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Water Budget Analysis for Stormwater Treatment Area 3/4

(October 1, 2003 to April 30, 2006)

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By

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LIST OF ABBREVIATIONS AND ACRONYMS

ac	acre
ac-ft	acre-feet
BMP	Best Management Practice
cm	centimeter
cm/d	centimeter per day
cfs	cubic feet per second
EAA	Everglades Agricultural Area
ECP	Everglades Construction Project
EFA	Everglades Forever Act
ENR	Everglades Nutrient Removal
ET	Evapotranspiration
ft	feet
ha	hectare
ha-m	hectare-meter
HW	headwater
$g/m^2/yr$	gram per meter square per year
I & D	Inflow and Distribution Basin
in	inch
in/day (in d^{-1})	inch(es) per day
m	meter
m^3s^{-1}	cubic meter per second
MAX	maximum
MIN	minimum
mm	millimeter
NGVD	National Geodetic Vertical Datum of 1929
P	Phosphorus
Q	discharge
Refuge	Arthur R. Marshall Loxahatchee National Wildlife Refuge
rpm	revolution per minute
SAV	submerged aquatic vegetation
SFWMD	South Florida Water Management District
STA	Stormwater Treatment Area
STA-3/4	Stormwater Treatment Area 3/4
TW	tailwater
USACE	U.S. Army Corps of Engineers
WCA-1	Water Conservation Area 1
WY	Water Year

CONVERSION FACTORS

Metric	English
mm	0.03937 in
cm	0.3937 in
m	3.2808 ft
km	0.6215 mile
ha	2.47 ac
$m^3\ s^{-1}$	35.2257 cfs
ha-m	8.1068 ac-ft

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EXECUTIVE SUMMARY

Stormwater Treatment Area 3/4 (STA-3/4) is a constructed wetland that is part of the Everglades Construction Project mandated by Florida's Everglades Forever Act (Section 373.4592, Florida Statutes [F.S.]). STA-3/4 is the largest of the six stormwater treatment areas with an area of 16,543 acres (ac). STA-3/4 started operation in October 2003 and is located in South Florida at the southern edge of the Everglades Agricultural Area (EAA). The EAA, with approximate area of 552,922 ac under agriculture (Redfield et al., 1999), is a highly productive irrigation drainage basin with a major production of sugarcane. Ecological changes in the Everglades have been partially attributed to an increase in phosphorus (P) concentrations in the inflow waters. Local, state, and federal initiatives have been taken to reduce P loads in runoff from agriculture and other sources. Water from the EAA flows to the south and southeast through four primary canals: Miami, North New River, Hillsboro, and West Palm Beach. The North New River and the Miami canals are the source of inflow to STA-3/4.

A minimum of 25 percent of the P load from the EAA is required to be removed at the basin level through the application of various agricultural Best Management Practices (BMPs) (Whalen and Whalen, 1994). Further removal of P is to be achieved through constructed wetland systems, known as Stormwater Treatment Areas (STAs) to an initial outflow total P concentration of 0.05 milligrams per liter (mg L^{-1}). STA-3/4 is one of the large-scale constructed wetlands that followed the successful operation of a demonstration constructed wetland, the Everglades Nutrient Removal Project, Stormwater Treatment Area 1 West (STA-1W), Stormwater Treatment Area 2 (STA-2), Stormwater Treatment Area 5 (STA-5) and Stormwater Treatment Area 6 (STA-6). Later, Stormwater Treatment Area 1 East (STA-1E) started operation. This report presents the first water budget for STA-3/4. Water budget analyses and flow data summary are presented for the period October 1, 2003 to April 30, 2006 spanning three water years. For the first partial Water Year (October 1, 2003 to April 30, 2004) only a flow data summary is provided, as stage data were not available. For Water Year 2005 (May 1, 2004 to April 30, 2005) and Water Year 2006 (May 1, 2005 to April 30, 2006), water budget analyses are presented.

Water Year 2004 analysis is for a partial water year. For WY2004, the total inflow was 23,303 acre-feet (ac-ft) and the total outflow was 25,811 ac-ft. For WY2005, the total inflow was 671,452 ac-ft and the total outflow was 648,882 ac-ft. For WY2006, the total inflow was 710,980 ac-ft and the total outflow was 749,103 ac-ft. Total areal average rainfall for WY2004, WY2005, and WY2006 was 11.8 in, 52.9 in, and 54 in, respectively. The total areal average evapotranspiration (ET) for WY2004, WY2005, and WY2006 was 28.7 in, 52.7 in, and 52.9 in, respectively. The remainders for WY2005, for the period with stage data in the cells (January 15, 2005 to April 30, 2005), were -9,196 ac-ft, 1.2 percent of the total inflows. The remainders for WY2006 were -17,242 ac-ft, 2.1 percent of the total inflows.

The mean hydraulic loading rates for WY2004, WY2005, and WY2006 were 0.05 in/day, 1.33 in/day and 1.41 in/day. The mean hydraulic retention time was computed as the ratio of the estimated mean volume of STA-3/4 and the average daily flow rate. The estimated mean volume was computed using the area-weighted (by cell) mean depth. The estimated mean hydraulic retention times for WY2005 and WY2006 were 8.5 and 14 days, respectively. The average depth for WY2005 and WY2006 were 11.11 and 20.4 inches, respectively.

INTRODUCTION

Background

Stormwater Treatment Area 3/4 (STA-3/4) is a constructed wetland that is part of the Everglades Construction Project mandated by Florida's Everglades Forever Act (Section 373.4592, Florida Statutes [F.S.]). STA-3/4 is the largest of the six stormwater treatment areas with an area of 16,543 acres. STA 3/4 started operation in October 2003 and is located in south Florida at the southern edge of the Everglades Agricultural Area (EAA). The EAA with approximate area of 552,922 ac under agriculture (Redfield et al., 1999) is a highly productive irrigation drainage basin with a major production of sugarcane. Ecological changes in the Everglades have been partially attributed to an increase in P concentrations in the inflow waters. Local, state, and federal initiatives have been taken to reduce P loads in runoff from agriculture and other sources. Water from the agricultural area flows to the south and southeast through four primary canals: Miami, North New River, Hillsboro, and West Palm Beach. The North New River and the Miami canals are the source of inflow to STA-3/4. The Everglades Agricultural Area and the Stormwater Treatment Areas are shown in **Figure 1**.

A minimum of 25 percent of the P load from the EAA is required to be removed at the basin level through the application of various agricultural Best Management Practices (BMPs) (Whalen and Whalen, 1994). Further removal of P is to be achieved through constructed wetland systems, known as Stormwater Treatment Areas (STAs), to an initial outflow total P concentration of 0.05 milligrams per liter (mg L^{-1}). STA-3/4 is one of the large-scale constructed wetlands that followed the successful operation of a demonstration constructed wetland, the Everglades Nutrient Removal Project, Stormwater Treatment Area 1 West (STA-1W), Stormwater Treatment Area 2 (STA-2), Stormwater Treatment Area 5 (STA-5) and Stormwater Treatment Area 6 (STA-6). Later, Stormwater Treatment Area 1 East (STA-1E) started operation. This report presents the first water budget for STA-3/4. Water budget analyses and a flow data summary are presented for the period October 23, 2003 to April 30, 2006. For the first partial water year (October 23, 2003 to April 30, 2004) only the flow data summary is provided, as stage data were not available. For Water Year 2005 (May 1, 2004 to April 30, 2005) and Water Year 2006 (May 1, 2005 to April 30, 2006) water budget analyses are presented.

Site Description

STA-3/4 is located east of the Holey Land Wildlife Management Area north of Water Conservation Area 3A (WCA-3A). On the east is the North New River Canal. The Miami Canal is west of the Holey Land. STA-3/4 is a six-cell STA consisting of three parallel treatment flow-ways each with two cells in series (**Figure 2**). STA-3/4 inflow structures started operation in October, 2003. The source of inflow into STA-3/4 is runoff/drainage from the Everglades Agricultural Area and Lake Okeechobee releases through the Miami and North New River canals. The average ground elevation is 2.90 m NGVD (9.51 ft NGVD). Surface area and spatially averaged elevation for each cell is depicted in **Table 1** (Sutron Corp., 2006).

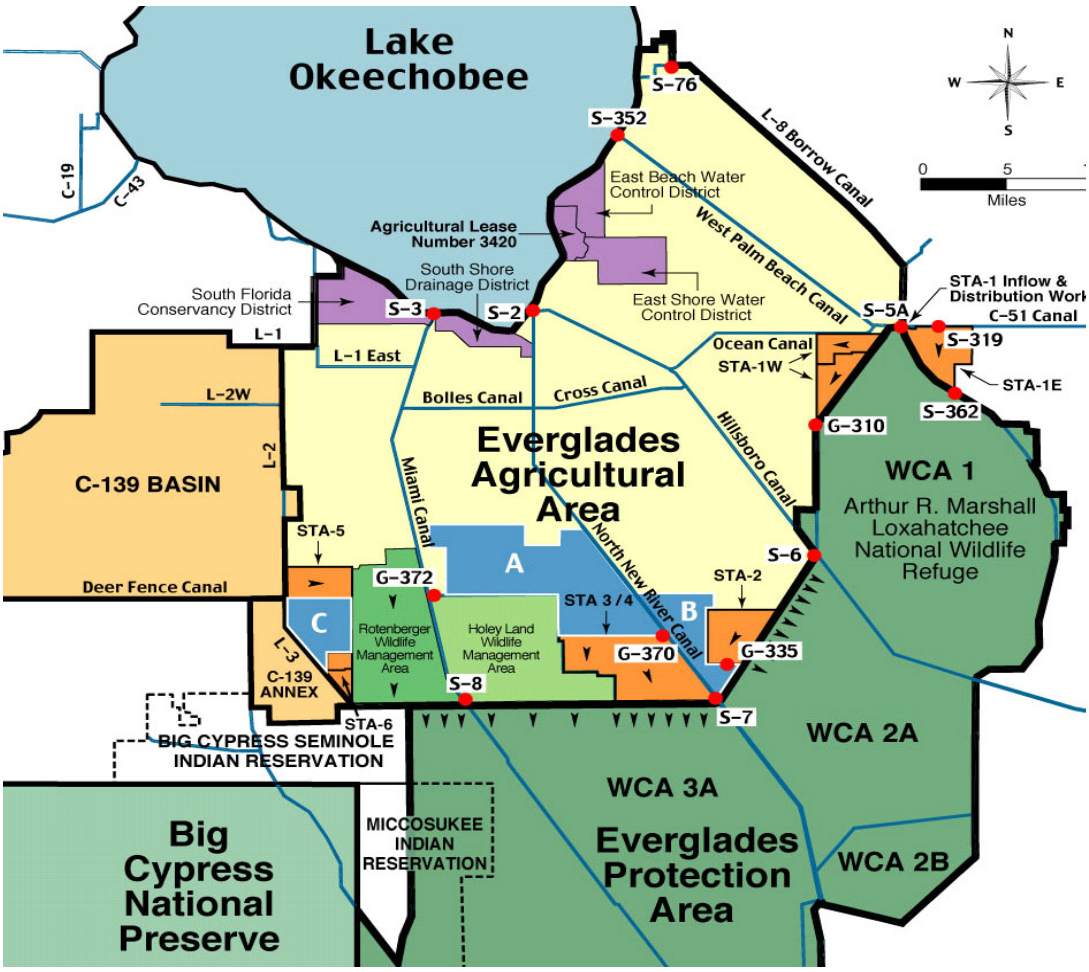

Figure 1. Location of the Everglades Agricultural Area and Stormwater Treatment Area 3/4.

Table 1. Site characteristics of STA-3/4.

Flow-way	Cell	Area		Avg. Ground Elevation	
		ha	ac	m NGVD	ft NGVD
Eastern	1A	1,230	3,039	2.85	9.35
	1B	1,412	3,488	2.82	9.25
Central	2A	1,029	2,542	2.96	9.70
	2B	1,172	2,894	2.96	9.70
Western	3A	872	2,153	2.93	9.60
	3B	983	2,427	2.93	9.60
Total		**6,698**	**16,543**		
Average				**2.90**	9.51

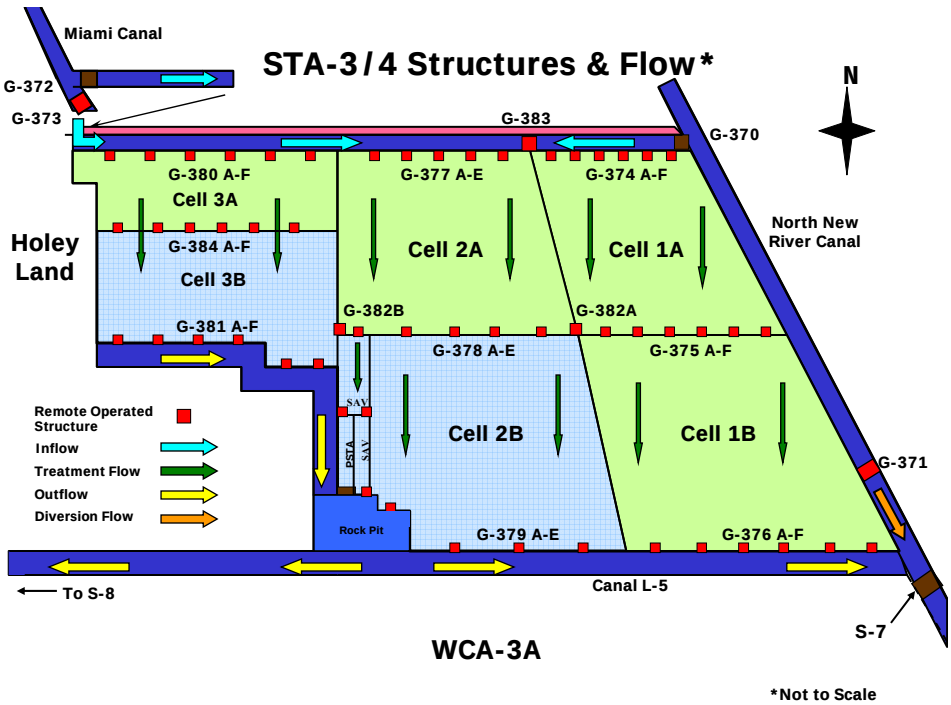

Figure 2. STA-3/4 structures and flow.

SYSTEM HYDRAULICS AND OPERATION

System Hydraulics

STA-3/4 Inflow, Internal, and Discharge Structures

Inflows are from the Miami Canal through the G-372 pump station and from the North New River Canal through the G-370 pump station. The Miami Canal sources of water are the S-3 and S-8 basins, the C-139 basin, the South Florida Conservancy District (SFCD), the South Shore Drainage District (SSDD), and Lake Okeechobee. The North New River Canal sources of water are the S-2 and S-7 basins and Lake Okeechobee. G-372 is a 4-unit pump station with 925 cfs discharge capacity for each pump. G-372 pumps water from the Miami Canal into the Supply Canal. The Supply Canal is 10.4 miles long and intersects the Inflow Canal at the northwest corner of STA-3/4. G-370 is a 3-unit pump station with 925 cfs discharge capacity for each pump. It delivers water from the North New River to the Inflow Canal at the northeast corner of STA-3/4. In the Inflow Canal, G-383, a double-barreled gated concrete-box culvert structure, serves as a divide and control for the inflows from the North New River Canal from the east and the Miami Canal from the west. The diversion structures are the G-373 spillway for the Miami Canal and the G-371 spillway for the North New River Canal. G372 HL is located at the discharge side of pump station G372 and its purpose is to discharge water into the Holey Land, a natural wetland, to the south.

STA-3/4 has three flow-ways, Eastern, Central, and Western. The Eastern Flow-way has Cells 1A and 1B in series. The Central Flow-way has Cells 2A and 2B. The Western Flow-way has Cells 3A and 3B. Seepage is pumped back into the supply canal and the inflow canal. The seepage canal runs along the northern side of the STA. At the G-372 inflow pump station there are three seepage pumps (G-372S_P), each 75 cfs which can discharge seepage into the supply canal or into the Holey Land. At the G-370 pump station there are three similar seepage pumps (G-370S_P) which pump into the inflow canal. On the northwestern corner of STA-3/4, there are platforms for two portable, 100 cfs seepage pumps. These pumps are used as supplemental capacity to maintain 8 ft NGVD water surface elevation in the seepage canal.

Inflows into Cell 1A of the Eastern Flow-way are through six gated concrete-box culverts (G-374 A–F). Outflows from Cell 1A and inflows into Cell 1B are through six gated concrete-box culverts (G-375 A–F). Outflows from Cell 1A and inflows into Cell 2A of the Central Flow-way are through five gated concrete-box culverts (G-377 A–E). Outflows from Cell 2A and inflows into Cell 2B are through five gated concrete-box culverts (G-378 A–E). Inflows into Cell 3A of the Western Flow-way are through six gated concrete-box culverts (G-380 A–F). Outflows from Cell 3A and inflows into Cell 3B are through six gated concrete-box culverts (G-384 A–F). G-382A is located on the interior levee separating the Eastern Flow-way and the Central Flow-way. G-382B is located on the interior levee separating the Central Flow-way and the Western Flow-way. These two structures provide operational flexibility to move water between adjacent flow-ways.

Outflows from STA-3/4 are into L-5 canal from each flow-way. Outflow from the Eastern Flow-way is through six gated concrete-box culverts (G-376 A–F). Outflow from the Central Flow-way is through five gated concrete-box culverts (G-379 A–E). Outflow from the Western Flow-way is through six gated concrete-box culverts (G-381 A–F). Inflow and outflow structures and stage monitoring sites are shown in **Appendix I**.

Operation

STA-3/4 is operated based on an operation plan (STA Management Division, 2007). Under normal operation conditions, flows from the Miami Canal and North New River Canal are pumped into STA-3/4 via the supply canal and the inflow canal. Diversion structures G-373 (Miami Canal) and G-371 (North New River Canal) are normally closed until diversion is an operational necessity. Water levels in each cell are maintained appropriate to the desired depth for the type of treatment cell.

HYDROLOGY AND HYDROLOGIC MONITORING

Rainfall and Evapotranspiration

STA-3/4 rainfall was estimated based on average rainfall from rain gauges in the vicinity of the STA with better quality of rainfall data. Rainfall stations S7, 3A-NE and EAA 5 (Dbkey 15204, LX283, JW233) were used for rainfall estimation over STA-3/4. Rainfall for the first partial WY2004 (October 2003 to April 30, 2004) was 11.8 in. Rainfall for WY2005 was 52.9 in. Rainfall for WY2006 was 54 in. Daily wetland evapotranspiration (potential evapotranspiration) computed from weather station ROTNWX (Dbkey RW486) and S7WX (RW484) were used as estimate of evapotranspiration (ET) from STA-3/4. Wetland ET is computed based on solar radiation data from the weather station using the simple method (Abtew, 1996). ET for the first partial Water Year 2004 (October 2003 to April 30, 2004) was 28.7 in. ET for Water Year 2005 was 52.7 in. ET for Water Year 2006 was 52.9 in. **Figure 3 a–c** show daily rainfall and daily ET for the three water years. **Table 2** depicts monthly rainfall and evapotranspiration.

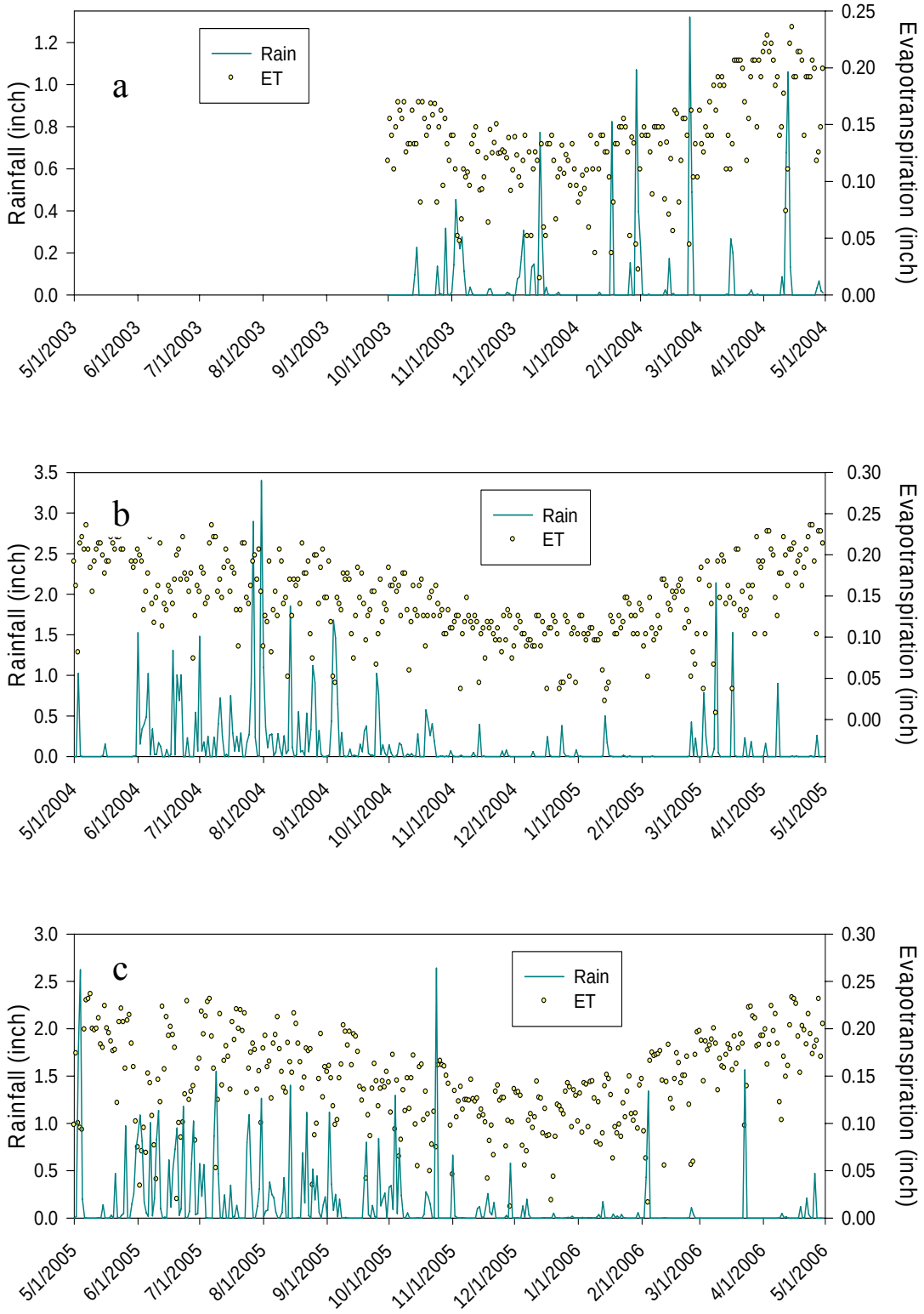

Figure 3 a–c. Daily distribution of areal average rainfall and evapotranspiration in STA-3/4 for (a) Water Year 2004 (WY2004), (b) WY2005, and (c) WY2006.

Table 2. STA-3/4 monthly flows, rainfall, and evapotranspiration.

Water Year	Year	Month	Inflow G370+G372 ac-ft	Outflow G376+G379+G381 ac-ft	Rainfall in	ET in
WY 2004	2003	Oct	674	0	0.79	4.39
	2003	Nov	1696	0	1.62	3.39
	2003	Dec	5413	0	2.08	3.28
	2004	Jan	2505	0	2.46	3.29
	2004	Feb	4930	11982	2.25	3.59
	2004	Mar	8085	13829	0.50	5.22
	2004	Apr	0	0	2.09	5.50
YW 2005	2004	May	1400	0	1.22	6.20
	2004	Jun	44164	24860	9.62	4.90
	2004	Jul	36323	24401	13.21	5.41
	2004	Aug	175203	172883	8.92	4.70
	2004	Sep	165243	169041	7.66	4.00
	2004	Oct	43367	64550	2.82	4.31
	2004	Nov	0	0	0.64	3.19
	2004	Dec	28074	24090	0.85	2.94
	2005	Jan	11235	19385	0.72	3.26
	2005	Feb	28270	26074	0.67	3.44
	2005	Mar	89380	84833	5.28	4.54
	2005	Apr	48793	38763	1.35	5.76
WY 2006	2005	May	46226	62359	7.44	5.56
	2005	Jun	209254	186687	12.34	3.79
	2005	Jul	108438	134519	8.96	5.44
	2005	Aug	41296	40941	6.54	4.95
	2005	Sep	49753	48877	4.86	4.35
	2005	Oct	109711	98657	6.48	3.81
	2005	Nov	44066	73964	2.17	3.21
	2005	Dec	2977	15546	0.47	3.30
	2006	Jan	34870	28105	0.41	3.54
	2006	Feb	42363	41903	1.93	3.81
	2006	Mar	17380	15804	1.56	5.53
	2006	Apr	4640	3086	0.92	5.64

Flows

Database keys for STA-3/4 flow structures and stage gauges are listed in **Appendix I**. The total inflows for WY2004, WY2005, and WY2006 were 23,303, 671,452, and 710,976 ac-ft, respectively including the backflows through the outflow culverts. The total outflow for WY2004, WY2005, and WY2006 was 25,811, 648,882, and 749,103 ac-ft, respectively including the flows to the Holey Land in WY2006. Monthly inflows and outflows are depicted in **Table 3**. There were backflows through the outflow culverts, 2,285 ac-ft and 12,667 ac-ft for Water Years 2005 and 2006, respectively. Due to low head differences, flow programs computed significant backflows in WY2006. Mass balance errors were high. Efforts were made to improve flow computation and data was revised in the database and as a result mass balance error was reduced. Currently, new flow monitoring equipment is being tested at the site. Discharge into the Holey Land through structure G-372HL for WY2006 was 1,571 ac-ft. Daily inflow and outflow are shown in **Figure 4 a–c**.

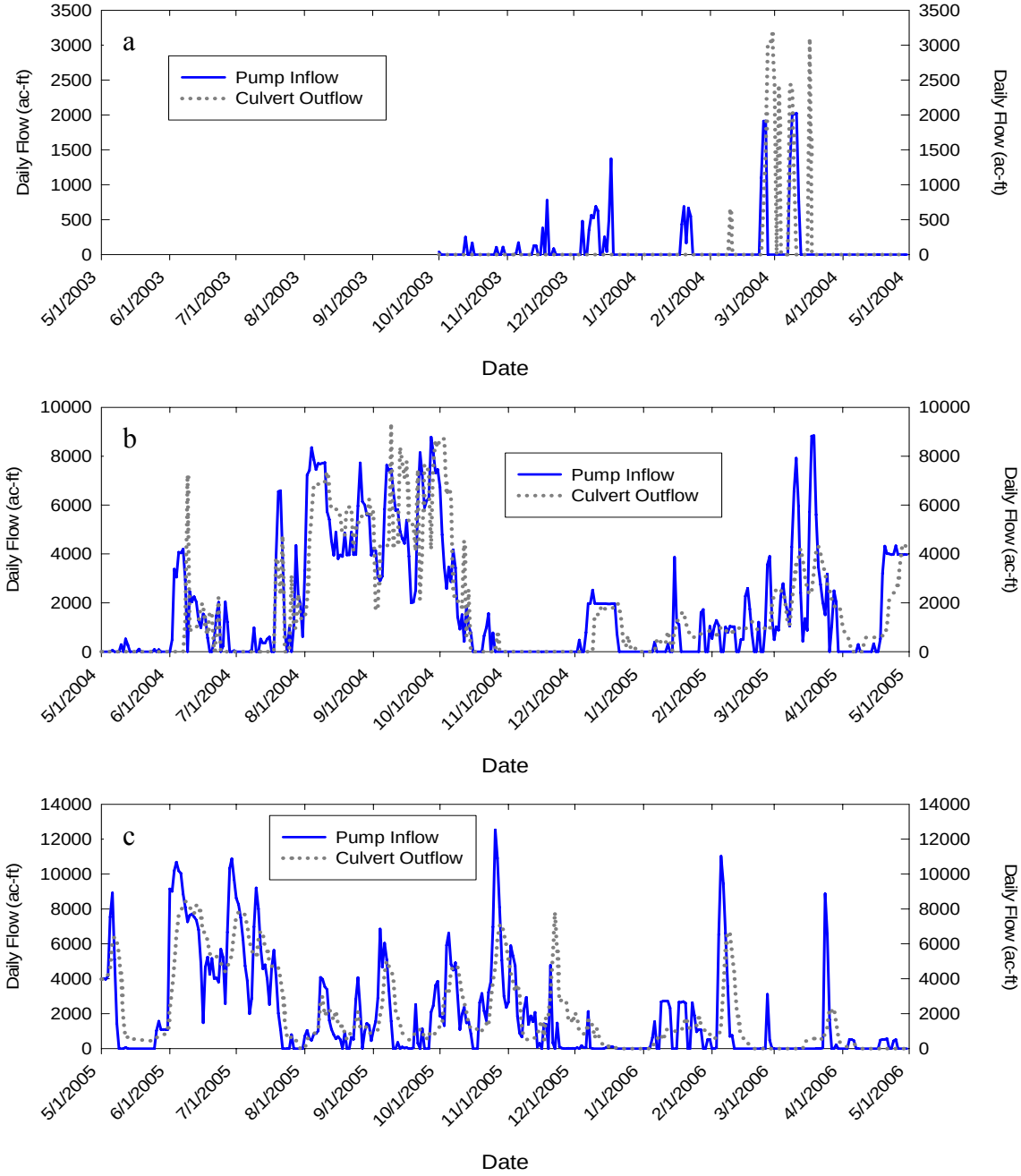

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Figure 4 a–c. STA-3/4 daily inflows and outflows for (a) WY2004, (b) WY2005, and (c) WY2006.

Water Levels

Daily water levels or water surface elevations (stages) in each cell of STA-3/4 are dependent upon rainfall, evapotranspiration, seepage, and daily operational activities. Water level observations in each cell started in WY2005. Water levels are regulated based on water depth, tests, maintenance, and other operational actions. The minimum, maximum, and mean of the daily average stage observations for WY2005 and WY2006 are shown in **Table 3**. The mean observed stage in Cell 1A was 11.53 ft NGVD and 11.56 ft NGVD for WY2005 and WY2006, respectively. The mean observed stage in Cell 1B was 11.0 ft NGVD and 11.1 ft NGVD for WY2005 and WY2006, respectively. The mean observed stage in Cell 2A was 11.6 ft NGVD and 11.74 ft NGVD for WY2005 and WY2006, respectively. The mean observed stage in Cell 2B was 11.19 ft NGVD and 11.26 ft NGVD for WY2005 and WY2006, respectively. The mean observed stage in Cell 3 A&B was 10.06 ft NGVD and 11.0 ft NGVD for WY2005 and WY2006, respectively. The daily average water level observations in Cell 1A and 1B are depicted in **Figure 5a**. The daily average water level observations in Cell 2A and 2B are depicted in **Figure 5b**. The daily average water level observations in Cell 3 A&B of STA-3/4 are depicted in **Figure 5c**. The mean water depths for Cells 1A were 24.72 and 25.08 inches for WY2005 and WY2006, respectively. The mean water depths for Cells 1B were 19.8 and 21 in for WY2005 and WY2006, respectively. The mean water depths for Cells 2A were 24 and 25.68 in for WY2005 and WY2006, respectively. The mean water depths for Cells 2B were 17.64 and 18.48 inches for WY2005 and WY2006, respectively. The mean water depths for Cell 3 A&B were 3.84 and 15.12 inches for WY2005 and WY2006, respectively.

Table 3. Observed water surface elevations (stages) and depths in STA-3/4**.**

Water Year	Cell	Water Surface Elevation			Depth
		Min	Max	Mean	Mean
		ft	ft	ft	in
WY2005	1A	10.55	13.12	11.53	24.72
	1B	10.36	12.26	11.00	19.80
	2A	10.97	13.20	11.60	24.00
	2B	10.53	12.22	11.19	17.64
	3 (A&B)	9.72	10.76	10.06	3.84
WY2006	1A	10.30	14.21	11.56	25.08
	1B	10.11	12.76	11.10	21.00
	2A	10.80	14.43	11.74	25.68
	2B	10.66	13.22	11.26	18.48
	3 (A&B)	9.92	12.38	11.00	15.12

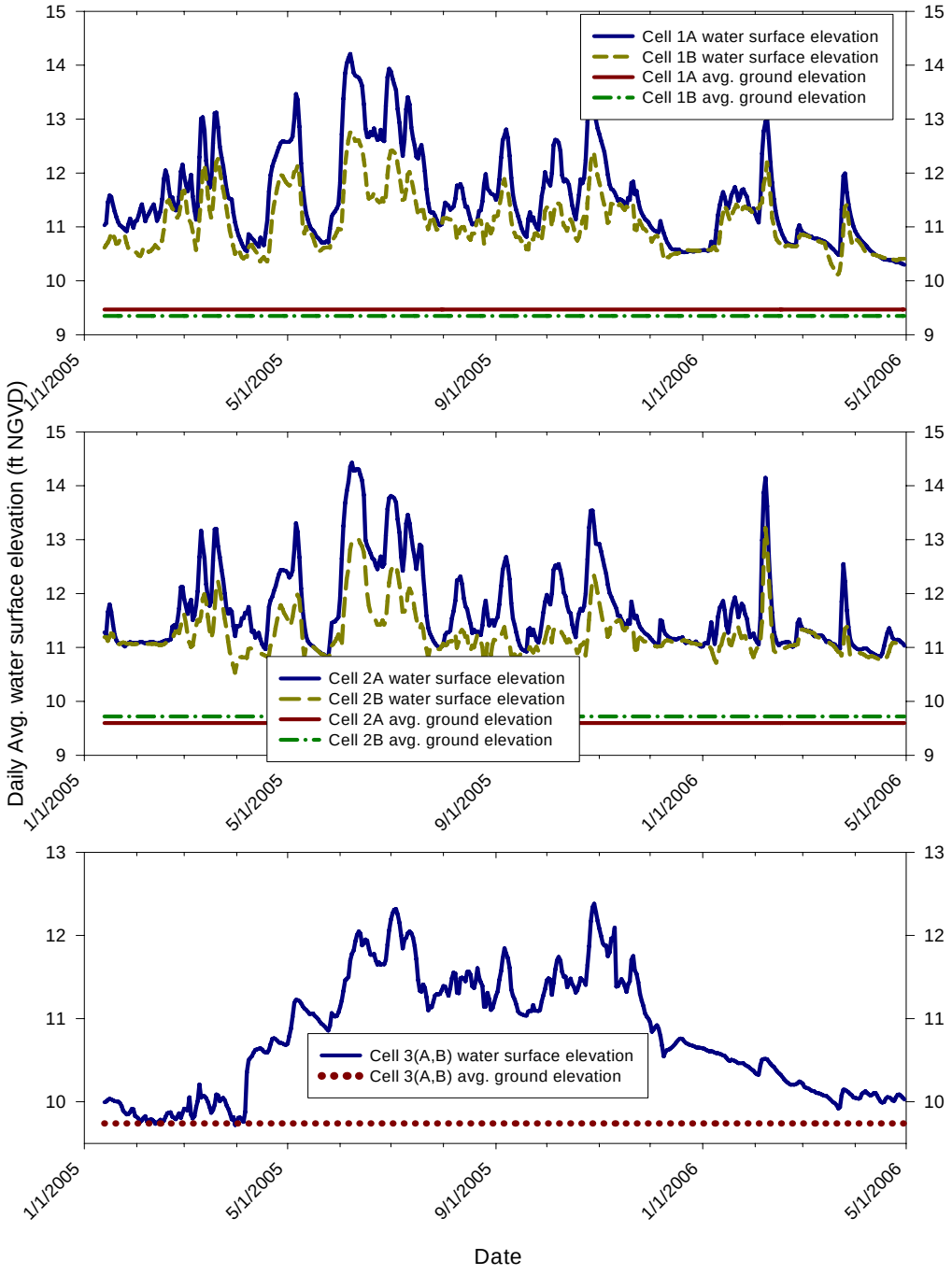

Figure 5 a–c. Daily mean water level in (a) Cell 1A, 1B; (b) Cell 2A, 2B; and Cell 3 (A,B) in STA-3/4.

WATER BUDGET COMPUTATIONS

STA-3/4 Water Balance Model

A schematic water balance model for STA-3/4 is depicted in **Figure 6**. Inflows to STA-3/4 are from the North New River Canal through the G-370 pump station and from the Miami Canal through the G-372 pump station. For Water Years 2004, 2005, and 2006 inflow through pump station G-372 from the Miami Canal was 54, 55, and 64 percent, respectively. There are backflows from the outflow culverts (G-376A–F, G-379A–E and G-381A–F) as discussed under the flows section. The unknown terms in the system are ungauged subsurface inflows, outflows, and errors. The schematic model (**Figure 6**) and the following set of water balance equations represent the hydrologic and hydraulic system of STA-3/4 for water budget analysis purposes.

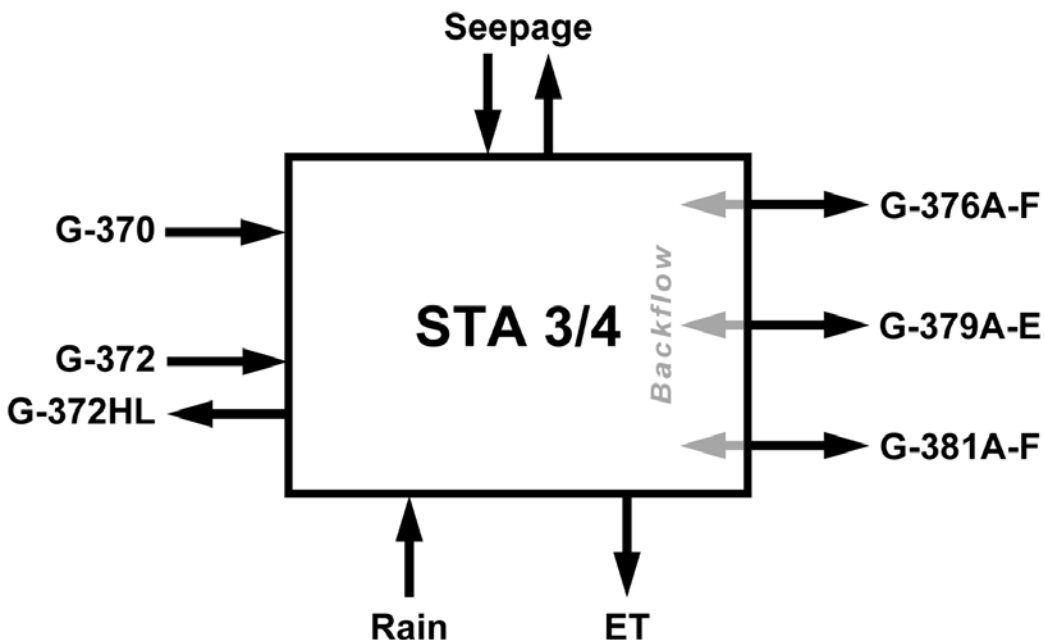

Figure 6. Schematic water balance model for STA-3/4.

$$\Delta S = A(Stg_t - Stg_{t-1}) \quad (1)$$

Where ΔS is change in storage; A is area; Stg_t is stage on day t and Stg_{t-1} is stage on previous day.

$$\text{INFLOW} - \text{OUTFLOW} - \Delta S = \text{REMAINDERS} \quad (2)$$

Where INFLOW is the amount of water that enters the system from external sources, and OUTFLOW is water that leaves the system boundary and is not recirculated. ΔS is the change in

storage in the system during the time interval of interest. REMAINDERS are surface and subsurface flows that are not monitored such as seepage and errors (ε_T) of measurements.

The expanded mass balance equation is given as follows:

$$\mathbf{\Delta S - G372P + G372HL - G370P - R + G376A_F + G379A_E + G381A_F + ET = REMAINDERS} \quad (3)$$

Where ΔS is change in storage in the system; G-372P and G-370P are pump inflows; G-372HL is inflow to the Holey Land; R is rainfall; G-376, G-379, and G-381 are outflow culverts; ET is evapotranspiration losses, REMAINDERS are errors and ungauged surface and subsurface flows such as seepage.

The daily change in storage for STA-3/4 was computed as the product of cell area and stage difference between current date and previous date. For the period October 1, 2003 to January 13, 2005, there is no stage record in the cells and storage could not be computed independently. As a result, errors and ungauged flows (REMAINDERS) could not be computed for that period. Storage changes in each cell were computed when stage data were available for the cell. The change in storage volume in each cell was computed based on the area of the cell and change in stage in the cell. The remainders in the computation of daily water balances are the sum of all errors and ungauged flows such as seepage in the system.

Remainders for part of Water Year 2005 and Water Year 2006 are shown in **Figure 7a** and **7b**. The average remainders for WY2005 for the period with stage data in the cells (January 15, 2005 to April 30, 2005) was -86 ac-ft/day with a total of -9,196 ac-ft, 1.2 percent of the total inflows. The average remainders for WY2006 were -47 ac-ft/day with a total of -17,242 ac-ft, 2.1 percent of the total inflows. Details of the daily water balance terms and calculations results are shown in Appendix IIa, IIb and IIc for WY2004, WY2005 and WY2006, respectively.

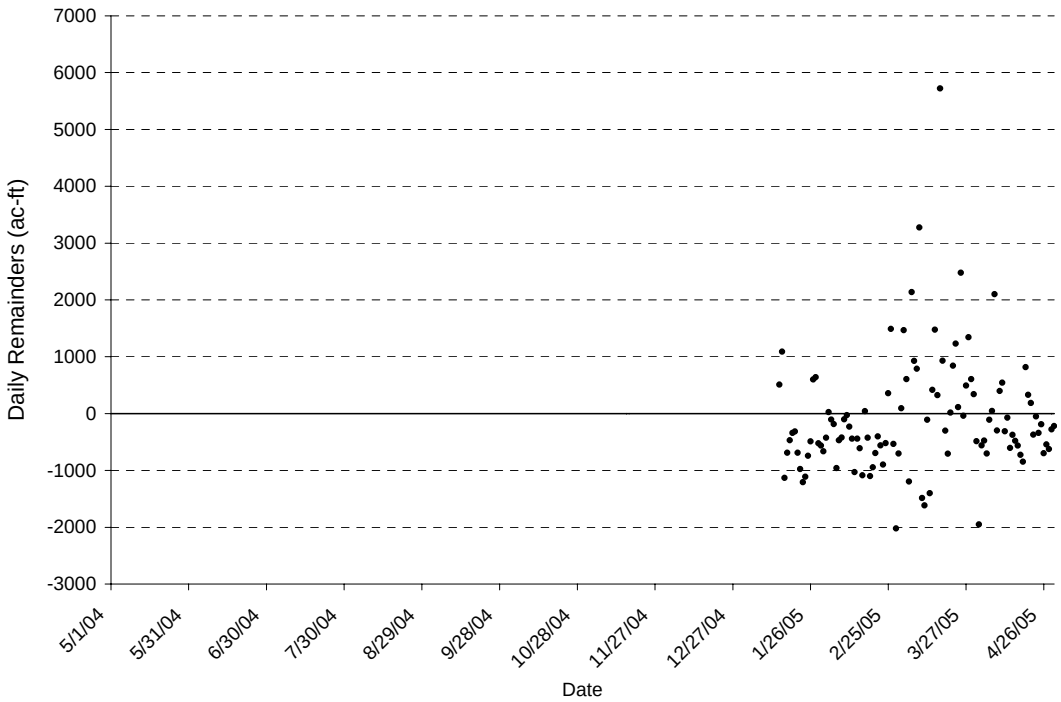

Figure 7a. Distribution of daily remainders (errors and ungauged flows) from STA-3/4 water balance for WY2005.

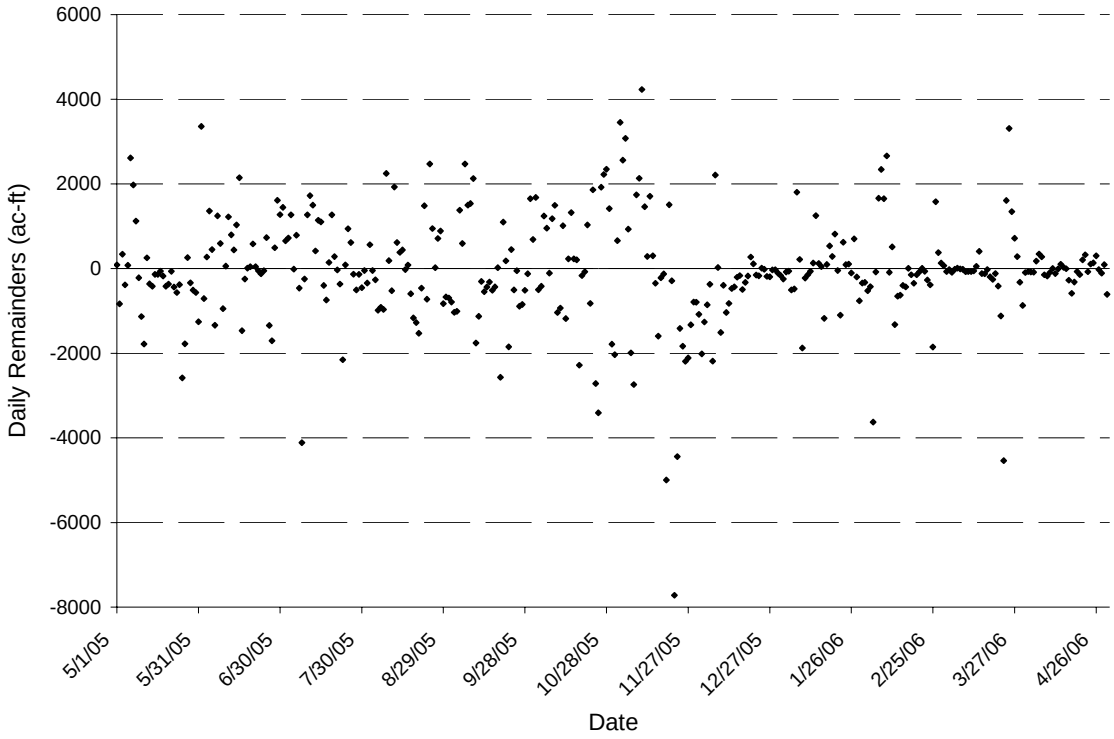

Figure 7b. Distribution of daily remainders (errors and ungauged flows) from STA-3/4 water balance for WY2006.

WATER BUDGET SUMMARY

This is the first water budget analysis technical publication for STA-3/4 for the period from October 1, 2003 to April 30, 2006, covering three water years. WY2004 analysis is for a partial water year. For WY2004, the total inflow was 23,303 ac-ft and the total outflow was 25,811 ac-ft. For WY2005, the total inflow was 671,452 ac-ft and the total outflow was 648,882 ac-ft. For WY2006, the total inflow was 710,980 ac-ft and the total outflow was 749,103 ac-ft. Total areal average rainfall for WY2004, WY2005, and WY2006 was 11.8 in, 52.9 in, and 54 in, respectively. The total areal average evapotranspiration for WY2004, WY2005, and WY2006 was 28.7 in, 52.7 in, and 52.9 in, respectively. The remainders for WY2005, for the period with stage data in the cells (January 15, 2006 to April 30, 2005) were -9,196 ac-ft, 1.2 percent of the total inflows. The remainders for WY2006 were -17,242 ac-ft, 2.1 percent of the total inflows.

The mean hydraulic loading rate for WY2004, WY2005, and WY2006 was 0.05 in/day, 1.33 in/day and 1.41 in/day. The mean hydraulic retention time was computed as the ratio of the estimated mean volume of STA-3/4 and the average daily flow rate. The estimated mean volume was computed using the area-weighted (by cell) mean depth. The estimated mean hydraulic retention time for WY2005 and WY2006 was 8.5 and 14 days, respectively. The average depth for WY2005 and WY2006 was 11.11 and 20.4 inches, respectively. Summary of the water budget for WY2004, WY2005, and WY2006 is shown in **Table 4 a–c.**

Table 4a. Summary of water budget for STA-3/4 for partial WY2004 (October 1, 2003 to April 30, 2004).

Inflows	ac-ft	Percent of total	Outflows	ac-ft	Percent of total
Inflows	23,303	35.7	Outflows	25,811	39.5
Rain	16,262	24.9	ET	39,501	60.5
Remainders	N/A				
Change in storage*	25,747	39.4			
Total	**65,312**			**65,312**	
Hydraulic loading rate (in/d)	0.05				
Average depth (in)	N/A				
Retention time (days)	N/A				

* estimated by mass balance

Table 4b. Summary of water budget for STA-3/4 for WY2005 (May 1, 2004 to April 30, 2005).

Inflows	ac-ft	Percent of total	Outflows	ac-ft	Percent of total
Inflows	669,167	88.8	Outflows	648,882	86.1
back flows through outflow culverts	2,285	0.3			
Total Surface Water Inflow	**671,452**				
Rain	72,975	9.7	ET	72,601	9.6
Remainders	9,196	1.2			
Change in storage				32,140	4.3
Total	**753,623**			**753,623**	
Hydraulic loading rate (in/d)	1.33				
Average depth (in)	11.11				
Retention time (days)	8.5				

Table 4c. Summary of water budget for STA-3/4 for WY2006 (May 1, 2005 to April 30, 2006).

Inflows	ac-ft	Percent of total	Outflows	ac-ft	Percent of total
Inflows	698,309	84.9	Outflows	747,532	90.9
backflow through outflow culverts	12,667	1.5	Flow to Holey Land	1,571	0.2
Total Surface Water Inflows	**710,976**		**Total Outflow**	**749,103**	
Rain	74,554	9.1	ET	72,955	8.9
Remainders	17,242	2.1			
Change in storage	19,282	2.3			
Total	**822,054**			**822,058**	
Hydraulic loading rate (in/d)	1.41				
Average depth (in)	20.40				
Retention time (days)	14				

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Appendix I. Flow control structures, stage recorders, and database retrieval keys for STA-3/4.

Station	Description	Location	Dbkey	Remark
G372_P	Pump	Northwest of STA 3/4 of Miami Canal	TA437	
G370_P	Pump	Northeast corner of STA 3/4	TA438	Pump at North New River canal
G372HL_S	Spillway	at G372	TS285	discharge to the Holey Land
G376A_C	Culvert	Outflow from Cell 1B		discharge from the eastern treatment track
G376B_C	Culvert	Outflow from Cell 1B		discharge from the eastern treatment track
G376C_C	Culvert	Outflow from Cell 1B	TA445	discharge from the eastern treatment track
G376D_C	Culvert	Outflow from Cell 1B		discharge from the eastern treatment track
G376E_C	Culvert	Outflow from Cell 1B		discharge from the eastern treatment track
G376F_C	Culvert	Outflow from Cell 1B	TA446	discharge from the eastern treatment track
G379A_C	Culvert	Outflow fro Cell 2B		discharge from the central treatment track
G379B_C	Culvert	Outflow fro Cell 2B		discharge from the central treatment track
G379C_C	Culvert	Outflow fro Cell 2B	TA449	discharge from the central treatment track
G379D_C	Culvert	Outflow fro Cell 2B		discharge from the central treatment track
G379E_C	Culvert	Outflow fro Cell 2B	TA450	discharge from the central treatment track
G381A_C	Culvert	Outflow from Cell 3B		discharge from the western treatment track
G381B_C	Culvert	Outflow from Cell 3B	TA447	discharge from the western treatment track
G381C_C	Culvert	Outflow from Cell 3B		discharge from the western treatment track
G381D_C	Culvert	Outflow from Cell 3B		discharge from the western treatment track
G381E_C	Culvert	Outflow from Cell 3B		discharge from the western treatment track
G381F_C	Culvert	Outflow from Cell 3B	TA448	discharge from the western treatment track
G374B_T	stage	tailwater at inflow to Cell 1A	T9922	stage at north side of Cell 1A
G374E_T	stage	tailwater at inflow to Cell 1A	T9924	stage at north side of Cell 1A
G375D_H	stage	headwater at outflow from Cell 1A	T9999	stage at south end of Cell 1A
G376B_H	stage	headwater at outflow from Cell 1B	T1024	stage at south end of Cell 1B
G376E_H	stage	headwater at outflow from Cell 1B	T1031	stage at south end of Cell 1B
G375D_T	stage	tailwater at inflow to Cell 1B	TA000	stage at north end of Cell 1B
G377B_T	stage	tailwater at inflow to Cell 2A	T9926	stage at north end of Cell 2A
G377D_T	stage	tailwater at inflow to Cell 2A	T9928	stage at north end of Cell 2A
G378C_H	stage	headwater at outflow from Cell 2A	T9929	stage at south end of Cell 2A
G379B_H	stage	headwater at outflow from Cell 2B	T1048	stage at south end of Cell 2B
G379D_H	stage	headwater at outflow from Cell 2B	T1054	stage at south end of Cell 2B
G378C_T	stage	tailwater at outflow to Cell 2A	T9930	stage at north end of Cell 2B
G380B_T	stage	tailwater at inflow to Cell 3	T9932	stage at north end of Cell 3
G380E_T	stage	tailwater at inflow to Cell 3	T9998	stage at north end of Cell 3
G381B_H	stage	headwater at outflow from Cell 3	T1061	stage at south end of Cell 3
G381E_H	stage	headwater at outflow from Cell 3	T1068	stage at south end of Cell 3

Appendix IIa. Water balance terms with calculated remainders for WY2004.

Date	Change in storage	Inflow surface water	Outflow surface water	Rain	ET	Remainders
	ac-ft	ac-ft	ac-ft	ac-ft	ac-ft	ac-ft
10/1/2003	-120	42	0	0	162	N/A
10/2/2003	-213	0	0	0	213	N/A
10/3/2003	-193	0	0	0	193	N/A
10/4/2003	-152	0	0	0	152	N/A
10/5/2003	-203	0	0	0	203	N/A
10/6/2003	-233	0	0	0	233	N/A
10/7/2003	-223	0	0	0	223	N/A
10/8/2003	-213	0	0	0	213	N/A
10/9/2003	-233	0	0	0	233	N/A
10/10/2003	-173	0	0	0	173	N/A
10/11/2003	-182	0	0	0	182	N/A
10/12/2003	-182	0	0	0	182	N/A
10/13/2003	28	251	0	0	223	N/A
10/14/2003	-49	0	0	133	182	N/A
10/15/2003	130	0	0	312	182	N/A
10/16/2003	-66	167	0	0	233	N/A
10/17/2003	-112	0	0	0	112	N/A
10/18/2003	-233	0	0	0	233	N/A
10/19/2003	-213	0	0	0	213	N/A
10/20/2003	-193	0	0	0	193	N/A
10/21/2003	-203	0	0	0	203	N/A
10/22/2003	-232	0	0	0	232	N/A
10/23/2003	-218	0	0	0	218	N/A
10/24/2003	-231	0	0	0	231	N/A
10/25/2003	77	0	0	188	112	N/A
10/26/2003	-194	0	0	9	203	N/A
10/27/2003	-113	105	0	5	223	N/A
10/28/2003	-132	0	0	0	132	N/A
10/29/2003	223	0	0	437	213	N/A
10/30/2003	-69	108	0	5	182	N/A
10/31/2003	-162	0	0	0	162	N/A
11/1/2003	-174	0	0	18	193	N/A
11/2/2003	5	0	0	198	193	N/A
11/3/2003	473	0	0	625	152	N/A
11/4/2003	319	0	0	391	71	N/A
11/5/2003	259	21	0	303	65	N/A
11/6/2003	462	172	0	381	91	N/A
11/7/2003	4	0	0	156	152	N/A
11/8/2003	-142	0	0	0	142	N/A
11/9/2003	-148	0	0	0	148	N/A
11/10/2003	-81	0	0	51	132	N/A
11/11/2003	-173	0	0	9	182	N/A
11/12/2003	-193	0	0	0	193	N/A
11/13/2003	-74	129	0	0	203	N/A
11/14/2003	-45	128	0	0	173	N/A
11/15/2003	-126	0	0	0	126	N/A

Appendix IIa. Continued.

Date	Change in storage	Inflow surface water	Outflow surface water	Rain	ET	Remainders
	ac-ft	ac-ft	ac-ft	ac-ft	ac-ft	ac-ft
11/16/2003	-128	0	0	0	128	N/A
11/17/2003	238	380	0	0	142	N/A
11/18/2003	-166	0	0	0	166	N/A
11/19/2003	729	780	0	37	87	N/A
11/20/2003	-158	0	0	41	200	N/A
11/21/2003	-172	0	0	0	172	N/A
11/22/2003	-98	86	0	0	184	N/A
11/23/2003	-207	0	0	0	207	N/A
11/24/2003	-171	0	0	0	171	N/A
11/25/2003	-172	0	0	0	172	N/A
11/26/2003	-175	0	0	0	175	N/A
11/27/2003	-173	0	0	0	173	N/A
11/28/2003	-147	0	0	18	166	N/A
11/29/2003	-181	0	0	9	190	N/A
11/30/2003	-126	0	0	0	126	N/A
12/1/2003	-151	0	0	0	151	N/A
12/2/2003	-191	0	0	0	191	N/A
12/3/2003	-63	0	0	106	169	N/A
12/4/2003	-23	0	0	119	142	N/A
12/5/2003	602	481	0	253	132	N/A
12/6/2003	260	0	0	423	162	N/A
12/7/2003	-193	0	0	0	193	N/A
12/8/2003	284	356	0	0	71	N/A
12/9/2003	392	565	0	0	173	N/A
12/10/2003	636	523	0	184	71	N/A
12/11/2003	740	690	0	202	152	N/A
12/12/2003	455	627	0	0	173	N/A
12/13/2003	-162	0	0	0	162	N/A
12/14/2003	1046	0	0	1066	20	N/A
12/15/2003	506	252	0	437	182	N/A
12/16/2003	-38	43	0	0	81	N/A
12/17/2003	481	502	0	51	71	N/A
12/18/2003	1196	1374	0	5	182	N/A
12/19/2003	-182	0	0	0	182	N/A
12/20/2003	-193	0	0	0	193	N/A
12/21/2003	-162	0	0	0	162	N/A
12/22/2003	-87	0	0	5	91	N/A
12/23/2003	-124	0	0	18	142	N/A
12/24/2003	-152	0	0	0	152	N/A
12/25/2003	-181	0	0	0	181	N/A
12/26/2003	-147	0	0	0	147	N/A
12/27/2003	-169	0	0	0	169	N/A
12/28/2003	-162	0	0	0	162	N/A
12/29/2003	-132	0	0	0	132	N/A
12/30/2003	-182	0	0	0	182	N/A
12/31/2003	-152	0	0	0	152	N/A

Appendix IIa. Continued.

Date	Change in storage	Inflow surface water	Outflow surface water	Rain	ET	Remainders
	ac-ft	ac-ft	ac-ft	ac-ft	ac-ft	ac-ft
1/1/2004	-132	0	0	0	132	N/A
1/2/2004	-112	0	0	0	112	N/A
1/3/2004	-122	0	0	0	122	N/A
1/4/2004	-144	0	0	0	144	N/A
1/5/2004	-128	0	0	0	128	N/A
1/6/2004	-151	0	0	0	151	N/A
1/7/2004	-81	0	0	0	81	N/A
1/8/2004	-193	0	0	0	193	N/A
1/9/2004	-152	0	0	0	152	N/A
1/10/2004	-50	0	0	0	50	N/A
1/11/2004	-182	0	0	0	182	N/A
1/12/2004	-134	0	0	18	152	N/A
1/13/2004	-193	0	0	0	193	N/A
1/14/2004	-193	0	0	0	193	N/A
1/15/2004	-173	0	0	0	173	N/A
1/16/2004	-173	0	0	0	173	N/A
1/17/2004	-142	0	0	0	142	N/A
1/18/2004	1085	0	0	1135	50	N/A
1/19/2004	326	434	0	5	112	N/A
1/20/2004	506	689	0	0	182	N/A
1/21/2004	-16	166	0	0	182	N/A
1/22/2004	465	668	0	0	203	N/A
1/23/2004	345	548	0	0	203	N/A
1/24/2004	-213	0	0	0	213	N/A
1/25/2004	-203	0	0	0	203	N/A
1/26/2004	-173	0	0	0	173	N/A
1/27/2004	140	0	0	211	71	N/A
1/28/2004	-191	0	0	0	191	N/A
1/29/2004	-183	0	0	0	183	N/A
1/30/2004	1414	0	0	1475	61	N/A
1/31/2004	516	0	0	547	30	N/A
2/1/2004	161	0	0	312	152	N/A
2/2/2004	-188	0	0	5	193	N/A
2/3/2004	-203	0	0	0	203	N/A
2/4/2004	-193	0	0	0	193	N/A
2/5/2004	-188	0	0	5	193	N/A
2/6/2004	-173	0	0	0	173	N/A
2/7/2004	-122	0	0	0	122	N/A
2/8/2004	-203	0	0	0	203	N/A
2/9/2004	-203	0	0	0	203	N/A
2/10/2004	-866	0	663	0	203	N/A
2/11/2004	-182	0	0	0	182	N/A
2/12/2004	-203	0	0	0	203	N/A
2/13/2004	-83	0	0	32	116	N/A
2/14/2004	-185	0	0	0	185	N/A
2/15/2004	142	0	0	239	97	N/A

Appendix IIa. Continued.

Date	Change in storage	Inflow surface water	Outflow surface water	Rain	ET	Remainders
	ac-ft	ac-ft	ac-ft	ac-ft	ac-ft	ac-ft
2/16/2004	-164	0	0	0	164	N/A
2/17/2004	-68	0	0	9	77	N/A
2/18/2004	-223	0	0	0	223	N/A
2/19/2004	-219	0	0	0	219	N/A
2/20/2004	-112	0	0	0	112	N/A
2/21/2004	-162	0	0	0	162	N/A
2/22/2004	-213	0	0	0	213	N/A
2/23/2004	-213	0	0	0	213	N/A
2/24/2004	908	1101	0	0	193	N/A
2/25/2004	3004	1914	669	1820	61	N/A
2/26/2004	909	1915	1459	676	223	N/A
2/27/2004	-3149	0	3012	5	142	N/A
2/28/2004	-3194	0	3012	0	182	N/A
2/29/2004	-3310	0	3168	0	142	N/A
3/1/2004	-2655	0	2432	0	223	N/A
3/2/2004	-182	0	0	0	182	N/A
3/3/2004	-2604	0	2432	0	173	N/A
3/4/2004	-203	0	0	0	203	N/A
3/5/2004	-193	0	0	0	193	N/A
3/6/2004	-233	0	0	0	233	N/A
3/7/2004	-193	0	0	0	193	N/A
3/8/2004	-1393	1292	2432	0	253	N/A
3/9/2004	-663	1992	2432	0	223	N/A
3/10/2004	751	2017	1003	0	264	N/A
3/11/2004	1771	2024	0	0	253	N/A
3/12/2004	496	760	0	0	264	N/A
3/13/2004	-253	0	0	0	253	N/A
3/14/2004	-147	0	0	5	152	N/A
3/15/2004	-193	0	0	0	193	N/A
3/16/2004	216	0	0	368	152	N/A
3/17/2004	-3006	0	3100	276	182	N/A
3/18/2004	-284	0	0	0	284	N/A
3/19/2004	-284	0	0	0	284	N/A
3/20/2004	-284	0	0	0	284	N/A
3/21/2004	-284	0	0	0	284	N/A
3/22/2004	-274	0	0	0	274	N/A
3/23/2004	-233	0	0	0	233	N/A
3/24/2004	-162	0	0	0	162	N/A
3/25/2004	-204	0	0	9	213	N/A
3/26/2004	-232	0	0	32	264	N/A
3/27/2004	-284	0	0	0	284	N/A
3/28/2004	-284	0	0	0	284	N/A
3/29/2004	-198	0	0	5	203	N/A
3/30/2004	-284	0	0	0	284	N/A
3/31/2004	-264	0	0	0	264	N/A
4/1/2004	-294	0	0	0	294	N/A

Appendix IIa. Continued.

Date	Change in storage	Inflow surface water	Outflow surface water	Rain	ET	Remainders
	ac-ft	ac-ft	ac-ft	ac-ft	ac-ft	ac-ft
4/2/2004	-304	0	0	0	304	N/A
4/3/2004	-314	0	0	0	314	N/A
4/4/2004	-294	0	0	0	294	N/A
4/5/2004	-304	0	0	0	304	N/A
4/6/2004	-284	0	0	0	284	N/A
4/7/2004	-253	0	0	0	253	N/A
4/8/2004	-264	0	0	0	264	N/A
4/9/2004	-193	0	0	0	193	N/A
4/10/2004	-84	0	0	119	203	N/A
4/11/2004	-239	0	0	5	244	N/A
4/12/2004	831	0	0	933	101	N/A
4/13/2004	1309	0	0	1461	152	N/A
4/14/2004	-121	0	0	184	304	N/A
4/15/2004	-325	0	0	0	325	N/A
4/16/2004	-264	0	0	0	264	N/A
4/17/2004	-264	0	0	0	264	N/A
4/18/2004	-294	0	0	0	294	N/A
4/19/2004	-294	0	0	0	294	N/A
4/20/2004	-284	0	0	0	284	N/A
4/21/2004	-193	0	0	0	193	N/A
4/22/2004	-264	0	0	0	264	N/A
4/23/2004	-264	0	0	0	264	N/A
4/24/2004	-264	0	0	0	264	N/A
4/25/2004	-284	0	0	0	284	N/A
4/26/2004	-274	0	0	0	274	N/A
4/27/2004	-116	0	0	46	162	N/A
4/28/2004	-81	0	0	92	173	N/A
4/29/2004	-175	0	0	28	203	N/A
4/30/2004	-260	0	0	14	274	N/A

Appendix IIb. Water balance terms with calculated remainders for WY2005.

Date	Change in storage	Inflow surface water	Outflow surface water	Rain	ET	Remainders
	ac-ft	ac-ft	ac-ft	ac-ft	ac-ft	ac-ft
1-May-04	-264	0	0	0	264	N/A
2-May-04	-223	0	0	0	223	N/A
3-May-04	1301	0	0	1413	112	N/A
4-May-04	-280	0	0	14	294	N/A
5-May-04	-304	0	0	0	304	N/A
6-May-04	-234	50	0	0	284	N/A
7-May-04	-325	0	0	0	325	N/A
8-May-04	-284	0	0	0	284	N/A
9-May-04	-253	0	0	0	253	N/A
10-May-04	74	287	0	0	213	N/A
11-May-04	-264	0	0	0	264	N/A
12-May-04	236	520	0	0	284	N/A
13-May-04	-28	266	0	0	294	N/A
14-May-04	-294	0	0	0	294	N/A
15-May-04	-253	0	0	21	274	N/A
16-May-04	-30	0	0	214	244	N/A
17-May-04	-264	0	0	0	264	N/A
18-May-04	-157	107	0	0	264	N/A
19-May-04	-304	0	0	0	304	N/A
20-May-04	-294	0	0	0	294	N/A
21-May-04	-284	0	0	0	284	N/A
22-May-04	-304	0	0	0	304	N/A
23-May-04	-304	0	0	0	304	N/A
24-May-04	-284	0	0	0	284	N/A
25-May-04	-198	86	0	0	284	N/A
26-May-04	-325	0	0	0	325	N/A
27-May-04	-230	84	0	0	314	N/A
28-May-04	-335	0	0	0	335	N/A
29-May-04	-264	0	0	0	264	N/A
30-May-04	-247	0	0	7	253	N/A
31-May-04	-250	0	0	14	264	N/A
1-Jun-04	1818	0	0	2102	284	N/A
2-Jun-04	422	482	0	214	274	N/A
3-Jun-04	3583	3378	0	469	264	N/A
4-Jun-04	3413	3044	0	551	182	N/A
5-Jun-04	4531	4068	0	676	213	N/A
6-Jun-04	5204	4034	0	1413	244	N/A
7-Jun-04	3921	4198	0	28	304	N/A
8-Jun-04	1960	2934	1250	469	193	N/A
9-Jun-04	-7361	0	7234	34	161	N/A
10-Jun-04	1488	2462	805	34	203	N/A
11-Jun-04	1067	2030	974	234	223	N/A
12-Jun-04	1152	2248	974	172	294	N/A
13-Jun-04	900	2029	974	0	155	N/A
14-Jun-04	-120	1272	1199	0	193	N/A
15-Jun-04	-983	975	1893	117	182	N/A

Appendix IIb. Continued.

Date	Change in storage	Inflow surface water	Outflow surface water	Rain	ET	Remainders
	ac-ft	ac-ft	ac-ft	ac-ft	ac-ft	ac-ft
16-Jun-04	-662	1544	1983	0	223	N/A
17-Jun-04	294	1415	942	34	213	N/A
18-Jun-04	1465	555	704	1806	193	N/A
19-Jun-04	-1806	0	1601	28	233	N/A
20-Jun-04	-489	0	1601	1385	274	N/A
21-Jun-04	1161	494	0	951	284	N/A
22-Jun-04	2087	1456	521	1385	233	N/A
23-Jun-04	-485	2024	2204	0	304	N/A
24-Jun-04	-244	0	0	0	244	N/A
25-Jun-04	311	228	0	317	233	N/A
26-Jun-04	1824	2037	0	0	213	N/A
27-Jun-04	968	1212	0	0	244	N/A
28-Jun-04	-101	0	0	0	101	N/A
29-Jun-04	579	0	0	751	173	N/A
30-Jun-04	-89	44	0	90	223	N/A
1-Jul-04	1827	0	0	2040	213	N/A
2-Jul-04	-164	0	0	90	253	N/A
3-Jul-04	4	0	0	248	244	N/A
4-Jul-04	-193	0	0	0	193	N/A
5-Jul-04	142	0	0	345	203	N/A
6-Jul-04	-294	0	0	0	294	N/A
7-Jul-04	-325	0	0	0	325	N/A
8-Jul-04	99	80	0	324	304	N/A
9-Jul-04	677	981	0	0	304	N/A
10-Jul-04	345	0	0	558	213	N/A
11-Jul-04	759	0	0	993	233	N/A
12-Jul-04	660	519	0	345	203	N/A
13-Jul-04	93	346	0	0	253	N/A
14-Jul-04	97	346	0	34	284	N/A
15-Jul-04	255	518	0	0	264	N/A
16-Jul-04	1424	603	0	1034	213	N/A
17-Jul-04	146	0	0	400	253	N/A
18-Jul-04	-154	0	0	90	244	N/A
19-Jul-04	217	3905	3851	345	182	N/A
20-Jul-04	3165	6557	3361	90	122	N/A
21-Jul-04	4490	6594	2321	400	182	N/A
22-Jul-04	-1206	3841	4753	0	294	N/A
23-Jul-04	464	758	0	0	294	N/A
24-Jul-04	45	0	0	248	203	N/A
25-Jul-04	1155	975	0	372	193	N/A
26-Jul-04	-2110	0	3121	1234	223	N/A
27-Jul-04	3828	1062	961	3991	264	N/A
28-Jul-04	3437	4348	961	324	274	N/A
29-Jul-04	-270	2304	2354	14	233	N/A
30-Jul-04	336	1972	1359	7	284	N/A
31-Jul-04	3729	614	1359	4687	213	N/A

Appendix IIb. Continued.

Date	Change in storage	Inflow surface water	Outflow surface water	Rain	ET	Remainders
	ac-ft	ac-ft	ac-ft	ac-ft	ac-ft	ac-ft
1-Aug-04	3360	3324	1359	1516	122	N/A
2-Aug-04	5523	7226	2034	503	173	N/A
3-Aug-04	3021	7420	4388	152	162	N/A
4-Aug-04	2921	8351	5531	365	264	N/A
5-Aug-04	1273	7859	6853	379	112	N/A
6-Aug-04	427	7448	6853	14	182	N/A
7-Aug-04	713	7703	6853	76	213	N/A
8-Aug-04	1046	7685	6853	386	173	N/A
9-Aug-04	765	7710	6813	152	284	N/A
10-Aug-04	517	7735	6955	0	264	N/A
11-Aug-04	-1474	5735	7368	352	193	N/A
12-Aug-04	-1219	5409	6473	48	203	N/A
13-Aug-04	-1257	4531	5821	103	71	N/A
14-Aug-04	448	3944	5821	2557	233	N/A
15-Aug-04	-946	4888	5821	159	173	N/A
16-Aug-04	-2253	3802	5821	0	233	N/A
17-Aug-04	-1768	3958	5531	28	223	N/A
18-Aug-04	-355	3888	4768	758	233	N/A
19-Aug-04	-24	4853	4768	83	193	N/A
20-Aug-04	-2163	3951	5916	97	294	N/A
21-Aug-04	-2190	3956	5916	14	244	N/A
22-Aug-04	-522	4900	5916	738	244	N/A
23-Aug-04	-374	3964	4157	83	264	N/A
24-Aug-04	-920	3970	5210	462	142	N/A
25-Aug-04	2195	5962	5210	1544	101	N/A
26-Aug-04	3179	7730	5531	1255	274	N/A
27-Aug-04	331	6136	5531	0	274	N/A
28-Aug-04	728	6011	5531	441	193	N/A
29-Aug-04	-160	5590	5531	34	253	N/A
30-Aug-04	-905	5620	6242	0	284	N/A
31-Aug-04	-1772	3943	5513	0	203	N/A
1-Sep-04	-1706	4222	5732	7	203	N/A
2-Sep-04	2180	4128	1712	28	264	N/A
3-Sep-04	1783	3057	1712	600	162	N/A
4-Sep-04	801	2897	4341	2316	71	N/A
5-Sep-04	694	3083	4341	2013	61	N/A
6-Sep-04	2178	5832	4341	889	203	N/A
7-Sep-04	3105	7632	4341	7	193	N/A
8-Sep-04	3301	7417	4341	407	182	N/A
9-Sep-04	-2100	7476	9346	14	244	N/A
10-Sep-04	1988	6562	4341	0	233	N/A
11-Sep-04	1199	5776	4341	7	244	N/A
12-Sep-04	1362	5812	4341	124	233	N/A
13-Sep-04	-3574	4923	8361	7	142	N/A
14-Sep-04	-3231	4632	7782	21	101	N/A
15-Sep-04	-2838	4426	7105	14	173	N/A

Appendix IIb. Continued.

Date	Change in storage	Inflow surface water	Outflow surface water	Rain	ET	Remainders
	ac-ft	ac-ft	ac-ft	ac-ft	ac-ft	ac-ft
16-Sep-04	-2653	5382	7781	0	253	N/A
17-Sep-04	-1303	3897	5204	207	203	N/A
18-Sep-04	-3371	1994	5204	83	244	N/A
19-Sep-04	-2947	2015	5204	434	193	N/A
20-Sep-04	-1223	2501	4108	517	132	N/A
21-Sep-04	-1426	6144	7453	55	173	N/A
22-Sep-04	5848	8145	2136	21	182	N/A
23-Sep-04	3006	7247	4055	28	213	N/A
24-Sep-04	-1969	5888	7644	0	213	N/A
25-Sep-04	-143	6178	7644	1413	91	N/A
26-Sep-04	-145	6278	7335	1055	142	N/A
27-Sep-04	4398	8782	4185	34	233	N/A
28-Sep-04	581	8153	7609	200	162	N/A
29-Sep-04	-1477	7307	8653	62	193	N/A
30-Sep-04	-1074	7460	8352	0	182	N/A
1-Oct-04	-2023	6738	8707	200	253	N/A
2-Oct-04	-4086	4782	8707	62	223	N/A
3-Oct-04	-5485	3445	8707	0	223	N/A
4-Oct-04	-4061	2577	6405	0	233	N/A
5-Oct-04	-3415	3457	6687	28	213	N/A
6-Oct-04	-3608	2855	6467	227	223	N/A
7-Oct-04	1734	4169	2463	200	173	N/A
8-Oct-04	1122	3425	2059	0	244	N/A
9-Oct-04	-873	1430	2059	0	244	N/A
10-Oct-04	-1280	920	2059	41	182	N/A
11-Oct-04	-340	1514	1786	14	81	N/A
12-Oct-04	-4238	412	4536	48	162	N/A
13-Oct-04	1022	1874	636	7	223	N/A
14-Oct-04	-1680	1039	2536	0	182	N/A
15-Oct-04	980	767	0	386	173	N/A
16-Oct-04	-223	0	0	0	223	N/A
17-Oct-04	-233	0	0	0	233	N/A
18-Oct-04	-173	0	0	0	173	N/A
19-Oct-04	671	0	0	793	122	N/A
20-Oct-04	413	0	0	586	173	N/A
21-Oct-04	802	647	0	358	203	N/A
22-Oct-04	1332	987	0	558	213	N/A
23-Oct-04	1650	1561	0	262	173	N/A
24-Oct-04	-223	0	0	0	223	N/A
25-Oct-04	576	768	0	0	193	N/A
26-Oct-04	-166	0	0	7	173	N/A
27-Oct-04	-911	0	735	7	182	N/A
28-Oct-04	-142	0	0	0	142	N/A
29-Oct-04	-135	0	0	7	142	N/A
30-Oct-04	-182	0	0	0	182	N/A
31-Oct-04	-55	0	0	97	152	N/A

Appendix IIb. Continued.

Date	Change in storage	Inflow surface water	Outflow surface water	Rain	ET	Remainders
	ac-ft	ac-ft	ac-ft	ac-ft	ac-ft	ac-ft
1-Nov-04	-138	0	0	14	152	N/A
2-Nov-04	-162	0	0	0	162	N/A
3-Nov-04	-173	0	0	0	173	N/A
4-Nov-04	-173	0	0	0	173	N/A
5-Nov-04	-30	0	0	21	50	N/A
6-Nov-04	-142	0	0	0	142	N/A
7-Nov-04	-162	0	0	0	162	N/A
8-Nov-04	-203	0	0	0	203	N/A
9-Nov-04	-173	0	0	0	173	N/A
10-Nov-04	-162	0	0	0	162	N/A
11-Nov-04	-83	0	0	69	152	N/A
12-Nov-04	-166	0	0	7	173	N/A
13-Nov-04	-162	0	0	0	162	N/A
14-Nov-04	484	0	0	545	61	N/A
15-Nov-04	-142	0	0	0	142	N/A
16-Nov-04	-145	0	0	7	152	N/A
17-Nov-04	-101	0	0	0	101	N/A
18-Nov-04	-162	0	0	0	162	N/A
19-Nov-04	-152	0	0	0	152	N/A
20-Nov-04	-162	0	0	0	162	N/A
21-Nov-04	-142	0	0	0	142	N/A
22-Nov-04	-132	0	0	0	132	N/A
23-Nov-04	-152	0	0	0	152	N/A
24-Nov-04	-132	0	0	0	132	N/A
25-Nov-04	-22	0	0	90	112	N/A
26-Nov-04	-173	0	0	0	173	N/A
27-Nov-04	-22	0	0	110	132	N/A
28-Nov-04	-169	0	0	14	182	N/A
29-Nov-04	-173	0	0	0	173	N/A
30-Nov-04	-101	0	0	0	101	N/A
1-Dec-04	-122	0	0	0	122	N/A
2-Dec-04	-152	0	0	0	152	N/A
3-Dec-04	303	476	0	0	173	N/A
4-Dec-04	-162	0	0	0	162	N/A
5-Dec-04	-142	0	0	0	142	N/A
6-Dec-04	640	782	0	0	142	N/A
7-Dec-04	1846	1967	0	0	122	N/A
8-Dec-04	1841	1973	0	0	132	N/A
9-Dec-04	2389	2521	0	0	132	N/A
10-Dec-04	415	1974	1520	83	122	N/A
11-Dec-04	329	1971	1520	0	122	N/A
12-Dec-04	275	1968	1520	0	173	N/A
13-Dec-04	-107	1965	1900	0	173	N/A
14-Dec-04	63	1956	1772	0	122	N/A
15-Dec-04	68	1961	1730	0	162	N/A
16-Dec-04	19	1947	1786	0	142	N/A

Appendix IIb. Continued.

Date	Change in storage	Inflow surface water	Outflow surface water	Rain	ET	Remainders
	ac-ft	ac-ft	ac-ft	ac-ft	ac-ft	ac-ft
17-Dec-04	467	1948	1769	338	50	N/A
18-Dec-04	76	1966	1765	28	152	N/A
19-Dec-04	-81	1964	1892	0	152	N/A
20-Dec-04	-1460	736	2023	0	173	N/A
21-Dec-04	-2034	0	1872	0	162	N/A
22-Dec-04	-1374	0	1232	0	142	N/A
23-Dec-04	-342	0	291	0	50	N/A
24-Dec-04	277	0	186	524	61	N/A
25-Dec-04	-639	0	647	69	61	N/A
26-Dec-04	-319	0	153	7	173	N/A
27-Dec-04	-463	0	308	7	162	N/A
28-Dec-04	-274	0	203	0	71	N/A
29-Dec-04	-142	0	0	0	142	N/A
30-Dec-04	-152	0	0	0	152	N/A
31-Dec-04	49	0	0	110	61	N/A
1-Jan-05	-142	0	0	0	142	N/A
2-Jan-05	-166	0	0	7	173	N/A
3-Jan-05	-173	0	0	0	173	N/A
4-Jan-05	-142	0	0	0	142	N/A
5-Jan-05	-132	0	0	0	132	N/A
6-Jan-05	246	388	0	0	142	N/A
7-Jan-05	-620	0	468	0	152	N/A
8-Jan-05	-723	0	571	0	152	N/A
9-Jan-05	-484	0	352	0	132	N/A
10-Jan-05	-474	0	342	0	132	N/A
11-Jan-05	-434	0	302	0	132	N/A
12-Jan-05	-667	302	827	0	142	N/A
13-Jan-05	-482	0	407	7	81	N/A
14-Jan-05	105	0	46	689	30	507
15-Jan-05	2139	3863	818	234	50	1090
16-Jan-05	1090	1209	1202	14	61	-1130
17-Jan-05	254	1107	1375	7	173	-688
18-Jan-05	-1229	0	1538	0	162	-471
19-Jan-05	-1438	0	1638	0	142	-342
20-Jan-05	-1100	0	1273	0	142	-315
21-Jan-05	-310	0	828	0	173	-690
22-Jan-05	76	0	746	0	152	-974
23-Jan-05	294	0	772	21	162	-1207
24-Jan-05	354	0	555	0	203	-1112
25-Jan-05	-119	0	660	0	203	-744
26-Jan-05	-408	0	714	7	193	-491
27-Jan-05	104	1598	722	0	173	598
28-Jan-05	145	1729	802	0	142	640
29-Jan-05	-411	0	763	0	173	-525
30-Jan-05	-373	0	795	0	142	-564
31-Jan-05	641	1039	871	0	193	-666

Appendix IIb. Continued.

.

Date	Change in storage	Inflow surface water	Outflow surface water	Rain	ET	Remainders
	ac-ft	ac-ft	ac-ft	ac-ft	ac-ft	ac-ft
1-Feb-05	25	538	756	0	182	-425
2-Feb-05	209	1037	680	0	122	26
3-Feb-05	552	1276	685	0	142	-104
4-Feb-05	427	1060	749	0	71	-187
5-Feb-05	-279	0	1033	0	203	-957
6-Feb-05	-643	0	967	7	152	-470
7-Feb-05	378	1007	920	0	132	-423
8-Feb-05	-6	785	751	0	142	-102
9-Feb-05	209	1040	686	0	173	-27
10-Feb-05	298	1023	803	0	152	-230
11-Feb-05	404	1021	827	0	233	-443
12-Feb-05	-155	0	952	0	233	-1031
13-Feb-05	-764	0	983	0	223	-442
14-Feb-05	36	497	880	0	193	-612
15-Feb-05	589	501	818	0	182	-1088
16-Feb-05	1099	2270	916	0	213	42
17-Feb-05	1758	2591	1054	0	203	-424
18-Feb-05	1507	1739	1118	0	213	-1099
19-Feb-05	222	730	1231	0	223	-946
20-Feb-05	-640	0	1102	0	233	-695
21-Feb-05	-771	0	959	0	213	-402
22-Feb-05	759	1209	858	0	152	-559
23-Feb-05	-156	0	871	0	182	-898
24-Feb-05	-507	0	871	7	162	-519
25-Feb-05	216	1044	985	586	71	358
26-Feb-05	1082	3560	883	7	112	1491
27-Feb-05	3757	3897	891	310	91	-532
28-Feb-05	1478	1445	1845	0	142	-2020
1-Mar-05	-1359	482	2309	0	233	-701
2-Mar-05	-1873	1024	2551	0	253	93
3-Mar-05	-2196	877	2636	1082	50	1468
4-Mar-05	-620	2263	2487	352	142	606
5-Mar-05	1258	2788	2463	0	264	-1196
6-Mar-05	-2372	2034	2044	0	223	2140
7-Mar-05	-743	1659	1284	0	193	926
8-Mar-05	-771	1039	1060	131	91	790
9-Mar-05	1992	4281	1952	2950	10	3277
10-Mar-05	4890	6585	2983	69	264	-1484
11-Mar-05	5694	7918	3638	0	203	-1617
12-Mar-05	1987	5954	3803	0	274	-110
13-Mar-05	-674	2401	4212	0	264	-1400
14-Mar-05	-3980	417	3787	0	193	417
15-Mar-05	-3390	1358	3049	0	223	1476
16-Mar-05	-2230	873	2577	0	203	324
17-Mar-05	-276	5717	2322	2102	50	5722
18-Mar-05	5286	8824	2436	21	193	930

Appendix IIb. Continued.

Date	Change in storage	Inflow surface water	Outflow surface water	Rain	ET	Remainders
	ac-ft	ac-ft	ac-ft	ac-ft	ac-ft	ac-ft
19-Mar-05	5531	8837	3324	0	284	-301
20-Mar-05	1914	5600	4108	0	284	-706
21-Mar-05	-1063	3459	4323	0	182	17
22-Mar-05	-2333	2747	4024	0	213	843
23-Mar-05	-2647	2007	3568	317	173	1231
24-Mar-05	-2035	1501	3239	0	182	115
25-Mar-05	-2269	3176	2744	0	223	2478
26-Mar-05	-2446	0	2536	255	203	-38
27-Mar-05	-1821	1028	2135	0	223	491
28-Mar-05	-903	2495	1914	0	142	1342
29-Mar-05	-636	2034	1761	0	304	605
30-Mar-05	-2460	0	1857	0	264	340
31-Mar-05	-1473	0	1707	0	253	-488
1-Apr-05	658	0	1036	7	264	-1951
2-Apr-05	-107	0	746	221	142	-561
3-Apr-05	-524	0	685	0	314	-476
4-Apr-05	-49	0	437	0	314	-702
5-Apr-05	-174	0	0	0	284	-109
6-Apr-05	-320	0	0	0	274	46
7-Apr-05	-2312	0	8	0	203	2101
8-Apr-05	1662	298	0	1241	173	-296
9-Apr-05	-640	0	0	0	244	396
10-Apr-05	-787	0	0	0	244	543
11-Apr-05	-523	0	530	0	304	-311
12-Apr-05	-814	0	612	0	274	-72
13-Apr-05	-163	0	545	0	223	-606
14-Apr-05	-517	0	610	0	284	-377
15-Apr-05	-50	327	580	7	284	-481
16-Apr-05	-305	0	576	0	294	-565
17-Apr-05	-132	0	622	7	244	-726
18-Apr-05	436	516	663	0	264	-846
19-Apr-05	1469	3208	649	0	274	815
20-Apr-05	3107	4323	661	0	223	332
21-Apr-05	2562	4000	998	0	253	186
22-Apr-05	1978	3996	2105	0	284	-371
23-Apr-05	1477	3964	2236	0	304	-53
24-Apr-05	1622	3985	2393	14	325	-340
25-Apr-05	1704	4332	2494	0	325	-191
26-Apr-05	1538	3971	2870	0	264	-701
27-Apr-05	1085	3975	3650	358	142	-543
28-Apr-05	-164	3956	4430	0	314	-624
29-Apr-05	-407	3972	4344	0	314	-279
30-Apr-05	-384	3970	4281	0	294	-221

Appendix IIc. Water balance terms with calculated remainders for WY2006.

Date	Change in storage	Inflow surface water	Outflow surface water	Rain	ET	Remainders
	ac-ft	ac-ft	ac-ft	ac-ft	ac-ft	ac-ft
1-May-05	-209.42475	3995	3982	0	135	87
2-May-05	717	4007	3908	23	239	-835
3-May-05	1832	3973	4075	2413	138	341
4-May-05	3805	4161	4226	3616	131	-384
5-May-05	3131	7545	4482	276	128	79
6-May-05	-48	8930	6095	5	274	2613
7-May-05	-3592	5116	6417	0	316	1975
8-May-05	-6189	1431	6178	0	319	1123
9-May-05	-5577	0	5468	0	326	-217
10-May-05	-3080	0	3940	0	275	-1135
11-May-05	-159	0	1666	0	273	-1780
12-May-05	-1047	72	589	0	275	256
13-May-05	-583	0	659	5	290	-362
14-May-05	-311	0	474	0	252	-416
15-May-05	-361	0	444	193	247	-138
16-May-05	-746	0	573	0	308	-135
17-May-05	-772	0	559	0	276	-63
18-May-05	-642	0	548	0	269	-175
19-May-05	-325	0	529	41	257	-420
20-May-05	-325	0	449	0	243	-366
21-May-05	-5	0	471	648	244	-63
22-May-05	-174	0	456	14	167	-435
23-May-05	-173	0	453	0	285	-565
24-May-05	-319	0	438	41	304	-382
25-May-05	1936	0	427	64	285	-2584
26-May-05	3324	1031	609	1342	217	-1777
27-May-05	254	1581	782	0	287	258
28-May-05	350	1098	791	0	295	-339
29-May-05	736	1104	830	207	253	-509
30-May-05	993	1102	814	358	219	-566
31-May-05	2157	1079	1044	1006	140	-1256
1-Jun-05	4678	9160	2250	1227	103	3356
2-Jun-05	7764	9015	3413	1498	47	-710
3-Jun-05	6233	10192	4709	1121	97	275
4-Jun-05	2973	10691	6463	234	131	1359
5-Jun-05	2049	10184	7663	74	94	451
6-Jun-05	3345	10055	7860	23	210	-1337
7-Jun-05	560	8849	8234	1388	196	1246
8-Jun-05	-1031	8109	8429	32	148	595
9-Jun-05	23	7261	8368	290	105	-946
10-Jun-05	501	7640	8170	1144	56	57
11-Jun-05	114	7727	7758	1567	201	1221
12-Jun-05	-1039	7539	7751	138	168	797
13-Jun-05	-1584	7364	8200	0	307	441
14-Jun-05	-2645	6809	8219	14	216	1032
15-Jun-05	-5110	4879	7551	0	292	2146

Appendix IIc. Continued.

Date	Change in storage	Inflow surface water	Outflow surface water	Rain	ET	Remainders
	ac-ft	ac-ft	ac-ft	ac-ft	ac-ft	ac-ft
16-Jun-05	-3151	1483	6680	846	265	-1465
17-Jun-05	-1858	4663	6650	161	278	-245
18-Jun-05	-500	5251	6198	721	266	9
19-Jun-05	-493	4254	5459	1002	247	43
20-Jun-05	588	5169	5280	1310	27	583
21-Jun-05	-1533	4014	5405	41	138	46
22-Jun-05	-1195	4052	5314	133	117	-50
23-Jun-05	415	3810	5005	1627	139	-122
24-Jun-05	706	5701	4877	9	180	-52
25-Jun-05	-578	5231	4761	0	315	733
26-Jun-05	-547	2581	4397	97	172	-1344
27-Jun-05	4264	6669	4723	795	183	-1707
28-Jun-05	6146	10326	4908	1411	192	491
29-Jun-05	3841	10887	5372	51	112	1613
30-Jun-05	1637	9688	6625	64	217	1273
1-Jul-05	151	8618	7578	790	231	1447
2-Jul-05	-197	8257	7819	317	300	653
3-Jul-05	-649	7506	7944	777	267	721
4-Jul-05	-3121	6272	7840	9	293	1269
5-Jul-05	-3206	4741	7646	0	314	-13
6-Jul-05	-4275	3890	7060	0	319	787
7-Jul-05	-3932	1994	6124	0	264	-462
8-Jul-05	2300	2880	5674	1195	217	-4116
9-Jul-05	3993	6984	5303	2137	72	-247
10-Jul-05	3101	9214	5315	643	172	1269
11-Jul-05	-238	8013	6231	0	296	1724
12-Jul-05	-2625	5817	6759	9	193	1500
13-Jul-05	-2352	4571	6614	335	228	416
14-Jul-05	-2404	4816	5831	0	250	1140
15-Jul-05	-2943	3995	5598	0	234	1105
16-Jul-05	-1795	2522	5006	478	187	-398
17-Jul-05	320	4612	4748	0	285	-741
18-Jul-05	707	5639	4554	28	259	147
19-Jul-05	-1851	4147	4607	184	303	1272
20-Jul-05	-3180	2025	4646	0	275	284
21-Jul-05	-3149	1107	3988	0	302	-34
22-Jul-05	-3014	0	3110	0	272	-368
23-Jul-05	331	0	1524	0	297	-2153
24-Jul-05	207	3	623	1098	182	89
25-Jul-05	-129	16	491	1503	217	940
26-Jul-05	-252	799	712	519	240	618
27-Jul-05	-616	0	497	0	253	-134
28-Jul-05	-228	0	490	0	244	-506
29-Jul-05	-70	0	190	170	187	-136
30-Jul-05	659	0	0	423	213	-449
31-Jul-05	1650	0	0	1742	138	-46

Appendix IIc. Continued.

Date	Change in storage	Inflow surface water	Outflow surface water	Rain	ET	Remainders
	ac-ft	ac-ft	ac-ft	ac-ft	ac-ft	ac-ft
1-Aug-05	834	724	0	14	246	-342
2-Aug-05	-188	1044	503	101	265	565
3-Aug-05	-235	561	739	115	219	-47
4-Aug-05	280	476	757	524	227	-265
5-Aug-05	1116	833	875	345	174	-987
6-Aug-05	931	863	893	299	253	-916
7-Aug-05	775	1010	1022	87	266	-966
8-Aug-05	-984	4085	2532	0	292	2245
9-Aug-05	560	3979	2997	9	245	186
10-Aug-05	2052	3540	1880	83	212	-522
11-Aug-05	-330	3388	2191	588	189	1927
12-Aug-05	-1476	1613	2292	0	182	614
13-Aug-05	-1503	1109	1973	0	255	384
14-Aug-05	432	793	1624	1930	226	440
15-Aug-05	-1803	557	2172	0	211	-23
16-Aug-05	-1109	695	1423	0	297	83
17-Aug-05	-640	512	1466	0	282	-596
18-Aug-05	-31	0	953	9	253	-1166
19-Aug-05	1023	956	982	0	226	-1275
20-Aug-05	1784	0	504	947	188	-1528
21-Aug-05	-190	0	666	221	204	-459
22-Aug-05	-571	649	1023	1535	246	1486
23-Aug-05	-35	539	1093	37	243	-726
24-Aug-05	-1455	2826	1564	0	245	2471
25-Aug-05	1696	4077	2102	712	48	944
26-Aug-05	1187	2249	1188	267	120	21
27-Aug-05	-1502	19	1286	611	137	710
28-Aug-05	-1382	968	1349	87	202	887
29-Aug-05	859	1452	1152	0	268	-827
30-Aug-05	1159	1325	856	193	175	-672
31-Aug-05	316	452	921	308	219	-696
1-Sep-05	699	1054	942	9	212	-790
2-Sep-05	2978	1566	939	1539	221	-1032
3-Sep-05	3117	2896	1080	492	203	-1012
4-Sep-05	3522	6861	1906	110	162	1381
5-Sep-05	1807	4661	2472	345	135	591
6-Sep-05	-863	6046	4314	18	142	2471
7-Sep-05	-1377	5090	5036	271	203	1500
8-Sep-05	-3139	3353	4732	0	223	1537
9-Sep-05	-5318	1581	4493	0	280	2126
10-Sep-05	-2604	0	4101	9	271	-1758
11-Sep-05	-1310	0	2190	0	251	-1131
12-Sep-05	-1398	362	1794	0	271	-305
13-Sep-05	-1077	0	1404	0	222	-548
14-Sep-05	-648	101	920	0	267	-439
15-Sep-05	-607	33	694	0	264	-318

Appendix IIc. Continued.

Date	Change in storage	Inflow surface water	Outflow surface water	Rain	ET	Remainders
	ac-ft	ac-ft	ac-ft	ac-ft	ac-ft	ac-ft
16-Sep-05	-264	59	596	0	242	-515
17-Sep-05	-261	0	505	0	191	-434
18-Sep-05	-689	0	499	0	170	20
19-Sep-05	2332	37	637	551	187	-2567
20-Sep-05	1449	2532	1031	1103	57	1099
21-Sep-05	-1094	313	1128	51	149	181
22-Sep-05	668	0	1073	14	119	-1847
23-Sep-05	-399	1153	1099	184	188	449
24-Sep-05	-271	0	572	23	224	-502
25-Sep-05	-645	0	499	0	199	-53
26-Sep-05	958	0	926	1158	162	-889
27-Sep-05	2217	2104	728	179	188	-849
28-Sep-05	2393	2462	659	276	199	-512
29-Sep-05	2972	3619	942	363	190	-121
30-Sep-05	1010	3867	995	0	212	1650
1-Oct-05	120	1859	1304	450	197	688
2-Oct-05	-901	1809	1349	473	153	1681
3-Oct-05	-1312	1311	3010	124	237	-500
4-Oct-05	4688	5927	3310	1783	129	-417
5-Oct-05	2159	6629	3095	64	200	1240
6-Oct-05	387	4834	4418	1016	89	955
7-Oct-05	121	4499	4704	331	113	-109
8-Oct-05	-1054	4927	4617	0	186	1178
9-Oct-05	-3351	3022	4728	5	155	1494
10-Oct-05	-1994	1093	3995	74	203	-1037
11-Oct-05	-339	1980	3094	0	158	-933
12-Oct-05	-1521	2367	2672	0	203	1014
13-Oct-05	306	1464	2106	0	236	-1183
14-Oct-05	-200	1558	1394	0	136	228
15-Oct-05	-1683	844	1133	5	75	1324
16-Oct-05	-1591	0	1139	0	219	232
17-Oct-05	-1458	0	1026	0	223	208
18-Oct-05	1026	0	1167	55	142	-2281
19-Oct-05	1717	2640	1286	381	183	-165
20-Oct-05	2369	3164	1034	312	150	-77
21-Oct-05	50	2157	1213	207	68	1033
22-Oct-05	871	1601	1455	9	106	-822
23-Oct-05	-44	3225	1258	5	154	1862
24-Oct-05	7340	3848	2762	3639	103	-2717
25-Oct-05	6303	6978	3862	0	222	-3410
26-Oct-05	5741	12539	4646	0	228	1923
27-Oct-05	2248	10908	6216	0	222	2222
28-Oct-05	-1514	8100	7045	0	220	2348
29-Oct-05	-3716	5066	7156	0	207	1420
30-Oct-05	-1987	3007	6585	0	195	-1786
31-Oct-05	-1648	2356	5904	0	134	-2034

Appendix IIc. Continued.

Date	Change in storage	Inflow surface water	Outflow surface water	Rain	ET	Remainders
	ac-ft	ac-ft	ac-ft	ac-ft	ac-ft	ac-ft
1-Nov-05	-2200	2661	5054	914	63	658
2-Nov-05	-2068	5901	4360	28	185	3452
3-Nov-05	-1256	5307	3864	9	146	2562
4-Nov-05	-1759	4751	3261	0	169	3079
5-Nov-05	-2971	1845	3701	5	191	929
6-Nov-05	-487	888	3217	5	157	-1994
7-Nov-05	2108	666	1124	0	172	-2738
8-Nov-05	-320	2269	674	0	172	1743
9-Nov-05	129	2940	511	0	170	2130
10-Nov-05	-3597	1378	542	0	201	4232
11-Nov-05	-457	1883	705	0	173	1462
12-Nov-05	479	1544	609	0	169	286
13-Nov-05	-282	2083	620	138	174	1709
14-Nov-05	-898	80	693	165	147	303
15-Nov-05	-743	307	1253	14	157	-347
16-Nov-05	-150	1	1609	9	149	-1597
17-Nov-05	1165	1425	488	152	139	-216
18-Nov-05	-139	1398	1960	354	57	-126
19-Nov-05	3110	0	1863	87	112	-4997
20-Nov-05	89	4776	3089	46	134	1509
21-Nov-05	-4493	324	5241	225	91	-291
22-Nov-05	-282	0	7819	0	183	-7721
23-Nov-05	180	1464	5532	0	193	-4441
24-Nov-05	-1324	105	2674	0	170	-1416
25-Nov-05	-1094	32	2785	0	174	-1834
26-Nov-05	-858	0	2874	0	174	-2190
27-Nov-05	-744	1	2789	37	104	-2112
28-Nov-05	-542	22	1749	0	141	-1327
29-Nov-05	-310	0	1883	800	16	-790
30-Nov-05	-768	21	1451	4.595278	138.9438	-796
1-Dec-05	-1174.69325	0	2069	0	187.2485	-1081
2-Dec-05	81.658	58	1813	4.595278	181.821	-2014
3-Dec-05	113.99875	0	966	0	182.9065	-1263
4-Dec-05	35.036	180	824	0	177.479	-856
5-Dec-05	-360.87875	42	845	174.6206	104.7506	-373
6-Dec-05	1297.983	52	879	13.78583	75.98491	-2187
7-Dec-05	-1592.49075	2130	1689	271.1214	96.60938	2209
8-Dec-05	-1686.89425	44	1611	45.95278	141.1148	25
9-Dec-05	73.52675	0	1287	0	150.8843	-1511
10-Dec-05	-339.01325	0	603	0	130.8026	-394
11-Dec-05	-234.54675	0	1126	0	145.9996	-1037
12-Dec-05	-35.5685	0	660	0	198.1035	-823
13-Dec-05	-30.974	0	328	0	174.7653	-472
14-Dec-05	64.775	0	196	0	173.6798	-434
15-Dec-05	131.407	46	0	4.595278	122.6614	-204
16-Dec-05	59.93725	149	103	4.595278	158.4828	-168

Appendix IIc. Continued.

Date	Change in storage	Inflow surface water	Outflow surface water	Rain	ET	Remainders
	ac-ft	ac-ft	ac-ft	ac-ft	ac-ft	ac-ft
17-Dec-05	262.647	117	232	0	118.8621	-496
18-Dec-05	76.77075	107	240	4.595278	119.9476	-326
19-Dec-05	108.34825	53	93	0	25.50922	-174
20-Dec-05	-265.209	0	0	68.92917	59.70243	275
21-Dec-05	-226.83525	0	0	0	117.7766	109
22-Dec-05	-10.61275	0	0	4.595278	164.4531	-149
23-Dec-05	8.97975	0	0	0	162.2821	-171
24-Dec-05	-165.44575	0	0	0	156.3118	9
25-Dec-05	-134.9865	0	0	0	150.3416	-15
26-Dec-05	5.13575	0	0	4.595278	183.4493	-184
27-Dec-05	9.182	0	0	9.190556	195.9325	-196
28-Dec-05	-153.20475	0	0	4.595278	189.9623	-32
29-Dec-05	-79.7845	0	0	22.97639	131.8881	-29
30-Dec-05	-76.19225	0	0	4.595278	185.6203	-105
31-Dec-05	-11.83425	0	0	0	177.479	-166
1-Jan-06	112.41025	0	0	4.595278	140.0293	-248
2-Jan-06	-92.29225	9	0	0	180.7355	-79
3-Jan-06	-39.419	14	0	9.190556	123.7469	-62
4-Jan-06	402.99025	97	0	0	195.9325	-502
5-Jan-06	923.4255	630	0	4.595278	193.7615	-482
6-Jan-06	-767.8865	1550	387	4.595278	131.8881	1804
7-Jan-06	-860.72725	0	454	4.595278	197.5608	214
8-Jan-06	890.74075	0	794	4.595278	198.6463	-1879
9-Jan-06	1940.70925	2691	798	0	173.6798	-222
10-Jan-06	2308.419	2730	472	13.78583	109.6354	-147
11-Jan-06	1620.7195	2724	1052	50.54806	168.2523	-66
12-Jan-06	1356.09025	2710	1117	0	106.3789	130
13-Jan-06	11.86375	2335	1187	238.9544	122.6614	1253
14-Jan-06	-1396.3005	0	1090	4.595278	191.5905	119
15-Jan-06	-1263.201	0	1007	0	207.873	49
16-Jan-06	0.249	0	976	0	201.9028	-1178
17-Jan-06	1312.83725	2671	1081	0	178.5645	98
18-Jan-06	1065.99125	2647	1021	59.73861	86.29715	533
19-Jan-06	1004.14925	2701	1282	4.595278	131.8881	287
20-Jan-06	-83.6125	2609	1781	27.57167	122.6614	816
21-Jan-06	-1316.84	0	1227	0	135.6873	-46
22-Jan-06	-123.38475	0	1157	50.54806	117.7766	-1101
23-Jan-06	537.176	2635	1316	4.595278	166.624	620
24-Jan-06	272.04275	1907	1399	0	145.9996	90
25-Jan-06	-649.32875	959	1317	0	183.4493	108
26-Jan-06	-831.97925	1099	1831	0	205.702	-105
27-Jan-06	-1130.11075	1082	1358	0	150.8843	703
28-Jan-06	-1048.3215	0	1106	0	141.1148	-199
29-Jan-06	-412.771	0	1021	0	151.9698	-760
30-Jan-06	-259.77125	533	1083	78.11972	129.7171	-342
31-Jan-06	-154.75325	538	829	0	192.676	-329

Appendix IIc. Continued.

Date	Change in storage	Inflow surface water	Outflow surface water	Rain	ET	Remainders
	ac-ft	ac-ft	ac-ft	ac-ft	ac-ft	ac-ft
1-Feb-06	-234.1825	0	555	0	201.9028	-523
2-Feb-06	-250.0055	0	563	9.190556	125.9178	-429
3-Feb-06	3529.049	48	653	592.7908	86.29715	-3627
4-Feb-06	7764.6945	6543	682	1847.302	22.25272	-78
5-Feb-06	7868.28325	11025	1267	0	228.4975	1662
6-Feb-06	3660.3245	9463	3221	0	240.438	2342
7-Feb-06	-1019.61475	6614	5748	0	235.5532	1650
8-Feb-06	-5996.01825	3546	6640	0	237.1815	2664
9-Feb-06	-6149.66825	698	6700	0	238.267	-90
10-Feb-06	-5471.9665	766	5486	0	242.609	510
11-Feb-06	-3223.4085	0	4348	0	199.7318	-1324
12-Feb-06	-1793.52225	0	2374	4.595278	75.98491	-652
13-Feb-06	-1039.35775	0	1469	0	197.5608	-627
14-Feb-06	-570.75775	0	720	0	251.8357	-401
15-Feb-06	-356.17275	0	617	0	172.5943	-433
16-Feb-06	-499.0915	0	334	0	159.0256	6
17-Feb-06	-383.1055	0	327	0	201.9028	-146
18-Feb-06	-98.2695	0	208	0	239.3525	-349
19-Feb-06	-77.37075	0	0	0	225.241	-148
20-Feb-06	-117.393	0	0	0	195.9325	-79
21-Feb-06	-213.22625	0	0	0	206.7875	6
22-Feb-06	-140.44775	0	0	0	206.7875	-66
23-Feb-06	38.04725	0	0	0	234.4677	-273
24-Feb-06	253.721	30	0	4.595278	164.4531	-384
25-Feb-06	1929.94925	0	0	151.6442	77.07041	-1855
26-Feb-06	1510.01925	3119	0	50.54806	81.4124	1578
27-Feb-06	-145.619	470	0	0	237.1815	379
28-Feb-06	-357.6985	40	0	0	269.7464	128
1-Mar-06	-341.40175	0	0	0	271.9174	69
2-Mar-06	-188.9745	0	0	0	257.8059	-69
3-Mar-06	-177.627	0	0	0	198.6463	-21
4-Mar-06	-165.1735	0	0	0	256.7204	-92
5-Mar-06	-223.7455	0	0	0	243.6945	-20
6-Mar-06	-258.5545	1	0	0	250.7502	9
7-Mar-06	-253.30825	0	0	0	259.4342	-6
8-Mar-06	-258.1205	0	0	0	275.7167	-18
9-Mar-06	-171.8695	7	0	0	253.4639	-75
10-Mar-06	-116.753	0	0	0	185.6203	-69
11-Mar-06	-159.6045	0	0	0	231.2112	-72
12-Mar-06	-166.00875	0	0	0	220.3562	-54
13-Mar-06	-264.723	7	0	0	218.1852	54
14-Mar-06	-646.15375	0	0	0	237.1815	409
15-Mar-06	-564.4545	0	432	0	252.3784	-120
16-Mar-06	-555.431	2	436	0	245.3227	-123
17-Mar-06	-639.30275	0	445	0	214.9287	-21
18-Mar-06	-506.63625	0	437	0	263.7762	-194

Appendix IIc. Continued.

Date	Change in storage	Inflow surface water	Outflow surface water	Rain	ET	Remainders
	ac-ft	ac-ft	ac-ft	ac-ft	ac-ft	ac-ft
19-Mar-06	-548.67125	0	579	0	224.1555	-254
20-Mar-06	-641.67825	0	515	0	246.4082	-119
21-Mar-06	-365.2715	17	527	0	267.0327	-412
22-Mar-06	230.11625	0	635	0	253.4639	-1119
23-Mar-06	6140.61525	37	454	2155.185	134.0591	-4536
24-Mar-06	6200.79525	8881	882	0	191.5905	1606
25-Mar-06	1736.6515	6554	1200	0	306.1106	3311
26-Mar-06	-2293.13225	1656	2297	0	307.1961	1345
27-Mar-06	-3148.44675	0	2137	0	293.0846	719
28-Mar-06	-2903.256	0	2332	0	290.3709	281
29-Mar-06	-1257.841	218	1549	0	249.6647	-322
30-Mar-06	-82.99325	0	701	0	251.8357	-870
31-Mar-06	-430.19275	0	259	0	264.8617	-94
1-Apr-06	-390.47875	0	196	0	264.8617	-70
2-Apr-06	-314.29825	0	122	0	274.0884	-82
3-Apr-06	-245.20325	0	108	0	223.07	-86
4-Apr-06	-23.8985	530	126	0	251.8357	176
5-Apr-06	-259.22725	526	135	0	308.2816	342
6-Apr-06	-292.6875	457	198	0	271.9174	280
7-Apr-06	-399.1175	20	269	0	296.3411	-146
8-Apr-06	-327.53925	0	248	0	253.4639	-174
9-Apr-06	-187.55625	0	116	4.595278	168.2523	-93
10-Apr-06	-76.6435	1	0	64.33389	142.2003	-1
11-Apr-06	-111.719	0	0	4.595278	234.4677	-118
12-Apr-06	-178.6785	0	0	18.38111	205.1593	-8
13-Apr-06	-322.453	0	0	0	220.899	102
14-Apr-06	-312.03375	0	0	0	280.0587	32
15-Apr-06	-318.393	0	0	0	320.7649	-2
16-Apr-06	-41.9255	0	0	0	318.5939	-277
17-Apr-06	274.5965	0	0	0	311.5381	-586
18-Apr-06	552.88075	497	0	0	263.7762	-320
19-Apr-06	550.22175	528	0	165.43	211.1295	-68
20-Apr-06	399.0855	536	0	0	278.9732	-142
21-Apr-06	94.58025	569	0	4.595278	273.0029	206
22-Apr-06	-289.53725	0	0	289.5025	252.3784	327
23-Apr-06	-167.978	0	0	55.14333	296.3411	-73
24-Apr-06	82.778	446	0	9.190556	267.5754	105
25-Apr-06	158.23375	530	0	0	238.267	134
26-Apr-06	96.423	0	0	647.9342	248.5792	303
27-Apr-06	-235.827	0	0	0	257.8059	-22
28-Apr-06	-210.55175	0	0	0	318.5939	-108
29-Apr-06	-327.76625	0	0	0	234.4677	93
30-Apr-06	327.76625	0	0	0	282.2297	-610