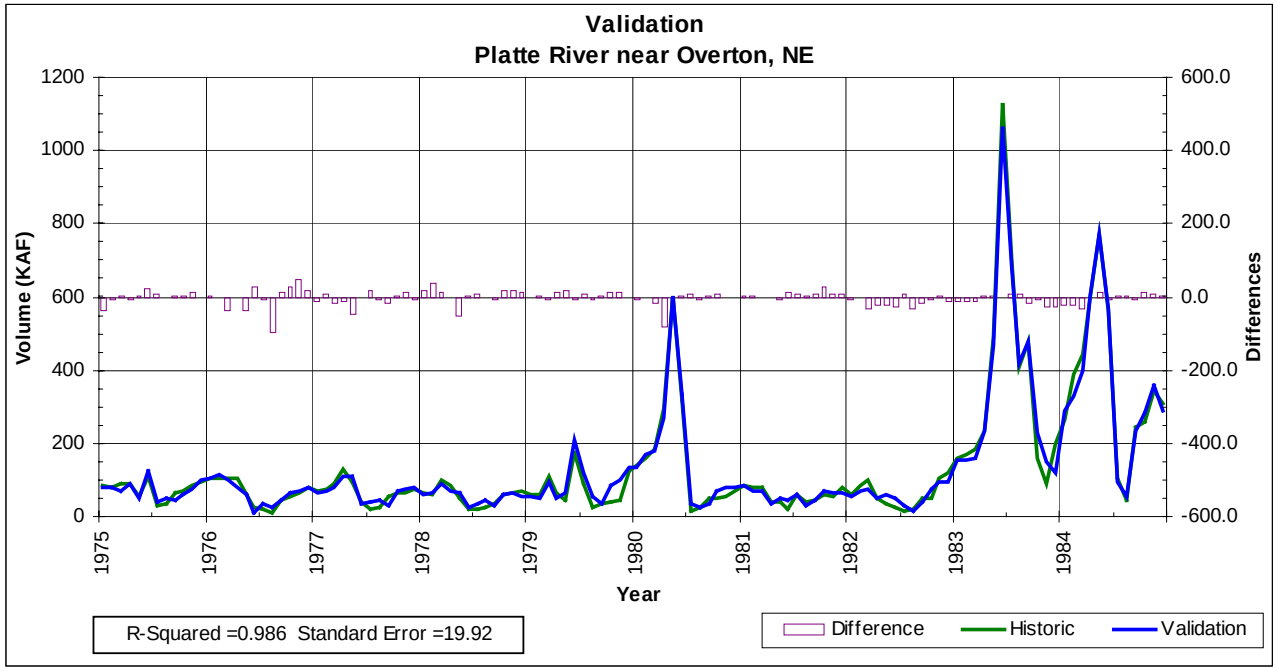

Figure 29. Platte River at Overton, validation period.

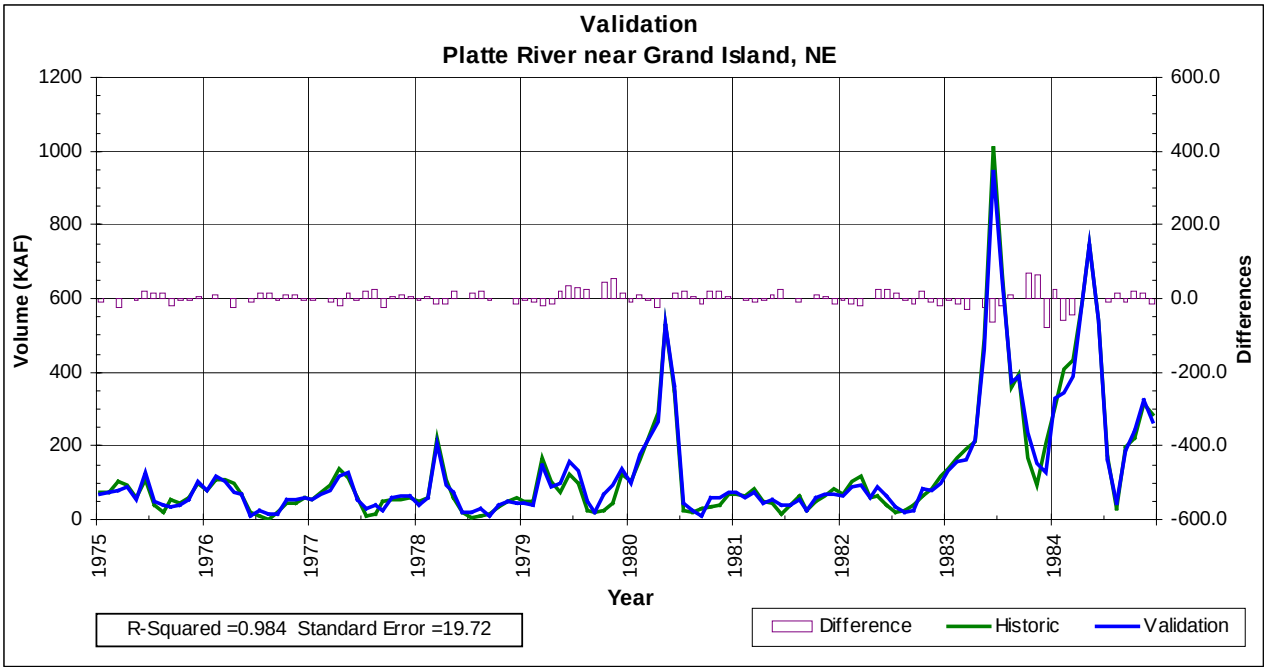

Figure 30. Platte River at Grand Island, validation period.

Table 31. Correlations , standard errors, and differences between modeled and historic values by location for the calibration and validation periods.

Calibration Runs 1985-1994

Location	R**2	Standard Error (KAF)	Average Difference (KAF)	Average Difference (%)
Lake McConaughy End-of-Month Content	0.967	39.598	39.1	2.9%
Lake McConaughy Outflow	0.916	18.110	0.0	0.0%
North Platte River at Keystone, NE	0.898	12.359	-1.2	-5.0%
North Platte River at North Platte, NE	0.850	11.977	-1.2	-3.1%
Keystone Diversion	0.741	16.066	1.2	2.3%
Korty Diversion	0.731	7.534	-0.4	-2.1%
Central Diversion	0.739	13.478	-1.8	-2.0%
Sutherland Hydro Return	0.713	14.772	0.7	1.3%
Jeffrey Return	0.569	4.376	-1.3	-30.6%
Johnson #2 Hydro Return	0.702	14.290	-4.2	-8.3%
Total Flow at Confluence, North Platte, NE	0.902	18.578	-0.1	-0.1%
Flow Passing Central Diversion	0.838	14.783	0.6	2.5%
Platte River near Cozad, NE	0.859	13.690	0.5	1.6%
Platte River near Overton, NE	0.891	19.462	-3.7	-4.1%
Platte River near Grand Island, NE	0.902	19.456	-4.0	-4.1%

Validation Runs 1975-1984

Location	R**2	Standard Error (KAF)	Average Difference (KAF)	Average Difference (%)
Lake McConaughy End-of-Month Content	0.885	51.796	-12.0	-0.8%
Lake McConaughy Outflow	0.959	19.537	0.0	0.0%
North Platte River at Keystone, NE	0.955	15.068	-7.8	-17.1%
North Platte River at North Platte, NE	0.952	14.341	-7.8	-13.0%
Keystone Diversion	0.544	21.76	7.8	15.1%
Korty Diversion	0.684	8.097	-2.9	-17.3%
Central Diversion	0.625	16.643	1.9	2.0%
Sutherland Hydro Return	0.583	18.897	4.6	8.4%
Jeffrey Return	0.227	4.441	-2.1	-51.3%
Johnson #2 Hydro Return	0.493	17.472	5.8	13.4%
Total Flow at Confluence, North Platte, NE	0.988	17.662	-0.3	-0.2%
Flow Passing Central Diversion	0.987	15.84	-3.8	-5.6%
Platte River near Cozad, NE	0.986	17.063	-5.2	-7.0%
Platte River near Overton, NE	0.986	19.921	0.5	0.5%
Platte River near Grand Island, NE	0.984	19.717	0.6	0.5%

3.3 Comparison with "Present Conditions" Analysis. The analyses presented throughout

Section 3.2 were performed using historic inflows at Julesburg and Lewellen (**Section 2**). The OPSTUDY analysis of the Proposed Platte River Recovery Program will not use historic inflows. Instead, the analysis will use a single, longer period of record (1947-1994) adjusted for Present (1997) Conditions. For these analyses, the model will be run using estimates of what conditions would have been if the level of development and management of the greater Platte River system ***as it existed in 1997*** had been in place for this longer period ("present conditions inflows"). Model runs for both the calibration and validation periods were performed to evaluate the performance of the model for these time periods based on present conditions inflows, as compared to its performance based on historic inflows. These comparisons are shown in **Table 32**.

Table 32. Comparison of correlations and standard errors for model runs based on historic versus Present Condition inflows.

Calibration Runs 1985-1994

Location	R-Squared for Historic Data	R-Squared for Present Conditions	Standard Error for Historic Data	Standard Error for Present Conditions
Lake McConaughy End-of-Month Content	0.967	0.952	39.598	48.908
Lake McConaughy Outflow	0.916	0.732	18.110	34.379
North Platte River at Keystone, NE	0.898	0.606	12.359	26.602
North Platte River at North Platte, NE	0.850	0.434	11.977	25.302
Keystone Diversion	0.741	0.664	16.066	18.138
Korty Diversion	0.731	0.614	7.534	8.542
Central Diversion	0.739	0.645	13.478	15.876
Sutherland Hydro Return	0.713	0.644	14.772	16.588
Jeffrey Return	0.569	0.574	4.376	4.316
Johnson #2 Hydro Return	0.702	0.621	14.290	15.398
Total Flow at Confluence, North Platte, NE	0.902	0.693	18.578	36.367
Flow Passing Central Diversion	0.838	0.535	14.783	30.962
Platte River near Cozad, NE	0.859	0.520	13.690	30.165
Platte River near Overton, NE	0.891	0.679	19.462	35.131
Platte River near Grand Island, NE	0.902	0.713	19.456	35.448

Validation Runs 1975-1984

Location	R-Squared for Historic Data	R-Squared for Present Conditions	Standard Error for Historic Data	Standard Error for Present Conditions
Lake McConaughy End-of-Month Content	0.885	0.876	51.796	50.754
Lake McConaughy Outflow	0.959	0.801	19.537	48.374
North Platte River at Keystone, NE	0.955	0.710	15.068	45.722
North Platte River at North Platte, NE	0.952	0.683	14.341	45.586
Keystone Diversion	0.544	0.449	21.760	23.628
Korty Diversion	0.684	0.621	8.097	10.273
Central Diversion	0.625	0.581	16.643	17.018
Sutherland Hydro Return	0.583	0.519	18.897	19.838
Jeffrey Return	0.227	0.230	4.441	4.269
Johnson #2 Hydro Return	0.493	0.459	17.472	18.064
Total Flow at Confluence, North Platte, NE	0.988	0.907	17.662	53.314
Flow Passing Central Diversion	0.987	0.906	15.840	49.263
Platte River near Cozad, NE	0.986	0.906	17.063	50.694
Platte River near Overton, NE	0.986	0.919	19.921	52.746
Platte River near Grand Island, NE	0.984	0.910	19.717	52.811

3.4 Conclusion. The results of the calibration and validation analyses indicate that, for the usual operating conditions for Kingsley Dam and Lake McConaughy, the Platte River OPSTUDY model satisfactorily simulates downstream flows in the North Platte River, the Platte River main stem, and the two diversions evaluated in the analysis. Therefore, the model can be used with confidence in the evaluation of alternative operation scenarios to assess their effects on flows and downstream river habitat conditions.