TABLES

TABLE 1.1

CONVERSION FACTORS

Multiply	By	To Obtain
Millimeters (mm)	0.0394	Inches (in)
Meters (m)	3.281	Feet (ft)
Kilometers (km)	0.621	Miles (mi)
Square meters (m^2)	10.765	Square feet (ft^2)
	0.00025	Acres
Cubic meters (m^3)	35.320	Cubic feet (ft^3)
	0.00081	Acre-feet (AF)
Cubic meters per second (cms)	35.320	Cubic feet per second (cfs)

TABLE 1.2

ACRONYMS

abv	Above
af/yr, AF/yr	acre-feet per year
AP	Airport
ASCE	Amercian Society of Civil Engineers
amsl	above mean sea level
blw	Below
cfs	cubic feet per second
cms	Cubic meters per second
CID	Consolidated Irrigation District
CU	Consumptive Use
DEM	Digital Elevation Model
DEQ	Idaho Department of Environmental Quality
DHI	Danish Hydrologic Institute
DNR	Washington Department of Natural Resources
DOE	Washington Department of Ecology
DP	Deer Park
e.g.	for example
EES	Economic and Engineering Services, Inc.
Ecology	Washington Department of Ecology
EMCON	Company name
EPA	United States Environmental Protection Agency
ESA	Federal Endangered Species Act
ESHB	Engrossed Substitute House Bill
ET	Evapotranspiration
ET_{rc}	evapotranspiration for refrence crop
FAO	Food and Agriculture Organization
FERC	Federal Energy Regulatory Commission
Ft	Feet
GIS	Geographic Information Systems
GMA	Growth Management Act
gpm/ft	gallons per minute per foot of drawdown (specific capacity)
ID	Idaho
IDEQ	Idaho Department of Environmental Quality

i.e.	That is
K	Hydraulic Conductivity
Kh	Horizontal Hydraulic Conductivity
Kv	Vertical Hydraulic Conductivity
LSR	Little Spokane River
LSRA	Little Spokane River Aquifer Area
LULC	Land Use and Land Cover
m	Meters
m/s	meters per second
mi^2	square miles
MIKE	Group of Software Products developed by DHI Water and Environment. MIKE refers to the suite of software modeling packages selected for use in this Watershed Inventory Assessment
mL	Milliliters
mm/h	millimeters per hour
MSL	Mean Sea Level
MSR	Middle Spokane River
mw	Megawatt
n	Porosity
NAPP	National Aerial Photography Program
NE	Northeast
NAVD 88	North American Vertical Datum of 1988
NAD 83	North American Datum 1983 (horizontal datum)
NGVD	National Geodetic Vertical Datum
NOAA	National Oceanic and Atmospheric Administration
nr	Near
NRCS	National Resource Conservation Service (formerly the SCS)
NW	Northwest
PET	Potential Evapotranspiration
POCD	Pend Oreille Conservation District
PRISM	Parameter-elevation Regressions on Independent Slopes Model
PU	Planning Unit
Qal	Recent Quaternary Alluvial Deposits
Qfs, Qfg, Qfcg	Quaternary Lower Sand and Gravel Unit, Flood Sand and Gravel Units
Qgl	Quaternary Glacial Deposits
Ql	Quaternary Loess
Qmw	Quaternary Mass Wasting Deposits

Qp/Qla	Quaternary Recent Deposits of Lacustrine
RCW	Revised Code of Washington
SAJB	Spokane Aquifer Joint Board
SCC	Spokane Community College
SCCD	Spokane County Conservation District
SCS	Soil Conservation Service (now the NRCS)
SNOTEL	SNOwpack TELemetry, snowpack and related climatic data collected in the Western United States by the Natural Resources Conservation Service (NRCS) through an automated system.
SR	Spokane River
S_s	Specific Storage
SSA	Sole Source Aquifer
SSURGO	Soil Survey Geographic
stn	Station
SVA	Spokane Valley Aquifer
SVRP, SVRPA	Spokane Valley – Rathdrum Prairie Aquifer
SW/GW	Surface Water-Groundwater
SWE	Snow Water Equivalent
S_y	Specific Yield
T	Transmissivity
Tl	Lacustrine silts and clays, Latah Formation
TRS	Township, Range, Section
Tw, Tgr	Tertiary Columbia River Basalts
USDA	United States Department of Agriculture
USGS	United States Geological Survey
UTM	Universal Transvere Mercator
v	Linear Velocity
w/o	Without
WA, Wa, Wash.	Washington
WAC	Washington Administrative Code
WAU	Watershed Administrative Unit
WaDOE	Washington Department of Ecology
WSDOT	Washington State Department of Transportation
WMA	Watershed Management Act
WQMP	Water Quality Management Program
WRIA	Water Resource Inventory Area
WRIA 54	Lower Spokane River Watershed

WRIA 55	Little Spokane Watershed
WRIA 56	Hangman Creek Watershed
WRIA 57	Middle Spokane River Watershed
WRIA 62	Pend Oreille River Watershed

TABLE 2.1

SUMMARY OF SPOKANE VALLEY RATHDRUM PRAIRIE
GROUNDWATER FLOW MODELING

Author	Date	Model Type
Pluhowski and Thomas, USGS.	1968	Water balance spreadsheet
Drost and Seitz, USGS.	1978	Water balance spreadsheet
Bolke and Vacarro, USGS	1981	2D, finite element groundwater flow model
Painter, IDEQ	1991	Water balance spreadsheet
Buchanan and Olness, Eastern Washington University	1994	3D, finite difference, ModFlow groundwater flow model
CH2M Hill (for City of Spokane wellhead protection)	1998	3D, finite element, MICRO FEM groundwater flow model
Buchanan (for the Spokane Valley Rathdrum Prairie Atlas [IDEQ, 2000])	1999	3D, finite difference, ModFlow groundwater flow model
CH2M Hill (for SAJB wellhead protection)	2000	3D, finite element, MICRO FEM groundwater flow model

TABLE 4.1

CONTINUOUS DAILY METEOROLOGICAL STATIONS

Station ID	Station Name	Source	Period of Record	Precipitation	Temperature
101956 *	Coeur D'Alene 1 E	NCDC	10/01/1960-12/31/2000	Y	Y
450031	Quartz Peak	SNOTEL	10/01/1985-09/30/1999	Y	Y
455844	Newport	NCDC	01/01/1960-08/09/2000	Y	Y
457938	Spokane International AP	ASOS-NWS	01/01/1960-08/09/2000	Y	Y
727856	Spokane Felts Field	ASOS-FAA	12/31/1972-12/31/2000	N	Y

* missing 1994 data

TABLE 4.2

STRICKLER'S ROUGHNESS COEFFICIENTS FOR OVERLAND FLOW

Cover type	Manning's #	Strickler's Value ($m^{1/3}/s$)
Smooth surfaces (asphalt, gravel, soil)	0.011	90.9
Fallow fields with loose soil	0.050	20.0
Cultivated soil w/crop residue (slope < 0.2)	00.60	16.7
Cultivated soil w/crop residue (slope < 0.2)	0.170	5.9
Short prairie grass and lawns	0.150	6.7
Dense grass	0.240	4.2
Bermuda grass	0.410	2.4
Range, natural	0.13	7.7
Woods or forest, poor cover	0.4	2.5
Woods or forest, good cover	0.8	1.3

Source: Spokane County Guidelines for Stormwater Management (October, 2000; Public Review Draft)

Note: Strickler's Roughness (equivalent to Mannings M) = $^1/n$, where n = Manning's # (DHI, 2001)

TABLE 5.1

MIKE SHE MODEL CODE SUMMARY

Hydrologic Component	Model Code Description
Overland Flow	2-Dimensional kinematic wave approximation. Uses DEM data directly.
Unsaturated Zone	1-Dimensional Richards or simplified Richards equation solutions with time varying water table.
Evapotranspiration/Plant Growth	Based on the empirical equations of the Kristensen and Jensen method where actual ET is based on soils moisture.
Snow Melt	Degree-Day Snowmelt approach.
Saturated Zone	3-Dimensional Boussinesq equation solved using implicit finite difference techniques.

TABLE 6.1

MIKE 11 HD MODELED RIVER SUMMARY

Name	**Total River Length** (m)	**Total River Length** (miles)	**Number Measured Cross Sections** (1)	**Number Created Cross Sections** (2)
Spokane River	107,488	66.8	48	14
Little Spokane River	79,795	49.6	10	16
Dragoon Creek	44,052	27.4	2	8
Deadman Creek	34,094	21.2	2	8
West Branch Little Spokane River	46,049	28.6	1	21
Dartford Creek	8,044	5.0	0	7
Little Deep Creek	26,501	16.5	0	9
Upriver Dam Channel	500	0.3	0	4
Upper Falls Controlworks Channel	765	0.5	0	4

(1) Measured cross-sections provided by Spokane County, Spokane County Conservation District, USGS and Ecology

(2) Created cross-sections based on trapezoid, matched to DEM

TABLE 6.2

LEAKAGE COEFFICIENTS USED IN PREVIOUS STUDIES

Upstream (Chainage in meters)	**Downstream**	**Leakage Coefficient** (sec^{-1})	
		Bolke & Vaccaro (1981)	**CH2M Hill** (1998)
Spokane River			
State Line (25,069)	Harvard Rd.	6.20E-07	5.0E-07
Harvard Rd. (29,136)	Barker Rd.		
Barker Rd. (34,666)	Sullivan Rd.		2.0E-06
Sullivan Rd. (38,947)	Kaiser	1.00E-04	1.0E-06
Kaiser	Trent Ave Brg.		5.0E-04
Trent Ave Brg. (42,693)	Plantes Ferry	6.20E-07	5.0E-06
Plantes Ferry (44,488)	Argonne		5.0E-07
Argonne (46,618)	Upriver Dam		5.0E-08
Upriver Dam (50,800)	Greene St.	2.00E-04	1.0E-03
Greene St (53,990)	Mission St Brg.	6.20E-07	5.0E-06
Mission St. Brg. (56,138)	Sirti		5.0E-06
Sirti	Monroe St.		5.0E-06
Monroe St. (60,315)	Cochrane St.	1.00E-05	5.0E-06
Cochrane St. (62,235)	Meenach Brg.	4.00E-06	5.0E-06
Meenach Brg. (67,085)	Albi Park	2.00E-06	1.0E-05
Albi Park (73,400)	7 Mile	4.00E-06	1.0E-05
7 Mile (79,890)	9 Mile Falls	1.00E-07	1.0E-05
Little Spokane River			
At Dartford Gage (62,137)	Mid-way between Dartford and nr Dartford Gages	1.00E-06	
Mid-way	Near Dartford USGS Gage	2.00E-06	
Near Dartford (67,679)	Spokane River	3.00E-06	

Note: Leakage Coefficient defined as the vertical hydraulic conductivity of the streambed divided by the streambed thickness

TABLE 6.3

LEAKAGE COEFFICIENTS FOR THE MIKE SHE MODEL

River Name	Upstream Chainage (m)	Downstream Chainage (m)	Leakage Coefficient (s^{-1})
West Branch LSR	3,692	6,900	1.00E-04
	6,900	35,900	1.00E-10
	35,900	46,049	1.00E-02
Spokane River	18,429	25,069	1.00E-06
	25,069	30,746	1.00E-05
	30,746	34,667	1.00E-07
	34,667	38,947	2.00E-06
	38,947	41,361	1.00E-03
	41,361	42,970	5.00E-05
	42,970	43,774	5.00E-06
	43,774	51,184	5.00E-07
	51,184	52,341	9.00E-04
	52,341	53,989	5.00E-05
	53,989	55,000	5.00E-07
	55,000	56,167	5.00E-06
	56,167	58,900	5.00E-05
	58,900	60,600	1.00E-10
	60,600	62,235	1.00E-06
	62,235	67,085	5.00E-05
	67,085	107,488	1.00E-05
Little Spokane River	0	6,500	1.00E-03
	6,500	19,102	1.00E-10
	19,102	24,000	1.00E-03
	24,000	27,000	1.00E-10
	27,000	30,800	1.00E-03
	30,800	35,000	1.00E-10
	35,000	36,423	1.00E-03
	36,423	37,348	1.00E-10
	37,348	79,667	1.00E-03
	79,667	79,795	1.00E-10
Dragoon Creek	0	14,769	1.00E-10
	14,769	44,052	1.00E-04
Upriver Dam Channel	0	500	1.00E-07
Dartford Creek	0	5,000	1.00E-05
	5,000	8,044	1.00E-06
Little Deep Creek	0	26,501	1.00E-07
Deadman Creek	2,512	16,094	1.00E-10
	16,094	34,094	1.00E-07

TABLE 6.4

SUMMARY OF STRUCTURES ON THE SPOKANE RIVER [1]

Hydroelectric Project Name	**Normal Pool Elevation** (m NAVD 88)	**Intake or Top-of-Dam Elevation** (m NAVD 88)	**Tail Water Surface Elevation**	**River Mile** (km)	**Max Power** (mw)	**Minimum Flow** (cms)	**Max Flow Through Turbines** (cms)
City of Spokane Upriver Dam (two structures)	582.1		571.50	129.1			212
Avista Upper Falls Control Works (two structures)	569.2	568.4	550.68	128.6	10		71
Monroe Street Dam	551.1	550.5	528.53	119.9	14.8	6	82
Nine Mile Dam	489.7	488.7 ± 6.7	469.85	119.1	26.4		184
Long Lake Dam	468.2						

[1] Data Source: Spokane County, City of Spokane and Avista Utilities

TABLE 6.5

NLCD LAND COVER CLASSIFICATIONS

NLCD Land Cover Class Definition	Stricklers Value ($m^{1/3}/s$) (1,2)	Total Acreage
Open Water	0	10,726
Perennial Ice/Snow	0	-
Low Intensity Residential (30-80% constructed, 20-70% vegetation)	31.8	44,054
High Intensity Residential (80-100% constructed, <20% vegetated)	48.2	486
Commercial Industrial/Transportation	54.6	17,392
Bare Rock/Sand/Clay	48	741
Quarries/Strip Mines/Gravel Pits	42	-
Transitional	15	37,011
Deciduous Forest	1.2	1,375
Evergreen Forest	1.2	323,176
Mixed Forest	1.2	21,082
Shrub land	4.8	64,711
Orchards/Vineyards/Other	3.6	5,867
Grasslands/Herbaceous	4.8	41,877
Pasture/Hay	2.4	79,597
Row Crops	10.2	2,765
Small Grains	10.2	29,216
Fallow	12	41,015
Urban/Recreational Grasses	4.2	1,849
Woody Wetlands	1.8	828
Emergent Herbaceous Wetlands	3	8

Note: (1) Strickler's Roughness (equivalent to Mannings M) = ^{1}/n, where n = Mannings n (DHI, 2001)
(2) Final roughness values used were 60% of reported Strickler's Roughness values.

TABLE 6.6

HYDROLOGIC SOIL GROUP CRITERIA

Hydrologic Soil Group	Criteria [a]
A	Saturated hydraulic conductivity is *very high* or in the upper half of high and internal free water occurrence is *very deep.*
B	Saturated hydraulic conductivity is in the lower half of *high* or in the upper half of *moderately high* and free water occurrence is *deep* or *very deep*.
C	Saturated hydraulic conductivity is in the lower half of *moderately high* or in the upper half of *moderately* low and internal free water occurrence is deeper than *shallow*.
D	Saturated hydraulic conductivity is below the upper half of *moderately low*, and/or internal free water occurrence is *shallow* or *very shallow* and *transitory* through *permanent*.

[a] The criteria are guidelines only. They are based on the assumption that the minimum saturated hydraulic conductivity occurs within the uppermost 0.5 m. If the minimum occurs between 0.5 and 1 m, then saturated hydraulic conductivity for the purpose of placement is increased one class. If the minimum occurs below 1 m, then the value for the soil is based on values above 1 m using the rules as previously given.

Source: Soil Survey Manual, 1993.

TABLE 6.7

VEGETATION GROUPING FOR EVAPOTRANSPIRATION SIMULATIONS

Vegetation Classes from NLCD and Spokane County Data	NLCD ID	Modeling Group Description
Deciduous Forest	41	Deciduous Forest
Evergreen Forest	42	Evergreen Forest
Mixed Forest	43	Mixed Forest
Shrubland	51	Shrubland
Orchards/Vineyards/Other	61	Plantations
Grasslands/Herbaceous	71	Grasslands/Herbaceous
Pasture/Hay	81	Pasture/Hay/Turf
Row Crops	82	Cropland
Small Grains	83	Cropland
Fallow	84	Cropland
Urban/Recreational Grasses	85	Pasture/Hay/Turf
Wetlands, Woody	91	Wetlands
Wetlands, Emergent Herbaceous	92	Wetlands

TABLE 6.8

VEGETATION EVAPOTRANSPIRATION CHARACTERISTICS

	Crop Group											
	Deciduous Forest	**Evergreen Forest**	**Mixed Forest**	**Crops**	**Plantation**	**Grasslands/ Herbaceous**	**Shrub-land**	**Pasture, Hay or Turf**	**Wetlands**	**Residential Lawn Low Density**	**Residential Lawn Medium Density**	**Residential Lawn High Density**
Canopy Storage Parameter (mm)	0.5	2	1.4	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Root Distribution	Assume 60% of the root mass is in the upper 20 cm of soil at a root depth of 1m for all vegetation											
Crop Coefficient (range within a year)	0.92 - 1.2	1.0 - 1.2	1.0 - 1.2	0.05 - 1.06	0.5-1.12	0.2 - 1.2	0.2 - 1.5	0.6 - 1.0	0.9 - 1.2	0.2 - 0.5	0.7 - 0.75	0.95 - 1.0
Root Depth (range within a year)	2	2	2	0.5 - 1.3	1.4	0.2	0.2	0.6	1	0.4	0.6	0.6
Leaf Area Index Range	2.0 - 8.0	5.5	5.5	1.0 - 5.0	1.0 - 5.0	0.3 - 5.0	0.3 - 5.0	2.1	4.0 - 6.34	0.2	0.4	0.6

Note: Crop Coefficients based on used of Blaney-Criddle FAO method for PET computation and may represent partial vegetation of cell.

TABLE 6.9

INTERNAL BOUNDARY CONDITIONS REPRESENTING WASTEWATER DISCHARGES TO SURFACE WATER

		Monthly Discharge (million gallons per month)												
Approx. Chainage (m)	**Discharger**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Annual Total** (million gallons per year)
46,620	Inland Empire Paper	123.1	108.6	115.8	112.0	123.1	124.5	133.8	129.2	118.1	121.3	115.7	119.4	1,444.6
55,000	Avista Heating waste water	9.3	9.3	9.3	9.3	9.3	9.3	9.3	9.3	9.3	9.3	9.3	9.3	111.6
40,000	Kaiser Trentwood	647.7	580.7	625.5	575.9	609.9	611.6	652.9	690.8	663.6	693.0	609.4	644.4	7,605.4
31,500	Liberty Lake Sewer District	14.0	13.3	15.9	14.9	15.5	14.7	15.7	15.6	14.9	14.2	13.0	13.4	175.2
71,000	Spokane Advanced Waste Water Treatment Plant	1,295.3	1,298.8	1,363.8	1,227.8	1,502.1	1,303.3	1,182.6	1,181.7	1,133.0	1,131.9	1,149.5	1,308.0	15,077.8
50,000	Colbert LF East & West Systems	27.2	27.2	27.2	27.2	27.2	27.2	27.2	27.2	27.2	27.2	27.2	27.2	326.3
50,000	Colbert LF South System	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	35.2
68,000	Fish Hatchery	270	270	270	270	270	270	270	270	270	270	270	270	3,240

Data Source: Spokane County

TABLE 6.10

TIME VARYING BOUNDARY CONDITIONS

(Elevation in m)

Well-ID	1533E01	1528N03	1521M01	50N05W04CACC02
Jan 1	607.8	608.1	608.7	609.1
March 1	608.4	608.8	609.4	609.9*
June 1	610.1	610.5	611.1	611.5
September 1	608.1*	608.5*	609.*	609.5

* indicates a measured value

TABLE 7.1

INTERNAL BOUNDARY VARIABLES TRANSFERRED
BETWEEN MIKE SHE COMPONENTS

(Source: MIKE SHE Water Movement User Manual,2000)

Component	Variable	Other Components Where Variable is Used
Evapotranspiration/Interception (ET/IC)		
	Net rainfall	UZ, OC
	Soil evaporation	UZ
	Transpiration	UZ
	Bypass	SZ
	Evaporation from groundwater	SZ
	Evaporation from overland flow	OC
Unsaturated Zone (UZ)		
	Infiltration	OC
	Recharge to groundwater table	SZ
Saturated Zone (SZ)		
	Groundwater table	UZ, EX
	Seepage flow	OC
	Net groundwater flow in each grid	UZ
Overland Flow, Channel Flow (OC)		
	Overland water depth	UZ, ET, SZ *
	River water level	EX
Exchange Component (EX)		
	Drainage flow	SZ, OC
	Discharge to river	SZ, OC

* Used as initial condition for the next time step if the groundwater table was above the ground surface in the previous SZ time step and is defined in the frame.

TABLE 8.1
CALIBRATION WELL INFORMATION

Well ID	Well Name	Water Level Record	Layer	Source	Comments
5415J01	VERA 1	Hydrograph	Qfg	Spokane County/Reanette Boese	SVRP
5426L01	VERA 4	Hydrograph	Qfg	Spokane County/Reanette Boese	SVRP
9233G01	DEER PARK	Hydrograph	Qfg	Spokane County/Reanette Boese	Deer Park Aquifer
5516C01	INLAND EMPIRE	Hydrograph	Qfg	Spokane County/Reanette Boese	SVRP
6308F02	MAYFAIR	Hydrograph	Qfg	Spokane County/Reanette Boese	SVRP, Hillyard Trough - Below Clay Lens
6307G01	WHITWORTH 3B	Hydrograph	Qfg	Spokane County/Reanette Boese	SVRP, Hillyard Trough - Above Clay Lens
7332H01	WHITWORTH 8A1	Hydrograph	Qfg	Spokane County/Reanette Boese	Little Spokane River
5314E01	CITY CENTRAL PREMIX	Hydrograph	Qfg	Spokane County/Reanette Boese	SVRP
5202E01	CITY WWTP	Hydrograph	Qfg	Spokane County/Reanette Boese	Outside of WRIA's
5304G01	CITY – NE COMM CNTR	Hydrograph	Qfg	Spokane County/Reanette Boese	SVRP, Hillyard Trough
5307M01	CITY - TRINITY	Hydrograph	Qfg	Spokane County/Reanette Boese	SVRP, Trinity Trough, Outside of WRIA's
5311J07	CITY - HALE'S	Hydrograph	Qfg	Spokane County/Reanette Boese	SVRP
5312C01	CITY - FELTS FIELD	Hydrograph	Qfg	Spokane County/Reanette Boese	SVRP
5322A03	CITY – 3rd & HAVANA	Hydrograph	Qfg	Spokane County/Reanette Boese	SVRP
6331J01	CITY _ FRANKLIN PARK	Hydrograph	Qfg	Spokane County/Reanette Boese	SVRP, Hillyard Trough, Just outside WRIA's
5411R02	SULLIVAN PARK NORTH	Hydrograph	Qfg	Spokane County/Reanette Boese	SVRP
5507H01	BARKER – NORTH	Hydrograph	Qfg	Spokane County/Reanette Boese	SVRP
5517D05	BARKER – MISSION	Hydrograph	Qfg	Spokane County/Reanette Boese	SVRP
6212L01	WHITWORTH #4	Hydrograph	Qfg	Spokane County/Reanette Boese	SVRP, Hillyard Trough, Above Clay Lens
6525R01	IDAHO RD nr PIPELINE	Hydrograph	Qfg	Spokane County/Reanette Boese	SVRP – near Stateline
6404N01	none	Snapshot	T	Boese and Buchanan, 1996	Peonie Prairie
7312P01	none	Snapshot	T	Boese and Buchanan, 1996	Little Spokane River Aquifer
7327J01	none	Snapshot	T	Boese and Buchanan, 1996	Little Spokane River Aquifer
8332G01	none	Snapshot	T	Boese and Buchanan, 1996	Little Spokane River Aquifer
8335B01	none	Snapshot	Qfg	Boese and Buchanan, 1996	Little Spokane River Aquifer
8201B01	DP/M-2	Snapshot	Qfg	EMCON, 1992	Deer Park Aquifer
9332P01	DP/M-5	Snapshot	Qfg	EMCON, 1993	Deer Park Aquifer
9235J01	DP-4	Snapshot	Qfg	EMCON, 1994	Deer Park Aquifer
9223R01	TW2	Snapshot	Qfg	EMCON, 1995	Deer Park Aquifer
8211K01	BROWN	Snapshot	T	EMCON, 1996	Deer Park Aquifer
8316N01	DOE-16	Snapshot	T	EMCON, 1997	Deer Park Aquifer
9233F01	DOE-33	Snapshot	T	EMCON, 1998	Deer Park Aquifer
8223B01	KEIFEL	Snapshot	T	EMCON, 1999	Deer Park Aquifer
9214N01	MILLER	Snapshot	T	EMCON, 2000	Deer Park Aquifer
25N45E09ABCD01	none	Snapshot	Qfg	USGS, 2000	SVRP – nr Stateline
25N45E17BBAA05	none	Snapshot	Qfg	USGS, 2001	SVRP – nr Stateline
50N06W12DDCD01	none	Snapshot	Qfg	USGS, 2002	SVRP – nr Stateline
51N06W36DAAA01	none	Snapshot	Qfg	USGS, 2003	SVRP – nr Stateline
DL0409P01	none	Snapshot	Qfg	Reanette Boese	Diamond Lake Aquifer
DL0410D02	none	Snapshot	Qfg	Reanette Boese	Diamond Lake Aquifer
DL0412E01	none	Snapshot	Qfg	Reanette Boese	Diamond Lake Aquifer
DL0506P01	none	Snapshot	Qfg	Reanette Boese	Diamond Lake Aquifer
DL1530D01	none	Snapshot	Qfg	Reanette Boese	Diamond Lake Aquifer
DL1531H01	none	Snapshot	Qfg	Reanette Boese	Diamond Lake Aquifer

TABLE 8.2

DISCHARGE CALIBRATION POINTS

Station Name	SCCD/ POCD ID	USGS ID	WQMP ID	Source	Period of Record	Data Type
Deadman Creek				SCCD	10/1998 - 5/1999	Snapshot
Dragoon Ck @ Crescent Br	DR5		8333R	WQMP	06/1994-06/1995	Snapshot
Little Spokane @ Scotia	LS1	12426500	0508N	POCD-SCCD-DOE- 2000	7/1996 - 9/1999	Snapshot
Spokane River at Long Lake, WA		12433000		USGS	04/01/1939-09/30/1999	Daily
Little Spokane River @ Dartford, Wash.	55B082	12431000	6305C	USGS	05/1929-09/1932, 01/1947-09/1999	Hydrograph
Little Spokane River Nr Dartford, Wash.	55B075	12431500		USGS	04/1948-03/1952, 10/1997-09/1999	Hydrograph
Little Spokane River, Chattaroy Rd., Chattaroy, WA	55B200		8327Q	SCC	10/1975 - 9/1996	Hydrograph
LSR at Elk/Chattaroy Road Bridge	LS 2			SCCD	7/1996 - 9/1999	Snapshot
Spokane R. Above Liberty Br. Nr Otis Orchard, WA		12419500		USGS/SCC	01/1929-10/1983, 01/1993-09/2000	Hydrograph
Spokane River At Spokane, WA		12422500		USGS	04/1891-09/1999	Hydrograph
Spokane River Blw Green St. @ Spokane Wash		12422000		USGS/SCC	12/1948-09/1952, 01/1993-12/1998	Hydrograph
W. Branch LSR Eloika Lake Road Bridge	LS 3			SCCD	7/1996 - 9/1999	Snapshot

TABLE 8.3

ANNUAL RIVER DISCHARGE CALIBRATION
(Based on Modeled Water Years 1993 – 1999)

Water Year	Average Annual Flow (cms)					
	Spokane River @ Spokane		Little Spokane River near Dartford		Little Spokane River @ Dartford	
	Measured	Modeled	Measured	Modeled	Measured	Modeled
1994	85.3	88.5	-	16.1	4.30	8.5
1995	179.0	171.9	-	23.4	9.30	15.8
1996	279.9	280.4	-	22.9	9.80	14.6
1997	293.0	280.0	-	28.0	17.71	19.3
1998	153.8	146.9	17.7	24.1	9.84	15.9
1999	213.4	210.5	19.5	24.9	12.63	16.0

TABLE 9.1

WRIA 57 WEEKLY WATER BALANCE
(values in mm)

	Major WRIA Inflows					Major WRIA Outflows					Change in Storage			
Date	Precipitation	Irrigation	Goundwater	River	Overland	Evapotranspiration	Well Abstraction	Groundwater	Overland	River	Subsurface Storage	Canopy Storage	Snow Storage	Overland Storage
10/2/1993	-2.2	-0.7	-30.7	-69.6	0.0	8.8	4.0	19.6	0.0	74.8	-3.8	0.0	0.0	-1.6
10/9/1993	-0.1	-0.3	-30.4	-69.7	0.0	3.4	3.6	19.5	0.0	74.9	-2.1	0.0	0.0	-1.0
10/16/1993	-35.0	-0.4	-30.3	-68.3	0.0	6.3	3.6	19.6	0.0	74.2	18.3	2.6	0.0	6.2
10/23/1993	-10.6	-0.3	-30.2	-60.1	0.0	7.3	3.6	19.3	0.0	67.7	1.6	-1.4	0.0	0.9
10/31/1993	-0.3	-0.4	-30.3	-57.2	0.0	5.9	3.6	19.2	0.0	65.5	-4.5	-1.3	0.0	-1.8
11/7/1993	-0.9	0.0	-30.5	-51.6	0.0	1.1	3.6	19.1	0.0	61.0	-2.2	0.2	0.1	-0.8
11/14/1993	0.0	0.0	-30.7	-48.4	0.0	0.5	3.7	19.0	0.0	57.9	-2.2	-0.1	0.0	-0.6
11/21/1993	-10.4	0.0	-30.8	-48.1	0.0	0.5	3.7	19.0	0.0	57.5	2.6	1.9	2.2	0.6
11/28/1993	-6.3	0.0	-30.7	-61.2	0.0	0.5	3.7	19.2	0.0	67.0	5.1	0.3	-0.7	0.7
12/5/1993	-37.3	0.0	-30.6	-60.1	0.0	0.2	3.3	19.6	0.0	66.9	23.9	0.0	4.4	6.9
12/12/1993	-34.2	0.0	-29.9	-70.5	-0.1	0.0	3.2	20.0	0.0	76.8	21.7	0.2	3.3	7.0
12/19/1993	-2.1	0.0	-29.5	-57.6	0.0	0.0	3.2	20.1	0.0	65.4	-2.1	0.0	1.9	-1.1
12/27/1993	-1.9	0.0	-29.1	-82.9	0.0	0.0	3.2	20.1	0.0	87.2	1.2	0.0	1.9	-1.0
1/3/1994	-27.5	0.0	-29.2	-73.7	0.0	0.0	3.2	20.0	0.0	79.8	17.3	-2.2	3.5	5.7
1/10/1994	-12.3	0.0	-29.7	-82.1	0.0	0.0	3.1	20.2	0.0	87.2	9.6	0.3	0.3	1.9
1/17/1994	-5.5	0.0	-29.4	-103.6	0.0	0.0	3.1	20.5	0.0	105.6	7.8	0.1	-1.2	1.1
1/24/1994	-3.6	0.0	-28.6	-105.7	0.0	0.0	3.1	20.4	0.0	108.6	4.1	0.7	-1.1	0.8
1/31/1994	-0.6	0.0	-29.0	-91.5	0.0	0.0	3.1	20.2	0.0	98.0	0.6	0.0	0.1	-0.8
2/7/1994	-0.5	0.0	-29.9	-65.4	0.0	1.0	3.2	19.9	0.0	76.6	-3.6	-0.2	0.2	-1.0
2/14/1994	-10.7	0.0	-30.8	-64.0	0.0	1.1	3.2	19.8	0.0	74.0	2.2	0.6	2.7	1.0
2/22/1994	-9.1	0.0	-31.4	-57.6	0.0	1.1	3.2	19.8	0.0	69.2	2.1	0.2	2.0	0.7
3/1/1994	-14.8	0.0	-31.5	-55.9	0.0	1.2	3.2	19.5	0.0	66.9	5.0	0.4	1.6	2.8
3/8/1994	-4.2	0.0	-31.7	-95.9	0.0	6.4	3.7	19.7	0.0	95.3	4.7	-1.0	-5.8	3.2
3/15/1994	-2.7	0.0	-30.3	-153.0	0.0	6.2	3.7	20.9	0.2	146.7	8.4	-0.9	-2.0	0.1
3/22/1994	-13.0	0.0	-29.5	-182.2	-0.1	6.3	3.7	21.5	0.2	170.3	14.2	1.0	-2.9	4.4
3/29/1994	-1.1	0.0	-27.7	-203.4	0.0	5.9	3.7	22.1	0.4	194.2	8.1	-1.2	-1.6	-2.3
4/12/1994	-11.1	-0.2	-27.3	-203.1	0.0	13.5	5.2	21.9	0.1	192.1	6.0	0.3	0.0	-2.1
4/20/1994	-15.4	-0.4	-25.7	-250.2	0.0	19.8	5.9	22.4	0.0	233.8	8.7	-0.3	0.2	-2.8
4/27/1994	-8.7	-0.3	-24.4	-271.9	0.0	17.8	5.9	22.6	0.1	252.1	5.6	0.3	-3.1	-2.2
5/4/1994	-10.8	-0.4	-20.2	-419.5	0.0	17.9	5.9	23.8	0.1	374.9	22.9	-0.2	-1.2	-3.1
5/11/1994	-3.3	-0.6	-19.5	-300.1	0.0	19.2	6.6	23.4	0.0	294.0	-6.2	-0.3	-0.6	-7.7
5/18/1994	-0.6	-0.6	-23.9	-176.7	0.0	20.0	7.5	21.2	0.1	181.1	-22.2	-0.2	-3.4	-3.5
5/25/1994	-14.8	-0.7	-25.5	-201.1	0.0	22.6	7.5	20.9	0.0	199.8	-7.4	0.0	-0.5	-2.4
6/1/1994	-17.4	-0.7	-27.5	-157.8	0.0	24.4	7.5	20.4	0.0	162.5	-11.1	-0.1	0.0	-1.4
6/8/1994	-3.4	-0.9	-29.4	-123.5	0.0	17.1	7.9	19.8	0.0	133.6	-16.7	0.0	0.0	-3.6
6/16/1994	-21.3	-1.9	-30.4	-99.8	0.0	21.8	11.2	18.9	0.0	108.8	-10.5	0.9	0.0	-0.5
6/23/1994	-11.1	-1.3	-30.6	-82.9	0.0	19.2	11.2	18.7	0.0	96.3	-16.1	-0.5	0.4	-2.1
6/30/1994	-4.4	-1.8	-31.0	-66.6	0.0	16.4	11.2	18.5	0.0	80.5	-18.7	-0.4	-0.4	-2.3
7/7/1994	-8.6	-2.3	-31.4	-59.0	0.0	16.7	11.2	18.2	0.0	71.3	-14.4	0.0	0.0	-2.1
7/14/1994	-1.5	-1.6	-31.9	-37.0	0.0	15.7	11.4	18.0	0.0	55.2	-21.4	0.0	0.0	-3.3
7/21/1994	0.0	-1.7	-32.5	-20.5	0.0	12.8	11.4	17.5	0.0	38.4	-21.5	0.0	0.0	-3.0
7/28/1994	0.0	-1.6	-32.7	-34.7	0.0	10.8	11.4	17.7	0.0	45.8	-15.8	0.0	0.0	-2.9
8/4/1994	0.0	-1.0	-33.0	-21.7	0.0	9.4	11.4	17.7	0.0	36.6	-16.1	0.0	0.0	-2.7
8/12/1994	-0.3	-1.7	-33.2	-11.9	0.0	8.1	9.2	17.7	0.0	28.1	-13.4	0.0	0.0	-2.5
8/19/1994	-0.5	-1.0	-33.1	-10.8	0.0	7.1	7.3	18.0	0.0	26.3	-10.7	0.0	0.0	-2.2
8/26/1994	-0.1	-0.3	-33.1	-10.2	0.0	5.9	7.3	18.0	0.0	25.0	-10.3	0.0	0.0	-2.1
9/2/1994	0.0	-0.2	-33.0	-10.2	0.0	5.2	7.3	18.0	0.0	24.5	-9.5	0.0	0.0	-2.1
9/9/1994	-3.0	-0.3	-32.9	-9.7	0.0	6.3	6.7	18.1	0.0	23.7	-7.0	0.1	0.0	-1.8
9/16/1994	-35.4	-1.7	-33.2	-10.2	0.0	17.4	4.1	18.3	0.0	23.9	13.5	0.0	0.0	2.9
9/23/1994	-3.6	-2.3	-33.2	-32.6	0.0	12.3	4.1	18.7	0.0	37.8	-2.8	-0.1	0.0	-1.9
9/30/1994	0.0	-1.7	-32.8	-45.7	0.0	8.8	4.1	19.5	0.0	51.3	-2.6	0.0	0.0	-2.0
TOTAL 94	**-422.3**	**-29.1**	**-1523.6**	**-4806.4**	**-0.4**	**430.0**	**289.4**	**1005.4**	**1.4**	**5066.5**	**-59.5**	**0.0**	**0.0**	**-27.2**
10/8/1994	0.0	-2.3	-32.5	-45.7	0.0	7.1	4.1	19.6	0.0	51.9	-1.3	0.0	0.0	-1.6
10/15/1994	0.0	-0.3	-32.3	-44.5	0.0	2.4	3.6	19.6	0.0	51.2	-0.4	0.0	0.0	-0.7
10/22/1994	-35.0	-0.4	-32.1	-44.4	0.0	4.7	3.6	19.5	0.0	51.4	21.6	2.4	2.9	4.2
10/29/1994	-9.3	-0.3	-31.9	-44.4	0.0	7.3	3.6	19.5	0.0	51.7	2.6	-0.3	-0.2	-0.1

Note: All values in mm, volume in m^3 = mm * (1 m/1000 mm) * 10950 cells * 4002 m^2.
Values Accumulated between timesteps.

TABLE 9.1

WRIA 57 WEEKLY WATER BALANCE
(values in mm)

	Major WRIA Inflows					Major WRIA Outflows					Change in Storage			
Date	Precipitation	Irrigation	Goundwater	River	Overland	Evapotranspiration	Well Abstraction	Groundwater	Overland	River	Subsurface Storage	Canopy Storage	Snow Storage	Overland Storage
11/5/1994	-58.1	-0.3	-31.9	-44.6	0.0	7.6	3.6	19.5	0.0	52.2	35.6	0.5	4.2	9.2
11/12/1994	-38.7	-0.1	-31.2	-58.6	0.0	3.2	3.6	19.6	0.0	62.5	24.4	0.1	2.5	7.5
11/19/1994	-12.2	0.0	-30.2	-81.4	0.0	0.5	3.7	20.2	0.0	83.8	11.4	0.0	0.9	1.8
11/26/1994	-33.3	0.0	-29.6	-74.8	-0.1	0.5	3.7	20.1	0.1	79.9	20.4	0.0	3.3	7.0
12/4/1994	-11.6	0.0	-28.8	-89.0	0.0	0.5	3.7	20.2	0.0	90.5	8.9	0.0	0.7	2.0
12/11/1994	-19.6	0.0	-28.2	-103.0	0.0	0.3	3.5	20.6	0.0	105.5	14.2	0.0	1.8	4.0
12/18/1994	-13.5	0.0	-27.1	-127.6	0.0	0.0	3.2	21.1	0.0	124.8	3.7	0.0	13.5	-1.3
12/25/1994	-24.9	0.0	-26.8	-140.5	-0.1	0.0	3.2	21.6	0.1	138.3	21.7	0.0	-2.3	7.8
1/1/1995	-7.8	0.0	-25.9	-157.7	0.0	0.0	3.2	22.1	0.0	156.2	9.6	0.0	0.2	0.8
1/8/1995	-22.8	0.0	-23.2	-201.2	-0.1	0.0	3.2	22.3	0.2	196.2	21.6	0.0	-3.4	7.9
1/15/1995	-4.1	0.0	-23.0	-161.5	0.0	0.0	3.1	21.7	0.0	163.6	2.0	-1.6	-0.4	1.0
1/22/1995	-29.0	0.0	-23.9	-185.7	-0.1	0.0	3.1	21.5	0.3	186.1	18.6	-0.1	1.3	9.1
1/30/1995	-14.8	0.0	-20.1	-302.6	-0.2	0.0	3.1	22.9	0.1	286.5	19.5	0.2	6.1	1.1
2/6/1995	-4.8	0.0	-20.1	-229.2	-0.1	0.0	3.1	22.5	0.1	226.6	3.6	0.8	-1.5	1.0
2/13/1995	-17.2	0.0	-19.0	-337.1	-0.2	0.8	3.2	23.4	0.3	313.4	23.7	0.1	2.4	4.2
2/20/1995	-6.7	0.0	-13.8	-416.9	0.0	1.1	3.2	25.0	0.0	389.0	16.9	0.1	5.4	-1.5
2/27/1995	-33.7	0.0	-14.0	-332.2	-0.3	1.1	3.2	23.4	0.3	323.7	16.9	0.4	4.5	8.2
3/6/1995	-0.9	0.0	-7.7	-708.0	-0.1	1.1	3.2	26.5	0.0	630.7	47.4	-0.1	0.1	-1.0
3/13/1995	-5.2	0.0	-3.7	-622.0	-0.5	5.3	3.6	27.4	1.2	580.6	17.9	-0.5	-13.1	8.2
3/20/1995	-34.6	0.0	-5.0	-468.9	-0.6	6.6	3.7	24.9	1.6	453.4	11.3	0.9	-0.9	7.8
3/28/1995	-28.7	0.0	-4.9	-527.9	-0.5	6.6	3.7	24.8	0.8	499.8	20.3	0.0	0.3	5.3
4/4/1995	-1.9	0.0	-3.8	-569.5	-0.1	6.4	3.7	25.3	0.3	538.6	6.9	-1.7	-1.6	-2.9
4/11/1995	-1.3	-0.2	-4.7	-445.6	0.0	10.6	4.7	23.4	0.1	436.3	-13.7	-0.6	-0.6	-7.7
4/18/1995	-9.8	-0.4	-8.1	-353.3	0.0	18.2	5.9	21.4	0.0	351.5	-17.9	0.0	0.0	-8.1
4/25/1995	-12.8	-0.4	-11.2	-335.2	0.0	18.8	5.9	20.8	0.0	330.8	-14.7	0.0	0.6	-6.1
5/2/1995	-2.2	-0.3	-13.7	-309.1	0.0	16.4	5.9	20.6	0.0	308.3	-14.1	0.0	-0.8	-10.7
5/9/1995	-13.8	-0.4	-16.5	-280.5	0.0	18.6	6.3	20.2	0.0	280.1	-11.5	0.8	-1.1	-5.4
5/16/1995	-4.3	-0.5	-17.2	-318.4	0.0	24.4	7.5	20.1	0.1	307.3	-13.4	-0.7	-2.7	-7.2
5/24/1995	-8.5	-0.8	-16.3	-374.2	0.0	22.9	7.5	20.8	0.1	355.2	-5.5	0.0	-2.9	-2.1
5/31/1995	0.0	-0.2	-17.0	-318.1	0.0	18.6	7.5	20.9	0.1	315.7	-18.1	0.0	-3.2	-3.0
6/7/1995	-0.2	-0.8	-22.0	-182.1	0.0	15.9	7.5	19.4	0.1	193.9	-27.9	0.0	-4.9	-0.4
6/14/1995	-29.3	-1.0	-23.9	-193.8	0.0	22.0	10.8	18.9	0.1	197.3	-8.5	1.8	-3.6	3.2
6/21/1995	-10.3	-0.5	-24.5	-158.0	0.0	23.0	11.2	18.8	0.2	170.4	-23.8	-1.8	-2.3	-2.6
6/28/1995	-23.7	-1.1	-25.7	-142.3	0.0	22.6	11.2	18.4	0.2	149.7	-14.0	0.9	-2.5	2.2
7/5/1995	-0.8	-1.0	-26.3	-125.9	0.0	17.3	11.2	18.4	0.2	138.3	-23.6	-1.1	-1.4	-4.3
7/12/1995	-17.6	-1.0	-27.7	-87.2	0.0	23.4	11.3	17.8	0.1	100.0	-18.4	0.0	-1.1	-1.1
7/20/1995	-8.3	-1.9	-28.3	-92.9	0.0	21.4	11.4	18.0	0.0	104.4	-19.3	-0.1	0.0	-4.2
7/27/1995	0.0	-0.9	-29.4	-42.3	0.0	16.4	11.4	17.5	0.0	64.1	-27.2	0.0	0.0	-5.1
8/3/1995	-1.6	-1.7	-30.3	-36.8	0.0	15.2	11.4	17.1	0.0	53.4	-22.7	0.0	0.0	-3.6
8/10/1995	0.0	-1.7	-31.2	-23.2	0.0	12.1	10.1	17.0	0.0	40.7	-21.0	0.0	0.0	-3.1
8/17/1995	-5.2	-1.1	-31.4	-31.9	0.0	12.7	7.3	17.5	0.0	44.2	-13.2	0.0	0.0	-1.9
8/24/1995	-6.4	-1.0	-31.2	-33.0	0.0	12.8	7.3	17.9	0.0	46.7	-11.5	0.0	0.0	-1.9
8/31/1995	-0.8	-0.2	-31.2	-26.7	0.0	8.2	7.3	17.9	0.0	42.1	-13.4	0.0	0.0	-2.2
9/7/1995	-1.2	-0.2	-31.4	-19.0	0.0	7.4	7.3	17.7	0.0	34.2	-12.8	0.0	0.0	-2.2
9/15/1995	-33.1	-1.5	-31.8	-15.5	0.0	8.6	4.2	17.7	0.0	29.8	13.6	2.7	0.0	3.5
9/22/1995	-8.4	-2.3	-31.9	-46.5	0.0	16.9	4.1	18.4	0.0	53.1	-2.2	-2.5	0.0	-1.4
9/29/1995	-0.4	-2.1	-31.8	-46.2	0.0	10.9	4.1	18.8	0.0	53.9	-6.2	-0.2	0.0	-2.3
TOTAL 95	**-668.9**	**-27.0**	**-1165.4**	**-10156.5**	**-3.1**	**478.5**	**289.5**	**1050.3**	**6.7**	**10089.4**	**38.1**	**0.0**	**0.0**	**11.1**
10/6/1995	-20.4	-1.6	-31.7	-48.3	0.0	13.1	4.1	18.9	0.0	57.0	5.0	2.0	0.0	0.8
10/13/1995	-35.4	-0.7	-31.4	-61.7	0.0	10.5	3.7	19.0	0.0	65.6	19.1	0.5	2.5	4.4
10/20/1995	-32.9	-0.3	-30.7	-74.2	0.0	7.5	3.6	19.4	0.1	77.1	19.6	-0.1	-0.6	7.4
10/27/1995	-13.9	-0.4	-29.9	-98.9	0.0	7.6	3.6	19.8	0.0	96.5	8.3	-0.2	-0.8	2.6
11/3/1995	-15.1	-0.3	-28.9	-116.9	0.0	7.5	3.6	20.3	0.0	113.6	9.4	-0.2	1.7	0.8
11/11/1995	0.0	-0.2	-28.1	-116.2	0.0	4.4	3.6	20.3	0.0	114.2	2.3	-1.2	-0.2	-1.4
11/18/1995	-17.7	0.0	-27.5	-127.5	0.0	0.5	3.7	20.5	0.0	124.1	14.4	1.9	1.0	2.9
11/25/1995	-8.3	0.0	-25.1	-235.0	0.0	0.5	3.7	21.4	0.0	206.4	21.9	0.0	1.0	1.3

Note: All values in mm, volume in m^3 = mm * (1 m/1000 mm) * 10950 cells * 4002 m^2.
Values Accumulated between timesteps.

TABLE 9.1

WRIA 57 WEEKLY WATER BALANCE
(values in mm)

	Major WRIA Inflows					Major WRIA Outflows					Change in Storage			
Date	Precipitation	Irrigation	Goundwater	River	Overland	Evapotranspiration	Well Abstraction	Groundwater	Overland	River	Subsurface Storage	Canopy Storage	Snow Storage	Overland Storage
12/2/1995	-8.8	0.0	-19.8	-327.2	0.0	0.5	3.7	23.4	0.0	297.8	24.9	0.0	0.9	1.1
12/9/1995	-29.3	0.0	-14.6	-521.3	0.0	0.4	3.6	24.6	0.1	447.0	55.5	0.0	1.0	11.2
12/16/1995	-11.8	0.0	-4.3	-861.8	0.0	0.0	3.2	30.7	0.2	773.0	60.4	0.0	7.7	-0.1
12/23/1995	-40.0	0.0	-3.3	-656.7	-0.1	0.0	3.2	32.0	0.7	605.9	42.5	0.0	-6.1	14.4
12/30/1995	-0.7	0.0	-3.1	-583.9	0.0	0.0	3.2	32.0	0.2	549.3	5.6	0.0	0.5	-3.3
1/7/1996	-6.2	0.0	-2.9	-377.7	0.0	0.0	3.2	25.7	0.0	375.3	-18.1	0.0	6.1	-2.4
1/14/1996	-9.7	0.0	-7.1	-254.6	0.0	0.0	3.1	21.5	0.0	265.3	-17.1	-1.9	1.9	1.1
1/21/1996	-8.5	0.0	-10.8	-268.0	0.0	0.0	3.1	20.9	0.2	275.2	-5.4	0.1	-6.2	4.2
1/28/1996	-18.0	0.0	-10.9	-346.4	0.0	0.0	3.1	21.2	0.3	331.1	2.0	0.1	10.6	2.0
2/4/1996	-11.6	0.0	-11.1	-330.1	0.0	0.0	3.1	21.5	0.1	322.9	-3.9	0.0	11.6	-1.4
2/11/1996	-11.2	0.0	-14.6	-228.7	0.0	0.5	3.1	20.6	0.0	236.3	-14.0	0.0	10.6	-1.1
2/18/1996	-29.3	0.0	-13.4	-544.7	-0.1	1.1	3.2	21.9	0.3	508.1	53.8	0.9	-7.9	10.6
2/25/1996	-21.4	0.0	-3.4	-1048.8	-0.1	1.1	3.2	32.4	0.2	960.1	71.6	0.2	-1.9	6.6
3/4/1996	-28.8	0.0	-3.2	-913.9	-0.1	1.1	3.2	37.1	0.2	855.5	36.6	0.0	12.9	1.9
3/11/1996	-13.1	0.0	-3.1	-639.6	-0.2	3.5	3.4	34.3	0.7	622.4	1.7	0.5	-16.4	10.9
3/18/1996	-13.2	0.0	-2.7	-418.8	-0.2	6.6	3.7	26.2	2.1	434.0	-18.4	-0.3	-12.4	3.2
3/25/1996	-5.3	0.0	-3.9	-386.0	0.0	6.4	3.7	21.7	0.3	388.3	-18.9	-0.8	-1.6	-2.6
4/1/1996	-4.7	0.0	-6.5	-368.5	-0.1	6.3	3.7	20.7	0.3	367.2	-14.9	-0.7	-3.3	0.2
4/8/1996	-13.4	0.0	-10.7	-309.3	-0.3	7.1	3.9	20.1	0.6	314.6	-12.8	0.8	-2.4	-0.8
4/15/1996	-2.2	-0.4	-13.0	-323.3	-0.2	18.5	5.9	20.2	0.2	321.8	-17.9	-1.3	-2.2	-9.5
4/22/1996	-8.2	-0.3	-10.8	-468.3	0.0	17.5	5.9	21.0	0.0	432.3	6.6	0.1	-0.9	-6.7
4/30/1996	-26.2	-0.4	-8.3	-528.2	0.0	19.6	5.9	22.4	0.0	492.9	13.8	1.5	-0.1	1.0
5/7/1996	-23.3	-0.3	-5.3	-758.5	-0.2	20.6	5.9	24.8	0.3	690.5	33.7	-1.3	-0.1	2.8
5/14/1996	-4.6	-1.0	-2.8	-708.3	0.0	24.7	7.3	26.6	0.0	667.4	3.0	-0.4	-0.8	-13.2
5/21/1996	-16.1	-0.9	-4.2	-478.7	0.0	25.0	7.5	22.9	0.0	468.6	-19.8	1.1	-1.7	-6.0
5/28/1996	-33.7	-0.5	-6.0	-528.4	0.0	30.8	7.5	22.0	0.1	492.7	1.8	-0.6	-1.8	3.3
6/4/1996	-11.0	-0.6	-4.9	-614.7	0.0	25.9	7.5	23.4	0.1	574.1	-1.5	-0.6	-1.1	-4.7
6/11/1996	-0.3	-1.0	-5.1	-523.8	0.0	20.4	9.4	22.6	0.0	501.3	-18.7	0.0	-0.7	-8.7
6/18/1996	0.0	-0.9	-7.8	-346.9	0.0	18.4	11.2	20.6	0.0	357.1	-37.9	-0.1	-0.8	-6.5
6/26/1996	-0.1	-2.3	-14.5	-188.3	0.0	16.7	11.2	18.5	0.0	206.0	-44.6	0.0	0.0	-4.9
7/3/1996	-36.9	-1.3	-18.2	-169.7	0.0	24.9	11.2	18.0	0.0	185.9	-18.1	1.7	0.0	1.9
7/10/1996	-17.2	-1.7	-21.0	-127.1	0.0	26.6	11.3	17.6	0.0	149.2	-31.6	-1.6	0.0	-1.7
7/17/1996	-1.8	-1.7	-24.2	-86.2	0.0	21.8	11.4	16.9	0.0	105.2	-37.5	0.0	0.0	-5.0
7/24/1996	-2.6	-1.6	-26.5	-66.6	0.0	18.5	11.4	16.7	0.0	88.8	-31.4	0.0	0.0	-3.9
7/31/1996	-2.5	-1.7	-28.3	-35.9	0.0	16.9	11.4	16.4	0.0	59.6	-31.1	0.0	0.0	-2.9
8/7/1996	-4.6	-1.6	-29.4	-38.6	0.0	16.2	11.4	16.3	0.0	56.6	-24.1	0.0	0.0	-2.5
8/14/1996	-12.2	-1.0	-30.1	-34.0	0.0	17.4	7.5	17.0	0.0	53.3	-14.4	0.0	0.0	-1.5
8/22/1996	-1.1	-0.2	-30.5	-30.0	0.0	10.5	7.3	17.0	0.0	45.8	-18.2	0.0	0.0	-2.5
8/29/1996	-1.3	-0.2	-30.6	-20.7	0.0	8.9	7.3	17.2	0.0	40.2	-17.3	0.0	0.0	-2.3
9/5/1996	-0.9	-1.1	-31.0	-17.3	0.0	8.3	7.3	17.0	0.0	34.7	-15.3	0.0	0.0	-2.2
9/12/1996	-4.6	-1.2	-31.3	-16.5	0.0	8.1	5.4	17.2	0.0	33.1	-9.6	0.4	0.0	-1.4
9/19/1996	-1.8	-2.1	-31.6	-42.0	0.0	7.2	4.1	17.6	0.0	48.9	-3.4	-0.4	0.0	-1.2
9/26/1996	-32.9	-1.6	-31.4	-57.5	0.0	16.9	4.1	18.5	0.0	64.6	13.1	1.8	0.0	2.4
TOTAL 96	**-674.7**	**-29.1**	**-829.3**	**-16474.1**	**-1.5**	**526.6**	**289.3**	**1116.5**	**7.4**	**15954.4**	**10.8**	**1.9**	**0.0**	**-1.4**
10/3/1996	-8.0	-2.2	-31.2	-57.2	0.0	13.9	4.1	18.7	0.0	64.7	-1.7	-1.9	0.0	-0.8
10/10/1996	-2.3	-1.2	-31.0	-56.5	0.0	7.6	3.9	18.7	0.0	64.3	-3.8	0.1	0.0	-1.5
10/18/1996	-3.1	-0.4	-30.9	-54.9	0.0	4.5	3.6	18.7	0.0	62.8	-1.5	-0.1	0.0	-0.6
10/25/1996	-47.2	-0.3	-30.9	-55.7	0.0	7.3	3.6	18.7	0.0	63.4	25.7	2.6	3.0	6.0
11/1/1996	-69.1	-0.4	-30.6	-63.3	0.0	7.8	3.6	18.9	0.0	70.0	31.7	0.0	17.6	9.8
11/8/1996	-28.9	-0.2	-29.7	-79.3	0.0	7.4	3.6	19.1	0.0	83.2	15.7	-0.3	-0.4	5.4
11/15/1996	-6.9	0.0	-29.0	-87.9	0.0	0.5	3.7	19.4	0.0	92.8	8.4	0.3	-4.4	2.2
11/22/1996	-11.0	0.0	-28.7	-86.8	0.0	0.5	3.7	19.4	0.0	92.4	6.7	0.0	0.5	1.7
11/29/1996	-43.6	0.0	-28.4	-92.8	-0.1	0.5	3.7	19.5	0.1	98.2	25.3	0.0	6.6	9.1
12/6/1996	-34.1	0.0	-27.4	-96.0	-0.1	0.5	3.7	19.8	0.1	107.3	19.2	0.0	0.4	9.2
12/14/1996	-27.1	0.0	-26.0	-136.1	0.0	0.1	3.3	20.1	0.0	136.2	5.4	0.0	22.1	0.1
12/21/1996	-49.7	0.0	-24.9	-184.2	-0.3	0.0	3.2	21.5	0.3	193.0	28.3	0.0	12.7	11.0

Note: All values in mm, volume in m^3 = mm * (1 m/1000 mm) * 10950 cells * 4002 m^2.
Values Accumulated between timesteps.

TABLE 9.1

WRIA 57 WEEKLY WATER BALANCE
(values in mm)

	Major WRIA Inflows					Major WRIA Outflows					Change in Storage			
Date	Precipitation	Irrigation	Goundwater	River	Overland	Evapotranspiration	Well Abstraction	Groundwater	Overland	River	Subsurface Storage	Canopy Storage	Snow Storage	Overland Storage
12/28/1996	-8.8	0.0	-22.8	-188.3	-0.1	0.0	3.2	21.7	0.0	188.6	2.3	0.0	8.8	-1.9
1/4/1997	-26.9	0.0	-23.0	-151.3	0.0	0.0	3.2	21.0	0.0	156.8	-3.4	0.0	26.9	-1.4
1/11/1997	-37.1	0.0	-22.8	-275.9	-2.2	0.0	3.1	22.5	0.9	282.7	44.3	-2.5	-10.8	18.3
1/18/1997	-6.4	0.0	-13.2	-539.6	-1.0	0.0	3.1	26.6	0.3	500.4	45.4	0.4	-7.0	1.2
1/25/1997	-12.7	0.0	-10.7	-361.1	-0.2	0.0	3.1	24.2	0.0	354.0	2.5	0.3	10.0	-2.2
2/1/1997	-10.8	0.0	-13.9	-274.9	-0.5	0.0	3.1	22.8	0.1	279.8	-4.0	0.3	7.3	-0.8
2/9/1997	-14.5	0.0	-16.4	-224.1	-0.7	0.1	3.1	21.7	0.3	237.3	1.3	0.7	-3.9	3.8
2/16/1997	-6.5	0.0	-17.0	-252.1	-0.2	1.1	3.2	21.9	0.0	257.2	-3.8	0.0	5.4	-2.1
2/23/1997	-18.0	0.0	-18.4	-215.5	-0.2	1.1	3.2	21.2	0.3	225.8	6.3	0.4	-6.1	4.4
3/2/1997	-19.1	0.0	-17.6	-299.0	-0.3	1.1	3.2	21.9	0.4	300.1	21.9	0.0	-8.8	3.8
3/9/1997	-24.3	0.0	-14.9	-316.6	-1.1	2.2	3.3	22.2	0.6	317.8	15.6	0.4	-14.4	15.9
3/16/1997	-22.9	0.0	-18.9	-266.5	-3.8	6.6	3.7	24.5	2.3	278.4	7.4	0.0	-23.2	20.3
3/23/1997	-25.8	0.0	-16.9	-284.5	-2.9	6.6	3.7	23.4	2.6	292.9	8.1	0.0	-9.7	9.0
3/30/1997	-21.5	0.0	-14.7	-451.9	-2.9	6.5	3.7	24.4	1.2	426.9	27.6	-0.9	-0.1	0.1
4/7/1997	-5.0	0.0	-5.8	-678.8	-0.7	6.3	3.7	25.9	0.3	627.8	29.9	-0.9	-1.4	-1.9
4/14/1997	-1.0	-0.3	-3.7	-580.4	-0.2	15.5	5.5	25.7	0.1	553.8	1.9	-0.5	-0.7	-13.1
4/21/1997	-4.6	-0.4	-5.3	-430.8	0.0	16.9	5.9	22.9	0.0	422.5	-13.9	0.1	-0.4	-12.3
4/28/1997	-29.0	-0.4	-7.1	-462.8	0.0	18.6	5.9	22.1	0.1	434.5	3.5	1.9	-0.3	2.5
5/5/1997	-23.8	-0.4	-3.6	-822.3	-0.3	20.8	5.9	26.2	0.1	743.7	39.8	-0.7	-0.5	3.6
5/12/1997	-18.7	-0.7	-3.1	-1064.4	-0.2	26.4	6.9	34.2	0.1	982.9	35.9	-1.1	-0.2	-4.1
5/19/1997	-1.3	-0.7	-3.0	-999.2	-0.1	24.6	7.5	36.4	0.2	929.3	11.4	-0.1	-4.5	-12.1
5/26/1997	-0.5	-0.6	-3.2	-1235.5	-0.1	21.7	7.5	40.1	0.5	1139.9	24.9	0.0	-6.8	-6.5
6/3/1997	-24.6	-0.5	-3.2	-1174.5	0.0	25.7	7.5	42.1	0.1	1111.1	11.6	1.3	-2.6	-2.3
6/10/1997	-32.2	-0.6	-2.9	-960.1	0.0	31.6	8.5	38.4	0.4	909.7	-5.4	-1.2	-4.4	2.2
6/17/1997	-12.5	-1.0	-2.7	-861.4	0.0	25.4	11.2	36.4	0.4	821.6	-19.9	-0.2	-4.0	-4.7
6/24/1997	-12.4	-1.0	-2.5	-687.6	0.0	23.6	11.2	32.8	0.2	664.3	-30.6	-0.1	-4.7	-2.5
7/1/1997	-10.3	-0.8	-2.4	-498.1	0.0	21.7	11.2	27.3	0.1	507.1	-46.4	0.4	-0.6	-7.1
7/8/1997	-9.6	-0.8	-7.1	-152.1	0.0	21.6	11.3	18.0	0.0	193.0	-66.0	-0.3	-0.9	-4.8
7/15/1997	-13.5	-1.6	-12.6	-209.5	0.0	26.2	11.4	17.4	0.0	227.1	-41.7	0.3	-0.8	-4.5
7/22/1997	-13.2	-1.1	-16.2	-177.3	0.0	25.5	11.4	17.4	0.0	195.4	-37.1	-0.5	0.0	-4.4
7/30/1997	-9.1	-1.7	-20.2	-98.9	0.0	22.0	11.4	16.7	0.0	125.0	-39.8	0.0	0.0	-4.4
8/6/1997	-1.3	-1.6	-23.3	-79.2	0.0	17.4	11.4	16.3	0.0	102.8	-36.3	0.0	0.0	-4.1
8/13/1997	-1.0	-2.2	-25.7	-46.0	0.0	13.9	8.5	16.3	0.0	70.7	-30.8	0.0	0.0	-2.7
8/20/1997	-0.4	-0.2	-27.2	-34.4	0.0	11.2	7.3	16.4	0.0	59.1	-26.9	0.0	0.0	-2.7
8/27/1997	-1.1	-1.0	-28.2	-39.1	0.0	10.5	7.3	16.5	0.0	57.6	-21.0	0.0	0.0	-2.2
9/3/1997	-7.5	-1.0	-28.7	-33.9	0.0	13.7	7.3	16.7	0.0	54.2	-17.3	0.0	0.0	-1.8
9/10/1997	-7.7	-1.5	-29.3	-24.8	0.0	10.4	6.1	16.6	0.0	43.7	-13.7	1.1	0.0	-1.5
9/17/1997	-3.3	-2.0	-30.1	-33.6	0.0	9.9	4.1	17.0	0.0	48.8	-10.2	-1.1	0.0	-1.4
9/25/1997	-44.4	-1.6	-30.5	-44.4	0.0	14.6	4.1	17.3	0.0	56.0	17.8	2.7	0.0	5.5
10/2/1997	-8.6	-2.2	-30.3	-66.4	0.0	17.4	4.1	17.9	0.0	73.4	-4.1	-2.7	0.0	-1.7
TOTAL 97	**-883.1**	**-30.9**	**-947.8**	**-16647.2**	**-18.2**	**569.2**	**293.6**	**1183.7**	**12.5**	**16382.1**	**46.5**	**-1.9**	**0.0**	**31.1**
10/9/1997	-3.5	-1.8	-30.0	-69.7	0.0	11.4	4.0	18.3	0.0	77.3	-6.0	0.1	0.0	-2.2
10/16/1997	-31.3	-0.3	-29.9	-70.9	0.0	7.4	3.6	18.5	0.0	78.0	14.3	2.5	0.3	4.7
10/23/1997	-13.1	-0.3	-29.4	-91.1	0.0	7.5	3.6	18.8	0.0	93.1	6.4	-0.9	-0.3	1.4
10/30/1997	-2.3	-0.3	-28.7	-96.1	0.0	6.8	3.6	19.1	0.0	98.6	-1.0	-1.5	0.2	-1.5
11/6/1997	-46.1	-0.4	-28.6	-87.7	0.0	7.1	3.6	19.1	0.1	93.6	22.9	2.4	-0.2	11.9
11/13/1997	-11.0	0.0	-28.2	-91.5	0.0	1.9	3.6	19.0	0.0	96.7	5.5	-0.1	0.4	0.3
11/21/1997	-5.2	0.0	-27.9	-96.0	0.0	0.5	3.7	19.2	0.0	101.4	3.4	-0.1	0.0	0.0
11/28/1997	-30.4	0.0	-28.0	-99.0	0.0	0.5	3.7	19.3	0.0	103.3	18.0	0.1	2.5	7.0
12/5/1997	-14.9	0.0	-27.0	-118.1	0.0	0.5	3.7	19.7	0.0	121.0	10.3	0.0	0.8	2.5
12/12/1997	-1.1	0.0	-25.7	-149.6	0.0	0.2	3.4	20.0	0.0	144.5	3.8	0.0	0.1	-1.0
12/19/1997	-10.4	0.0	-24.5	-171.0	0.0	0.0	3.2	20.8	0.0	167.1	4.2	0.0	10.4	-1.1
12/26/1997	-32.1	0.0	-24.7	-134.3	-0.1	0.0	3.2	20.6	0.1	138.8	18.4	0.0	-0.7	9.1
1/2/1998	-40.4	0.0	-24.7	-119.1	0.0	0.0	3.2	20.1	0.0	126.7	-4.5	0.0	40.4	-1.2
1/9/1998	-24.3	0.0	-25.7	-98.4	-0.1	0.0	3.2	19.8	0.2	109.0	10.6	-1.8	-0.3	7.3
1/17/1998	-32.6	0.0	-26.6	-91.7	0.0	0.0	3.1	19.3	0.1	103.1	1.2	0.2	22.6	1.1

Note: All values in mm, volume in m^3 = mm * (1 m/1000 mm) * 10950 cells * 4002 m^2.
Values Accumulated between timesteps.

TABLE 9.1

WRIA 57 WEEKLY WATER BALANCE
(values in mm)

	Major WRIA Inflows					Major WRIA Outflows					Change in Storage			
Date	Precipitation	Irrigation	Goundwater	River	Overland	Evapotranspiration	Well Abstraction	Groundwater	Overland	River	Subsurface Storage	Canopy Storage	Snow Storage	Overland Storage
1/24/1998	-16.7	0.0	-27.4	-81.2	0.0	0.0	3.1	19.0	0.1	93.8	-1.4	0.4	9.0	0.8
1/31/1998	-22.3	0.0	-28.8	-93.9	-0.7	0.0	3.1	19.6	0.3	107.4	19.3	0.2	-10.5	8.5
2/7/1998	-15.9	0.0	-30.1	-147.6	-2.8	0.0	3.1	22.4	0.6	153.4	28.3	0.3	-20.4	9.7
2/14/1998	-4.3	0.0	-25.0	-189.2	-0.5	1.0	3.2	22.3	0.2	189.0	14.3	0.2	-11.5	0.6
2/21/1998	-22.0	0.0	-23.1	-197.8	-0.2	1.1	3.2	22.0	0.2	197.4	13.4	0.2	2.2	2.5
2/28/1998	-14.0	0.0	-23.4	-208.3	-0.2	1.1	3.2	23.0	0.2	209.9	10.1	0.0	0.3	1.4
3/7/1998	-8.1	0.0	-22.0	-199.6	-0.1	1.1	3.2	22.0	0.1	202.4	2.2	0.3	-1.7	1.4
3/15/1998	-16.9	0.0	-25.6	-174.1	-2.7	6.4	3.7	23.5	1.5	182.2	4.5	0.0	-18.2	17.4
3/22/1998	-15.1	0.0	-25.0	-155.6	-2.6	6.5	3.7	22.4	1.7	165.3	-0.3	-0.9	-4.5	1.1
3/29/1998	-11.1	0.0	-24.6	-201.0	-2.0	6.5	3.7	21.5	0.7	197.3	3.7	0.1	-3.5	2.5
4/5/1998	-15.3	0.0	-21.2	-351.0	-1.2	6.6	3.7	23.0	0.7	320.1	23.0	0.5	-1.3	2.5
4/12/1998	-2.4	-0.2	-16.2	-409.6	-0.6	13.3	5.0	24.0	0.3	383.6	11.7	-2.0	-0.9	-8.4
4/19/1998	-6.6	-0.4	-14.7	-372.6	-0.1	18.2	5.9	22.9	0.0	352.5	3.7	0.0	-0.3	-11.4
4/26/1998	0.0	-0.3	-14.9	-337.4	0.0	16.2	5.9	22.3	0.0	326.0	-3.8	-0.1	-0.8	-13.3
5/3/1998	-10.4	-0.4	-16.6	-321.7	0.0	17.2	5.9	21.7	0.1	305.3	-1.6	0.1	-2.1	-4.8
5/11/1998	0.0	-0.4	-14.9	-404.9	0.0	18.2	6.5	22.2	0.2	377.9	2.2	0.0	-5.8	-7.5
5/18/1998	-0.5	-0.7	-12.9	-460.4	0.0	21.0	7.5	22.7	0.1	426.4	1.0	-0.1	-4.8	-6.6
5/25/1998	-30.4	-0.5	-14.5	-335.3	0.0	25.2	7.5	21.9	0.1	331.2	-5.6	2.2	-0.7	0.1
6/1/1998	-29.7	-0.5	-18.3	-272.2	0.0	29.8	7.5	20.7	0.1	266.6	-8.6	-0.7	-0.6	0.0
6/8/1998	-38.9	-0.5	-14.9	-486.9	0.0	30.6	7.7	22.1	0.3	443.3	24.3	-1.6	-0.1	4.2
6/15/1998	-6.3	-1.6	-13.4	-355.9	0.0	24.6	11.2	22.0	0.0	356.7	-20.6	-0.2	0.0	-8.1
6/22/1998	-7.6	-1.4	-19.1	-166.7	0.0	21.9	11.2	19.5	0.0	181.0	-35.1	0.2	0.0	-5.0
6/29/1998	-16.6	-1.7	-21.6	-151.7	0.0	23.5	11.2	18.9	0.0	165.5	-25.1	-0.1	0.0	-2.3
7/7/1998	-2.8	-1.7	-23.9	-116.2	0.0	19.4	11.2	18.2	0.0	131.0	-30.4	-0.1	0.0	-4.4
7/14/1998	-9.4	-2.6	-26.1	-76.4	0.0	23.5	11.4	17.7	0.0	95.3	-28.9	0.0	0.0	-3.5
7/21/1998	-9.6	-1.1	-27.7	-67.8	0.0	22.1	11.4	17.5	0.0	85.0	-26.2	0.0	0.0	-2.9
7/28/1998	0.0	-1.6	-29.0	-48.3	0.0	16.3	11.4	17.2	0.0	65.7	-27.6	0.0	0.0	-3.2
8/4/1998	-0.6	-1.4	-29.8	-37.2	0.0	14.0	11.4	17.1	0.0	55.8	-24.4	0.0	0.0	-3.0
8/11/1998	-5.4	-1.7	-30.6	-34.7	0.0	15.0	9.4	17.3	0.0	50.5	-17.4	0.0	0.0	-2.3
8/18/1998	0.0	-1.0	-30.7	-31.6	0.0	9.3	7.3	17.7	0.0	48.1	-16.3	0.0	0.0	-2.7
8/25/1998	-0.9	-1.0	-31.0	-17.0	0.0	9.0	7.3	17.5	0.0	34.9	-16.0	0.0	0.0	-2.4
9/2/1998	-2.6	-0.2	-31.3	-11.3	0.0	9.2	7.3	17.4	0.0	29.4	-15.2	0.0	0.0	-2.4
9/9/1998	0.0	-0.2	-31.5	-14.5	0.0	6.5	6.9	17.4	0.0	30.6	-12.8	0.0	0.0	-2.2
9/16/1998	-5.5	-2.3	-31.9	-19.5	0.0	7.9	4.1	17.7	0.0	31.8	-4.0	0.1	0.0	-1.0
9/23/1998	-2.9	-2.3	-32.0	-42.0	0.0	7.8	4.1	18.3	0.0	50.3	-2.1	-0.1	0.0	-1.3
9/30/1998	-5.6	-1.7	-31.8	-49.5	0.0	9.0	4.1	18.8	0.0	57.0	0.0	0.0	0.0	-1.0
TOTAL 98	**-654.9**	**-31.0**	**-1265.2**	**-8224.5**	**-14.3**	**503.0**	**289.5**	**1022.9**	**8.1**	**8351.7**	**-54.2**	**0.0**	**0.0**	**-8.4**
10/7/1998	-12.6	-2.1	-31.6	-54.2	0.0	11.8	4.1	19.0	0.0	59.9	3.4	0.0	0.0	0.0
10/14/1998	-3.2	-0.3	-31.1	-68.0	0.0	4.5	3.7	19.4	0.0	72.0	1.5	0.1	0.0	-0.7
10/21/1998	-11.2	-0.4	-30.8	-61.8	0.0	5.4	3.6	19.3	0.0	67.7	4.1	1.5	0.3	0.3
10/29/1998	-1.8	-0.3	-30.7	-61.5	0.0	5.1	3.6	19.3	0.0	67.7	-0.7	-1.3	-0.3	-0.8
11/5/1998	-3.8	-0.4	-30.6	-60.1	0.0	4.0	3.6	19.2	0.0	66.4	-0.4	0.1	0.4	-0.5
11/12/1998	-11.3	-0.1	-30.6	-50.9	0.0	3.0	3.6	19.1	0.0	60.0	4.1	1.4	0.4	0.5
11/19/1998	-5.4	0.0	-30.7	-49.6	0.0	0.5	3.7	19.0	0.0	58.7	2.2	0.5	0.5	0.0
11/26/1998	-17.2	0.0	-30.5	-67.2	0.0	0.5	3.7	19.1	0.0	70.0	13.8	0.0	1.2	2.2
12/3/1998	-49.4	0.0	-30.0	-103.3	0.0	0.5	3.7	20.1	0.0	100.8	39.6	0.0	2.9	8.9
12/10/1998	-49.3	0.0	-28.0	-141.9	0.0	0.3	3.5	20.7	0.0	134.8	29.8	0.0	16.6	8.5
12/17/1998	-13.7	0.0	-25.1	-190.9	0.0	0.0	3.2	21.9	0.0	181.4	10.3	0.0	13.4	-1.2
12/25/1998	-21.9	0.0	-24.2	-187.2	0.0	0.0	3.2	22.1	0.0	181.6	17.2	0.2	5.3	3.9
1/1/1999	-15.4	0.0	-23.4	-164.6	0.0	0.0	3.2	21.7	0.0	165.1	1.0	0.0	15.4	-1.1
1/8/1999	-48.2	0.0	-24.1	-159.6	-0.1	0.0	3.2	21.3	0.1	163.0	22.0	0.0	15.3	9.1
1/15/1999	-2.3	0.0	-21.6	-235.6	0.0	0.0	3.1	22.0	0.0	224.8	9.2	-0.2	2.2	-1.0
1/22/1999	-16.1	0.0	-22.5	-207.7	-0.1	0.0	3.1	22.2	0.1	207.5	23.6	-1.4	-12.8	7.8
1/29/1999	-35.2	0.0	-19.9	-321.2	-0.2	0.0	3.1	23.4	0.2	304.4	38.1	0.3	1.4	8.4
2/5/1999	-12.4	0.0	-16.2	-312.5	-0.3	0.0	3.1	23.3	0.1	304.0	14.1	0.5	-1.4	2.3
2/12/1999	-21.0	0.0	-18.3	-222.4	-0.4	0.7	3.2	22.6	0.3	229.6	13.7	0.2	-9.1	5.1

Note: All values in mm, volume in m^3 = mm * (1 m/1000 mm) * 10950 cells * 4002 m^2.
Values Accumulated between timesteps.

TABLE 9.1

WRIA 57 WEEKLY WATER BALANCE
(values in mm)

	Major WRIA Inflows					Major WRIA Outflows					Change in Storage			
Date	**Precipitation**	**Irrigation**	**Goundwater**	**River**	**Overland**	**Evapotranspiration**	**Well Abstraction**	**Groundwater**	**Overland**	**River**	**Subsurface Storage**	**Canopy Storage**	**Snow Storage**	**Overland Storage**
2/20/1999	-21.1	0.0	-19.1	-195.0	-0.2	1.1	3.2	21.7	0.2	209.4	3.1	0.2	3.3	0.7
2/27/1999	-24.2	0.0	-20.5	-165.8	-0.2	1.1	3.2	21.0	0.2	182.3	0.1	0.1	3.0	3.9
3/6/1999	-44.3	0.0	-21.9	-195.7	-0.5	1.1	3.2	21.4	0.5	211.9	17.4	0.0	7.2	8.0
3/13/1999	-10.0	0.0	-16.1	-395.9	-0.6	5.0	3.6	22.9	0.2	381.0	22.2	-0.3	-14.6	9.4
3/20/1999	-1.1	0.0	-15.2	-325.8	-1.4	6.2	3.7	22.8	0.5	322.5	0.7	-0.9	-11.7	4.7
3/27/1999	-11.7	0.0	-17.9	-263.3	-2.2	6.3	3.7	22.1	1.0	264.2	-1.3	0.2	-4.5	4.3
4/3/1999	-6.4	0.0	-15.8	-406.7	-1.0	6.2	3.7	22.6	0.4	372.7	15.9	-0.2	-3.0	0.3
4/10/1999	-15.0	-0.1	-10.8	-528.6	-1.0	10.8	4.5	24.3	1.0	492.8	23.4	-0.3	-2.1	1.3
4/18/1999	-11.1	-0.4	-10.4	-382.0	-0.1	19.3	5.9	22.8	0.1	373.6	-6.5	-0.3	-0.4	-8.1
4/25/1999	-1.4	-0.3	-13.5	-311.5	0.0	17.3	5.9	21.4	0.0	309.1	-14.5	-0.3	-2.3	-10.9
5/2/1999	-7.4	-0.4	-12.6	-446.6	-0.1	17.3	5.9	21.9	0.1	408.6	9.6	0.0	-1.5	-6.1
5/9/1999	-5.1	-0.6	-8.7	-600.5	0.0	17.3	6.2	24.0	0.0	547.1	20.3	0.1	-0.8	-8.7
5/16/1999	-21.7	-0.7	-6.6	-583.9	0.0	27.7	7.5	24.3	0.0	542.0	8.2	-0.1	0.7	-4.1
5/23/1999	-3.5	-1.2	-7.0	-487.5	0.0	22.7	7.5	23.1	0.0	463.6	-11.2	-0.2	-1.1	-8.5
5/30/1999	-2.8	-0.5	-8.7	-458.7	0.0	20.6	7.5	22.2	0.1	431.7	-13.2	0.3	-3.3	-3.4
6/6/1999	-0.9	-0.7	-7.0	-652.4	-0.1	17.7	7.5	23.9	0.2	588.2	10.5	0.0	-5.5	1.7
6/14/1999	-12.6	-1.3	-3.7	-708.4	0.0	22.5	10.6	25.7	0.0	655.4	6.8	0.0	-2.2	-1.6
6/21/1999	-4.5	-1.3	-3.2	-571.8	0.0	18.4	11.2	24.9	0.0	542.7	-16.8	0.0	-3.1	-2.3
6/28/1999	-4.2	-1.4	-4.2	-491.8	0.0	16.7	11.2	23.2	0.1	465.7	-19.7	0.0	-6.0	0.1
7/5/1999	-33.6	-1.3	-5.6	-384.8	0.0	24.1	11.2	21.6	0.2	382.2	-15.5	-0.2	-2.1	1.7
7/12/1999	-3.9	-0.7	-11.6	-203.7	0.0	21.7	11.3	19.6	0.1	225.1	-45.9	0.0	-0.7	-6.2
7/19/1999	-0.4	-1.5	-17.5	-124.6	0.0	17.7	11.4	18.1	0.0	146.6	-44.0	-0.1	-0.9	-5.5
7/26/1999	-5.8	-1.6	-20.8	-123.5	0.0	18.4	11.4	17.8	0.0	140.9	-31.2	0.0	0.0	-3.7
8/2/1999	-0.3	-1.7	-24.0	-76.5	0.0	13.6	11.4	17.2	0.0	97.5	-32.4	0.0	0.0	-3.7
8/10/1999	-0.1	-1.7	-26.4	-42.9	0.0	11.4	10.3	16.9	0.0	66.1	-28.9	0.0	0.0	-3.1
8/17/1999	-12.8	-1.3	-27.6	-55.3	0.0	15.9	7.3	17.2	0.0	70.6	-14.5	0.0	0.0	-1.2
8/24/1999	-6.7	-1.1	-28.1	-62.3	0.0	14.6	7.3	17.7	0.0	77.0	-15.9	0.0	0.0	-2.0
8/31/1999	-1.2	-0.3	-28.7	-32.5	0.0	9.5	7.3	17.4	0.0	53.6	-20.0	0.0	0.0	-2.3
9/7/1999	-8.0	-1.0	-29.5	-20.6	0.0	12.4	7.3	17.1	0.0	39.6	-16.3	0.2	0.0	-1.8
9/14/1999	-2.8	-1.7	-30.3	-16.0	0.0	8.0	4.4	17.1	0.0	35.0	-11.9	-0.2	0.0	-1.5
9/21/1999	0.0	-6.3	-30.9	-34.3	0.0	5.7	4.1	17.3	0.0	45.3	-3.6	0.0	0.0	-1.1
9/28/1999	0.0	-2.8	-30.8	-63.4	0.0	5.3	4.1	18.1	0.0	69.4	-2.4	0.0	0.0	-1.2
9/30/1999	-4.6	-2.5	-30.5	-67.8	0.0	8.0	4.1	18.6	0.0	74.1	-1.1	0.0	0.0	-1.0
TOTAL 99	**-640.1**	**-37.9**	**-1065.4**	**-12200.3**	**-8.6**	**478.0**	**293.6**	**1082.6**	**5.8**	**12006.8**	**17.7**	**0.0**	**0.0**	**11.0**

Note: All values in mm, volume in m^3 = mm * (1 m/1000 mm) * 10950 cells * 4002 m^2.
Values Accumulated between timesteps.

TABLE 9.2

WRIA 55 WEEKLY WATER BALANCE
(values in mm)

	Major WRIA Inflows					Major WRIA Outflows					Change in Storage			
Date	Precipitation	Irrigation	Goundwater	River	Overland	Evapotranspiration	Well Abstraction	Groundwater	Overland	River	Subsurface Storage	Canopy Storage	Snow Storage	Overland Storage
10/2/1993	-2.0	-0.1	-3.9	0.0	0.0	7.7	0.3	0.6	0.1	0.0	-6.6	-0.1	0.0	-0.5
10/9/1993	-0.7	0.0	-3.9	0.0	0.0	3.0	0.1	0.6	0.1	5.1	-3.9	0.0	0.0	-0.2
10/16/1993	-34.5	0.0	-3.8	0.0	0.0	7.1	0.1	0.6	0.1	5.2	16.2	5.4	0.0	2.5
10/23/1993	-11.9	0.0	-3.8	0.0	0.0	8.3	0.1	0.6	0.1	5.4	2.4	-2.1	0.0	-0.1
10/31/1993	-1.0	0.0	-3.8	0.0	0.0	7.7	0.1	0.6	0.1	5.1	-4.8	-3.1	0.0	-1.1
11/7/1993	-0.8	0.0	-3.8	0.0	0.0	1.2	0.1	0.6	0.1	4.9	-2.3	0.1	0.1	-0.5
11/14/1993	-0.2	0.0	-3.7	0.0	0.0	0.2	0.1	0.6	0.1	5.1	-2.0	0.0	0.0	-0.3
11/21/1993	-13.4	0.0	-3.7	0.0	0.0	0.3	0.1	0.6	0.1	6.6	2.0	3.6	4.6	0.2
11/28/1993	-5.5	0.0	-3.8	0.0	0.0	0.3	0.1	0.6	0.1	5.4	2.5	0.6	-0.6	0.2
12/5/1993	-41.7	0.0	-3.8	0.0	0.0	0.1	0.2	0.6	0.1	5.4	29.3	1.0	-1.1	6.9
12/12/1993	-38.4	0.0	-3.9	0.0	0.0	0.0	0.3	0.6	0.1	5.4	26.0	0.0	-0.1	5.7
12/19/1993	-2.1	0.0	-3.9	0.0	0.0	0.0	0.3	0.6	0.1	5.4	-2.3	0.0	1.8	-1.2
12/27/1993	-2.6	0.0	-4.0	0.0	0.0	0.0	0.3	0.6	0.1	5.5	-1.9	0.0	2.6	-0.9
1/3/1994	-26.2	0.0	-4.0	0.0	0.0	0.0	0.3	0.6	0.2	6.9	20.0	-5.2	2.7	4.0
1/10/1994	-13.6	0.0	-3.9	0.0	0.0	0.0	0.2	0.6	0.1	9.0	9.5	0.9	-3.4	1.3
1/17/1994	-6.3	0.0	-4.0	0.0	0.0	0.0	0.2	0.6	0.2	7.7	2.7	0.5	-1.8	-0.3
1/24/1994	-4.8	0.0	-4.1	0.0	0.0	0.0	0.2	0.6	0.1	6.3	0.5	1.4	-0.7	-0.3
1/31/1994	-0.6	0.0	-4.0	0.0	0.0	0.0	0.2	0.6	0.1	6.1	-1.9	0.1	0.0	-0.9
2/7/1994	-0.3	0.0	-4.0	0.0	0.0	0.6	0.3	0.6	0.1	8.5	-2.0	-0.2	0.1	-0.9
2/14/1994	-15.1	0.0	-3.9	0.0	0.0	0.7	0.3	0.6	0.1	8.6	-0.6	0.4	12.4	-0.7
2/22/1994	-8.4	0.0	-3.9	0.0	0.0	0.8	0.3	0.6	0.1	7.2	-0.1	0.3	5.2	-0.6
3/1/1994	-16.1	0.0	-3.9	0.0	0.0	0.9	0.3	0.6	0.1	6.9	4.7	1.7	3.7	0.8
3/8/1994	-8.2	0.0	-3.9	0.0	0.0	7.3	0.3	0.6	0.2	6.2	10.9	-1.2	-17.4	2.9
3/15/1994	-3.0	0.0	-4.1	0.0	0.0	7.2	0.3	0.7	0.1	5.8	-3.1	-2.4	-2.1	-1.0
3/22/1994	-17.5	0.0	-4.3	0.0	0.0	7.3	0.3	0.7	0.2	5.9	3.3	2.3	-1.3	0.5
3/29/1994	-1.0	0.0	-4.4	0.0	0.0	7.2	0.3	0.7	0.1	5.9	-4.3	-3.4	-0.4	-1.4
4/5/1994	-14.0	0.0	-4.4	0.0	0.0	15.5	0.4	0.7	0.1	7.6	-4.5	2.1	0.2	-1.7
4/12/1994	-16.1	0.0	-4.5	0.0	0.0	20.7	0.5	0.7	0.1	8.5	-3.6	-2.1	-0.2	-1.3
4/20/1994	-9.0	0.0	-4.6	0.0	0.0	19.3	0.5	0.7	0.1	8.0	-8.7	0.4	-1.4	-3.0
4/27/1994	-11.1	0.0	-4.8	0.0	0.0	18.9	0.5	0.7	0.1	7.6	-6.7	-0.4	-0.4	-2.5
5/4/1994	-3.2	-0.1	-4.8	0.0	0.0	20.4	0.6	0.7	0.1	6.3	-13.9	-0.5	-0.3	-3.9
5/11/1994	-0.6	-0.1	-4.4	0.0	0.0	18.7	0.6	0.7	0.1	5.9	-16.6	0.0	-2.0	-1.5
5/18/1994	-13.5	-0.1	-4.3	0.0	0.0	21.5	0.6	0.7	0.1	5.8	-9.0	-0.1	-0.3	-0.9
5/25/1994	-14.6	-0.1	-4.2	0.0	0.0	23.3	0.6	0.7	0.1	6.2	-10.0	0.0	0.0	-0.5
6/1/1994	-4.4	-0.1	-4.1	0.0	0.0	16.7	0.7	0.7	0.1	5.5	-13.2	0.0	0.0	-0.6
6/8/1994	-22.8	-0.2	-3.9	0.0	0.0	25.0	0.9	0.7	0.1	5.4	-5.2	0.9	0.0	0.0
6/16/1994	-12.4	-0.1	-3.9	0.0	0.0	21.3	0.9	0.7	0.1	5.5	-9.9	-0.5	0.0	-0.5
6/23/1994	-3.9	-0.2	-3.8	0.0	0.0	15.8	0.9	0.7	0.1	5.1	-12.2	-0.5	0.0	-0.7
6/30/1994	-8.0	-0.2	-3.8	0.0	0.0	16.8	0.9	0.6	0.1	4.8	-9.9	0.0	0.0	-0.5
7/7/1994	-2.0	-0.2	-3.7	0.0	0.0	14.5	0.9	0.6	0.1	4.7	-12.8	0.0	0.0	-0.7
7/14/1994	0.0	-0.2	-3.6	0.0	0.0	10.7	0.9	0.6	0.1	4.6	-10.8	0.0	0.0	-0.7
7/21/1994	0.0	-0.2	-3.6	0.0	0.0	8.5	0.9	0.6	0.1	4.6	-8.7	0.0	0.0	-0.7
7/28/1994	0.0	-0.1	-3.6	0.0	0.0	7.2	0.9	0.6	0.1	4.5	-7.3	0.0	0.0	-0.6
8/4/1994	-0.4	-0.2	-3.6	0.0	0.0	6.4	0.7	0.6	0.1	4.4	-6.2	0.0	0.0	-0.6
8/12/1994	-0.6	-0.1	-3.6	0.0	0.0	5.6	0.6	0.6	0.1	4.4	-5.3	0.0	0.0	-0.5
8/19/1994	-0.1	0.0	-3.6	0.0	0.0	4.8	0.6	0.6	0.1	4.3	-5.0	0.0	0.0	-0.5
8/26/1994	0.0	0.0	-3.7	0.0	0.0	4.4	0.6	0.6	0.1	4.3	-4.6	0.0	0.0	-0.5
9/2/1994	-4.0	0.0	-3.7	0.0	0.0	5.7	0.6	0.6	0.1	4.3	-3.4	1.1	0.0	-0.2
9/9/1994	-36.9	-0.2	-3.6	0.0	0.0	21.7	0.3	0.6	0.1	4.2	12.3	-0.4	0.0	1.4
9/16/1994	-5.0	-0.2	-3.7	0.0	0.0	14.1	0.3	0.6	0.1	4.2	-8.3	-0.8	0.0	-1.1
9/23/1994	0.0	-0.2	-3.9	0.0	0.0	7.1	0.3	0.6	0.1	4.2	-7.1	0.0	0.0	-0.6
9/30/1994	0.0	-0.2	-3.9	0.0	0.0	5.1	0.3	0.6	0.1	4.2	-5.1	0.0	0.0	-0.4
TOTAL 94	**-458.6**	**-3.3**	**-205.7**	**0.0**	**-0.1**	**437.4**	**22.8**	**33.4**	**6.4**	**294.8**	**-101.5**	**-0.1**	**0.0**	**-9.2**

Note: All values in mm, volume in m^3 = mm * 1,752,000 m^3/mm
Values accumulated between timesteps

TABLE 9.2

WRIA 55 WEEKLY WATER BALANCE
(values in mm)

	Major WRIA Inflows					Major WRIA Outflows					Change in Storage			
Date	Precipitation	Irrigation	Goundwater	River	Overland	Evapotranspiration	Well Abstraction	Groundwater	Overland	River	Subsurface Storage	Canopy Storage	Snow Storage	Overland Storage
10/8/1994	0.0	0.0	-3.9	0.0	0.0	1.7	0.1	0.6	0.1	4.4	-2.7	0.0	0.0	-0.1
10/15/1994	-34.3	0.0	-3.9	0.0	0.0	4.6	0.1	0.6	0.1	4.2	18.4	5.4	0.9	3.3
10/22/1994	-9.5	0.0	-3.8	0.0	0.0	8.3	0.1	0.6	0.1	4.3	1.0	-0.9	-0.1	-0.7
10/29/1994	-55.9	0.0	-3.8	0.0	0.0	8.4	0.1	0.6	0.1	4.2	34.2	0.9	2.4	6.4
11/5/1994	-39.6	0.0	-3.8	0.0	0.0	3.3	0.1	0.6	0.1	4.4	24.8	0.1	2.8	4.1
11/12/1994	-14.2	0.0	-4.0	0.0	0.0	0.3	0.1	0.6	0.1	4.4	7.9	0.0	1.5	0.8
11/19/1994	-41.5	0.0	-4.0	0.0	0.0	0.3	0.1	0.6	0.1	4.6	24.6	0.0	6.0	4.2
11/26/1994	-14.9	0.0	-4.0	0.0	0.0	0.3	0.1	0.6	0.1	5.2	7.6	0.0	1.7	-0.1
12/4/1994	-24.6	0.0	-4.1	0.0	0.0	0.2	0.2	0.6	0.2	6.9	14.3	0.0	2.3	1.3
12/11/1994	-16.1	0.0	-4.2	0.0	0.0	0.0	0.3	0.7	0.1	6.9	-1.9	0.0	16.1	-1.2
12/18/1994	-26.3	0.0	-4.3	0.0	0.0	0.0	0.3	0.7	0.2	7.8	23.0	0.0	-7.3	3.8
12/25/1994	-8.7	0.0	-4.3	0.0	0.0	0.0	0.3	0.7	0.1	8.7	5.7	0.0	-4.6	0.1
1/1/1995	-32.0	0.0	-4.4	0.0	-0.1	0.0	0.3	0.7	0.2	9.5	21.2	0.0	-5.6	3.6
1/8/1995	-5.4	0.0	-4.4	0.0	0.0	0.0	0.2	0.7	0.1	7.2	2.3	-3.4	0.8	-0.3
1/15/1995	-42.4	0.0	-4.3	0.0	-0.1	0.0	0.2	0.7	0.3	7.1	22.5	-0.1	-3.3	6.9
1/22/1995	-22.9	0.0	-4.6	0.0	0.0	0.0	0.2	0.7	0.2	12.2	4.5	0.4	7.0	-0.3
1/30/1995	-8.0	0.0	-4.5	0.0	0.0	0.0	0.2	0.7	0.2	14.6	2.4	1.4	-4.5	0.3
2/6/1995	-24.0	0.0	-4.5	0.0	0.0	0.5	0.3	0.7	0.3	10.2	4.0	0.2	8.1	0.3
2/13/1995	-7.4	0.0	-4.9	0.0	0.0	0.7	0.3	0.8	0.2	17.0	-2.7	0.3	5.9	-1.8
2/20/1995	-50.1	0.0	-4.7	0.0	0.0	0.8	0.3	0.8	0.3	15.9	7.2	0.4	34.3	0.6
2/27/1995	-1.1	0.0	-5.1	0.0	0.0	0.7	0.3	0.8	0.3	11.9	-2.5	-0.1	-0.2	-1.2
3/6/1995	-8.5	0.0	-5.3	0.0	-0.1	6.0	0.3	0.8	0.3	15.3	17.1	0.2	-34.7	5.9
3/13/1995	-46.6	0.0	-4.9	0.0	-0.2	7.4	0.3	0.8	0.6	10.6	20.5	0.6	-10.4	9.0
3/20/1995	-30.9	0.0	-4.8	0.0	-0.1	7.4	0.3	0.8	0.5	9.6	8.5	0.0	-1.3	0.9
3/28/1995	-3.2	0.0	-4.8	0.0	0.0	7.3	0.3	0.8	0.3	9.5	-5.5	-2.9	-2.5	-3.8
4/4/1995	-2.4	0.0	-4.7	0.0	0.0	12.5	0.4	0.8	0.3	13.4	-9.7	-2.0	-1.6	-4.4
4/11/1995	-11.4	0.0	-4.4	0.0	0.0	20.0	0.5	0.7	0.3	21.3	-9.0	0.1	-0.3	-4.8
4/18/1995	-19.4	0.0	-4.3	0.0	0.0	20.4	0.5	0.7	0.3	20.4	-4.7	0.0	0.4	-2.1
4/25/1995	-3.0	0.0	-4.2	0.0	0.0	18.3	0.5	0.7	0.2	16.6	-12.4	-0.2	-1.0	-5.7
5/2/1995	-14.4	0.0	-4.1	0.0	0.0	19.7	0.5	0.7	0.2	12.4	-7.5	2.5	-1.0	-3.5
5/9/1995	-4.4	-0.1	-4.1	0.0	0.0	25.1	0.6	0.7	0.2	9.7	-16.8	-2.6	-1.5	-3.7
5/16/1995	-10.0	-0.1	-4.2	0.0	0.0	22.5	0.6	0.7	0.2	8.6	-13.3	-0.1	-1.5	-1.4
5/24/1995	0.0	0.0	-4.3	0.0	0.0	17.0	0.6	0.7	0.2	7.9	-17.4	0.0	-1.3	-1.2
5/31/1995	-0.1	-0.1	-4.0	0.0	0.0	14.4	0.6	0.7	0.2	7.4	-15.1	0.0	-2.0	-0.6
6/7/1995	-37.1	-0.1	-3.8	0.0	0.0	23.3	0.9	0.7	0.2	7.0	3.7	4.7	-1.4	2.8
6/14/1995	-14.6	-0.1	-3.9	0.0	0.0	31.2	0.9	0.7	0.2	6.7	-12.9	-4.6	-1.0	-2.2
6/21/1995	-28.1	-0.1	-3.7	0.0	0.0	28.2	0.9	0.7	0.2	6.3	-6.0	2.4	-1.1	0.3
6/28/1995	-1.0	-0.1	-3.8	0.0	0.0	19.4	0.9	0.7	0.2	6.2	-16.7	-2.5	-1.3	-1.5
7/5/1995	-14.3	-0.1	-3.6	0.0	0.0	23.8	0.9	0.6	0.2	6.2	-11.0	-0.1	-0.9	-1.0
7/12/1995	-8.2	-0.2	-3.6	0.0	0.0	20.5	0.9	0.6	0.1	6.1	-13.1	0.0	0.0	-1.9
7/20/1995	0.0	-0.1	-3.6	0.0	0.0	12.8	0.9	0.6	0.1	6.1	-13.4	0.0	0.0	-1.3
7/27/1995	-3.4	-0.2	-3.5	0.0	0.0	13.0	0.9	0.6	0.1	6.2	-10.3	0.0	0.0	-1.0
8/3/1995	0.0	-0.2	-3.4	0.0	0.0	8.6	0.8	0.6	0.1	5.9	-9.3	0.0	0.0	-0.9
8/10/1995	-5.9	-0.1	-3.5	0.0	0.0	11.3	0.6	0.6	0.1	5.6	-6.4	0.0	0.0	-0.6
8/17/1995	-7.3	-0.1	-3.6	0.0	0.0	12.1	0.6	0.6	0.1	5.0	-5.8	0.0	0.0	-0.5
8/24/1995	-0.9	0.0	-3.6	0.0	0.0	6.7	0.6	0.6	0.1	4.8	-6.5	0.0	0.0	-0.7
8/31/1995	-2.2	0.0	-3.5	0.0	0.0	7.2	0.6	0.6	0.1	4.8	-5.9	0.0	0.0	-0.5
9/7/1995	-34.3	-0.2	-3.5	0.0	0.0	10.5	0.3	0.6	0.1	4.7	14.7	5.0	0.0	2.2
9/15/1995	-8.9	-0.2	-3.6	0.0	0.0	19.4	0.3	0.6	0.1	4.6	-6.0	-4.9	0.0	-1.6
9/22/1995	-0.3	-0.2	-3.7	0.0	0.0	10.7	0.3	0.6	0.1	4.6	-10.5	-0.2	0.0	-0.9
9/29/1995	-27.2	-0.2	-3.8	0.0	0.0	15.3	0.3	0.6	0.1	4.5	4.0	4.9	0.0	1.1
TOTAL 95	**-826.7**	**-2.8**	**-209.1**	**0.0**	**-0.9**	**502.0**	**22.5**	**34.6**	**9.6**	**429.3**	**38.9**	**4.9**	**0.0**	**6.6**

Note: All values in mm, volume in m^3 = mm * 1,752,000 m^3/mm
Values accumulated between timesteps

TABLE 9.2

WRIA 55 WEEKLY WATER BALANCE
(values in mm)

	Major WRIA Inflows					Major WRIA Outflows					Change in Storage			
Date	Precipitation	Irrigation	Goundwater	River	Overland	Evapotranspiration	Well Abstraction	Groundwater	Overland	River	Subsurface Storage	Canopy Storage	Snow Storage	Overland Storage
10/6/1995	-36.6	-0.1	-3.7	0.0	0.0	12.0	0.2	0.6	0.1	4.6	18.5	0.0	0.2	2.4
10/13/1995	-41.6	0.0	-3.8	0.0	0.0	8.4	0.1	0.6	0.1	4.8	22.9	0.2	-0.2	5.4
10/20/1995	-19.7	0.0	-3.9	0.0	0.0	8.4	0.1	0.6	0.1	4.5	6.0	-0.2	0.0	0.5
10/27/1995	-22.2	0.0	-4.0	0.0	0.0	8.4	0.1	0.6	0.1	4.7	8.1	-0.6	0.6	1.0
11/3/1995	0.0	0.0	-4.0	0.0	0.0	5.0	0.1	0.6	0.1	5.4	-3.9	-2.8	-0.1	-1.2
11/11/1995	-20.0	0.0	-4.0	0.0	0.0	0.3	0.1	0.6	0.1	6.6	8.9	3.7	2.1	1.5
11/18/1995	-15.4	0.0	-4.2	0.0	0.0	0.3	0.1	0.6	0.1	7.9	7.9	0.0	2.2	1.6
11/25/1995	-9.9	0.0	-4.6	0.0	0.0	0.3	0.1	0.7	0.1	7.5	5.3	0.0	1.3	0.6
12/2/1995	-37.4	0.0	-4.9	0.0	0.0	0.2	0.2	0.7	0.2	7.0	25.9	0.4	-0.1	4.8
12/9/1995	-18.1	0.0	-5.8	0.0	0.0	0.0	0.3	0.8	0.2	6.2	4.0	0.0	10.9	-0.5
12/16/1995	-51.6	0.0	-5.6	0.0	-0.1	0.0	0.3	0.8	0.4	6.9	41.4	0.0	-14.2	10.3
12/23/1995	-0.8	0.0	-5.3	0.0	0.0	0.0	0.3	0.8	0.2	6.2	-2.0	0.0	0.5	-4.2
12/30/1995	-5.5	0.0	-4.9	0.0	0.0	0.0	0.3	0.8	0.2	8.0	-2.5	0.0	5.5	-1.6
1/7/1996	-9.7	0.0	-4.4	0.0	0.0	0.0	0.3	0.7	0.2	9.5	3.5	-4.4	4.5	0.6
1/14/1996	-8.6	0.0	-4.2	0.0	0.0	0.0	0.2	0.7	0.2	13.5	8.1	0.6	-9.7	1.6
1/21/1996	-25.1	0.0	-4.3	0.0	0.0	0.0	0.2	0.7	0.3	13.4	1.9	0.2	14.7	0.0
1/28/1996	-16.5	0.0	-4.3	0.0	0.0	0.0	0.2	0.7	0.2	9.3	-2.8	0.0	16.5	-1.2
2/4/1996	-13.1	0.0	-4.2	0.0	0.0	0.3	0.3	0.7	0.2	8.7	-0.7	0.9	8.4	-0.4
2/11/1996	-36.8	0.0	-4.2	0.0	0.0	0.7	0.3	0.7	0.3	9.6	4.8	1.2	23.3	1.0
2/18/1996	-28.9	0.0	-5.5	0.0	0.0	0.7	0.3	0.8	0.3	12.0	4.9	0.2	19.5	0.0
2/25/1996	-35.6	0.0	-5.5	0.0	0.0	0.8	0.3	0.9	0.3	8.6	2.7	0.0	28.5	-0.2
3/4/1996	-12.3	0.0	-5.1	0.0	0.0	3.5	0.3	0.8	0.3	7.6	16.4	1.2	-22.7	3.9
3/11/1996	-16.8	0.0	-4.5	0.0	-0.1	7.4	0.3	0.8	0.4	8.4	18.2	-0.2	-32.5	5.9
3/18/1996	-3.9	0.0	-4.2	0.0	0.0	7.3	0.3	0.7	0.4	8.1	4.3	-0.8	-19.4	0.7
3/25/1996	-3.9	0.0	-4.1	0.0	0.0	7.3	0.3	0.7	0.4	8.7	4.3	-0.7	-22.4	2.1
4/1/1996	-11.1	0.0	-4.0	0.0	0.0	8.2	0.3	0.7	0.4	9.8	-1.7	0.2	-7.2	-0.7
4/8/1996	-2.2	0.0	-4.0	0.0	0.0	20.1	0.5	0.7	0.3	19.6	-13.4	-3.4	-4.3	-5.6
4/15/1996	-11.1	0.0	-4.2	0.0	0.0	19.3	0.5	0.7	0.3	15.9	-9.0	-0.1	-0.9	-4.2
4/22/1996	-26.8	0.0	-4.4	0.0	0.0	20.1	0.5	0.7	0.2	15.1	-1.0	4.2	-0.1	-1.7
4/30/1996	-23.2	0.0	-4.7	0.0	0.0	21.0	0.5	0.8	0.2	16.7	0.3	-4.2	0.0	-0.3
5/7/1996	-6.2	-0.1	-4.9	0.0	0.0	27.2	0.6	0.8	0.2	12.7	-17.3	-0.4	-0.4	-5.8
5/14/1996	-21.8	-0.1	-4.5	0.0	0.0	26.4	0.6	0.8	0.2	10.2	-8.5	3.9	-0.9	-2.4
5/21/1996	-35.5	-0.1	-4.4	0.0	0.0	32.4	0.6	0.7	0.2	8.8	1.4	-2.8	-0.8	0.9
5/28/1996	-11.8	-0.1	-4.6	0.0	0.0	28.0	0.6	0.8	0.2	9.8	-15.0	-1.1	-1.0	-2.6
6/4/1996	-0.7	-0.1	-4.5	0.0	0.0	22.2	0.8	0.8	0.2	7.7	-20.7	0.0	-1.3	-2.3
6/11/1996	0.0	-0.1	-4.3	0.0	0.0	18.4	0.9	0.7	0.2	6.6	-19.0	-0.1	-0.6	-1.5
6/18/1996	0.0	-0.2	-3.8	0.0	0.0	15.6	0.9	0.7	0.2	7.2	-17.2	0.0	0.0	-1.0
6/26/1996	-56.3	-0.1	-3.7	0.0	0.0	28.8	0.9	0.7	0.2	6.9	14.7	3.4	0.0	5.6
7/3/1996	-19.1	-0.2	-3.6	0.0	0.0	34.7	0.9	0.7	0.2	6.3	-13.3	-3.4	0.0	-2.6
7/10/1996	-1.4	-0.2	-3.4	0.0	0.0	25.9	0.9	0.6	0.2	6.1	-23.8	0.0	0.0	-3.1
7/17/1996	-2.6	-0.2	-3.4	0.0	0.0	18.3	0.9	0.6	0.2	5.4	-16.7	0.0	0.0	-1.2
7/24/1996	-2.6	-0.2	-3.3	0.0	0.0	15.1	0.9	0.6	0.2	5.2	-13.4	0.0	0.0	-1.0
7/31/1996	-4.1	-0.2	-3.3	0.0	0.0	13.7	0.9	0.6	0.1	5.5	-10.7	0.0	0.0	-0.9
8/7/1996	-13.3	-0.1	-3.3	0.0	0.0	17.8	0.6	0.6	0.2	5.0	-6.3	0.0	0.0	-0.4
8/14/1996	-1.0	0.0	-3.4	0.0	0.0	8.2	0.6	0.6	0.1	5.1	-8.2	0.0	0.0	-0.7
8/22/1996	-3.0	0.0	-3.4	0.0	0.0	8.9	0.6	0.6	0.1	4.9	-6.9	0.0	0.0	-0.6
8/29/1996	-0.8	-0.1	-3.4	0.0	0.0	6.8	0.6	0.6	0.1	4.8	-6.8	0.0	0.0	-0.7
9/5/1996	-4.6	-0.1	-3.4	0.0	0.0	7.7	0.4	0.6	0.1	4.8	-4.7	0.3	0.0	-0.4
9/12/1996	-1.7	-0.2	-3.4	0.0	0.0	5.9	0.3	0.6	0.1	4.7	-5.0	-0.3	0.0	-0.4
9/19/1996	-34.7	-0.2	-3.6	0.0	0.0	19.8	0.3	0.6	0.1	4.6	7.8	3.8	0.0	1.0
9/26/1996	-8.2	-0.2	-3.7	0.0	0.0	15.9	0.3	0.6	0.1	4.6	-5.0	-3.8	0.0	-0.7
TOTAL 96	**-794.4**	**-6.0**	**-426.4**	**0.0**	**-1.5**	**1075.1**	**45.3**	**70.8**	**20.3**	**845.0**	**29.4**	**4.9**	**0.0**	**8.9**

Note: All values in mm, volume in m^3 = mm * 1,752,000 m^3/mm
Values accumulated between timesteps

TABLE 9.2

WRIA 55 WEEKLY WATER BALANCE
(values in mm)

	Major WRIA Inflows					Major WRIA Outflows					Change in Storage			
Date	Precipitation	Irrigation	Goundwater	River	Overland	Evapotranspiration	Well Abstraction	Groundwater	Overland	River	Subsurface Storage	Canopy Storage	Snow Storage	Overland Storage
10/3/1996	-1.7	-0.1	-3.7	0.0	0.0	6.8	0.2	0.6	0.1	4.6	-6.1	0.0	0.0	-0.4
10/10/1996	-3.8	0.0	-3.6	0.0	0.0	4.6	0.1	0.6	0.1	4.6	-2.7	0.0	0.0	-0.1
10/18/1996	-55.4	0.0	-3.6	0.0	0.0	8.2	0.1	0.6	0.1	4.6	29.5	5.4	1.9	6.8
10/25/1996	-78.0	0.0	-3.6	0.0	0.0	8.5	0.1	0.6	0.2	4.7	38.0	0.0	18.1	8.8
11/1/1996	-33.3	0.0	-3.7	0.0	0.0	8.2	0.1	0.6	0.2	4.6	21.8	-0.4	-4.7	2.7
11/8/1996	-10.8	0.0	-3.7	0.0	0.0	0.3	0.1	0.6	0.2	4.8	7.3	0.4	-1.8	0.3
11/15/1996	-13.4	0.0	-3.8	0.0	0.0	0.3	0.1	0.6	0.2	5.0	6.3	0.0	1.9	0.4
11/22/1996	-43.5	0.0	-3.8	0.0	0.0	0.3	0.1	0.6	0.2	5.8	21.9	0.0	13.2	1.5
11/29/1996	-41.1	0.0	-3.8	0.0	-0.1	0.3	0.1	0.6	0.2	7.6	20.7	0.0	9.5	1.8
12/6/1996	-34.0	0.0	-3.9	0.0	0.0	0.0	0.3	0.6	0.2	7.5	1.4	0.0	27.4	-1.0
12/14/1996	-55.2	0.0	-4.1	0.0	-0.1	0.0	0.3	0.7	0.3	7.2	28.9	0.0	5.1	5.5
12/21/1996	-10.9	0.0	-4.3	0.0	0.0	0.0	0.3	0.7	0.2	8.3	-4.0	0.0	10.9	-2.4
12/28/1996	-32.3	0.0	-4.2	0.0	0.0	0.0	0.3	0.7	0.2	10.4	-3.0	0.0	32.3	-1.5
1/4/1997	-43.0	0.0	-4.2	0.0	-0.1	0.0	0.3	0.7	0.4	10.2	32.6	-5.2	-14.7	10.6
1/11/1997	-8.2	0.0	-4.9	0.0	0.0	0.0	0.2	0.8	0.3	15.2	2.3	0.9	-4.7	-1.4
1/18/1997	-15.2	0.0	-4.8	0.0	0.0	0.0	0.2	0.8	0.2	11.9	-4.4	0.6	13.7	-2.2
1/25/1997	-11.5	0.0	-4.5	0.0	0.0	0.0	0.2	0.7	0.2	9.2	-2.0	0.7	8.0	-1.1
2/1/1997	-14.7	0.0	-4.3	0.0	0.0	0.1	0.2	0.7	0.2	16.0	4.9	1.5	-1.4	1.5
2/9/1997	-6.8	0.0	-4.3	0.0	0.0	0.7	0.3	0.7	0.2	17.9	-3.7	0.0	6.1	-1.7
2/16/1997	-21.2	0.0	-4.2	0.0	0.0	0.7	0.3	0.7	0.2	12.7	0.8	0.3	14.7	-1.0
2/23/1997	-23.3	0.0	-4.2	0.0	0.0	0.8	0.3	0.7	0.3	10.5	3.1	0.1	13.9	-0.5
3/2/1997	-26.5	0.0	-4.4	0.0	-0.1	2.0	0.3	0.7	0.3	10.0	17.6	1.1	-10.8	5.3
3/9/1997	-28.5	0.0	-4.2	0.0	-0.2	7.4	0.3	0.7	0.5	10.2	27.7	0.0	-45.4	14.9
3/16/1997	-27.6	0.0	-4.2	0.0	-0.2	7.4	0.3	0.7	0.6	8.7	17.5	0.1	-27.2	6.5
3/23/1997	-20.0	0.0	-4.3	0.0	-0.1	7.3	0.3	0.7	0.6	9.6	5.7	-1.0	-10.1	-2.6
3/30/1997	-4.9	0.0	-4.8	0.0	0.0	7.3	0.3	0.8	0.6	9.8	-0.7	-1.2	-14.0	-2.2
4/7/1997	-1.1	0.0	-4.9	0.0	0.0	17.7	0.5	0.8	0.5	22.9	-13.0	-1.5	-4.6	-8.2
4/14/1997	-4.2	0.0	-4.6	0.0	0.0	18.9	0.5	0.8	0.4	26.5	-12.0	-0.2	-4.1	-6.0
4/21/1997	-30.9	0.0	-4.4	0.0	0.0	19.3	0.5	0.8	0.4	26.0	3.2	3.2	-5.4	1.2
4/28/1997	-23.7	0.0	-4.9	0.0	0.0	21.1	0.5	0.8	0.4	20.8	-1.4	-1.5	-4.5	0.3
5/5/1997	-18.9	-0.1	-5.4	0.0	0.0	27.7	0.6	0.8	0.3	16.2	-7.2	-2.5	-2.8	-3.0
5/12/1997	-1.1	-0.1	-5.4	0.0	0.0	26.5	0.6	0.8	0.3	11.8	-19.0	-0.3	-5.8	-6.3
5/19/1997	-0.5	-0.1	-5.6	0.0	0.0	21.2	0.6	0.9	0.2	11.2	-17.4	-0.2	-4.8	-3.3
5/26/1997	-25.8	0.0	-5.7	0.0	0.0	25.7	0.6	0.9	0.2	13.4	-4.8	3.5	-1.4	-1.9
6/3/1997	-33.3	-0.1	-5.3	0.0	0.0	33.6	0.7	0.8	0.3	11.6	-1.2	-3.3	-2.0	1.0
6/10/1997	-13.8	-0.1	-5.0	0.0	0.0	29.2	0.9	0.8	0.2	10.8	-16.1	-0.2	-1.6	-1.9
6/17/1997	-12.7	-0.1	-4.7	0.0	0.0	25.0	0.9	0.8	0.3	10.2	-13.8	0.0	-2.1	-0.8
6/24/1997	-10.0	-0.1	-4.4	0.0	0.0	21.8	0.9	0.8	0.2	9.1	-13.7	0.2	-1.0	-1.4
7/1/1997	-8.1	-0.1	-3.7	0.0	0.0	20.5	0.9	0.7	0.2	8.7	-14.2	-0.1	-1.6	-1.0
7/8/1997	-15.3	-0.2	-3.5	0.0	0.0	24.6	0.9	0.7	0.2	8.1	-13.5	2.2	-0.2	-2.1
7/15/1997	-17.1	-0.1	-3.5	0.0	0.0	28.9	0.9	0.7	0.2	7.6	-12.1	-2.4	0.0	-1.4
7/22/1997	-7.2	-0.2	-3.4	0.0	0.0	19.5	0.9	0.7	0.2	7.0	-14.1	0.0	0.0	-1.4
7/30/1997	-1.2	-0.2	-3.3	0.0	0.0	13.2	0.9	0.6	0.1	6.8	-13.4	0.0	0.0	-1.4
8/6/1997	-0.7	-0.2	-3.2	0.0	0.0	9.9	0.7	0.6	0.2	6.5	-10.5	0.0	0.0	-1.1
8/13/1997	-0.4	0.0	-3.3	0.0	0.0	7.9	0.6	0.6	0.1	6.3	-8.9	0.0	0.0	-1.0
8/20/1997	-1.0	-0.1	-3.2	0.0	0.0	7.7	0.6	0.6	0.1	5.6	-8.0	0.0	0.0	-0.9
8/27/1997	-12.3	-0.1	-3.3	0.0	0.0	15.9	0.6	0.6	0.2	5.3	-5.6	0.0	0.0	-0.4
9/3/1997	-8.1	-0.2	-3.2	0.0	0.0	9.7	0.5	0.6	0.1	5.3	-4.7	1.4	0.0	-0.5
9/10/1997	-3.1	-0.2	-3.3	0.0	0.0	8.8	0.3	0.6	0.1	5.1	-6.0	-1.4	0.0	-0.6
9/17/1997	-52.2	-0.2	-3.4	0.0	0.0	17.6	0.3	0.6	0.2	5.1	21.4	5.5	0.0	4.4
9/25/1997	-10.3	-0.2	-3.5	0.0	0.0	21.4	0.3	0.6	0.2	5.0	-6.6	-5.5	0.0	-2.0
10/2/1997	-4.3	-0.2	-3.6	0.0	0.0	14.2	0.3	0.6	0.1	5.0	-10.7	0.6	0.0	-1.8
TOTAL 97	**-981.9**	**-3.2**	**-214.6**	**0.0**	**-1.3**	**578.5**	**22.8**	**36.2**	**12.9**	**509.1**	**38.0**	**0.6**	**0.0**	**7.2**

Note: All values in mm, volume in m^3 = mm * 1,752,000 m^3/mm
Values accumulated between timesteps

TABLE 9.2

WRIA 55 WEEKLY WATER BALANCE
(values in mm)

	Major WRIA Inflows					Major WRIA Outflows					Change in Storage			
Date	Precipitation	Irrigation	Goundwater	River	Overland	Evapotranspiration	Well Abstraction	Groundwater	Overland	River	Subsurface Storage	Canopy Storage	Snow Storage	Overland Storage
10/9/1997	-30.8	0.0	-3.5	0.0	0.0	8.3	0.1	0.6	0.2	5.3	12.2	4.8	0.1	1.9
10/16/1997	-13.7	0.0	-3.6	0.0	0.0	8.4	0.1	0.6	0.1	5.9	3.3	-1.6	-0.1	0.4
10/23/1997	-2.2	0.0	-3.7	0.0	0.0	8.0	0.1	0.6	0.1	5.6	-4.2	-3.4	0.1	-1.0
10/30/1997	-50.6	0.0	-3.7	0.0	0.0	8.1	0.1	0.6	0.2	5.8	25.9	5.1	-0.1	6.8
11/6/1997	-10.7	0.0	-3.7	0.0	0.0	1.8	0.1	0.6	0.1	8.3	3.9	-0.1	0.6	-0.8
11/13/1997	-4.8	0.0	-3.7	0.0	0.0	0.3	0.1	0.6	0.1	7.1	1.1	-0.1	0.4	-0.4
11/21/1997	-35.7	0.0	-3.7	0.0	0.0	0.3	0.1	0.6	0.2	6.6	20.8	0.1	5.2	4.3
11/28/1997	-18.8	0.0	-3.8	0.0	0.0	0.3	0.1	0.6	0.2	8.2	10.0	0.0	1.9	1.8
12/5/1997	-1.0	0.0	-3.9	0.0	0.0	0.1	0.2	0.6	0.2	6.9	-1.6	0.0	-0.3	-0.7
12/12/1997	-9.5	0.0	-4.1	0.0	0.0	0.0	0.3	0.7	0.2	6.3	-1.9	0.0	9.5	-0.9
12/19/1997	-35.9	0.0	-4.1	0.0	0.0	0.0	0.3	0.7	0.2	8.3	27.2	0.0	-4.9	5.7
12/26/1997	-41.4	0.0	-4.0	0.0	0.0	0.0	0.3	0.7	0.2	8.1	-2.8	0.0	41.4	-1.3
1/2/1998	-39.0	0.0	-3.9	0.0	-0.1	0.0	0.3	0.7	0.3	9.5	23.3	-4.7	7.1	3.9
1/9/1998	-36.0	0.0	-3.8	0.0	0.0	0.0	0.2	0.6	0.2	9.7	2.2	0.3	27.3	-0.2
1/17/1998	-19.8	0.0	-3.7	0.0	0.0	0.0	0.2	0.6	0.2	8.0	-0.3	1.1	14.6	-0.5
1/24/1998	-27.5	0.0	-3.7	0.0	-0.1	0.0	0.2	0.6	0.3	9.7	22.2	0.9	-11.7	5.1
1/31/1998	-19.9	0.0	-3.8	0.0	-0.1	0.0	0.2	0.7	0.4	20.0	22.7	0.9	-28.3	6.2
2/7/1998	-4.6	0.0	-4.1	0.0	0.0	0.6	0.3	0.7	0.2	15.0	-3.6	0.2	1.5	-3.5
2/14/1998	-29.4	0.0	-4.2	0.0	0.0	0.7	0.3	0.7	0.2	11.5	-0.7	0.2	23.1	-1.5
2/21/1998	-14.3	0.0	-4.2	0.0	0.0	0.8	0.3	0.7	0.2	10.1	-1.1	0.1	9.7	-1.2
2/28/1998	-10.3	0.0	-4.2	0.0	0.0	0.8	0.3	0.7	0.2	9.0	1.7	1.2	-1.0	0.7
3/7/1998	-22.3	0.0	-4.1	0.0	-0.1	7.1	0.3	0.7	0.4	16.4	24.6	0.0	-38.0	10.3
3/15/1998	-25.4	0.0	-4.0	0.0	-0.1	7.3	0.3	0.7	0.8	24.6	12.5	-1.2	-18.0	3.6
3/22/1998	-9.7	0.0	-4.0	0.0	0.0	7.3	0.3	0.7	0.7	19.1	0.9	-0.2	-13.2	0.0
3/29/1998	-20.9	0.0	-4.3	0.0	0.0	7.4	0.3	0.7	0.8	17.1	2.9	1.1	-6.0	1.0
4/5/1998	-3.0	0.0	-4.6	0.0	0.0	14.9	0.4	0.8	0.5	15.2	-9.2	-4.1	-4.2	-4.6
4/12/1998	-6.6	0.0	-4.6	0.0	0.0	19.9	0.5	0.8	0.4	11.4	-12.3	-0.3	-1.9	-5.7
4/19/1998	0.0	0.0	-4.5	0.0	0.0	17.5	0.5	0.8	0.4	9.3	-14.0	-0.1	-2.3	-6.3
4/26/1998	-12.1	0.0	-4.4	0.0	0.0	18.1	0.5	0.7	0.3	9.7	-6.2	0.0	-3.4	-2.9
5/3/1998	0.0	0.0	-4.5	0.0	0.0	18.2	0.6	0.7	0.3	9.3	-15.5	-0.3	-4.3	-3.9
5/11/1998	-0.5	-0.1	-4.6	0.0	0.0	18.7	0.6	0.8	0.3	8.5	-17.6	-0.1	-2.1	-2.6
5/18/1998	-28.1	-0.1	-4.5	0.0	0.0	24.8	0.6	0.8	0.3	7.4	-3.5	3.8	-0.9	-0.3
5/25/1998	-31.7	-0.1	-4.2	0.0	0.0	30.7	0.6	0.7	0.3	7.1	-2.9	-0.1	-1.0	0.1
6/1/1998	-44.8	-0.1	-4.5	0.0	0.0	32.7	0.6	0.7	0.3	8.0	7.9	-3.8	-0.3	2.3
6/8/1998	-6.0	-0.2	-4.6	0.0	0.0	29.9	0.9	0.8	0.2	6.8	-22.3	-0.1	-0.1	-4.5
6/15/1998	-13.5	-0.1	-4.1	0.0	0.0	24.5	0.9	0.7	0.2	6.0	-15.2	2.0	0.0	-1.0
6/22/1998	-24.9	-0.2	-3.9	0.0	0.0	28.4	0.9	0.7	0.3	5.7	-6.4	-0.9	0.0	0.2
6/29/1998	-3.1	-0.2	-3.8	0.0	0.0	20.4	0.9	0.7	0.2	5.5	-17.4	-1.1	0.0	-1.7
7/7/1998	-15.6	-0.3	-3.6	0.0	0.0	26.3	0.9	0.7	0.2	5.3	-12.9	0.0	0.0	-0.7
7/14/1998	-12.4	-0.1	-3.6	0.0	0.0	24.1	0.9	0.6	0.2	5.2	-13.7	0.0	0.0	-0.9
7/21/1998	0.0	-0.2	-3.5	0.0	0.0	14.2	0.9	0.6	0.2	5.0	-15.1	0.0	0.0	-1.3
7/28/1998	-0.5	-0.1	-3.5	0.0	0.0	11.4	0.9	0.6	0.2	4.9	-11.7	0.0	0.0	-1.2
8/4/1998	-5.7	-0.2	-3.5	0.0	0.0	13.3	0.8	0.6	0.2	4.9	-8.7	0.0	0.0	-0.8
8/11/1998	0.0	-0.1	-3.5	0.0	0.0	7.3	0.6	0.6	0.2	4.8	-8.1	0.0	0.0	-0.8
8/18/1998	-0.9	-0.1	-3.5	0.0	0.0	7.3	0.6	0.6	0.2	4.8	-7.3	0.0	0.0	-0.8
8/25/1998	-3.1	0.0	-3.5	0.0	0.0	8.5	0.6	0.6	0.2	4.7	-6.5	0.0	0.0	-0.7
9/2/1998	0.0	0.0	-3.5	0.0	0.0	5.5	0.6	0.6	0.1	4.7	-6.3	0.0	0.0	-0.7
9/9/1998	-7.8	-0.2	-3.5	0.0	0.0	8.7	0.3	0.6	0.2	4.7	-3.4	0.8	0.0	-0.1
9/16/1998	-4.9	-0.2	-3.6	0.0	0.0	8.6	0.3	0.6	0.1	4.8	-4.4	-0.6	0.0	-0.4
9/23/1998	-5.6	-0.2	-3.7	0.0	0.0	8.7	0.3	0.6	0.2	4.7	-4.0	-0.2	0.0	-0.4
9/30/1998	-13.2	-0.2	-3.8	0.0	0.0	12.9	0.3	0.6	0.2	4.7	-1.3	0.0	0.0	-0.2
TOTAL 98	**-777.9**	**-3.2**	**-197.4**	**0.0**	**-0.7**	**514.6**	**22.4**	**33.3**	**13.0**	**430.0**	**-48.8**	**-5.4**	**-0.1**	**-2.2**

Note: All values in mm, volume in m^3 = mm * 1,752,000 m^3/mm
Values accumulated between timesteps

TABLE 9.2

WRIA 55 WEEKLY WATER BALANCE
(values in mm)

	Major WRIA Inflows					Major WRIA Outflows					Change in Storage			
Date	Precipitation	Irrigation	Goundwater	River	Overland	Evapotranspiration	Well Abstraction	Groundwater	Overland	River	Subsurface Storage	Canopy Storage	Snow Storage	Overland Storage
10/7/1998	-3.2	0.0	-3.8	0.0	0.0	4.2	0.1	0.6	0.1	4.8	-2.8	0.1	0.0	-0.2
10/14/1998	-12.3	0.0	-3.8	0.0	0.0	5.8	0.1	0.6	0.2	4.9	0.9	3.2	0.1	0.2
10/21/1998	-1.6	0.0	-3.8	0.0	0.0	6.2	0.1	0.6	0.1	4.9	-3.2	-3.0	-0.1	-0.4
10/29/1998	-4.6	0.0	-3.8	0.0	0.0	4.2	0.1	0.6	0.2	4.9	-2.3	0.7	0.2	-0.1
11/5/1998	-14.1	0.0	-3.8	0.0	0.0	3.5	0.1	0.6	0.1	5.1	2.7	3.8	1.2	0.5
11/12/1998	-6.0	0.0	-3.7	0.0	0.0	0.3	0.1	0.6	0.1	5.3	2.2	0.4	0.7	0.1
11/19/1998	-21.8	0.0	-3.7	0.0	0.0	0.3	0.1	0.6	0.2	5.4	13.0	0.0	2.9	2.8
11/26/1998	-55.7	0.0	-3.9	0.0	0.0	0.3	0.1	0.6	0.2	6.1	36.8	0.0	6.2	8.0
12/3/1998	-60.6	0.0	-4.0	0.0	0.0	0.2	0.2	0.6	0.3	7.5	39.2	0.2	6.6	7.7
12/10/1998	-15.8	0.0	-4.3	0.0	0.0	0.0	0.3	0.7	0.2	7.8	-1.5	0.0	15.3	-1.4
12/17/1998	-25.3	0.0	-4.4	0.0	0.0	0.0	0.3	0.7	0.3	8.1	23.4	0.0	-8.0	3.3
12/25/1998	-25.5	0.0	-4.4	0.0	0.0	0.0	0.3	0.7	0.2	7.9	-1.9	0.0	25.5	-1.4
1/1/1999	-76.1	0.0	-4.2	0.0	-0.1	0.0	0.3	0.7	0.4	10.2	32.4	0.0	26.6	6.0
1/8/1999	-2.4	0.0	-4.4	0.0	0.0	0.0	0.2	0.7	0.2	10.8	-2.8	0.0	2.4	-2.4
1/15/1999	-18.0	0.0	-4.4	0.0	0.0	0.0	0.2	0.7	0.3	9.9	15.6	-3.7	-5.4	2.9
1/22/1999	-39.1	0.0	-4.5	0.0	-0.1	0.0	0.2	0.7	0.4	13.9	17.2	0.9	4.9	3.9
1/29/1999	-14.8	0.0	-4.6	0.0	0.0	0.0	0.2	0.8	0.3	12.9	1.5	1.0	4.6	-0.6
2/5/1999	-24.9	0.0	-4.4	0.0	0.0	0.5	0.3	0.7	0.3	11.9	3.7	0.2	13.6	-0.7
2/12/1999	-24.9	0.0	-4.3	0.0	0.0	0.7	0.3	0.7	0.3	10.9	-0.2	0.3	18.7	-1.2
2/20/1999	-30.3	0.0	-4.1	0.0	0.0	0.8	0.3	0.7	0.2	9.5	1.8	0.0	22.3	-1.0
2/27/1999	-57.6	0.0	-4.0	0.0	-0.1	0.8	0.3	0.7	0.3	10.2	6.1	0.2	43.1	0.0
3/6/1999	-9.6	0.0	-4.4	0.0	0.0	5.6	0.3	0.7	0.3	12.3	14.8	0.7	-27.7	4.3
3/13/1999	-1.1	0.0	-4.5	0.0	-0.1	7.3	0.3	0.7	0.4	18.2	14.0	-0.5	-41.0	5.3
3/20/1999	-13.3	0.0	-4.3	0.0	-0.1	7.3	0.3	0.7	0.5	20.1	11.9	0.0	-26.4	3.1
3/27/1999	-6.3	0.0	-4.3	0.0	0.0	7.3	0.3	0.7	0.5	16.6	4.4	-0.3	-18.0	-0.2
4/3/1999	-14.2	0.0	-4.7	0.0	0.0	12.2	0.4	0.8	0.5	18.2	-0.2	-0.9	-10.1	-1.0
4/10/1999	-11.8	0.0	-4.6	0.0	0.0	20.8	0.5	0.8	0.4	12.4	-8.4	-1.1	-3.2	-4.3
4/18/1999	-2.8	0.0	-4.4	0.0	0.0	19.5	0.5	0.7	0.4	10.3	-6.8	0.2	-15.7	-2.2
4/25/1999	-9.0	0.0	-4.4	0.0	0.0	19.0	0.5	0.7	0.7	12.9	-5.3	-1.3	-11.4	-2.0
5/2/1999	-5.6	-0.1	-4.8	0.0	0.0	18.8	0.5	0.8	0.4	11.4	-11.2	-0.2	-4.4	-4.0
5/9/1999	-23.4	-0.1	-4.8	0.0	0.0	29.4	0.6	0.8	0.4	9.3	-7.9	-0.3	-1.2	-2.1
5/16/1999	-5.8	-0.1	-4.7	0.0	0.0	23.2	0.6	0.8	0.3	8.0	-14.3	-0.2	-3.9	-3.4
5/23/1999	-3.6	0.0	-4.5	0.0	0.0	20.7	0.6	0.8	0.3	8.5	-13.9	-0.2	-5.7	-3.0
5/30/1999	-1.6	-0.1	-4.7	0.0	0.0	17.8	0.6	0.8	0.3	9.1	-14.9	-0.2	-4.6	-1.8
6/6/1999	-12.1	-0.1	-5.0	0.0	0.0	23.6	0.8	0.8	0.2	8.4	-11.8	-0.1	-1.6	-2.2
6/14/1999	-5.4	-0.1	-4.9	0.0	0.0	18.8	0.9	0.8	0.2	7.0	-13.9	-0.1	-1.5	-1.4
6/21/1999	-7.4	-0.1	-4.6	0.0	0.0	18.5	0.9	0.8	0.2	6.5	-12.3	0.1	-2.4	0.1
6/28/1999	-44.7	-0.1	-4.5	0.0	0.0	29.5	0.9	0.8	0.3	6.7	7.9	0.8	-1.2	3.3
7/5/1999	-6.5	-0.1	-4.1	0.0	0.0	29.3	0.9	0.7	0.2	6.5	-21.0	-0.9	-1.2	-3.6
7/12/1999	-1.1	-0.2	-3.7	0.0	0.0	18.2	0.9	0.7	0.2	6.2	-17.6	-0.1	-0.3	-2.5
7/19/1999	-7.2	-0.2	-3.6	0.0	0.0	18.4	0.9	0.7	0.2	5.5	-12.7	0.0	0.0	-1.2
7/26/1999	-0.2	-0.2	-3.5	0.0	0.0	11.5	0.9	0.6	0.2	5.2	-12.2	0.0	0.0	-1.3
8/2/1999	-0.1	-0.2	-3.4	0.0	0.0	9.2	0.8	0.6	0.2	5.1	-10.1	0.0	0.0	-1.1
8/10/1999	-10.3	-0.1	-3.4	0.0	0.0	14.7	0.6	0.6	0.2	5.0	-6.1	0.0	0.0	-0.6
8/17/1999	-5.6	-0.1	-3.5	0.0	0.0	11.8	0.6	0.6	0.2	4.9	-7.4	0.0	0.0	-0.7
8/24/1999	-1.3	0.0	-3.5	0.0	0.0	7.4	0.6	0.6	0.2	4.9	-7.3	0.0	0.0	-0.8
8/31/1999	-14.2	-0.1	-3.4	0.0	0.0	16.6	0.6	0.6	0.2	4.8	-4.6	0.1	0.0	-0.2
9/7/1999	-4.3	-0.2	-3.4	0.0	0.0	8.1	0.3	0.6	0.2	4.9	-5.3	-0.1	0.0	-0.4
9/14/1999	0.0	-0.7	-3.4	0.0	0.0	4.4	0.3	0.6	0.2	4.8	-5.2	0.0	0.0	-0.5
9/21/1999	0.0	-0.3	-3.6	0.0	0.0	4.1	0.3	0.6	0.2	4.8	-5.1	0.0	0.0	-0.5
9/28/1999	-6.7	-0.3	-3.7	0.0	0.0	9.0	0.3	0.6	0.2	4.8	-3.6	0.0	0.0	-0.3
9/30/1999	0.0	0.0	-3.7	0.0	0.0	0.0	0.3	0.6	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL 99	**-769.5**	**-3.7**	**-214.1**	**0.0**	**-0.8**	**489.4**	**22.8**	**35.7**	**13.3**	**436.0**	**-4.4**	**0.0**	**0.0**	**0.7**

Note: All values in mm, volume in m^3 = mm * 1,752,000 m^3/mm
Values accumulated between timesteps

TABLE 9.3

SPOKANE RIVER GAINING AND LOSING REACHES

Reach Start	Reach End	Start Chainage	End Chainage	Interaction Type	Gaining (+) or Losing (-) Annual Average (cms)					
					1994	1995	1996	1997	1998	1999
Post Falls	Greenacres Waste	18,428	36,244	Losing	-8.3	-16.6	-26.0	-24.3	-14.9	-20.5
Greenacres Waste	Sullivan Rd	36,244	38,948	Transition from Losing to Gaining	7.8	6.1	4.9	5.4	6.4	5.3
Sullivan Rd.	Centennial Trail	38,948	44,488	Gaining	3.3	2.7	2.3	2.5	2.7	2.4
Centennial Trail	Upriver Dam	44,488	51,259	Negligible Interaction	-0.5	-0.5	-0.4	-0.4	-0.5	-0.5
Upriver Dam	Approx RM 79.1	51,259	52,341	Gaining	2.6	2.7	2.7	2.9	2.4	2.2
Approx RM 79.1	Upstream of Greene St.	52,341	53,500	Transition from Gaining to Losing	-0.5	-0.7	-0.9	-0.8	-1.0	-1.2
Upstream of Greene St.	Upstream of Upper Falls Dam	53,500	59,362	Losing	-4.0	-4.5	-4.9	-4.6	-5.7	-6.4
Upstream of Upper Falls Dam	downstream Monroe St. Dam	59,362	60,600	Minimal interaction	0.0	1.0	2.0	3.0	4.0	5.0
downstream Monroe St. Dam	Spokane River at Spokane	60,600	62,236	Losing	-6.0	-6.8	-7.5	-7.2	-8.1	-9.1
Spokane River at Spokane	Fort Wright (TJ Meenach Bridge)	62,236	67,085	Transition from Losing to Gaining	1.1	0.9	0.7	0.7	1.0	0.8
Fort Wright (TJ Meenach Bridge)	Seven Mile Bridge	67,085	80,711	Gaining	4.5	4.7	4.5	4.8	4.8	4.7
Seven Mile Bridge	Upstream Nine Mile Dam	80,711	85,853	Losing	-1.7	-2.0	-2.2	-2.2	-1.9	-2.1
Upstream Nine Mile Dam	Little Spokane River	85,853	88,502	Gaining	1.5	1.8	1.9	2.0	1.8	1.9

TABLE 9.4

SUMMARY OF ESTIMATED FLOW ACROSS STATELINE

Source	**Approx. Location of Eastern Model Boundary**	**Estimated Groundwater Flow Across Stateline** (cms)	**Estimated Groundwater Flow Across Stateline** (cfs)
Pluhowski and Thomas (1968)	3 miles west of WA-ID state line	26.9	950
Drost and Seitz (1978)	WA-ID state line	22.6	800
Bolke and Vacarro (1981)	WA-ID state line	112.1	396[1]
Bolke and Vacarro (1981)	3.5 miles east of WA-ID state line	128.3	453[2]
Painter (1991)	WA-ID state line	21.3	753
Buchanan and Olness (1994)	WA-ID state line	9.0	320
CH2M Hill (1998)	WA-ID state line	10.7	380
Buchanan (1999)	WA-ID state line	11.0	390
CH2M Hill (2000)	WA-ID state line	11.3	400
IDEQ (2000)	WA-ID state line	11.0	390
MIKE SHE (2002)* WY 1994-1999	WA-ID state line	15.6	551

1. Calculated by subtracting north and south groundwater inflow from the total groundwater inflow to the model with WA-ID line as the eastern model boundary (i.e. 668 – 145 (north) – 127 (south)).
2. Calculated by subtracting north and south groundwater inflow from the total groundwater inflow to the model with Post Falls Dam as the eastern model boundary (i.e. 668 – 108 (north) – 107 (south)).

TABLE 9.5

SUMMARY OF ESTIMATED SPOKANE RIVER GAINS AND LOSSES

Spokane River Stage Measurement Station		**Broom (1951)**	**Drost & Seitz (1978)**	**Bolke & Vaccaro (1981)**	**Miller (unpublished 1996)**		**CH2MHill (1998)**				**Gearhart & Buchanan (2000)**		**MIKE SHE (2002) - Average Annual Gain/Loss**					
Upstream	Downstream	Gain / Loss	Gain / Loss	Gain / Loss	Gain / Loss at Low Flow	Gain / Loss at Medium Flow	Gain / Loss Fall 1994		Gain / Loss Spring 1995		Max. Gain / Loss Dec 1998 to Jul 1999	Min. Gain / Loss Dec 1998 to Jul 1999	1994	1994	1996	1997	1998	1999
State Line	Harvard Rd	-2.21	-2.27	-1.42	-5.86	-9.03	-1.27	-3.85	-2.01	-4.84	-8.69	-1.33	-4.76	-10.16	-16.74	-15.58	-8.96	-12.76
Harvard Rd	Barker Rd										-3.88	-0.82	-0.16	-0.30	-0.47	-0.43	-0.27	-0.37
Barker Rd	Sullivan Rd	10.48	9.34				-2.58		-2.83		-2.49	-0.79	7.75	6.07	4.88	5.44	6.40	5.32
Sullivan Rd	Kaiser			6.80	5.83	4.53	-0.20		-0.14		-0.79	1.42						
Kaiser	Trent Ave Brg						0.62		1.81				3.27	2.70	2.33	2.49	2.75	2.44
Trent Ave Brg	Plantes Ferry	16.02	6.51	-1.13			0.03	0.45	0.34	2.01	-1.50	0.85	0.00	0.00	-0.01	0.00	0.00	-0.01
Plantes Ferry	Argonne				Unquantified		-0.34		-0.11				-0.09	-0.09	-0.10	-0.08	-0.09	-0.11
Argonne	Upriver Dam						-0.17	-0.51	-0.11	-0.23			-0.53	-0.54	-0.54	-0.51	-0.55	-0.57
Upriver Dam	Green St			7.64	5.92	27.93	4.22	4.22	5.49	5.49			2.20	2.15	2.02	2.33	1.54	1.10
Green St	Mission St Brg	-1.10		-5.66	1.78	3.45	-1.08	-2.12	-0.91	-1.19			-2.95	-3.38	-3.77	-3.60	-4.17	-4.71
Mission St Brg	Sirti		3.40				-0.62		-0.25									
Sirti	Monroe St						-0.42		-0.03				-1.09	-1.10	-1.09	-1.00	-1.50	-1.64
Monroe St	Cochrane St			3.68	-1.61	-2.27	-1.19	-4.30	-1.16	-3.43			-1.32	-1.53	-1.78	-1.76	-1.50	-1.65
Cochrane St	Meenach Brg	3.57		-1.27			-3.11		-2.27				1.07	0.93	0.67	0.68	0.99	0.82
Meenach Brg	Albi Park			-1.13			1.42	3.77	1.59	4.16			1.45	1.53	1.37	1.47	1.55	1.48
Albi Park	7 Mile	0.59	2.83	1.42			2.18		2.32				2.65	2.77	2.73	2.87	2.80	2.78
7 Mile	9 Mile Falls			-1.13			0.17		0.25				-0.03	-0.10	-0.23	-0.13	-0.03	-0.11
State Line to USGS at Cochrane St		23.19	16.42	9.91	6.06	7.36	-3.00		0.08									
State Line to Mission St Bridge		24.29	13.59	6.23	7.67	9.63	-1.81		1.25									
USGS at Cochrane St to 9 Mile Falls		4.16	6.23	-2.12			0.65		2.46									
Total (State Line to 9 Mile Falls)		27.35	19.82	7.79			-2.35		1.98									

Note: All values for flows, gains, and losses are in cms
Adapted from CH2MHill, 1998.
WRIA 57 extends to just downstream of the USGS Cochrane St Gage (also known as Spokane River at Spokane)
MSHE, 2002 Data calculated based on Water Year.
MSHE,2002 gains and losses represent GW/SW interaction only. They do not include any other gains and/or losses.

TABLE 9.6

SUMMARY OF ESTIMATED FLOW THROUGH HILLYARD TROUGH
(Based on Modeled Water Years 1994 – 1999)

Source	**Estimated SVRP Aquifer Discharge to Little Spokane River** (cms)	**Estimated SVRP Aquifer Discharge to Little Spokane River** (cfs)
Bolke and Vacarro, 1981	7.2	254
CH2M Hill, 1998 (Spring, 1995)	9.5	335
CH2M Hill, 1998 (Fall, 1994)	8.5	300
CH2M Hill, 1998 (Fall, 1994)	5.2	182
Golder Associates (2002)	7.9	281