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# **Water Budget Analysis for Stormwater Treatment Area 2**

**(Water Years 2002 to 2006; May 1, 2001 to April 30, 2006)**

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## EXECUTIVE SUMMARY

This report presents a water budget for Stormwater Treatment Area 2 (STA-2). The report covers a five-year period from May 1, 2001 to April 30, 2006. STA-2 is a primary component of the Everglades Construction Project mandated by the 1994 Everglades Forever Act (Section 373.4592, Florida Statutes) and is located in Palm Beach County. Construction of STA-2 was completed in June 1999. STA-2 provides a total effective treatment area of 6,430 acres and treats discharges from Pump Station S-6 and agricultural pump station G-328. STA-2 contains three treatment cells, Cell 1, Cell 2 and Cell 3 parallel to each other (1,990 acres, 2,220 acres and 2,220 acres, respectively). Upon satisfying the start-up requirements for the net improvement in total phosphorous and mercury, flow-through operations began in earnest with the 2001 wet season.

During the five-year study, WY 2002 to WY 2006, STA-2 received 1,672,903 ac-ft of water from pumping operations. An additional 136,240 ac-ft of water was received via rainfall; 140,180 ac-ft of water was lost through evapotranspiration. Seepage was estimated to be 1.4 percent of the water budget during this period, losing 25,225 ac-ft of water to surrounding water bodies and the surficial aquifer. Outflow from STA-2 through G-335 was 91.3 percent of the inflow or 1,527,088 ac-ft. This volume entered the L-6 canal. The error in the water budget for the five-year period was 6.2 percent. On the average for this 5-year period, Cell 1 retained water for 16.9 days; whereas Cell 2 and Cell 3 retained water for 10.4 and 9.5 days, respectively.

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# CONTENTS

EXECUTIVE SUMMARY .....	i
ACKNOWLEDGEMENTS.....	ii
CONTENTS.....	iii
TABLES .....	iv
FIGURES .....	v
INTRODUCTION .....	1
Background.....	1
Site Description.....	3
STA Operation .....	4
HYDROLOGIC AND HYDRAULIC DATA.....	5
Rainfall.....	6
Stage.....	6
Flow .....	6
Evapotranspiration .....	6
Seepage .....	6
WATER BUDGET .....	7
Methodology.....	7
Results.....	7
Rainfall and Evapotranspiration .....	7
Cell 1.....	8
Cell 2.....	13
Cell 3.....	17
STA-2.....	21
Mean Hydraulic Retention Time .....	25
SUMMARY AND DISCUSSION.....	27
Residual Analysis.....	27
RECOMMENDATIONS .....	28
REFERENCES .....	29
APPENDIX A.....	30
APPENDIX B.....	32
APPENDIX C.....	37
APPENDIX D.....	43

## TABLES

Table 1.	Annual water budget summaries for Cell 1 in STA-2. ....	9
Table 2.	Monthly water budgets for Cell 1 in STA-2. ....	12
Table 3.	Annual water budget summaries for Cell 2 in STA-2. ....	13
Table 4.	Monthly water budgets for Cell 2 in STA-2. ....	16
Table 5.	Annual water budget summaries for Cell 3 in STA-2. ....	17
Table 6.	Monthly water budgets for Cell 3 in STA-2. ....	20
Table 7.	Annual water budget summaries for STA-2. ....	21
Table 8.	Monthly water budgets for STA-2. ....	24
Table 9.	Mean hydraulic retention time (MHRT, days). ....	26
Table A-1.	STA-2 site properties. ....	30
Table A-2.	Stage monitoring stations. ....	30
Table A-3.	Flow monitoring stations. ....	31
Table A-4.	Rainfall monitoring stations. ....	31
Table A-5.	Evapotranspiration stations. ....	31
Table B-1.	Rainfall for WY 2002. ....	32
Table C-1.	Evapotranspiration (in.) for WY 2002. ....	38
Table D-1.	Cell 1 daily average stage (ft NGVD) for WY 2002. ....	43
Table D-2.	Cell 2 daily average stage (ft NGVD) for WY 2002. ....	48
Table D-3.	Cell 3 daily average stage (ft NGVD) for WY 2002. ....	53

# FIGURES

Figure 1. STA-2 site location map. ....	2
Figure 2. Schematic diagram of STA-2. ....	4
Figure 3. Monthly rainfall minus estimated evapotranspiration at STA-2. ....	8
Figure 4. Daily water budget residuals for Cell 1 in STA-2. ....	9
Figure 5. Estimated seepage for Cell 1 in STA-2. ....	10
Figure 6. Stage in Cells 1, 2 and 3 in STA-2 and surrounding areas. ....	10
Figure 7. Inflow, outflow and stage for Cell 1 in STA-2. ....	11
Figure 8. Daily water budget residuals for Cell 2 in STA-2. ....	14
Figure 9. Estimated seepage for Cell 2 in STA-2. ....	14
Figure 10. Inflow, outflow and stage for Cell 2 in STA-2. ....	15
Figure 11. Daily water budget residuals for Cell 3 in STA-2. ....	18
Figure 12. Estimated seepage for Cell 3 in STA-2. ....	18
Figure 13. Inflow, outflow and stage for Cell 3 in STA-2. ....	19
Figure 14. Daily water budget residuals for STA-2. ....	22
Figure 15. Estimated seepage for STA-2. ....	22
Figure 16. Inflow, outflow and stage for STA-2. ....	23
Figure 17. STA-2 inflow, seepage and water budget residuals. ....	28
Figure C-1. Daily evapotranspiration at STA-2. ....	37





# INTRODUCTION

The five-year water budget for STA-2 covers operation from May 1, 2001 through April 30, 2006. The report is based upon daily water budgets for the treatment cells in STA-2 and for the entire STA. Daily results were aggregated to develop monthly and annual water budgets for the water years 2002, 2003, 2004, 2005 and 2006 (WY 2002, WY 2003, WY 2004, WY 2005 and WY 2006). In this report, a water year runs from May 1<sup>st</sup> to April 30<sup>th</sup>. This coincides with the period used in the South Florida Environmental Report (SFER, SFWMD, 2006). The daily water budget accounted for inflow, outflow, rainfall, evapotranspiration, seepage and error terms.

STA-2 is a component of the Everglades Construction Project mandated by the 1994 Everglades Forever Act (section 373.4592, Florida Statutes). STA-2 is located in Palm Beach County, Florida, situated generally on and surrounding the former Brown's Farm Wildlife Management Area and positioned immediately west of Water Conservation Area 2A (WCA-2A, **Figure 1. STA-2 site location map.**). STA-2 provided a total effective area of 6,430 acres to treat stormwater runoff originating from the Hillsboro Canal and Ocean Canal drainage basins upstream from the S-6 Pump Station. The effective treatment area of STA-2 has since been expanded.

This section of the report presents background information and information about hydro-meteorological monitoring at STA-2. It is followed by the sections describing the operation of STA-2 and the sources of data used for the report. The actual water budget analyses are presented, followed by a summary, recommendations and conclusions.

## ***Background***

STA-2 is intended to treat discharge from Pump Station S-6 and agricultural pump station G-328. Combined with other elements of the Everglades Construction Program, STA-2 is designed to reduce the long-term, flow-weighted mean total phosphorus concentration in discharges to WCA-2A with an interim goal of 50 parts per billion (ppb). Outflows from STA-2 will help in the re-establishment of sheet flow along the northwesterly perimeter of WCA-2A. Average annual inflow volumes and loads on which the design of STA-2 was based were 174,641 acre-feet and 33,760 kilograms (33.76 metric tons) of total phosphorus per year.

Construction of STA-2 was completed in June 1999. On September 29, 2000, the Florida Department of Environmental Protection issued the Everglades Forever Act Permit #0126704 and the associated NPDES Permit (FL0177946) for operation of STA-2. Discharge operations were authorized in the fall of 2000.

Water budgets completed for STA-5 and STA-6 (Huebner, 2001; Huebner, 2002; Huebner, 2003; Parrish and Huebner, 2004) and the associated presentation of results influenced the methods used in this study.

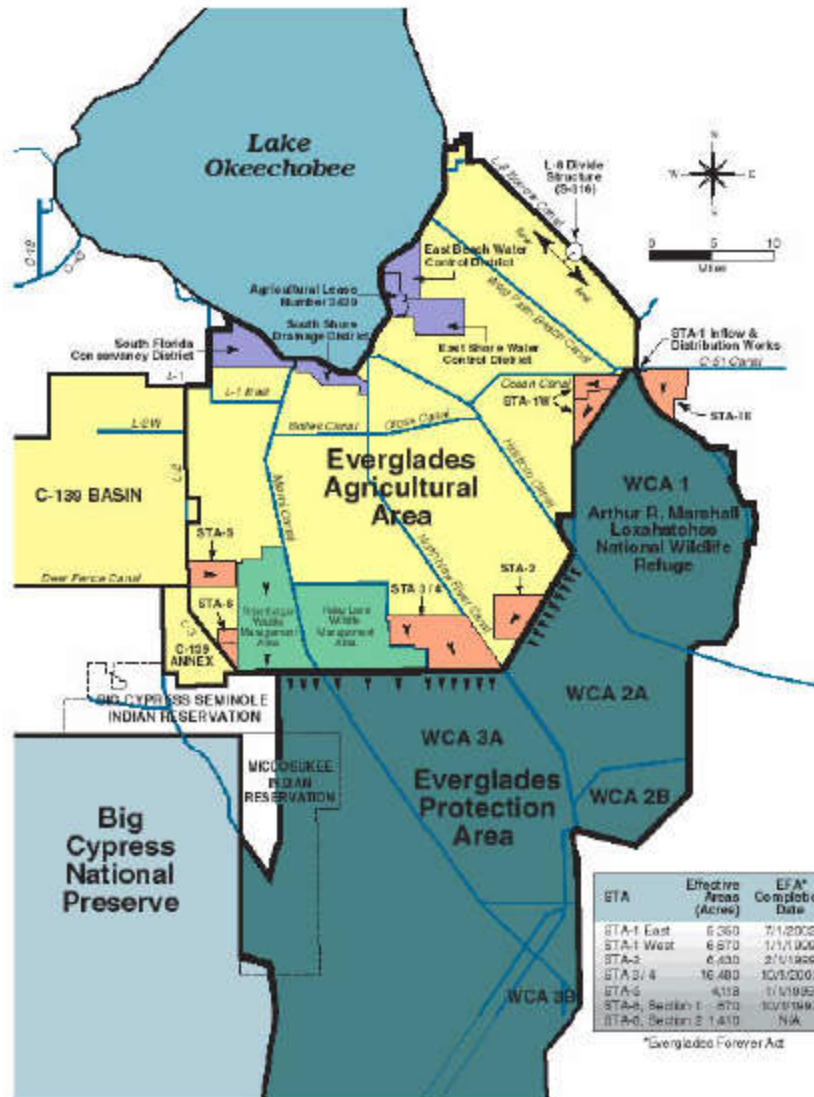


Figure 1. STA-2 site location map.

The water budget at STA-2 involves the following hydrologic/hydraulic components:

- Inflow through pumps and culverts
- Outflow through pumps, culverts and gated structures
- Rainfall
- Evapotranspiration
- Seepage
- Change in storage
- Water budget error

Each component makes up an important part of the water budget for STA-2. The budget was developed for varying time periods from 1 day to 12 months using the following equation:

$$\frac{\Delta S}{\Delta t} = I - O + R - ET \pm G + \varepsilon \quad (1)$$

where  $\Delta S$  = change in storage over the time period  
 $\Delta t$  = time period  
 $I$  = average inflow over the time period  
 $O$  = average outflow over the time period  
 $R$  = rainfall over the time period  
 $E$  = evapotranspiration over the time period  
 $G$  = levee and deep seepage over the time period  
 $\varepsilon$  = water budget error over the time period

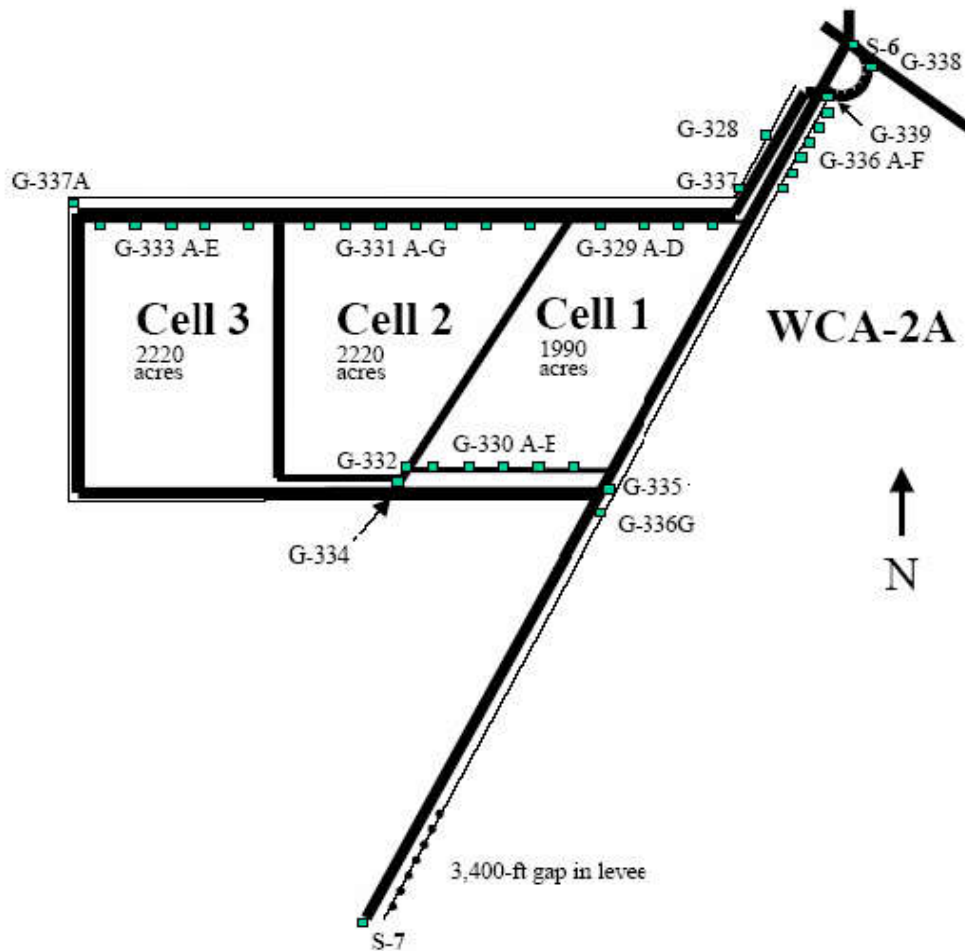
In Equation (1), all terms have the same units, acre-feet per unit time (day, month, year). To do this for rainfall and evapotranspiration, the values (in inches or millimeters) are converted to feet and multiplied by the effective surface area in acres, (e.g., 1990 acres for Cell 1) to get a volume of rainfall or evapotranspiration for a selected time period.

Five years of daily average stage, flow, rainfall and evapotranspiration data were used in this report. The data were analyzed daily, monthly and annually using Equation (1).

### ***Site Description***

The total effective treatment area of STA-2, 6,430 acres, is distributed among three parallel cells: Cell 1 (1,990 acres), Cell 2 (2,220 acres) and Cell 3 (2,220 acres). Flows pass through these treatment cells from north to south and then directed to a final discharge collection system along the southern boundary of STA-2 (**Figure 2**).

The plant community in Cells 1 and 2 is dominated by sawgrass, cattail and other emergent vegetation. Vegetation in Cell 3 consists almost entirely of submerged aquatic vegetation (SAV) and open water.



**Figure 2.** Schematic diagram of STA-2.

### **STA Operation**

Pump Station S-6 (**Figure 2**) serves as a primary inflow pumping station to STA-2. Additionally, agricultural pump station G-328 can discharge up to 445 cfs to STA-2 from drainage of upstream farmlands. Discharges from S-6 are conveyed to the STA-2 treatment cells through the Supply Canal and Inflow Canal. The STA-2 Supply Canal extends southwesterly from pump station S-6 approximately 18,500 feet adjacent to the northwestern boundary of WCA-2A. Flows from the Supply Canal are conveyed to the Inflow Canal, which extends across the northern perimeter of STA-2.

A series of inflow control structures (culverts) move water from the Inflow Canal to the treatment cells (G-329 A-D into Cell 1, G-331 A-G into Cell 2 and G-333 A-E into Cell 3). Water travels to the south through the treatment cells eventually discharging to the Discharge Canal through each treatment cells' discharge structures (culverts G-330 A-E

for Cell 1, gated spillway G-332 for Cell 2 and gated spillway G-334 for Cell 3). Water then travels to the east in the Discharge Canal toward the STA-2 outflow pump station G-335, located at the southeast corner of STA-2. The outflow pump station discharges to the L-6 Borrow Canal. Discharges within the L-6 Borrow Canal will sheetflow across the L-6 Levee into the northwesterly portion of WCA-2A through structures G-336 A-F and into the southwestern portion of WCA-2A and through a gap in the L-6 Levee. The location of these discharges was selected because the downstream areas are impacted with cattail.

All treatment cells were operational during WY 2002 to WY 2006. However, special operational conditions during this period included:

- A severe regional drought ended in WY 2002.
- Cell 1 was operated to address methyl mercury issues in WY 2002 to WY 2003.
- Hurricanes Francis and Jeanne occurred in WY 2005 and affected the area containing STA-2.
- Hurricane Wilma caused a power outage from approximately October 24, 2005 to December 20, 2005, moderate damage to some of the levees and severe damage to Cell 3 SAV.
- Cell 3 was restricted to flow beginning in December 2005 to allow plant establishment, SAV recovery and hydrilla research.
- Vegetation in Cell 3 was managed to optimize SAV performance in WY 2006.
- Construction of a treatment cell, Cell 4, started in April 2006.

Because of the power outage caused by Hurricane Wilma, significant missing data had to be estimated to complete a water budget for Water Year 2006. Further details concerning STA-2 operations can be found in the Operation Plan Stormwater Treatment Area 2 (Revised), (SFWMD, 2001).

## HYDROLOGIC AND HYDRAULIC DATA

The following sections describe the data that were used for the water budget computations and any special considerations for using the data. The source for the data was DBHYDRO, the South Florida Water Management District's corporate database. The corresponding database (DB) keys and station names are provided in Appendix A, **Tables A-2 to A-5**. Almost 2,000 missing data points (approximately 2 percent of the data) had to be estimated for the 5-year water budget.

Two hydrologic parameters were monitored at STA-2: stage and rainfall. Gate openings and pump speeds were also monitored. Daily average stage (water surface elevation) was recorded at the stations listed in **Table A-2** in Appendix A and shown in **Figure 2**. **Table A-3** in Appendix A lists the stations where daily average flow data was recorded.

## ***Rainfall***

Daily rainfall data for STA-2 was collected at three sites listed in **Table A-4**. The arithmetic mean rainfall for these stations was used for the water budget analysis. **Table B-1** in Appendix B lists the daily rainfall amounts used by water year.

## ***Stage***

Stage data are collected instantaneously, averaged and recorded as daily average stage in DBHYDRO. The instantaneous stage is also used to compute flows at the inlet and the outlet structures. Daily average stage was computed for each treatment cell using the values at stage gages within the cell. The cell average daily stage was used to compute change in storage in the cell by multiplying the change in stage from the previous day by the effective surface area of the cell (shown in **Table A-1**). When the water level fell below the average ground surface elevation, change in storage was determined using a wetting-drying curve described in Huebner (2007).

## ***Flow***

Daily average flow rates were determined using two methods, culvert equations and pump performance curves. At pump stations S-6, G-328 and G-335, average daily flow was computed instantaneously using motor speed and headwater and tailwater elevation data. The average daily flow at these stations was recorded in DBHYDRO and reviewed monthly for accuracy and missing data.

Daily average flow at the gated culverts in STA-2, G-329A-D, G-331A-G, G-333A-E and G-330A-E, were based on instantaneous flow values that were calculated using instantaneous headwater stage, tailwater stage and gate openings. A complete record of QA/QC'd daily average flow was loaded monthly in DBHYDRO.

## ***Evapotranspiration***

Evapotranspiration (ET) is the loss of water to the atmosphere by vaporization (evaporation) at the surface of a water body and plant transpiration. The evapotranspiration data used in this report were derived from ET data maintained in a preferred DBKEY for STA-1W. STA-1W is on the eastern side of the Everglades Agricultural Area. These data for ET are considered to be the highest quality available. **Table C-1** in Appendix C lists the daily ET values used by water year.

## ***Seepage***

No direct measurement of seepage was made at STA-2. Attempts to quantify seepage at STA sites have been made. The most recent, detailed studies have been associated with the ENR project (Choi and Harvey, 2000) and those discussed in the 1998-99 water budget analysis for STA-6 (Huebner, 2001).

In the analysis, seepage was computed as:

$$G = 1.983 * K_{sp} * L * \Delta H \quad (2)$$

Where $G$	=	seepage, through the levee and deep (ac-ft/d)
$K_{sp}$	=	coefficient of seepage (cfs/mi/ft)
$L$	=	length along the seepage boundary (mi)
$\Delta H$	=	hydraulic head difference between the unit and the boundary (ft)
1.983	=	constant to convert from cfs to ac-ft/d

$K_{sp}$ , the coefficient of seepage parameter helps quantify the amount of seepage that occurs through a levee and through the bottom of a STA cell. In this report, it has been calibrated to minimize the sum of squared daily error (SSE) for the entire STA over the five-year period of record examined. Seepage coefficients used for Cell 1, Cell 2 and Cell 3 were 0.1, 0.1 and 1.0, respectively.

## WATER BUDGET

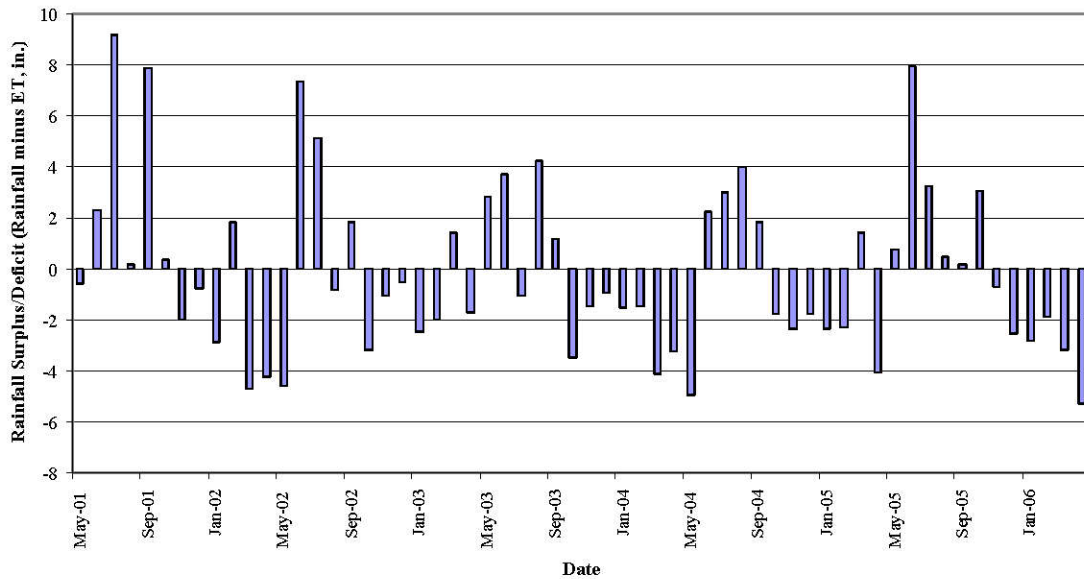
### ***Methodology***

For this analysis, STA-2 was divided into three hydrologic units: Cell 1; Cell 2; and Cell 3. A water budget analysis was performed on each unit on a daily, annual and period of study (5 water years) basis using Equation 1. A daily, monthly and period of study water budget was also completed for the entire STA using data from all three flow ways as well as the supply, inflow and discharge canals. Terms in Equation (1) were converted to acre-feet (ac-ft) per unit time. The results described in the following section of the report focus on the period of study water budget.

### ***Results***

#### **Rainfall and Evapotranspiration**

Rainfall data for STA-2 are presented in Appendix B. Evapotranspiration (ET) data are provided in Appendix C. **Figure 3** shows the monthly rainfall surplus or deficit based on the sum of rainfall minus estimated ET at STA-2.



**Figure 3.** Monthly rainfall minus estimated evapotranspiration at STA-2.

### Cell 1

Shortly after discharge operations for STA-2 were authorized in September 2001, an anomalously high methyl-mercury (MeHg) concentration was reported for Cell 1 (October 2000). By April 2001, Cell 1 had dried out due to an extended drought that occurred from 2000 to 2001. When the drought ended during the summer and fall of 2001, FDEP again authorized flow-through operations for Cell 1 to ameliorate the MeHg problem.

Unfortunately, a second high MeHg concentration in STA outflow traced to Cell 1 outflow was observed in October 2001. Cell 1 was allowed to dry out again and adjustable plates were added to the outflow structures to increase the stage in Cell 1 to prevent excessive methylation of mercury in the future. The plates were in place near the beginning of the WY 2003 wet season (July 2002). The dry out and re-flooding events affected the water budget results presented for STA-2, Cell 1 during WY 2002 and WY 2003.

**Table 1** presents a summary of the annual water budgets for Cell 1 at STA-2. The properties (width, length and surface area) of Cell 1 are listed in **Table A-1**. Table 1 also shows the summary information for the daily water budget analysis. A similar table is provided in the corresponding section for the other hydrologic units at STA-2. Inflow was measured at G-329 A to D and outflow at G-330 A to E.

Error in the annual water budgets ranged from about -75 to 7.5 percent. Water Budget error is computed daily using Equation (1) and summed for the month or water year. The percentage of days where the daily water budget did not balance within a 0.25 ft (3

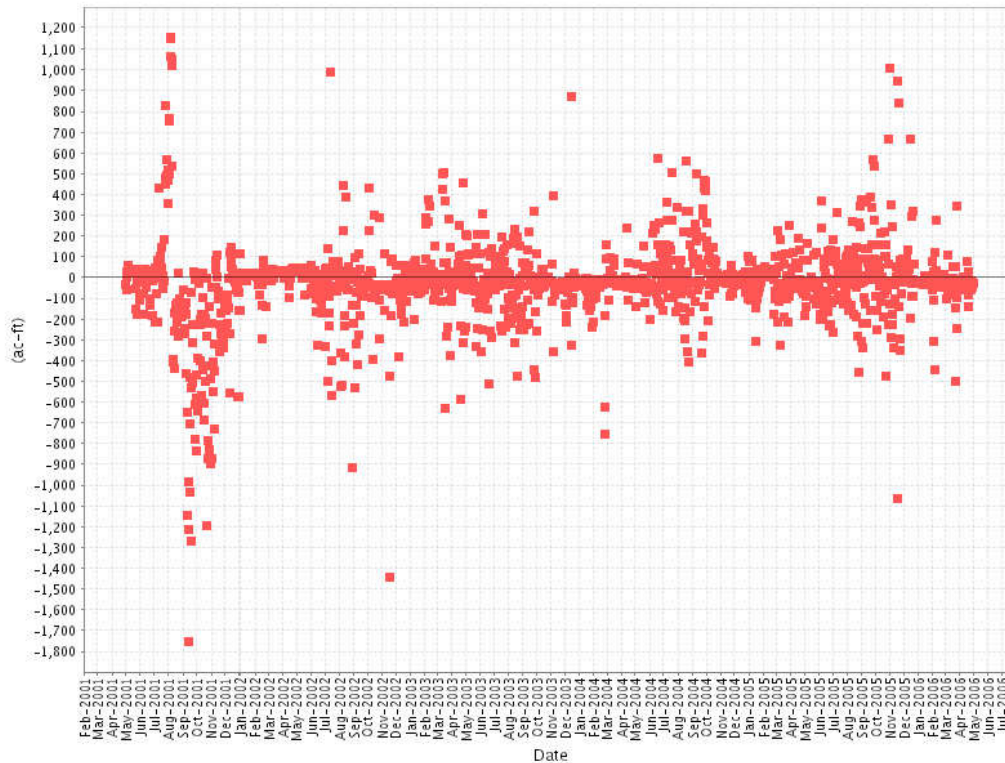


in.) depth was 3.8 percent. This suggests that daily values in the budget were adequately quantified. Daily water budget residuals are shown in **Figure 4**.

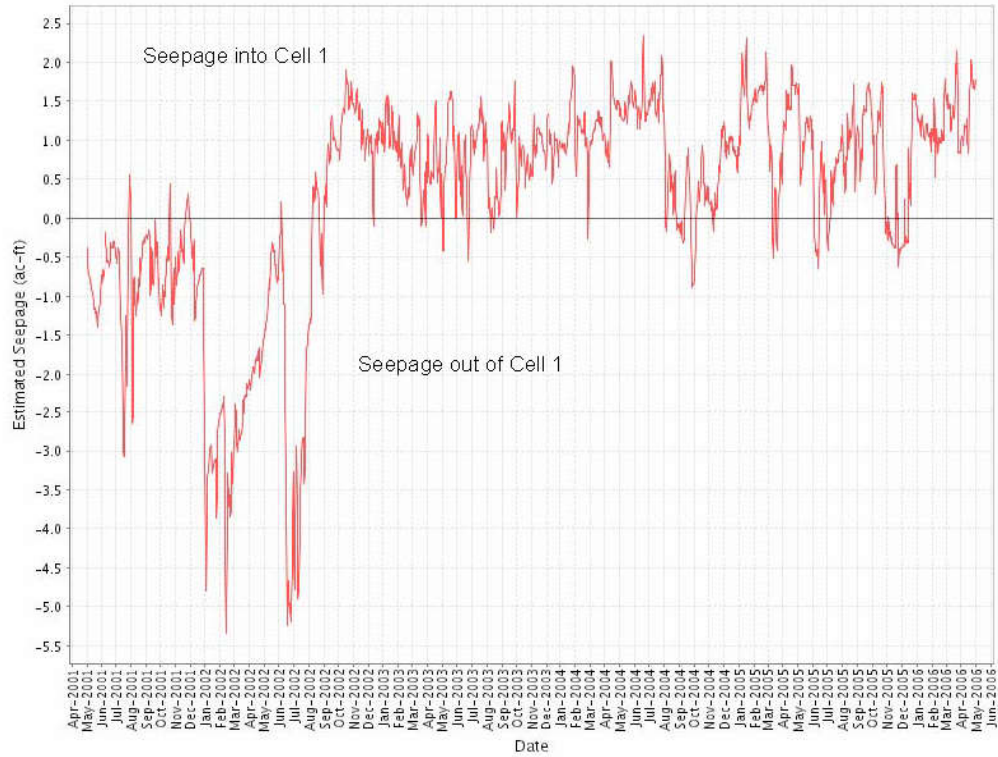
**Figure 5** shows the estimated seepage for Cell 1 over the period of study. **Figure 6** displays the water levels in the treatment cells versus the water levels in the surrounding canals. Inflow, outflow and stage for Cell 1 are provided in **Figure 7**. **Table 2** presents the monthly results of the water budget analysis for Cell 1.

**Table 1.** Annual water budget summaries for Cell 1 in STA-2.

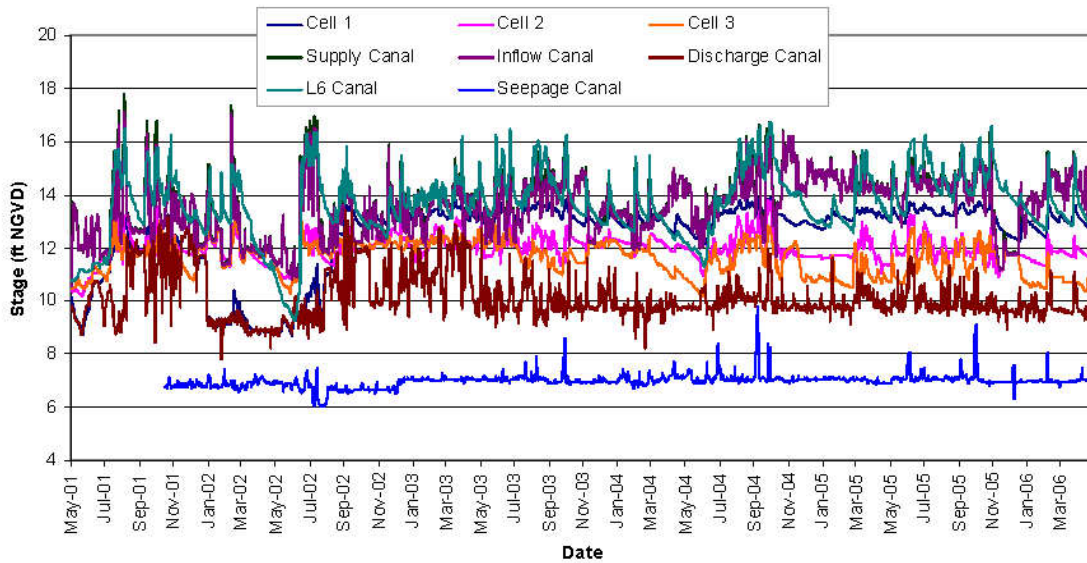
Water Year	INFLOW (ac-ft)	SEEPAGE IN (ac-ft)	RAIN (ac-ft)	Σ INFLOW (ac-ft)	OUTFLOW (ac-ft)	SEEPAGE OUT (ac-ft)	ET (ac-ft)	Σ OUTFLOW (ac-ft)	Δ STORAGE (ac-ft)	ERROR (ac-ft)	ERROR %
wy 2002	43869	515	9839	54224	15908	4	8749	24661	-32	-29594	-75
wy 2003	46348	227	8365	54940	29907	230	8467	38604	4621	-11714	-25
wy 2004	63293	3	7587	70883	49719	338	8481	58537	-1734	-14080	-21.7
wy 2005	55004	13	7240	62257	57919	358	8400	66677	387	4807	7.5
wy 2006	58885	18	8443	67347	57371	327	8577	66275	-177	-1249	-1.8
<b>TOTAL</b>	<b>267400</b>	<b>775</b>	<b>41474</b>	<b>309650</b>	<b>210824</b>	<b>1257</b>	<b>42674</b>	<b>254754</b>	<b>3065</b>	<b>-51830</b>	<b>-18.3</b>
<b>% Inflow</b>	<b>86.4</b>	<b>0.3</b>	<b>13.4</b>	<b>% Outflow</b>	<b>82.8</b>	<b>0.5</b>	<b>16.8</b>				
<b>RESIDUAL ANALYSIS</b>				<b>&gt; 1" ERROR</b>			<b>&gt; 2" ERROR</b>		<b>&gt; 3" ERROR</b>		
SUM	-51830	AVG ERR	28	# OF DAYS	333	141	69				
MAX	1151	STD DEV	206	PERCENT	18.24	7.72	3.78				
MIN	-1754										



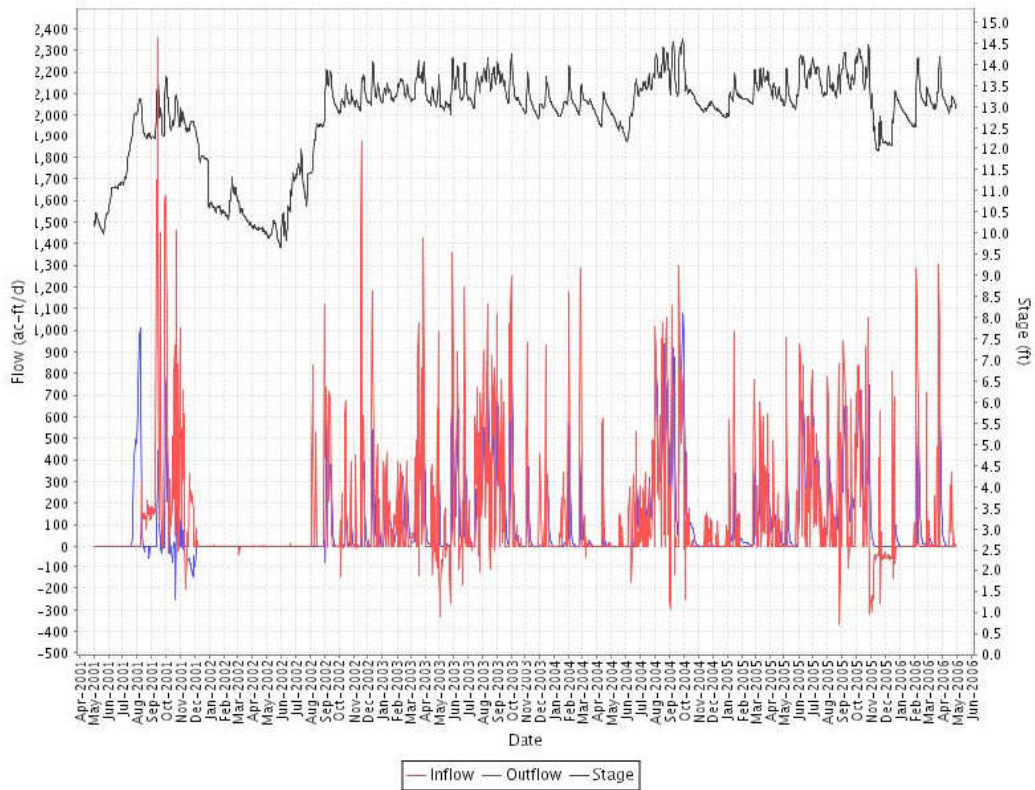
**Figure 4.** Daily water budget residuals for Cell 1 in STA-2.



**Figure 5.** Estimated seepage for Cell 1 in STA-2.



**Figure 6.** Stage in Cells 1, 2 and 3 in STA-2 and surrounding areas.



**Figure 7.** Inflow, outflow and stage for Cell 1 in STA-2 .

**Table 2.** Monthly water budgets for Cell 1 in STA-2.

Water Year	Month-Year	INFLOW (ac-ft)	OUTFLOW (ac-ft)	Δ STORAGE (ac-ft)	ET (ac-ft)	RAIN (ac-ft)	SEEPAGE (ac-ft)	REMAINDER (ac-ft)
2002	May-01	1	0	13	959	863	-30	78
	Jun-01	0	0	-51	875	1257	-15	-448
	Jul-01	2	3824	2787	876	2401	-36	5048
	Aug-01	3540	7371	-1192	860	887	-28	2585
	Sep-01	19335	2322	2669	655	1966	-15	-15669
	Oct-01	14812	3680	-1528	616	671	-24	-12739
	Nov-01	6107	-1051	-530	560	229	-8	-7365
	Dec-01	111	-238	-2146	492	370	-27	-2400
	Jan-02	3	0	-5	566	86	-99	372
	Feb-02	-1	0	7	421	727	-94	-391
	Mar-02	-47	0	-41	886	107	-79	706
	Apr-02	7	0	-14	982	275	-57	629
	2003	May-02	2	0	-31	1070	306	-26
Jun-02		9	0	2	696	1915	-83	-1310
Jul-02		0	0	1	832	1683	-102	-952
Aug-02		4988	0	2557	787	651	-9	-2303
Sep-02		7429	4717	357	731	1034	24	-2634
Oct-02		2566	990	538	675	151	44	-470
Nov-02		5268	2081	-19	533	359	37	-2994
Dec-02		5909	3940	-73	455	364	29	-1922
Jan-03		3899	2287	372	560	153	35	-798
Feb-03		3760	5157	-156	587	258	17	1587
Mar-03		8926	8419	1078	730	962	19	357
Apr-03		3593	2315	-5	810	529	22	-980
2004		May-03	3767	3539	394	842	1308	26
	Jun-03	8151	8225	-1381	798	1415	16	-1906
	Jul-03	5692	4496	652	885	713	35	-337
	Aug-03	16311	13378	964	708	1412	8	-2664
	Sep-03	10510	8756	276	679	876	32	-1644
	Oct-03	2082	3614	-2622	713	135	20	-493
	Nov-03	2273	1397	-358	527	284	28	-962
	Dec-03	3545	1806	599	504	344	30	-950
	Jan-04	3136	150	788	559	303	38	-1905
	Feb-04	6078	3510	64	595	347	28	-2228
	Mar-04	225	561	-1263	811	124	35	-204
	Apr-04	1524	287	153	860	326	39	-511
	2005	May-04	373	0	-1221	1037	221	44
Jun-04		2374	1797	2164	857	1225	44	1262
Jul-04		4390	6235	697	840	1340	49	2090
Aug-04		16943	17056	356	709	1373	10	-185
Sep-04		11953	14432	1349	660	960	0	3528
Oct-04		1356	5065	-2977	670	373	8	1036
Nov-04		924	18	70	505	119	12	-439
Dec-04		316	8	-630	446	155	28	-618
Jan-05		4276	2173	876	502	114	47	-793
Feb-05		2227	798	1294	543	163	46	292
Mar-05		7882	8121	-659	730	965	12	-643
Apr-05		1989	2214	-932	901	231	45	8
2006		May-05	3125	1954	450	889	1014	34
	Jun-05	13648	11844	1730	654	1967	6	-1381
	Jul-05	5425	7637	-1503	877	1417	15	183
	Aug-05	6212	5945	871	810	885	29	559
	Sep-05	7918	9272	704	690	719	38	2068
	Oct-05	11306	13753	-2153	615	1126	27	-190
	Nov-05	-1778	249	-1943	526	407	-7	196
	Dec-05	1184	340	1848	495	72	16	1443
	Jan-06	113	4	-930	532	67	35	-539
	Feb-06	5773	3103	1574	624	315	31	-756
	Mar-06	4760	2970	-30	902	373	43	-1248
	Apr-06	1199	300	-794	962	82	41	-771

## Cell 2

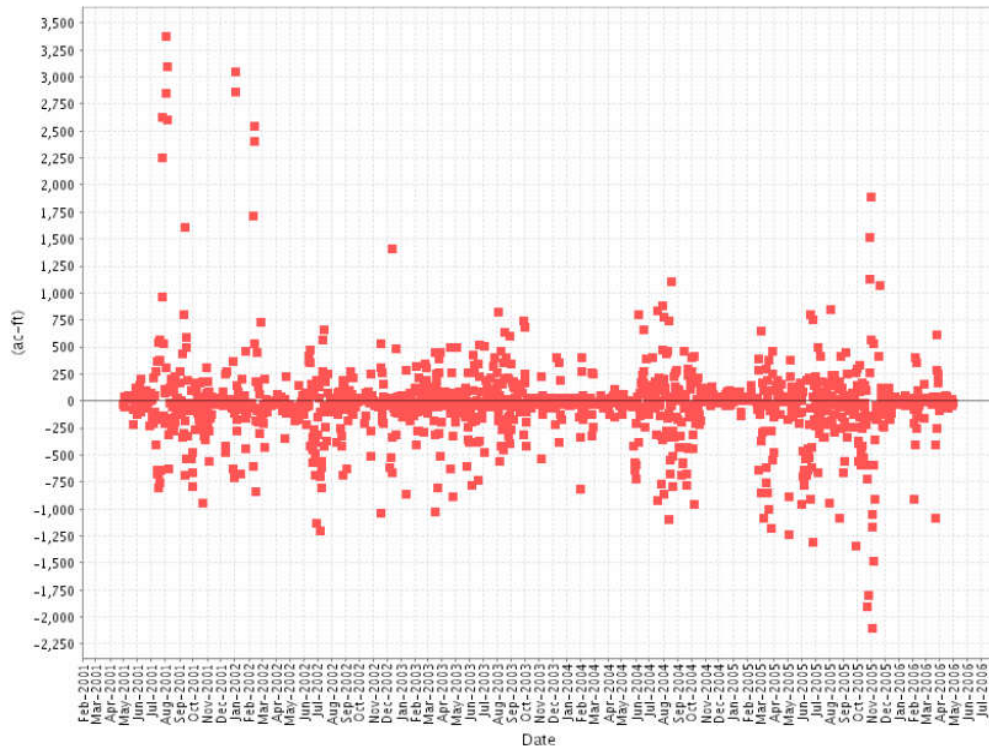
**Table 3** presents the water budget for Cell 2 in STA-2. The properties (width, length and surface area) of Cell 2 are listed in **Table A-1** in Appendix A. **Table 3** also provides summary information for the daily water budget analysis. Inflow was measured at G-331 A to G and outflow at G-332.

Error in the water budget ranged from approximately -24.5 to 17.1 percent. The percentage of days where the daily water budget did not balance within a 0.25 ft (3 in.) depth was 7.67 percent. Daily water budget residuals are presented in **Figure 8**.

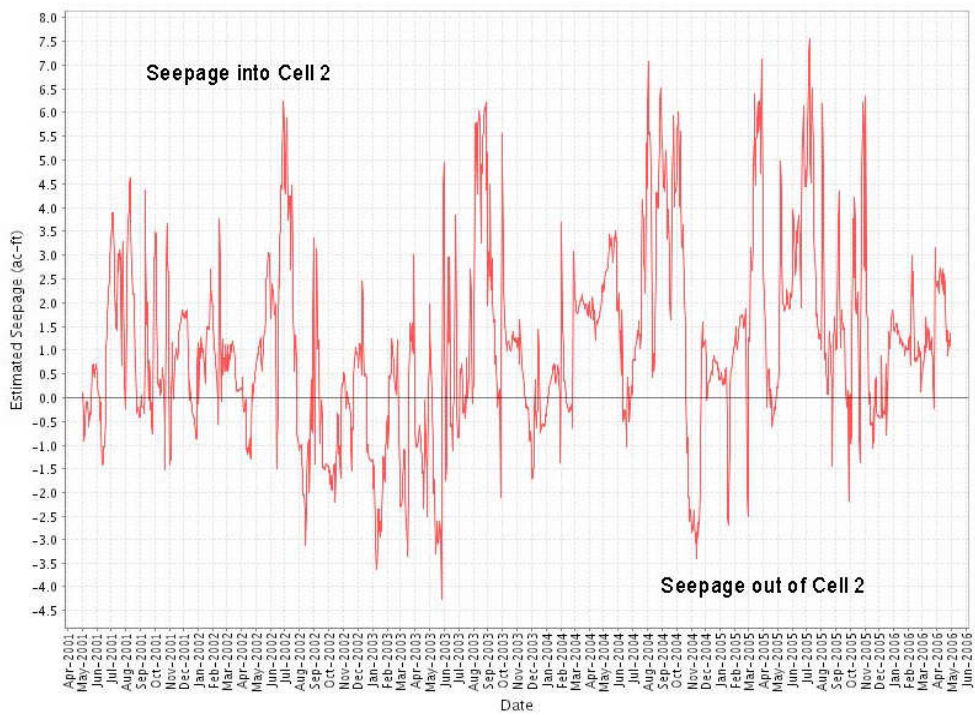
**Figure 9** shows the estimated seepage for Cell 2 over the period of study. **Figure 6** displays the water levels in treatment cells versus the water levels in the surrounding canals. Inflow, outflow and stage for Cell 2 are provided in **Figure 10**. **Table 4** presents the monthly results of the water budget analysis for Cell 2.

**Table 3.** Annual water budget summaries for Cell 2 in STA-2.

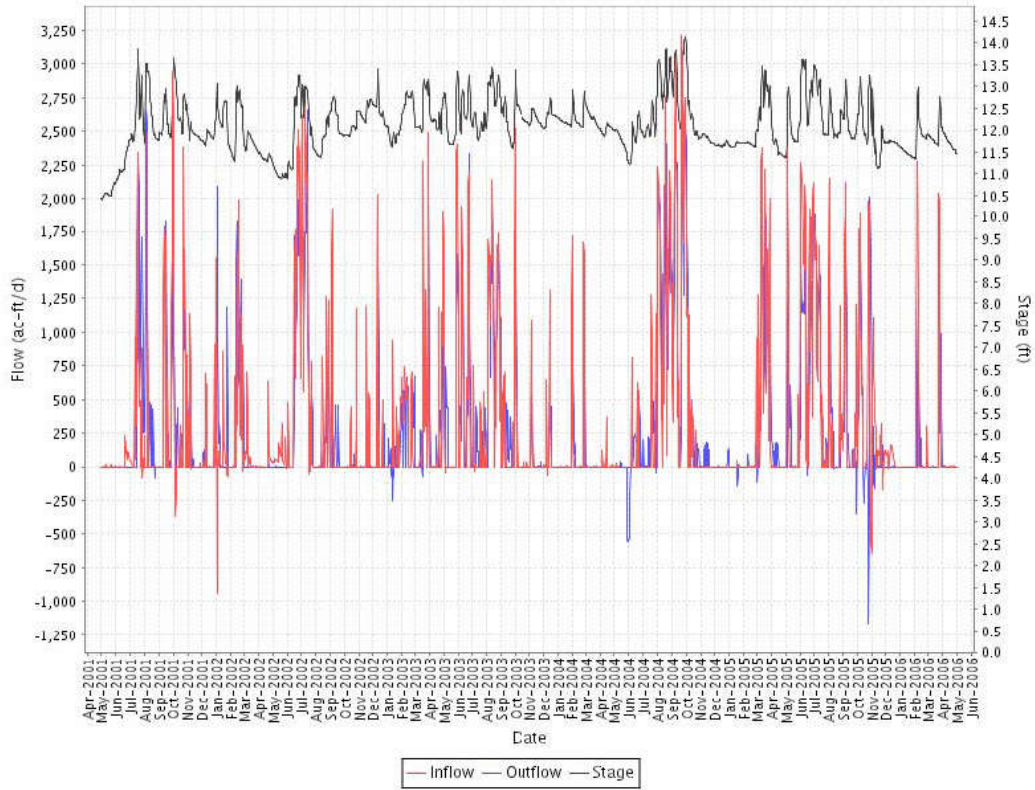
Water Year	INFLOW (ac-ft)	SEEPAGE IN (ac-ft)	RAIN (ac-ft)	∑ INFLOW (ac-ft)	OUTFLOW (ac-ft)	SEEPAGE OUT (ac-ft)	ET (ac-ft)	∑ OUTFLOW (ac-ft)	Δ STORAGE (ac-ft)	ERROR (ac-ft)	ERROR %
wy 2002	74002	52	10977	85030	89344	358	9760	99462	1310	15743	17.1
wy 2003	121019	270	9332	130621	100377	289	9445	110112	3249	-17261	-14.3
wy 2004	90493	103	8464	99059	89833	466	9461	99760	-1655	-954	-0.9
wy 2005	144208	99	8076	152383	133160	727	9371	143257	-1382	-10508	-7.1
wy 2006	129975	24	9419	139418	98563	665	9569	108797	151	-30470	-24.5
TOTAL	559697	548	46268	606513	511278	2506	47606	561389	1673	-43450	-7.4
% Inflow	92.3	0.1	7.7	% Outflow	91.1	0.5	8.5				
RESIDUAL ANALYSIS					> 1" ERROR	> 2" ERROR	> 3" ERROR				
SUM	-43450	AVG ERR	24	# OF DAYS	446	240	140				
MAX	3377	STD DEV	307	PERCENT	24.42	13.14	7.67				
MIN	-2106										



**Figure 8.** Daily water budget residuals for Cell 2 in STA-2.



**Figure 9.** Estimated seepage for Cell 2 in STA-2.



**Figure 10.** Inflow, outflow and stage for Cell 2 in STA-2.

**Table 4. Monthly water budgets for Cell 2 in STA-2.**

Water Year	Month-Year	INFLOW (ac-ft)	OUTFLOW (ac-ft)	Δ STORAGE (ac-ft)	ET (ac-ft)	RAIN (ac-ft)	SEEPAGE (ac-ft)	REMAINDER (ac-ft)
2002	May-01	1957	0	104	1070	963	713	-1033
	Jun-01	1799	1	854	976	1402	863	-507
	Jul-01	19382	21542	1523	977	2679	987	2969
	Aug-01	9061	10037	254	960	990	1001	2201
	Sep-01	13801	11794	317	731	2193	926	-2226
	Oct-01	18209	15440	481	688	748	1250	-1099
	Nov-01	4337	5506	-2622	625	255	952	-132
	Dec-01	6561	-19	3242	549	413	1132	-2069
	Jan-02	8038	7464	-2341	631	96	1348	-1033
	Feb-02	14573	15977	1187	470	812	1132	3381
	Mar-02	4844	834	-243	988	119	1244	-2140
	Apr-02	3462	0	-708	1096	307	1188	-2193
2003	May-02	708	1	-2276	1194	342	866	-1264
	Jun-02	26484	26890	953	776	2137	974	972
	Jul-02	29286	34454	2331	928	1877	1095	7646
	Aug-02	9648	7859	-817	878	726	1290	-1163
	Sep-02	10649	6691	1364	816	1153	1239	-1692
	Oct-02	4338	0	224	753	169	1312	-2217
	Nov-02	4060	1409	52	595	400	1268	-1136
	Dec-02	12490	6631	124	508	406	1206	-4428
	Jan-03	10833	7689	-446	625	171	1242	-1894
	Feb-03	9696	5889	700	655	287	1079	-1660
	Mar-03	14860	9834	95	814	1074	1190	-4000
	Apr-03	11825	9969	-622	904	590	1177	-988
2004	May-03	11656	10826	-1898	939	1459	1232	-2015
	Jun-03	23471	22880	1937	890	1578	1100	1758
	Jul-03	3506	3123	-1543	987	795	944	-790
	Aug-03	31827	38379	-2173	790	1575	623	4217
	Sep-03	7378	8028	1693	757	977	661	2784
	Oct-03	5579	4206	100	795	151	877	248
	Nov-03	5821	2301	1708	588	317	1097	-443
	Dec-03	6445	3487	199	562	384	1221	-1361
	Jan-04	3481	1444	-209	624	339	1085	-876
	Feb-04	11050	10151	-785	664	387	1057	-350
	Mar-04	997	1	-1350	905	139	891	-688
	Apr-04	523	0	-628	959	363	597	42
2005	May-04	41	-1469	-1159	1157	246	530	-1228
	Jun-04	6057	2322	2469	956	1367	844	-833
	Jul-04	6155	5290	265	937	1495	822	-336
	Aug-04	33231	35735	-117	791	1532	857	2504
	Sep-04	39336	39125	2143	737	1071	618	2216
	Oct-04	19296	19030	-1272	747	416	759	-448
	Nov-04	9204	10264	-2602	563	133	865	-247
	Dec-04	1728	1	477	498	173	593	-332
	Jan-05	1	2002	-424	560	128	631	2640
	Feb-05	6665	2816	2860	606	181	494	-69
	Mar-05	17399	10504	-3333	814	1076	572	-9918
	Apr-05	1270	796	335	1005	258	641	1250
2006	May-05	6235	3524	548	992	1131	610	-1692
	Jun-05	29064	20726	1552	730	2195	663	-7588
	Jul-05	11498	10725	-1522	978	1581	567	-2330
	Aug-05	12595	10657	901	904	987	732	-389
	Sep-05	17447	13970	445	770	802	662	-2402
	Oct-05	26603	25067	-1534	686	1256	651	-2990
	Nov-05	3042	8841	2082	587	454	1016	9031
	Dec-05	-2697	1963	-2562	553	81	991	3561
	Jan-06	1016	0	-447	594	75	576	-368
	Feb-06	8725	6650	1672	696	351	574	516
	Mar-06	4553	5696	-1129	1007	416	641	1245
	Apr-06	674	1	-611	1073	91	474	172



### Cell 3

**Table 5** presents the water budget for Cell 3 at STA-2. The properties (width, length and surface area) of Cell 3 are listed in **Table A-1** in Appendix A. **Table 5** also provides summary information for the daily water budget analysis. Inflow was measured at G-333 A to G and outflow at G-334.

Error in the water budget ranged from approximately -8.0 to 2.1 percent. The percentage of days where the daily water budget did not balance within a 0.25 ft (3 in.) depth was 7.5 percent. Daily water budget residuals are presented in **Figure 11**.

**Figure 12** shows the estimated seepage for Cell 1 over the period of study. **Figure 6** displays the water levels in treatment cells versus the water levels in the surrounding canals. Inflow, outflow and stage for Cell 3 are displayed in **Figure 13**. **Table 6** presents the monthly results of the water budget analysis for Cell 3.

**Table 5.** Annual water budget summaries for Cell 3 in STA-2.

WATER YEAR	INFLOW (ac-ft)	SEEPAGE IN (ac-ft)	RAIN (ac-ft)	∑ INFLOW (ac-ft)	OUTFLOW (ac-ft)	SEEPAGE OUT (ac-ft)	ET (ac-ft)	∑ OUTFLOW (ac-ft)	Δ STORAGE (ac-ft)	ERROR (ac-ft)	ERROR %	
wy 2002	106025	0	10977	117002	88577	12735	9760	111072	2048	-3882	-3.4	
wy 2003	144878	0	9332	154210	117316	13939	9445	140701	1685	-11824	-8	
wy 2004	111734	0	8464	120197	104826	11385	9461	125673	-2949	2526	2.1	
wy 2005	140382	0	8076	148459	126418	8225	9371	144014	-356	-4801	-3.2	
wy 2006	118756	0	9419	128175	107821	8156	9569	125545	-604	-3234	-2.5	
TOTAL	621774	0	46268	668042	544958	54441	47606	647004	-176	-21214	-3.2	
% Inflow	93.1	0	7	% Outflow	84.3	8.5	7.4					
RESIDUAL ANALYSIS				> 1" ERROR			> 2" ERROR		> 3" ERROR			
SUM	-21214	AVG ERR	12	# OF DAYS	534	261	137					
MAX	2400	STD DEV	289	PERCENT	29.24	14.29	7.5					
MIN	-1307											

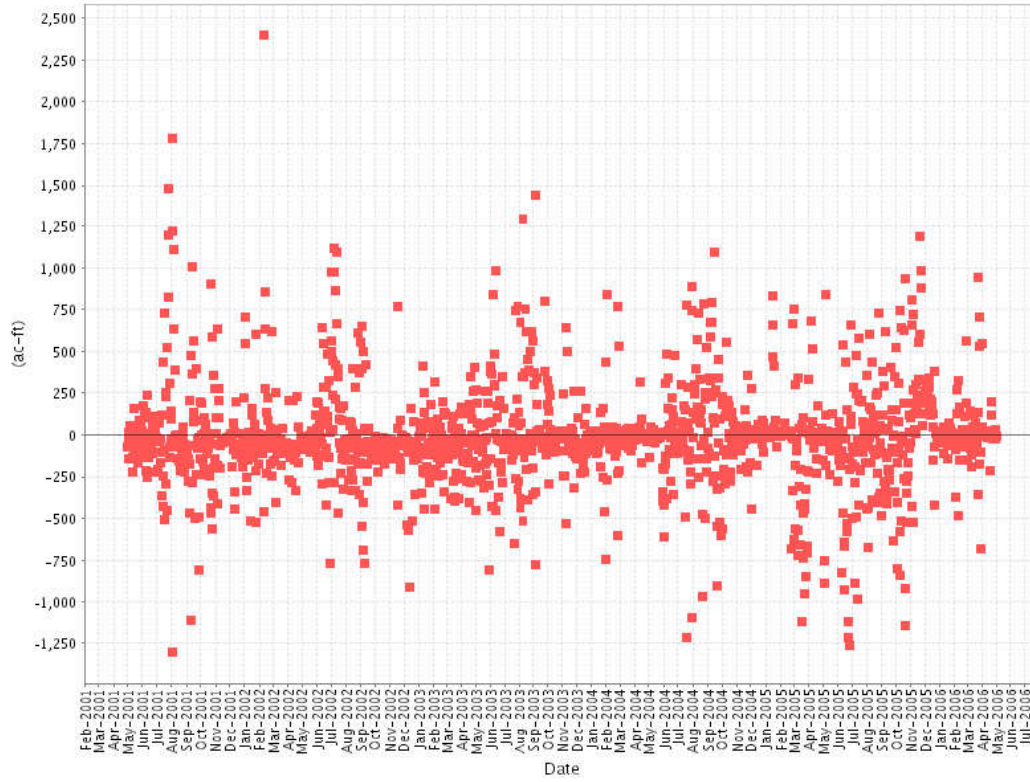


Figure 11. Daily water budget residuals for Cell 3 in STA-2.

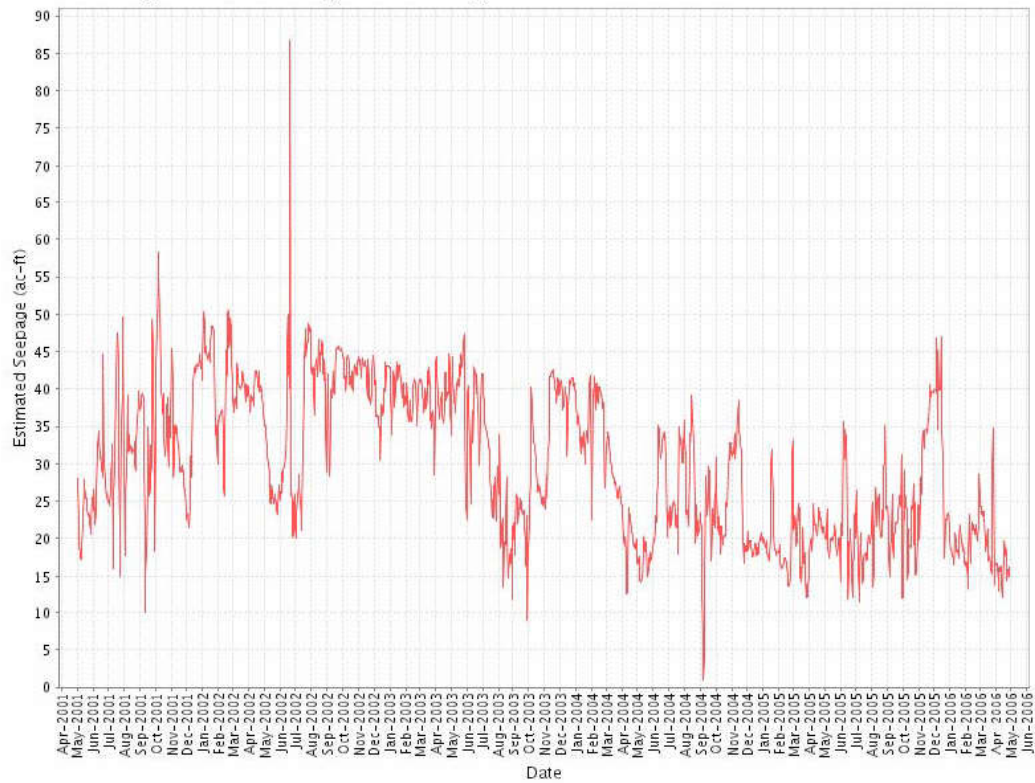
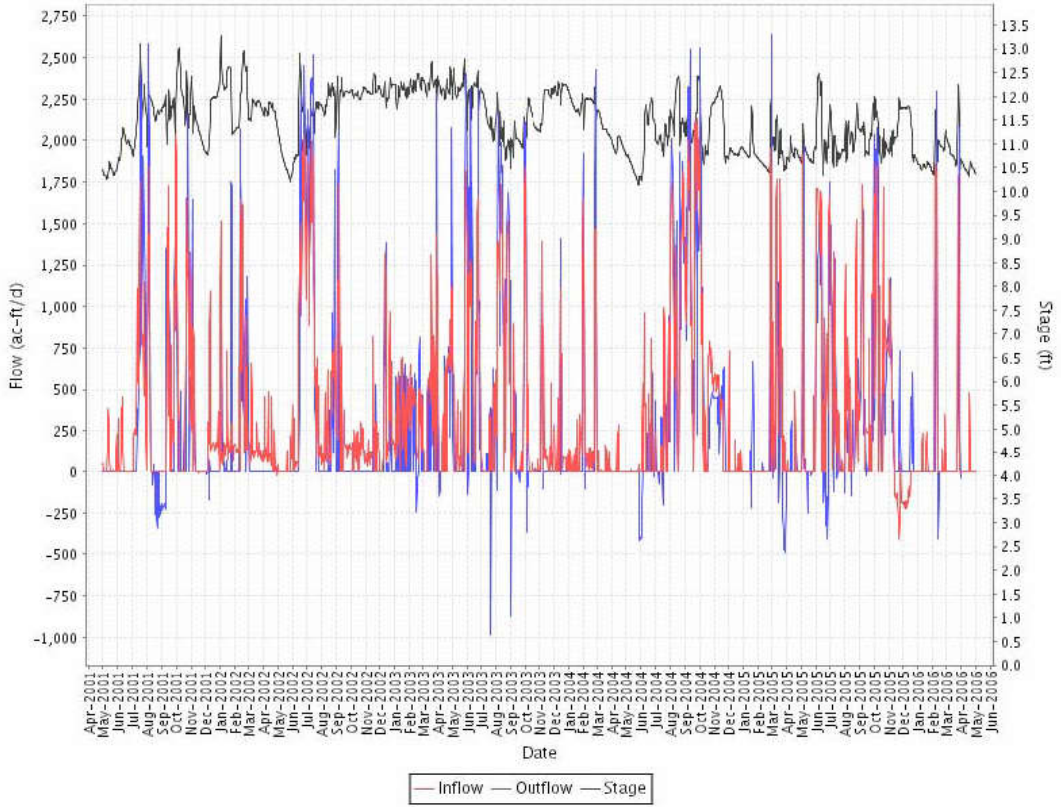


Figure 12. Estimated seepage for Cell 3 in STA-2.



**Figure 13.** Inflow, outflow and stage for Cell 3 in STA-2.

**Table 6. Monthly water budgets for Cell 3 in STA-2.**

Water Year	Month-Year	INFLOW (ac-ft)	OUTFLOW (ac-ft)	Δ STORAGE (ac-ft)	ET (ac-ft)	RAIN (ac ft)	SEEPAGE (ac-ft)	REMAINDER (ac-ft)
2002	May-01	1957	0	104	1070	963	713	-1033
	Jun-01	1799	1	854	976	1402	863	-507
	Jul-01	19382	21542	1523	977	2679	987	2969
	Aug-01	9061	10037	254	960	990	1001	2201
	Sep-01	13801	11794	317	731	2193	926	-2226
	Oct-01	18209	15440	481	688	748	1250	-1099
	Nov-01	4337	5506	-2622	625	255	952	-132
	Dec-01	6561	-19	3242	549	413	1132	-2069
	Jan-02	8038	7464	-2341	631	96	1348	-1033
	Feb-02	14573	15977	1187	470	812	1132	3381
	Mar-02	4844	834	-243	988	119	1244	-2140
	Apr-02	3462	0	-708	1096	307	1188	-2193
2003	May-02	708	1	-2276	1194	342	866	-1264
	Jun-02	26484	26890	953	776	2137	974	972
	Jul-02	29286	34454	2331	928	1877	1095	7646
	Aug-02	9648	7859	-817	878	726	1290	-1163
	Sep-02	10649	6691	1364	816	1153	1239	-1692
	Oct-02	4338	0	224	753	169	1312	-2217
	Nov-02	4060	1409	52	595	400	1268	-1136
	Dec-02	12490	6631	124	508	406	1206	-4428
	Jan-03	10833	7689	-446	625	171	1242	-1894
	Feb-03	9696	5889	700	655	287	1079	-1660
	Mar-03	14860	9834	95	814	1074	1190	-4000
	Apr-03	11825	9969	-622	904	590	1177	-988
2004	May-03	11656	10826	-1898	939	1459	1232	-2015
	Jun-03	23471	22880	1937	890	1578	1100	1758
	Jul-03	3506	3123	-1543	987	795	944	-790
	Aug-03	31827	38379	-2173	790	1575	623	4217
	Sep-03	7378	8028	1693	757	977	661	2784
	Oct-03	5579	4206	100	795	151	877	248
	Nov-03	5821	2301	1708	588	317	1097	-443
	Dec-03	6445	3487	199	562	384	1221	-1361
	Jan-04	3481	1444	-209	624	339	1085	-876
	Feb-04	11050	10151	-785	664	387	1057	-350
	Mar-04	997	1	-1350	905	139	891	-688
	Apr-04	523	0	-628	959	363	597	42
2005	May-04	41	-1469	-1159	1157	246	530	-1228
	Jun-04	6057	2322	2469	956	1367	844	-833
	Jul-04	6155	5290	265	937	1495	822	-336
	Aug-04	33231	35735	-117	791	1532	857	2504
	Sep-04	39336	39125	2143	737	1071	618	2216
	Oct-04	19296	19030	-1272	747	416	759	-448
	Nov-04	9204	10264	-2602	563	133	865	-247
	Dec-04	1728	1	477	498	173	593	-332
	Jan-05	1	2002	-424	560	128	631	2640
	Feb-05	6665	2816	2860	606	181	494	-69
	Mar-05	17399	10504	-3333	814	1076	572	-9918
	Apr-05	1270	796	335	1005	258	641	1250
2006	May-05	6235	3524	548	992	1131	610	-1692
	Jun-05	29064	20726	1552	730	2195	663	-7588
	Jul-05	11498	10725	-1522	978	1581	567	-2330
	Aug-05	12595	10657	901	904	987	732	-389
	Sep-05	17447	13970	445	770	802	662	-2402
	Oct-05	26603	25067	-1534	686	1256	651	-2990
	Nov-05	3042	8841	2082	587	454	1016	9031
	Dec-05	-2697	1963	-2562	553	81	991	3561
	Jan-06	1016	0	-447	594	75	576	-368
	Feb-06	8725	6650	1672	696	351	574	516
	Mar-06	4553	5696	-1129	1007	416	641	1245
	Apr-06	674	1	-611	1073	91	474	172

## STA-2

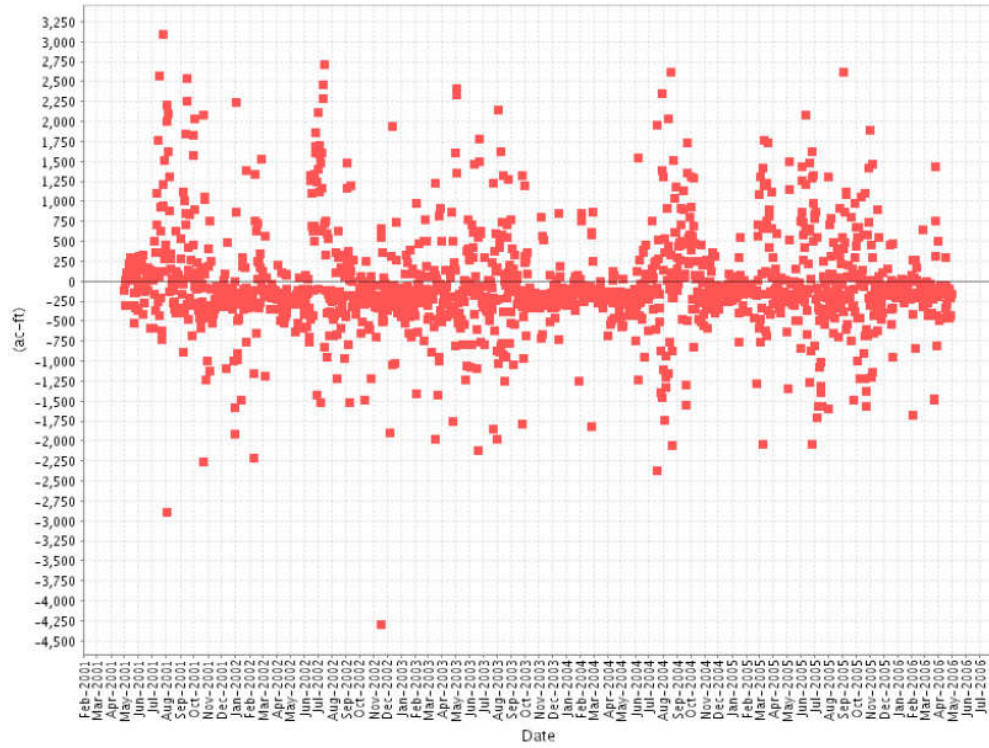
**Table 7** presents the water budget for STA-2. The properties (width, length and surface area) of the STA are listed in **Table A-1** in Appendix A. **Table 7** also provides summary information for the daily water budget analysis. Inflow was measured at S-6 and G-328 and outflow at G-335.

Error in the water budget ranged from approximately -12.3 to 1.0 percent. The percentage of days where the daily water budget did not balance within a 0.25 ft (3 in.) depth was less than 3.0 percent. Daily water budget residuals are presented in **Figure 14**.

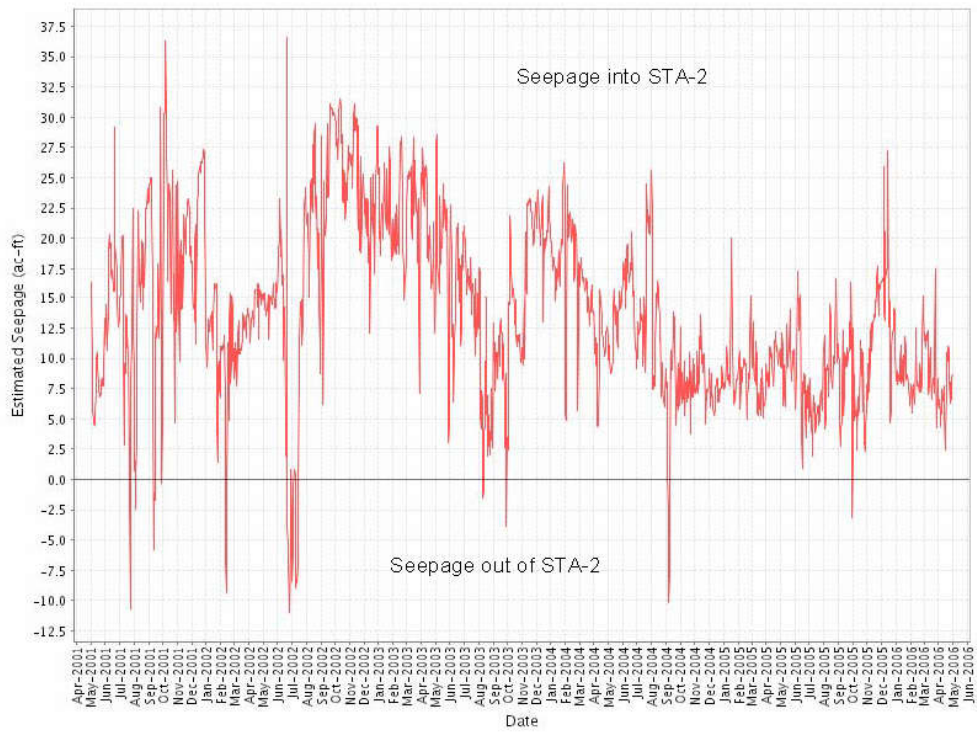
**Figure 15** shows the estimated seepage for the STA over the period of study. **Figure 6** displays the water levels in treatment cells versus the water levels in the surrounding canals. Inflow, outflow and stage for the STA are presented in **Figure 16**. **Table 8** presents the monthly results of the water budget analysis for the STA.

**Table 7. Annual water budget summaries for STA-2.**

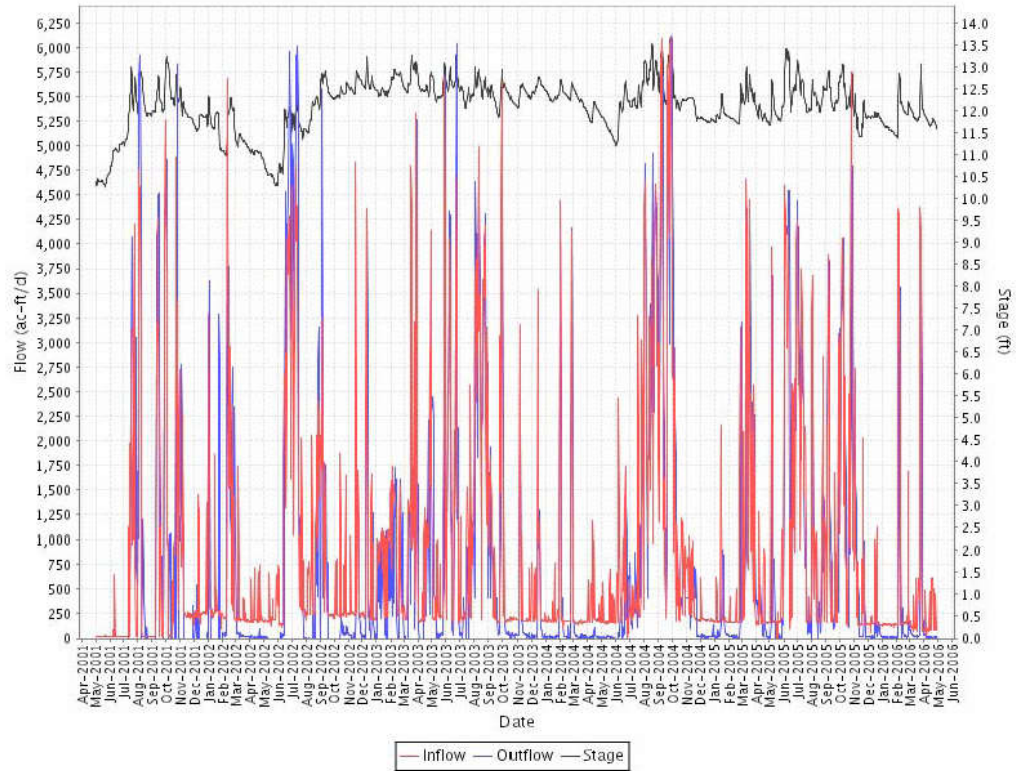
WATER YEAR	INFLOW (ac-ft)	SEEPAGE IN (ac-ft)	RAIN (ac-ft)	∑ INFLOW (ac-ft)	OUTFLOW (ac-ft)	SEEPAGE OUT (ac-ft)	ET (ac-ft)	∑ OUTFLOW (ac-ft)	Δ STORAGE (ac-ft)	ERROR (ac-ft)	ERROR %
wy 2002	243208	47	32322	275577	240685	5344	28739	274769	3327	2518	1
wy 2003	362559	118	27479	390155	308297	7360	27812	343470	9555	-37130	-10.1
wy 2004	328308	6	24922	353236	284780	5568	27859	318206	-6339	-41369	-12.3
wy 2005	387371	29	23782	411182	371023	3766	27594	402383	-1351	-10150	-2.4
wy 2006	351457	3	27735	379195	322303	3390	28176	353869	-630	-25956	-7
TOTAL	1672903	203	136240	1809346	1527088	25428	140180	1692696	4562	-112087	-6.4
% Inflow	92.5	0.1	7.6	% Outflow	90.3	1.6	8.3				
RESIDUAL ANALYSIS					> 1" ERROR	> 2" ERROR	> 3" ERROR				
SUM	-112087	AVG ERR	61	# OF DAYS	382	165	55				
MAX	3093	STD DEV	617	PERCENT	20.92	9.04	3.01				
MIN	-4299										



**Figure 14.** Daily water budget residuals for STA-2.



**Figure 15.** Estimated seepage for STA-2.



**Figure 16.** Inflow, outflow and stage for STA-2.

**Table 8. Monthly water budgets for STA-2.**

Water Year	Month-Year	INFLOW (ac-ft)	OUTFLOW (ac-ft)	Δ STORAGE (ac-ft)	ET (ac-ft)	RAIN (ac-ft)	SEEPAGE (ac-ft)	REMAINDER (ac-ft)
2002	May-01	745	0	271	3151	2836	267	107
	Jun-01	1390	0	3045	2875	4129	484	884
	Jul-01	28281	42059	4457	2878	7888	342	13567
	Aug-01	25595	33914	-1120	2826	2914	477	7587
	Sep-01	40213	49288	6096	2152	6457	419	11286
	Oct-01	43602	46774	-2699	2025	2203	643	938
	Nov-01	15845	12569	-4581	1839	752	581	-6189
	Dec-01	13551	1793	2135	1616	1215	652	-8570
	Jan-02	17410	13719	-3896	1858	283	363	-5649
	Feb-02	39897	38098	1752	1383	2390	245	-807
	Mar-02	8495	2028	-933	2911	350	361	-4479
	Apr-02	8185	443	-1199	3226	904	430	-6189
2003	May-02	7343	84	-3128	3516	1006	453	-7424
	Jun-02	56856	64157	3984	2285	6292	274	7553
	Jul-02	63064	83035	614	2734	5527	189	17980
	Aug-02	27345	15027	3753	2586	2137	652	-7466
	Sep-02	25369	23283	506	2402	3396	757	-1818
	Oct-02	14803	1693	2052	2217	498	832	-8507
	Nov-02	18396	6899	410	1752	1178	776	-9738
	Dec-02	25164	19503	-1125	1495	1197	692	-5796
	Jan-03	25512	17108	255	1840	503	698	-6113
	Feb-03	26438	22083	295	1928	846	582	-2396
	Mar-03	44279	34677	2167	2398	3161	699	-7500
	Apr-03	27989	20749	-228	2662	1738	623	-5921
2004	May-03	32062	35060	-665	2766	4296	585	1388
	Jun-03	52528	56764	-1658	2621	4647	486	1038
	Jul-03	20589	14086	-1013	2906	2341	492	-6458
	Aug-03	91757	94120	-457	2325	4638	183	-223
	Sep-03	35674	28571	3321	2229	2878	272	-4159
	Oct-03	15625	13815	-4500	2341	445	402	-4011
	Nov-03	13316	5808	1181	1732	933	568	-4959
	Dec-03	16597	9078	1336	1655	1129	646	-5012
	Jan-04	10672	2874	188	1836	997	581	-6189
	Feb-04	24991	23080	323	1956	1140	520	-251
	Mar-04	5128	907	-3843	2665	409	484	-5323
	Apr-04	9369	615	-553	2825	1070	334	-7218
2005	May-04	7195	388	-4006	3407	725	383	-7747
	Jun-04	17964	8268	6127	2814	4024	484	-4295
	Jul-04	23135	20338	2851	2758	4403	491	-1099
	Aug-04	93714	96114	1426	2330	4511	358	2003
	Sep-04	102519	107053	5233	2169	3154	184	8965
	Oct-04	33567	43575	-9357	2200	1226	243	1869
	Nov-04	13617	11307	-2822	1659	392	259	-3606
	Dec-04	6573	803	-198	1467	510	224	-4787
	Jan-05	10844	5197	555	1649	376	290	-3529
	Feb-05	14477	4661	4829	1785	534	253	-3483
	Mar-05	55344	67433	-3155	2397	3169	252	8415
	Apr-05	8422	5885	-2835	2959	759	295	-2877
2006	May-05	19440	13632	2604	2922	3330	302	-3310
	Jun-05	78393	88698	6229	2149	6463	258	12478
	Jul-05	48902	45275	-6371	2879	4654	176	-11596
	Aug-05	30000	26683	2644	2662	2907	305	-613
	Sep-05	32127	34611	1052	2267	2361	265	3708
	Oct-05	67810	71393	-4340	2019	3699	202	-2235
	Nov-05	15410	13275	-425	1729	1336	388	-1779
	Dec-05	7556	2947	-974	1627	238	454	-3739
	Jan-06	4366	371	-1933	1748	220	267	-4133
	Feb-06	23127	12639	4463	2049	1033	240	-4769
	Mar-06	18132	12295	-937	2964	1226	300	-4737
	Apr-06	6196	483	-2643	3161	269	214	-5250



### Mean Hydraulic Retention Time

Mean hydraulic retention time (MHRT) measures how long water remains in each cell and estimates the treatment time. During this time, physical, chemical and biological processes remove particulate and soluble phosphorus, other nutrients and contaminants. The mean hydraulic retention time (also referred to as mean cell residence time) was determined using Equation 3:

$$t = \frac{V}{Q} \quad (3)$$

where t = mean hydraulic retention time (d)  
V = cell volume (ac-ft)  
Q = flow rate (ac-ft/d)

MHRT was based upon the average stage during the study period and the average volume of total inflow and total outflow including rainfall, evapotranspiration and seepage, which are significant percentages of the water budget. **Table 9** provides the mean hydraulic retention time (days) for Cells 1, 2 and 3. Wet season values were based upon data from June through October; dry-season values were based upon values from November through May.

**Table 9.** Mean hydraulic retention time (MHRT, days).

**STA-2**

<b>WATER YEAR</b>	<b>ANNUAL AVG DEPTH</b>	<b>ANNUAL MHRT</b>	<b>WET AVG DEPTH</b>	<b>WET MHRT</b>	<b>DRY AVG DEPTH</b>	<b>DRY MHRT</b>
WY02	1.23	10.6	1.58	9.0	0.97	13.5
WY03	1.74	11.3	1.56	7.6	1.86	15.8
WY04	1.92	13.7	1.98	8.8	1.88	24.0
WY05	1.70	10.0	2.02	7.0	1.47	17.3
WY06	1.64	10.7	1.98	7.1	1.39	21.9
<b>5-yr. Mean</b>	1.65	11.3	1.82	7.9	1.52	18.5

**Cell 1**

<b>WATER YEAR</b>	<b>ANNUAL AVG DEPTH</b>	<b>ANNUAL MHRT</b>	<b>WET AVG DEPTH</b>	<b>WET MHRT</b>	<b>DRY AVG DEPTH</b>	<b>DRY MHRT</b>
WY02	0.11	2.0	0.88	8.1	-0.44	---
WY03	1.18	18.4	0.75	15.3	1.49	19.9
WY04	1.88	21.2	2.13	14.4	1.71	36.5
WY05	1.94	21.9	2.19	14.7	1.76	38.9
WY06	1.93	21.0	2.41	14.3	1.59	43.5
<b>5-yr. Mean</b>	1.41	16.9	1.67	13.3	1.64	34.7

**Cell 2**

<b>WATER YEAR</b>	<b>ANNUAL AVG DEPTH</b>	<b>ANNUAL MHRT</b>	<b>WET AVG DEPTH</b>	<b>WET MHRT</b>	<b>DRY AVG DEPTH</b>	<b>DRY MHRT</b>
WY02	1.26	11.1	1.55	8.2	1.05	17.6
WY03	1.49	10.0	1.45	6.6	1.52	15.6
WY04	1.67	13.6	1.79	8.3	1.58	28.9
WY05	1.50	8.2	1.90	5.7	1.22	16.9
WY06	1.42	9.3	1.83	6.3	1.13	20.4
<b>5-yr. Mean</b>	1.47	10.5	1.71	7.0	1.30	19.9

**Cell 3**

<b>WATER YEAR</b>	<b>ANNUAL AVG DEPTH</b>	<b>ANNUAL MHRT</b>	<b>WET AVG DEPTH</b>	<b>WET MHRT</b>	<b>DRY AVG DEPTH</b>	<b>DRY MHRT</b>
WY02	1.69	12.0	1.73	8.5	1.66	17.5
WY03	1.97	10.8	1.88	7.4	2.04	15.7
WY04	1.71	11.3	1.55	6.5	1.83	20.6
WY05	1.18	6.5	1.48	4.6	0.97	12.5
WY06	1.09	7.0	1.25	4.4	0.98	15.0
<b>5-yr. Mean</b>	1.53	9.5	1.58	6.3	1.50	16.3

## SUMMARY AND DISCUSSION

During the five-year period of WY 2002 to WY 2006, STA-2 received 1,672,903 ac-ft of water. This flow constituted 92.5 percent of the total inflow to STA-2. Rainfall accounted for 136,240 ac-ft or 7.6 percent of the total inflow. Through evapotranspiration, 140,180 ac-ft were lost. Estimated seepage was 1.4 percent of the water budget during the study period, losing 25,225 ac-ft to surrounding water bodies and the surficial aquifer. The volume of seepage was based upon head differences between the treatment cells and the water levels in the areas surrounding STA-2 and the estimated seepage coefficients for Cells 1, 2 and 3 that were estimated as 0.1, 0.1 and 1.0, respectively. Outflow from STA-2 was 90.3 percent of the total outflow accounting for 1,527,088 ac-ft. This volume was pumped into the L-6 Canal from the discharge canal at STA-2. The amount of water stored in the STA increased by 4,562 ac-ft in five years. The error in the water budget was 112,087 ac-ft or 6.2 percent of the water budget. The average retention time in Cells 1, 2 and 3 was 16.9, 10.4 and 9.5 days, respectively.

Cell 1 received 267,400 ac-ft of water during the study period through structures G-329A to D. Rain into this cell accounted for 41,474 ac-ft of inflow. The volume of water stored in Cell 1 increased by 3,065 ac-ft during the period. The G-330A to E structures discharged 210,824 ac-ft of water from Cell 1 and the cell lost 42,674 ac-ft of water through evapotranspiration. Net seepage for Cell 1 was estimated at 481 ac-ft. Water budget error was about 18.1 percent, which is high compared to errors in the other cells, possibly affected by values from the first water year's data.

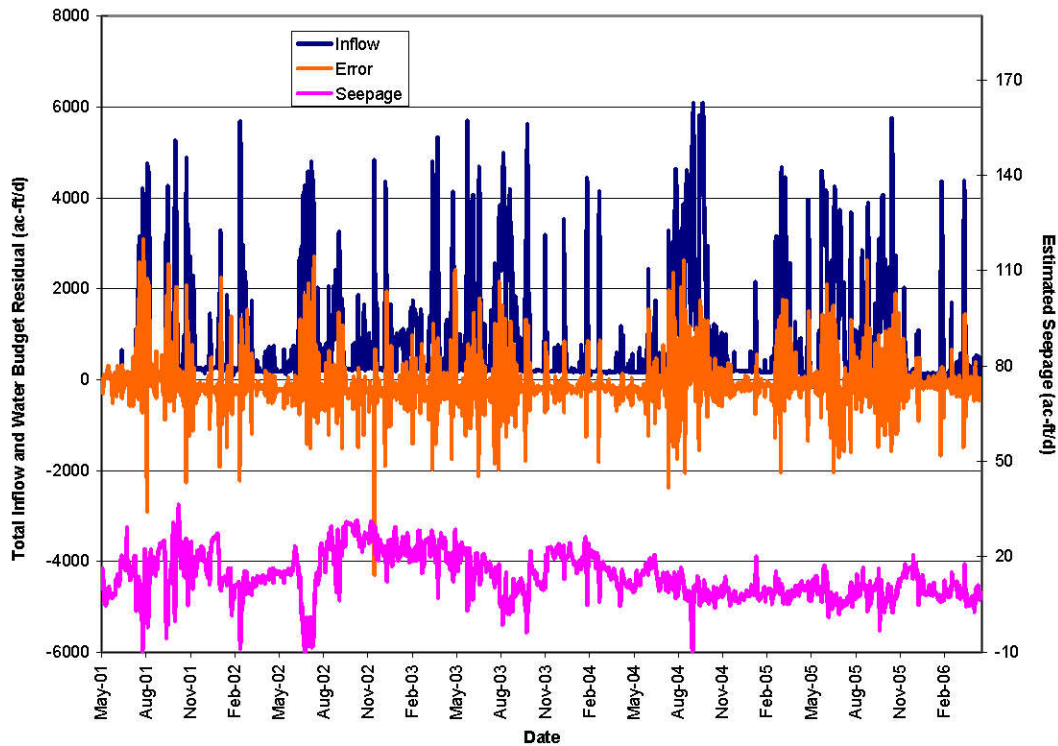
Cell 2 received 559,697 ac-ft of water during the study period through structures G-331A to G. Rain into this cell accounted for 46,268 ac-ft of inflow. The volume of water stored in Cell 2 increased by 1,673 ac-ft during the period. The G-332 structure discharged 511,278 ac-ft of water from Cell 2 and the cell lost 47,606 ac-ft of water through evapotranspiration. Net seepage for Cell 2 was estimated as 1,957 ac-ft. The water budget error was about 7.4 percent.

Cell 3 received 621,774 ac-ft of water during the study period through structures G-333A to E. Rain into this cell accounted for 41,474 ac-ft of inflow. The volume of water stored in Cell 3 decreased by 176 ac-ft during the period. The G-334 structure discharged 210,824 ac-ft of water from Cell 3 and the cell lost 42,674 ac-ft of water through evapotranspiration. Net seepage for Cell 3 was estimated as 54,441 ac-ft. Water budget error was about 3.2 percent.

### ***Residual Analysis***

The water budget residuals for STA-2 are displayed in **Figure 4**, **Figure 8**, **Figure 11** and **Figure 14** (residuals for Cell 1, Cell 2, Cell 3 and the entire STA) are not random. Generally, the residuals increase when flow increases as shown in **Figure 17** for the entire STA, which shows daily inflow, seepage and budget error for the five-year period. Although seepage also increases during these periods (in response to increased stages in

STA-2), the volume of outflow from STA-2, plus the increased seepage and the increase in storage, do not equal the daily volume of water entering STA-2. This was expected since the mean retention times for the cells are more than one day. Flow measurement error may also account for this, but it may also indicate a response to inflow that is not adequately represented by the traditional equations for levee seepage and storage used in this and other studies.



**Figure 17.** STA-2 inflow, seepage and water budget residuals.

## RECOMMENDATIONS

The residual error for individual cells varied dramatically for certain years. One source of error is the linear assumption used for the calculation of daily change in storage values. Recent detailed stage-storage information has shown that, due to the individual topographic variation of each cell, the vertical assumptions are not accurate at low stages, which is most of the time for which water budgets are computed. Modifications to the water budget program to incorporate a non-linear stage-storage relationship should significantly improve cell water budgets.

## REFERENCES

- Choi, J. and J. W. Harvey. September 2000. Quantifying Time-varying Ground-water Discharge and Recharge in Wetlands of the North Florida Everglades. *Wetlands*. V. 20, no. 3. pp. 500-511. The Society of Wetland Scientists. McLean. VA.
- Huebner, R. S. February 2001. Water Budget Analysis for Stormwater Treatment Area 6, Section 1. Technical Memorandum EMA #391. Hydro Information Systems and Assessment Department. Environmental Monitoring and Assessment Division. SFWMD. West Palm Beach. FL.
- Huebner, R. S. June 2002. Water Budget Analysis for Stormwater Treatment Area 5. Technical Publication EMA #402. Hydro Information Systems and Assessment Department. Environmental Monitoring and Assessment Department. SFWMD. West Palm Beach. FL.
- Huebner, R. S. June 2003. Water Budget Analysis for Stormwater Treatment Area 6, Section 1. Technical Publication EMA #408. Resource Assessment Division. Environmental Monitoring and Assessment Department. SFWMD. West Palm Beach. FL.
- Huebner, R. S. May 2007. Water Budget Analysis for Stormwater Treatment Area 5. Technical Publication EMA #447. Water Quality Assessment Division. Environmental Resource Assessment Department. SFWMD. West Palm Beach. FL.
- Parrish, D. M., Huebner, R. S. June 2004. Water Budget Analysis for Stormwater Treatment Area 5. Technical Publication EMA #418. Resource Assessment Division. Environmental Monitoring and Assessment Department. SFWMD. West Palm Beach. FL.
- SFWMD. March 2001. Operation Plan Stormwater Treatment Area 2 (Revised). South Florida Water Management District. West Palm Beach. FL.
- SFWMD. March 2006. 2006 South Florida Environmental Report. South Florida Water Management District. West Palm Beach. FL.

# APPENDIX A

## Site Properties and Monitoring Stations

**Table A-1.** STA-2 site properties.

<b>Surface Area</b>		
<b>Cell 1</b>	<b>1990</b>	<b>ac</b>
<b>Cell 2</b>	<b>2220</b>	<b>ac</b>
<b>Cell 3</b>	<b>2220</b>	<b>ac</b>
<b>Total</b>	<b>6430</b>	<b>ac</b>
<b>Cell 1 Average Ground Elevation</b>	<b>11.82</b>	<b>ft NGVD</b>
<b>Cell 2 Average Ground Elevation</b>	<b>10.33</b>	<b>ft NGVD</b>
<b>Cell 3 Average Ground Elevation</b>	<b>9.61</b>	<b>ft NGVD</b>
<b>Levee Length</b>		
<b>Along Northern Boundary</b>		
<b>Supply Canal</b>	<b>3000</b>	<b>ft</b>
<b>Inflow Canal</b>	<b>23400</b>	<b>ft</b>
<b>Discharge Canal</b>	<b>6000</b>	<b>ft</b>

**Table A-2.** Stage monitoring stations.

<b>STATION</b>	<b>STATION DESCRIPTION</b>	<b>DBKEY</b>
S6_T	S6 STA-2 Inflow Structure Supply Canal (Tailwater)	06685
G328_T	G-328 STA-2 Inflow Structure Supply Canal (Tailwater)	MQ898
G329B_H	G-329B STA-2 Inflow Structure Cell 1/Inflow Canal (Headwater)	MT237
G330A_H	G-330A STA-2 Outflow Structure Cell 1 (Headwater)	MQ893
G330D_H	G-330D STA-2 Outflow Structure Cell 1 (Headwater)	MQ894
G331B_T	G-331B STA-2 Inflow Structure Cell 2 (Tailwater)	MT241
G331D_H	G-331D STA-2 Inflow Structure Cell 2/Inflow Canal (Headwater)	MT248
G331E_T	G-331E STA-2 Inflow Structure Cell 2 (Tailwater)	MT244
G332_H	G-332 STA-2 Outflow Structure Cell 2 (Headwater)	N3458
G332_T	G-332 STA-2 Outflow Structure Cell 2/Discharge Canal (Tailwater)	N3459
G333C_H	G-333C STA-2 Inflow Structure Cell3/Inflow Canal (Headwater)	N0750
G333C_T	G-333C STA-2 Inflow Structure Cell 3 (Tailwater)	N0751
G335_H	G-335 STA-2 Outflow Structure Discharge Canal (Headwater)	MR463
G335_T	G-335 STA-2 Outflow Structure L6 Canal (Tailwater)	MR464
G337_H	G-337 STA-2 Inflow Structure Seepage Canal (Headwater)	LG727
G337_T	G-337 STA-2 Inflow Structure Supply Canal/Inflow Canal (Tailwater)	LG728
G339_T	G-339 STA-2 Inflow Structure L6 Canal (Tailwater)	MS576

**Table A-3.** Flow monitoring stations.

<b>STATION</b>	<b>STATION DESCRIPTION</b>	<b>DBKEY</b>
G328	Flow from Florida Crystals Inc. at the inflow of STA-2	J0718
G328I_C	Irrigation flow to Florida Crystals Inc. (culvert)	TA607
G328I_P	Irrigation flow to Florida Crystals Inc. (pump)	TA605
G329A_C	G-329A STA-2 Inflow Structure Cell 1	N0748
G329B_C	G-329B STA-2 Inflow Structure Cell 1	LG703
G329C_C	G-329C STA-2 Inflow Structure Cell 1	LG704
G329D_C	G-329D STA-2 Inflow Structure Cell 1	LG705
G330A_C	G-330A STA-2 Outflow Structure Cell 1	LG706
G330B_C	G-330B STA-2 Outflow Structure Cell 1	LG707
G330C_C	G-330C STA-2 Outflow Structure Cell 1	LG708
G330D_C	G-330D STA-2 Outflow Structure Cell 1	LG709
G330E_C	G-330E STA-2 Outflow Structure Cell 1	LG710
G331A_C	G-331A STA-2 Inflow Structure Cell 2	LG711
G331B_C	G-331B STA-2 Inflow Structure Cell 2	LG712
G331C_C	G-331C STA-2 Inflow Structure Cell 2	LG713
G331D_C	G-331D STA-2 Inflow Structure Cell 2	LG714
G331E_C	G-331E STA-2 Inflow Structure Cell 2	LG715
G331F_C	G-331F STA-2 Inflow Structure Cell 2	LG716
G331G_C	G-331G STA-2 Inflow Structure Cell 2	LG718
G332_S	G-332 STA-2 Outflow Structure Cell 2	LG719
G333A_C	G-333A STA-2 Inflow Structure Cell 3	LG720
G333B_C	G-333B STA-2 Inflow Structure Cell 3	LG721
G333C_C	G-333C STA-2 Inflow Structure Cell 3	LG722
G333D_C	G-333D STA-2 Inflow Structure Cell 3	LG723
G333E_C	G-333E STA-2 Inflow Structure Cell 3	LG724
G334_S	G-334 STA-2 Outflow Structure Cell 3	LG725
G335_P	STA-2 Primary Outflow Pump Station	N0659
G337_P	STA-2 Seepage Return Pump Station	LG701
G338_C	STA-2 Culvert Flow on Hillsboro Canal 400 ft Downstream of S6	MC705
S6_P	Hillsboro Canal at S-6 Near Shawano	15034

**Table A-4.** Rainfall monitoring stations.

<b>STATION</b>	<b>STATION DESCRIPTION</b>	<b>DBKEY</b>
EAA5	EAA5 Everglades Agricultural Area	JW233
S6_R	S6 STA-2 S6 Pump Station	15203
S7_R	S7 Pump Station	15204

**Table A-5.** Evapotranspiration stations.

<b>STATION</b>	<b>STATION DESCRIPTION</b>	<b>DBKEY</b>
STA1W	Areal Computed Parameter for STA-1W Project	KN810

# APPENDIX B

## Rainfall Data

**Table B-1.** Rainfall for WY 2002.

Day	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
1	0.33	0.67	0.02	0.97	0.10	0.00	0.00	0.03	0.22	0.01	0.00	0.00
2	0.00	0.26	0.00	1.85	0.00	0.00	0.15	0.06	0.07	0.00	0.00	0.00
3	0.49	0.00	0.00	0.54	0.09	0.00	0.04	0.00	0.02	0.00	0.00	0.09
4	0.18	0.00	1.35	0.71	0.46	0.00	0.24	0.02	0.00	0.00	0.03	0.20
5	0.00	0.24	0.00	0.13	0.71	0.23	0.94	0.00	0.00	0.00	0.02	0.00
6	0.00	0.06	0.59	0.01	0.01	0.00	0.00	0.02	0.06	0.00	0.00	0.00
7	0.00	1.12	0.10	0.00	0.04	0.00	0.00	0.45	0.01	0.00	0.12	0.01
8	0.02	0.61	0.00	0.00	2.22	0.02	0.00	0.00	0.00	0.00	0.28	0.00
9	0.00	0.10	1.19	0.02	0.03	0.04	0.00	0.07	0.00	0.22	0.00	0.00
10	0.00	0.00	0.88	0.00	1.51	0.01	0.00	0.00	0.00	0.61	0.00	0.02
11	0.00	0.00	0.01	0.03	0.20	0.00	0.00	0.00	0.00	0.17	0.03	0.00
12	0.00	0.23	0.74	0.00	0.13	0.00	0.00	0.00	0.00	0.00	0.10	0.00
13	0.00	0.22	0.11	0.18	1.02	0.00	0.00	0.00	0.01	0.10	0.03	0.00
14	0.00	0.46	0.58	0.00	0.29	0.00	0.00	0.00	0.00	0.18	0.00	0.06
15	0.00	0.13	0.00	0.00	0.02	0.35	0.00	0.00	0.10	0.20	0.00	0.71
16	0.00	0.08	0.28	0.00	0.00	0.28	0.00	0.00	0.01	1.53	0.00	0.37
17	0.00	0.07	1.01	0.00	0.33	0.00	0.00	0.00	0.00	0.47	0.00	0.18
18	0.00	0.00	0.08	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.02
19	0.00	0.00	1.14	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	0.00	0.00	0.54	0.11	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00
21	0.00	0.97	1.03	0.68	0.00	0.77	0.00	0.00	0.00	0.02	0.00	0.00
22	0.41	0.68	0.24	0.02	0.00	1.76	0.00	0.00	0.00	0.04	0.00	0.00
23	1.04	0.16	4.00	0.00	0.01	0.00	0.00	0.00	0.00	0.74	0.00	0.00
24	0.01	0.14	0.00	0.00	0.10	0.10	0.01	0.00	0.00	0.10	0.00	0.00
25	0.24	0.01	0.03	0.00	0.00	0.26	0.00	0.29	0.00	0.00	0.00	0.00
26	1.25	0.00	0.20	0.00	0.08	0.16	0.00	0.31	0.00	0.00	0.01	0.00
27	0.19	1.19	0.22	0.02	0.63	0.00	0.00	0.00	0.00	0.00	0.01	0.00
28	0.01	0.17	0.01	0.00	0.95	0.00	0.00	0.00	0.00	0.00	0.01	0.00
29	0.10	0.00	0.12	0.00	2.90	0.00	0.00	0.01	0.00		0.00	0.00
30	0.12	0.02	0.00	0.07	0.00	0.02	0.00	0.00	0.00		0.00	0.00
31	0.82		0.00	0.00		0.00		0.95	0.01			0.00
MAX	1.25	1.19	4.00	1.85	2.90	1.76	0.94	0.95	0.22	1.53	0.28	0.71
MEAN	0.17	0.25	0.47	0.17	0.40	0.13	0.05	0.07	0.02	0.16	0.02	0.06
MIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SUM	5.21	7.58	14.48	5.35	11.85	4.04	1.38	2.23	0.52	4.39	0.64	1.66



**Table B-1 (continued).** Rainfall for WY 2003.

Day	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
1	0.00	0.02	1.69	0.01	0.06	0.27	0.00	0.02	0.00	0.00	0.00	0.00
2	0.00	0.00	0.23	0.21	0.75	0.14	0.00	0.06	0.01	0.00	0.00	0.00
3	0.00	0.60	0.32	0.05	2.36	0.01	0.00	0.00	0.26	0.00	0.00	0.00
4	0.00	0.09	0.27	0.01	0.31	0.02	0.00	0.00	0.00	0.00	0.47	0.00
5	0.00	0.01	1.24	0.03	0.34	0.00	0.00	0.03	0.00	0.00	0.00	0.00
6	0.00	0.69	0.26	0.00	0.04	0.00	0.01	0.00	0.00	0.00	0.00	0.00
7	0.00	0.02	0.35	0.08	0.06	0.00	0.02	0.01	0.00	0.00	0.00	0.00
8	0.00	0.18	0.54	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.19	1.54	0.00	0.00	0.00	0.00	0.50	0.00	0.00	0.03	0.08
10	0.00	0.05	0.18	0.00	0.00	0.00	0.00	0.99	0.00	0.00	0.03	0.21
11	0.00	0.01	0.71	0.21	0.88	0.00	0.00	0.03	0.00	0.00	0.11	0.00
12	0.02	0.78	2.04	0.19	0.02	0.02	0.00	0.00	0.00	0.00	0.02	0.00
13	0.00	0.38	0.01	0.67	0.24	0.02	0.08	0.03	0.03	0.00	0.19	0.00
14	0.32	1.18	0.00	0.12	0.00	0.01	0.02	0.08	0.62	0.00	0.23	0.00
15	0.17	2.18	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00
16	0.16	0.21	0.09	0.11	0.00	0.27	0.30	0.00	0.00	0.04	0.26	0.01
17	0.17	0.22	0.00	0.02	0.00	0.00	1.02	0.00	0.00	0.21	1.72	0.01
18	0.00	0.08	0.15	0.09	0.00	0.00	0.02	0.00	0.00	0.00	0.24	0.22
19	0.53	0.00	0.00	0.41	0.08	0.00	0.00	0.01	0.00	0.00	0.01	0.05
20	0.17	0.72	0.00	0.44	0.04	0.00	0.07	0.17	0.00	0.16	0.00	0.00
21	0.00	0.57	0.41	0.53	0.01	0.00	0.59	0.23	0.00	0.03	0.51	0.00
22	0.00	0.21	0.00	0.10	0.08	0.00	0.03	0.00	0.00	0.12	0.22	0.00
23	0.00	0.91	0.10	0.09	0.31	0.00	0.00	0.00	0.00	0.55	0.37	0.00
24	0.00	0.23	0.00	0.01	0.29	0.00	0.00	0.00	0.00	0.00	0.40	0.00
25	0.00	0.60	0.00	0.00	0.21	0.01	0.00	0.00	0.00	0.00	0.00	0.00
26	0.00	0.21	0.00	0.09	0.00	0.10	0.00	0.00	0.00	0.45	0.00	0.61
27	0.01	0.36	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.27	0.64
28	0.00	0.50	0.00	0.09	0.03	0.00	0.00	0.00	0.00	0.00	0.73	1.24
29	0.00	0.03	0.00	0.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
30	0.16	0.33	0.00	0.08	0.05	0.00	0.00	0.00	0.01	0.00	0.00	0.11
31	0.14	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
MAX	0.53	2.18	2.04	0.67	2.36	0.27	1.02	0.99	0.62	0.55	1.72	1.24
MEAN	0.06	0.39	0.33	0.13	0.21	0.03	0.07	0.07	0.03	0.06	0.19	0.11
MIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SUM	1.85	11.55	10.15	3.93	6.23	0.91	2.16	2.19	0.92	1.55	5.81	3.19

**Table B-1 (continued).** Rainfall for WY 2004.

Day	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
1	0.47	0.01	0.01	0.36	0.23	0.00	0.01	0.00	0.00	0.38	0.00	0.00
2	0.28	0.24	0.07	0.89	0.39	0.00	0.12	0.00	0.00	0.00	0.00	0.00
3	0.00	0.60	0.23	0.04	0.00	0.00	0.42	0.01	0.00	0.00	0.00	0.00
4	0.01	0.81	0.05	0.20	0.07	0.00	0.15	0.08	0.00	0.00	0.00	0.00
5	0.00	0.83	0.03	0.00	0.47	0.00	0.19	0.00	0.00	0.00	0.00	0.00
6	0.00	0.49	0.23	0.53	0.49	0.00	0.62	0.47	0.00	0.01	0.00	0.00
7	0.00	0.48	0.00	0.76	0.08	0.00	0.11	0.00	0.00	0.00	0.00	0.00
8	0.00	0.32	0.00	0.24	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.87	0.00	0.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08
10	0.00	0.23	0.00	0.64	0.00	0.00	0.03	0.02	0.00	0.00	0.00	0.04
11	0.00	0.12	0.00	0.18	0.00	0.00	0.01	0.26	0.00	0.00	0.00	0.00
12	0.00	0.18	0.01	0.00	0.09	0.00	0.00	0.00	0.01	0.00	0.00	0.42
13	0.00	0.01	0.01	0.00	0.28	0.00	0.01	0.00	0.00	0.02	0.00	0.97
14	0.23	0.01	0.18	0.56	0.02	0.04	0.00	0.46	0.00	0.00	0.00	0.14
15	0.00	0.00	1.03	0.11	0.02	0.29	0.00	0.73	0.00	0.15	0.00	0.01
16	0.06	0.07	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.53	0.00
17	0.14	0.00	0.19	0.35	0.20	0.00	0.00	0.01	0.00	0.00	0.20	0.00
18	0.04	0.85	0.06	0.13	0.06	0.00	0.00	0.01	0.42	0.00	0.00	0.00
19	0.35	0.38	0.04	0.03	0.00	0.00	0.00	0.00	0.15	0.00	0.00	0.00
20	0.22	0.47	0.15	0.27	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00
21	0.00	1.11	0.07	0.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	1.05	0.14	0.06	0.53	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23	0.24	0.08	0.39	0.38	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00
24	0.31	0.01	0.00	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25	1.51	0.01	0.00	0.57	0.61	0.13	0.00	0.00	0.00	0.70	0.00	0.00
26	0.39	0.03	0.00	0.02	0.42	0.16	0.00	0.00	0.00	0.76	0.00	0.00
27	1.00	0.13	0.13	0.09	0.42	0.00	0.00	0.00	0.07	0.00	0.00	0.15
28	1.40	0.04	0.13	0.11	0.11	0.00	0.00	0.00	0.02	0.00	0.00	0.05
29	0.12	0.00	0.24	0.06	0.46	0.20	0.01	0.00	0.00	0.00	0.00	0.07
30	0.06	0.01	0.68	0.00	0.86	0.00	0.00	0.00	0.65		0.00	0.03
31	0.00		0.28	0.06		0.00		0.00	0.50		0.00	
MAX	1.51	1.11	1.03	0.89	0.86	0.29	0.62	0.73	0.65	0.76	0.53	0.97
MEAN	0.25	0.28	0.14	0.28	0.18	0.03	0.06	0.07	0.06	0.07	0.02	0.07
MIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SUM	7.89	8.53	4.30	8.51	5.28	0.82	1.71	2.07	1.83	2.09	0.75	1.96

**Table B-1 (continued).** Rainfall for WY 2005.

Day	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
1	0.00	1.00	0.51	0.34	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00
2	0.00	0.12	0.05	0.23	0.00	0.44	0.00	0.02	0.00	0.00	0.00	0.08
3	1.00	0.06	0.00	0.21	0.31	0.00	0.00	0.00	0.00	0.00	0.77	0.00
4	0.01	0.41	0.06	0.28	0.75	0.00	0.00	0.00	0.00	0.00	0.33	0.00
5	0.00	0.51	0.10	0.15	1.36	0.00	0.01	0.00	0.00	0.00	0.00	0.00
6	0.00	0.69	0.00	0.01	0.09	0.48	0.00	0.00	0.00	0.01	0.00	0.00
7	0.00	0.29	0.19	0.11	0.00	0.20	0.00	0.00	0.00	0.04	0.00	0.03
8	0.00	0.06	0.05	0.19	0.14	0.00	0.00	0.00	0.00	0.00	0.03	0.89
9	0.00	0.03	0.00	0.00	0.01	0.00	0.06	0.00	0.00	0.00	2.14	0.00
10	0.00	0.01	0.08	0.00	0.05	0.00	0.00	0.01	0.00	0.00	0.06	0.00
11	0.00	0.13	0.47	0.20	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00
12	0.00	0.05	0.30	0.03	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00
13	0.00	0.00	0.00	0.11	0.01	0.00	0.00	0.00	0.03	0.00	0.00	0.00
14	0.09	0.00	0.01	0.95	0.00	0.00	0.45	0.00	0.43	0.00	0.00	0.00
15	0.03	0.27	0.00	0.19	0.02	0.19	0.00	0.01	0.16	0.00	0.00	0.00
16	0.17	0.00	1.05	0.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	0.01	0.04	0.04	0.02	0.22	0.00	0.00	0.22	0.00	0.00	1.57	0.02
18	0.00	1.04	0.05	0.57	0.03	0.00	0.00	0.02	0.00	0.00	0.02	0.03
19	0.00	0.09	0.39	0.23	0.01	0.11	0.00	0.00	0.00	0.00	0.00	0.00
20	0.00	0.64	0.05	0.05	0.34	0.46	0.00	0.00	0.00	0.00	0.01	0.00
21	0.00	0.70	0.03	0.01	0.31	0.08	0.00	0.00	0.00	0.00	0.00	0.00
22	0.00	0.12	0.03	0.83	0.07	0.10	0.00	0.00	0.00	0.02	0.00	0.00
23	0.00	0.00	0.43	0.06	0.01	0.06	0.00	0.00	0.05	0.00	0.16	0.00
24	0.00	0.00	0.12	0.80	0.00	0.01	0.00	0.60	0.00	0.05	0.00	0.01
25	0.00	0.02	0.62	1.01	0.74	0.00	0.05	0.01	0.00	0.52	0.00	0.01
26	0.00	0.00	0.60	0.45	0.94	0.00	0.00	0.00	0.00	0.00	0.71	0.00
27	0.00	0.00	1.02	0.00	0.06	0.00	0.08	0.00	0.00	0.29	0.00	0.24
28	0.00	0.00	0.87	0.62	0.12	0.00	0.02	0.00	0.00	0.04	0.00	0.02
29	0.00	0.97	0.02	0.03	0.16	0.01	0.00	0.00	0.00		0.00	0.03
30	0.00	0.12	0.01	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00
31	0.00		0.94	0.00		0.09		0.03	0.00		0.00	
MAX	1.00	1.04	1.05	1.01	1.36	0.48	0.45	0.60	0.43	0.52	2.14	0.89
MEAN	0.04	0.25	0.26	0.27	0.19	0.07	0.02	0.03	0.02	0.04	0.19	0.05
MIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SUM	1.33	7.39	8.08	8.28	5.79	2.25	0.72	0.94	0.69	0.98	5.82	1.39

**Table B-1 (continued).** Rainfall for WY 2006.

Day	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
1	0.00	1.10	0.78	0.02	0.01	0.56	0.88	0.00	0.00	0.00	0.00	0.00
2	0.03	1.05	0.31	0.11	0.98	0.35	0.02	0.01	0.00	0.01	0.00	0.00
3	1.30	0.52	0.43	0.09	0.61	0.13	0.01	0.00	0.01	0.47	0.00	0.00
4	1.49	0.17	0.01	0.07	0.01	1.17	0.00	0.00	0.00	1.25	0.00	0.00
5	0.19	0.05	0.00	0.22	0.21	0.01	0.01	0.11	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.24	0.00	0.73	0.00	0.05	0.00	0.00	0.00	0.00
7	0.00	1.47	0.00	0.04	0.16	0.24	0.00	0.13	0.00	0.00	0.00	0.00
8	0.00	0.03	0.38	0.00	0.00	0.00	0.00	0.04	0.01	0.00	0.00	0.00
9	0.00	0.22	1.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.00	0.76	0.48	0.07	0.00	0.05	0.00	0.00	0.01	0.00	0.00	0.01
11	0.00	0.98	0.00	0.35	0.00	0.05	0.00	0.00	0.04	0.00	0.00	0.00
12	0.00	0.07	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
13	0.00	0.00	0.25	0.00	0.00	0.00	0.07	0.00	0.09	0.00	0.00	0.00
14	0.00	0.01	0.03	0.59	0.00	0.00	0.17	0.00	0.01	0.00	0.00	0.00
15	0.04	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00
16	0.00	0.67	0.06	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00
17	0.00	0.06	0.00	0.00	0.00	0.00	0.10	0.00	0.00	0.00	0.00	0.00
18	0.00	1.00	0.00	0.00	0.00	0.04	0.24	0.00	0.03	0.00	0.00	0.00
19	0.00	0.70	0.06	0.00	0.25	0.20	0.07	0.01	0.00	0.00	0.00	0.09
20	0.00	0.77	0.00	0.60	0.66	0.01	0.01	0.04	0.01	0.00	0.00	0.00
21	0.71	0.03	0.00	0.21	0.07	0.20	0.17	0.00	0.00	0.00	0.00	0.01
22	0.01	0.08	0.00	0.73	0.02	0.00	0.00	0.00	0.04	0.00	0.00	0.20
23	0.00	0.39	0.00	0.03	0.06	0.01	0.00	0.00	0.00	0.00	2.24	0.01
24	0.03	0.07	0.92	0.00	0.00	3.02	0.00	0.00	0.00	0.00	0.00	0.00
25	0.04	0.00	1.30	0.59	0.01	0.00	0.00	0.00	0.00	0.09	0.00	0.00
26	0.75	0.10	0.30	0.17	0.70	0.00	0.00	0.00	0.00	0.05	0.00	0.14
27	0.00	0.39	0.01	0.50	0.14	0.00	0.01	0.01	0.00	0.00	0.00	0.00
28	0.00	0.69	0.00	0.28	0.18	0.00	0.00	0.01	0.00	0.00	0.00	0.00
29	0.26	0.23	0.19	0.03	0.27	0.00	0.64	0.02	0.00		0.00	0.00
30	0.58	0.21	0.41	0.14	0.00	0.00	0.00	0.00	0.07		0.00	0.00
31	0.66		1.03	0.25		0.00		0.00	0.05		0.00	
MAX	1.49	1.47	1.57	0.73	0.98	3.02	0.88	0.13	0.09	1.25	2.24	0.20
MEAN	0.20	0.40	0.28	0.17	0.14	0.22	0.08	0.01	0.01	0.07	0.07	0.02
MIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SUM	6.11	11.86	8.54	5.34	4.33	6.79	2.45	0.44	0.40	1.89	2.25	0.49

# APPENDIX C

## Evapotranspiration Data

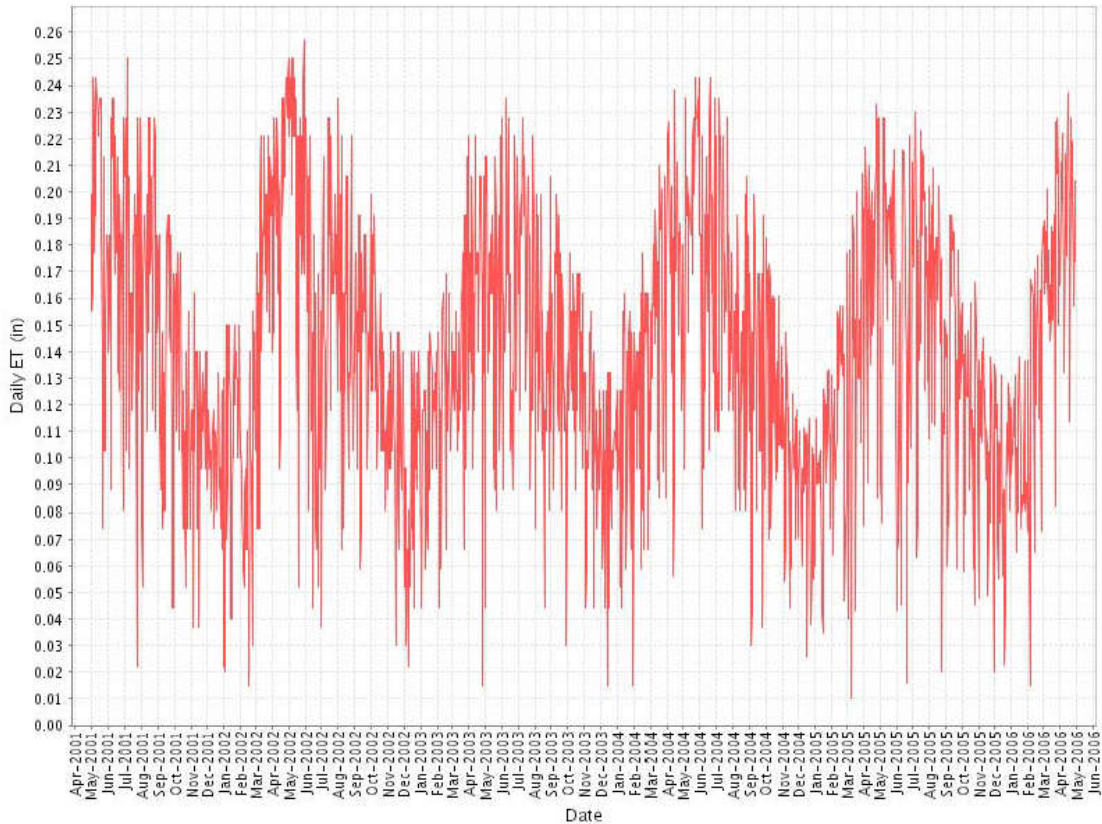


Figure C-1. Daily evapotranspiration at STA-2.

**Table C-1.** Evapotranspiration (in.) for WY 2002.

Day	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
1	0.16	0.18	0.21	0.07	0.16	0.16	0.12	0.09	0.13	0.10	0.10	0.14
2	0.20	0.17	0.23	0.05	0.15	0.16	0.10	0.10	0.02	0.10	0.18	0.16
3	0.16	0.14	0.21	0.07	0.18	0.11	0.12	0.12	0.06	0.08	0.13	0.15
4	0.16	0.18	0.10	0.17	0.11	0.17	0.04	0.10	0.15	0.07	0.07	0.23
5	0.24	0.16	0.25	0.18	0.09	0.14	0.04	0.10	0.08	0.06	0.16	0.21
6	0.23	0.14	0.19	0.19	0.12	0.18	0.16	0.10	0.07	0.06	0.07	0.20
7	0.21	0.09	0.18	0.17	0.15	0.15	0.10	0.10	0.09	0.05	0.07	0.18
8	0.18	0.23	0.21	0.17	0.11	0.15	0.11	0.10	0.15	0.08	0.19	0.20
9	0.23	0.21	0.10	0.17	0.07	0.10	0.14	0.08	0.14	0.09	0.20	0.23
10	0.19	0.24	0.16	0.14	0.09	0.16	0.14	0.11	0.15	0.10	0.22	0.21
11	0.24	0.24	0.16	0.11	0.13	0.18	0.13	0.11	0.13	0.07	0.16	0.16
12	0.24	0.24	0.15	0.20	0.08	0.16	0.07	0.12	0.12	0.10	0.14	0.21
13	0.24	0.20	0.16	0.15	0.08	0.17	0.14	0.12	0.10	0.11	0.18	0.20
14	0.23	0.17	0.12	0.23	0.12	0.10	0.12	0.07	0.04	0.07	0.18	0.10
15	0.22	0.18	0.16	0.21	0.16	0.11	0.04	0.10	0.04	0.07	0.19	0.11
16	0.23	0.22	0.18	0.23	0.18	0.07	0.11	0.11	0.09	0.02	0.18	0.14
17	0.24	0.18	0.15	0.17	0.18	0.13	0.14	0.10	0.11	0.14	0.22	0.17
18	0.24	0.18	0.20	0.21	0.19	0.09	0.11	0.10	0.10	0.13	0.17	0.24
19	0.24	0.21	0.18	0.18	0.18	0.11	0.10	0.08	0.13	0.10	0.20	0.19
20	0.18	0.13	0.19	0.17	0.16	0.07	0.12	0.13	0.15	0.10	0.20	0.21
21	0.18	0.16	0.13	0.12	0.19	0.06	0.13	0.13	0.12	0.09	0.18	0.24
22	0.14	0.13	0.13	0.16	0.15	0.05	0.11	0.09	0.13	0.09	0.16	0.24
23	0.07	0.13	0.02	0.23	0.14	0.14	0.13	0.09	0.14	0.03	0.18	0.21
24	0.21	0.20	0.22	0.21	0.18	0.11	0.12	0.10	0.13	0.16	0.22	0.23
25	0.10	0.17	0.23	0.23	0.18	0.09	0.13	0.07	0.13	0.12	0.21	0.23
26	0.12	0.18	0.20	0.22	0.11	0.07	0.13	0.10	0.13	0.15	0.15	0.24
27	0.11	0.08	0.13	0.11	0.04	0.16	0.10	0.07	0.10	0.14	0.21	0.24
28	0.10	0.13	0.21	0.18	0.04	0.13	0.14	0.13	0.12	0.10	0.21	0.23
29	0.16	0.23	0.14	0.15	0.05	0.08	0.13	0.07	0.15		0.19	0.23
30	0.18	0.21	0.23	0.18	0.17	0.07	0.14	0.07	0.10		0.21	0.24
31	0.18		0.18	0.18		0.10		0.02	0.11		0.21	
MAX	0.24	0.24	0.25	0.23	0.19	0.18	0.16	0.13	0.15	0.16	0.22	0.24
MEAN	0.19	0.18	0.17	0.17	0.13	0.12	0.11	0.10	0.11	0.09	0.17	0.20
MIN	0.07	0.08	0.02	0.05	0.04	0.05	0.04	0.02	0.02	0.02	0.07	0.10
SUM	5.78	5.28	5.28	5.19	3.95	3.72	3.38	2.97	3.41	2.54	5.35	5.92

**Table C-1 (continued).** Evapotranspiration (in.) for WY 2003.

Day	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
1	0.25	0.23	0.04	0.24	0.13	0.13	0.09	0.05	0.06	0.14	0.13	0.18
2	0.22	0.23	0.17	0.18	0.18	0.16	0.12	0.07	0.08	0.15	0.14	0.14
3	0.24	0.20	0.17	0.16	0.15	0.15	0.11	0.10	0.04	0.15	0.13	0.17
4	0.24	0.16	0.21	0.15	0.18	0.13	0.13	0.07	0.12	0.12	0.12	0.18
5	0.23	0.16	0.16	0.13	0.10	0.18	0.10	0.10	0.11	0.04	0.13	0.13
6	0.25	0.21	0.15	0.20	0.16	0.17	0.10	0.03	0.12	0.11	0.14	0.21
7	0.20	0.19	0.14	0.07	0.15	0.19	0.15	0.07	0.12	0.12	0.14	0.18
8	0.24	0.08	0.09	0.22	0.19	0.16	0.10	0.07	0.13	0.06	0.13	0.18
9	0.25	0.19	0.09	0.15	0.14	0.13	0.13	0.02	0.13	0.13	0.16	0.10
10	0.22	0.22	0.12	0.16	0.19	0.16	0.12	0.07	0.10	0.13	0.10	0.16
11	0.22	0.12	0.12	0.07	0.06	0.14	0.14	0.08	0.06	0.16	0.13	0.12
12	0.24	0.11	0.17	0.16	0.07	0.10	0.12	0.07	0.11	0.16	0.11	0.21
13	0.22	0.12	0.20	0.16	0.14	0.12	0.10	0.05	0.07	0.16	0.14	0.22
14	0.24	0.15	0.23	0.13	0.18	0.11	0.10	0.11	0.07	0.13	0.15	0.17
15	0.14	0.04	0.18	0.21	0.15	0.13	0.10	0.07	0.14	0.13	0.13	0.17
16	0.12	0.14	0.23	0.16	0.16	0.14	0.03	0.14	0.12	0.14	0.12	0.18
17	0.21	0.18	0.16	0.21	0.16	0.14	0.06	0.13	0.10	0.07	0.16	0.17
18	0.22	0.16	0.12	0.17	0.17	0.16	0.15	0.07	0.09	0.17	0.16	0.18
19	0.05	0.16	0.22	0.13	0.18	0.14	0.10	0.08	0.15	0.12	0.16	0.14
20	0.22	0.13	0.17	0.10	0.15	0.10	0.09	0.04	0.14	0.11	0.18	0.20
21	0.18	0.07	0.16	0.13	0.16	0.12	0.07	0.14	0.14	0.13	0.16	0.19
22	0.23	0.07	0.16	0.13	0.18	0.15	0.09	0.10	0.13	0.14	0.13	0.21
23	0.21	0.09	0.16	0.13	0.11	0.10	0.15	0.12	0.10	0.16	0.07	0.21
24	0.22	0.12	0.17	0.16	0.10	0.14	0.13	0.10	0.11	0.13	0.19	0.19
25	0.19	0.05	0.19	0.22	0.13	0.10	0.10	0.09	0.13	0.11	0.19	0.16
26	0.17	0.17	0.17	0.21	0.15	0.11	0.09	0.13	0.12	0.10	0.12	0.02
27	0.18	0.11	0.20	0.15	0.13	0.10	0.10	0.11	0.13	0.13	0.10	0.17
28	0.24	0.10	0.16	0.12	0.14	0.08	0.10	0.12	0.12	0.15	0.18	0.13
29	0.26	0.16	0.18	0.10	0.15	0.10	0.14	0.14	0.13		0.21	0.21
30	0.18	0.10	0.13	0.15	0.20	0.11	0.13	0.12	0.10		0.12	0.04
31	0.17		0.21	0.13		0.13		0.11	0.14		0.22	
MAX	0.26	0.23	0.23	0.24	0.20	0.19	0.15	0.14	0.15	0.17	0.22	0.22
MEAN	0.21	0.14	0.16	0.15	0.15	0.13	0.11	0.09	0.11	0.13	0.14	0.16
MIN	0.05	0.04	0.04	0.07	0.06	0.08	0.03	0.02	0.04	0.04	0.07	0.02
SUM	6.45	4.20	5.02	4.75	4.41	4.07	3.22	2.75	3.38	3.54	4.40	4.89

**Table C-1 (continued).** Evapotranspiration (in.) for WY 2004.

Day	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
1	0.16	0.16	0.16	0.11	0.11	0.13	0.13	0.11	0.13	0.10	0.13	0.21
2	0.21	0.23	0.16	0.07	0.16	0.13	0.13	0.12	0.10	0.13	0.16	0.22
3	0.20	0.09	0.18	0.14	0.14	0.14	0.13	0.11	0.09	0.15	0.13	0.23
4	0.21	0.14	0.18	0.20	0.13	0.12	0.04	0.10	0.10	0.13	0.16	0.21
5	0.21	0.16	0.12	0.17	0.10	0.18	0.06	0.06	0.10	0.12	0.15	0.22
6	0.13	0.15	0.19	0.14	0.09	0.15	0.07	0.07	0.13	0.13	0.18	0.17
7	0.16	0.14	0.20	0.19	0.16	0.15	0.10	0.13	0.05	0.10	0.16	0.18
8	0.14	0.16	0.18	0.11	0.18	0.13	0.10	0.10	0.12	0.14	0.19	0.20
9	0.17	0.18	0.22	0.15	0.18	0.16	0.10	0.10	0.13	0.13	0.14	0.13
10	0.18	0.24	0.21	0.13	0.17	0.13	0.13	0.04	0.04	0.14	0.19	0.14
11	0.16	0.17	0.23	0.15	0.20	0.12	0.15	0.13	0.13	0.10	0.18	0.18
12	0.18	0.18	0.19	0.18	0.18	0.17	0.11	0.11	0.08	0.15	0.15	0.06
13	0.17	0.23	0.21	0.20	0.12	0.16	0.16	0.11	0.16	0.12	0.17	0.09
14	0.16	0.21	0.18	0.10	0.11	0.11	0.14	0.02	0.16	0.14	0.09	0.21
15	0.19	0.15	0.14	0.16	0.19	0.14	0.13	0.13	0.15	0.06	0.16	0.24
16	0.17	0.16	0.13	0.16	0.18	0.16	0.10	0.07	0.16	0.16	0.09	0.17
17	0.10	0.17	0.16	0.12	0.18	0.09	0.09	0.04	0.10	0.08	0.16	0.17
18	0.13	0.10	0.15	0.12	0.14	0.17	0.14	0.13	0.06	0.18	0.21	0.18
19	0.09	0.13	0.18	0.11	0.14	0.12	0.04	0.12	0.09	0.15	0.19	0.20
20	0.21	0.11	0.21	0.04	0.08	0.14	0.14	0.13	0.14	0.07	0.19	0.21
21	0.19	0.09	0.21	0.12	0.17	0.16	0.10	0.09	0.09	0.13	0.20	0.15
22	0.08	0.13	0.13	0.11	0.16	0.17	0.10	0.07	0.13	0.16	0.19	0.16
23	0.14	0.09	0.18	0.15	0.13	0.16	0.10	0.10	0.15	0.15	0.16	0.19
24	0.17	0.16	0.09	0.12	0.14	0.17	0.12	0.10	0.16	0.15	0.10	0.18
25	0.17	0.22	0.13	0.16	0.11	0.11	0.07	0.10	0.14	0.07	0.12	0.19
26	0.19	0.18	0.12	0.13	0.13	0.15	0.10	0.10	0.10	0.16	0.16	0.15
27	0.12	0.16	0.18	0.14	0.11	0.14	0.10	0.11	0.07	0.09	0.18	0.12
28	0.10	0.13	0.12	0.08	0.11	0.10	0.11	0.11	0.15	0.13	0.21	0.12
29	0.14	0.20	0.22	0.16	0.03	0.16	0.13	0.10	0.13	0.11	0.09	0.14
30	0.22	0.21	0.19	0.18	0.10	0.10	0.09	0.12	0.05		0.16	0.18
31	0.21		0.19	0.21		0.13		0.11	0.02		0.18	
MAX	0.22	0.24	0.23	0.21	0.20	0.18	0.16	0.13	0.16	0.18	0.21	0.24
MEAN	0.16	0.16	0.17	0.14	0.14	0.14	0.11	0.10	0.11	0.12	0.16	0.17
MIN	0.08	0.09	0.09	0.04	0.03	0.09	0.04	0.02	0.02	0.06	0.09	0.06
SUM	5.08	4.81	5.34	4.27	4.09	4.30	3.18	3.04	3.37	3.59	4.90	5.19



**Table C-1 (continued).** Evapotranspiration (in.) for WY 2005.

Day	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
1	0.18	0.18	0.12	0.13	0.17	0.18	0.13	0.10	0.08	0.12	0.15	0.19
2	0.14	0.18	0.15	0.12	0.17	0.16	0.10	0.10	0.11	0.11	0.18	0.08
3	0.10	0.18	0.11	0.16	0.14	0.17	0.12	0.11	0.12	0.10	0.04	0.22
4	0.19	0.07	0.13	0.16	0.03	0.15	0.11	0.10	0.09	0.06	0.08	0.21
5	0.24	0.19	0.11	0.08	0.04	0.17	0.05	0.09	0.09	0.13	0.18	0.20
6	0.21	0.22	0.21	0.16	0.15	0.07	0.07	0.08	0.10	0.10	0.15	0.18
7	0.19	0.10	0.24	0.15	0.13	0.13	0.13	0.06	0.09	0.09	0.15	0.16
8	0.21	0.10	0.21	0.13	0.12	0.17	0.15	0.07	0.10	0.10	0.05	0.09
9	0.19	0.19	0.22	0.19	0.20	0.17	0.12	0.10	0.10	0.10	0.01	0.19
10	0.15	0.13	0.17	0.16	0.18	0.09	0.14	0.09	0.10	0.11	0.18	0.18
11	0.20	0.14	0.12	0.09	0.17	0.07	0.10	0.09	0.09	0.15	0.14	0.21
12	0.19	0.21	0.16	0.15	0.16	0.10	0.10	0.11	0.10	0.16	0.19	0.17
13	0.19	0.17	0.22	0.10	0.13	0.16	0.12	0.11	0.06	0.15	0.18	0.14
14	0.19	0.21	0.20	0.12	0.08	0.16	0.04	0.09	0.04	0.13	0.14	0.19
15	0.18	0.16	0.21	0.08	0.12	0.11	0.10	0.11	0.04	0.14	0.15	0.19
16	0.18	0.19	0.15	0.15	0.16	0.15	0.11	0.09	0.04	0.14	0.15	0.20
17	0.22	0.16	0.18	0.12	0.17	0.16	0.06	0.03	0.13	0.16	0.04	0.15
18	0.17	0.10	0.16	0.13	0.17	0.12	0.09	0.11	0.12	0.14	0.16	0.17
19	0.22	0.23	0.16	0.15	0.13	0.09	0.11	0.10	0.11	0.15	0.20	0.19
20	0.23	0.24	0.16	0.16	0.10	0.10	0.12	0.12	0.09	0.13	0.19	0.15
21	0.20	0.21	0.18	0.16	0.10	0.13	0.11	0.11	0.12	0.16	0.13	0.18
22	0.23	0.16	0.23	0.09	0.15	0.14	0.10	0.10	0.10	0.13	0.13	0.20
23	0.24	0.20	0.12	0.20	0.17	0.10	0.11	0.05	0.11	0.14	0.14	0.21
24	0.23	0.20	0.14	0.16	0.17	0.16	0.09	0.04	0.13	0.11	0.13	0.23
25	0.23	0.13	0.18	0.08	0.04	0.15	0.07	0.06	0.13	0.05	0.15	0.23
26	0.23	0.15	0.13	0.11	0.11	0.11	0.12	0.10	0.13	0.07	0.15	0.19
27	0.24	0.24	0.16	0.21	0.19	0.12	0.09	0.10	0.11	0.08	0.17	0.09
28	0.24	0.18	0.15	0.18	0.14	0.11	0.12	0.06	0.10	0.09	0.11	0.23
29	0.22	0.11	0.14	0.18	0.11	0.11	0.11	0.07	0.11		0.21	0.23
30	0.24	0.22	0.18	0.16	0.09	0.14	0.07	0.10	0.07		0.19	0.20
31	0.21		0.12	0.11		0.10		0.06	0.13		0.17	
MAX	0.24	0.24	0.24	0.21	0.20	0.18	0.15	0.12	0.13	0.16	0.21	0.23
MEAN	0.20	0.17	0.16	0.14	0.13	0.13	0.10	0.09	0.10	0.12	0.14	0.18
MIN	0.10	0.07	0.11	0.08	0.03	0.07	0.04	0.03	0.04	0.05	0.01	0.08
SUM	6.25	5.17	5.07	4.28	3.98	4.04	3.05	2.69	3.03	3.27	4.40	5.43

**Table C-1 (continued).** Evapotranspiration (in.) for WY 2006.

Day	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
1	0.10	0.07	0.18	0.20	0.14	0.16	0.05	0.14	0.09	0.13	0.18	0.17
2	0.15	0.04	0.20	0.17	0.15	0.14	0.14	0.13	0.11	0.08	0.19	0.20
3	0.09	0.07	0.17	0.16	0.11	0.13	0.11	0.11	0.10	0.07	0.17	0.21
4	0.08	0.07	0.19	0.18	0.06	0.06	0.12	0.12	0.12	0.02	0.16	0.20
5	0.08	0.11	0.23	0.11	0.09	0.14	0.13	0.08	0.12	0.16	0.19	0.22
6	0.19	0.17	0.22	0.20	0.08	0.08	0.11	0.07	0.11	0.17	0.17	0.20
7	0.19	0.15	0.19	0.17	0.13	0.09	0.14	0.06	0.13	0.16	0.19	0.21
8	0.23	0.11	0.19	0.21	0.12	0.15	0.11	0.08	0.13	0.16	0.20	0.17
9	0.23	0.07	0.06	0.17	0.19	0.12	0.14	0.11	0.11	0.17	0.17	0.13
10	0.21	0.05	0.08	0.14	0.16	0.12	0.15	0.11	0.07	0.16	0.15	0.19
11	0.20	0.09	0.18	0.18	0.16	0.12	0.11	0.08	0.10	0.14	0.18	0.21
12	0.17	0.22	0.17	0.11	0.19	0.15	0.13	0.13	0.10	0.07	0.15	0.18
13	0.20	0.22	0.14	0.18	0.18	0.15	0.12	0.12	0.08	0.16	0.17	0.18
14	0.15	0.21	0.14	0.17	0.18	0.12	0.09	0.12	0.12	0.17	0.14	0.20
15	0.18	0.22	0.22	0.18	0.19	0.09	0.11	0.06	0.14	0.12	0.15	0.24
16	0.19	0.21	0.14	0.18	0.17	0.15	0.10	0.09	0.13	0.15	0.19	0.23
17	0.19	0.18	0.19	0.16	0.17	0.16	0.10	0.09	0.11	0.16	0.18	0.22
18	0.20	0.16	0.18	0.19	0.16	0.12	0.05	0.08	0.07	0.18	0.19	0.19
19	0.18	0.14	0.22	0.20	0.12	0.10	0.07	0.02	0.08	0.16	0.15	0.11
20	0.18	0.02	0.21	0.17	0.06	0.12	0.10	0.04	0.08	0.14	0.19	0.23
21	0.20	0.09	0.20	0.14	0.14	0.06	0.08	0.07	0.09	0.14	0.18	0.20
22	0.17	0.09	0.20	0.16	0.07	0.07	0.14	0.11	0.08	0.12	0.19	0.20
23	0.20	0.14	0.20	0.18	0.11	0.11	0.14	0.11	0.11	0.16	0.08	0.22
24	0.21	0.19	0.13	0.17	0.18	0.05	0.12	0.09	0.10	0.13	0.17	0.20
25	0.19	0.22	0.15	0.02	0.17	0.16	0.13	0.10	0.14	0.08	0.23	0.20
26	0.14	0.13	0.19	0.11	0.15	0.17	0.13	0.12	0.13	0.07	0.21	0.17
27	0.22	0.10	0.17	0.12	0.12	0.15	0.09	0.13	0.08	0.17	0.23	0.16
28	0.20	0.12	0.17	0.11	0.13	0.14	0.08	0.12	0.09	0.19	0.21	0.20
29	0.21	0.11	0.13	0.15	0.15	0.13	0.02	0.08	0.09		0.15	0.17
30	0.16	0.21	0.16	0.15	0.15	0.13	0.09	0.12	0.07		0.19	0.20
31	0.11		0.11	0.15		0.09		0.12	0.14		0.18	
MAX	0.23	0.22	0.23	0.21	0.19	0.17	0.15	0.14	0.14	0.19	0.23	0.24
MEAN	0.17	0.13	0.17	0.16	0.14	0.12	0.11	0.10	0.10	0.13	0.18	0.19
MIN	0.08	0.02	0.06	0.02	0.06	0.05	0.02	0.02	0.07	0.02	0.08	0.11
SUM	5.37	3.95	5.29	4.88	4.16	3.71	3.17	2.99	3.21	3.76	5.44	5.80

## APPENDIX D

### Daily Average Stage for STA-2 Treatment Cells

**Table D-1.** Cell 1 daily average stage (ft NGVD) for WY 2002.

Day	May-01	Jun-01	Jul-01	Aug-01	Sep-01	Oct-01	Nov-01	Dec-01	Jan-02	Feb-02	Mar-02	Apr-02
1	10.273	10.492	11.178	12.832	12.248	13.72	12.979	12.504	10.676	10.459	10.735	10.133
2	10.222	10.594	11.151	12.922	12.3	13.661	12.846	12.49	10.655	10.459	10.732	10.143
3	10.16	10.658	11.128	12.994	12.278	13.384	12.652	12.419	10.687	10.422	10.734	10.079
4	10.242	10.706	11.152	13.044	12.257	13.21	12.665	12.341	10.71	10.413	10.746	10.137
5	10.455	10.74	11.287	13.154	12.259	13.224	12.715	12.273	10.688	10.413	10.489	10.177
6	10.463	10.796	11.305	13.183	12.249	13.052	12.863	12.236	10.672	10.37	10.608	10.128
7	10.428	10.905	11.299	13.195	12.236	12.91	12.82	12.155	10.624	10.386	10.474	10.123
8	10.389	11.031	11.291	13.188	12.301	12.747	12.703	12.146	10.581	10.41	10.508	10.124
9	10.354	11.064	11.338	13.162	12.436	12.669	12.63	12.074	10.634	10.318	10.494	10.111
10	10.316	11.064	11.496	12.983	12.655	12.528	12.663	11.787	10.598	10.326	10.564	10.083
11	10.284	11.056	11.701	12.811	13.179	12.473	12.572	11.642	10.578	10.514	10.564	10.107
12	10.245	11.056	11.775	12.645	13.354	12.426	12.473	11.694	10.584	10.655	10.438	10.067
13	10.204	11.056	11.825	12.506	13.461	12.503	12.419	11.756	10.545	10.753	10.428	10.082
14	10.168	11.058	11.869	12.422	13.593	12.564	12.484	11.791	10.511	10.764	10.409	10.067
15	10.131	11.073	11.901	12.396	13.619	12.655	12.513	11.808	10.479	10.891	10.393	10.112
16	10.11	11.08	11.934	12.361	13.247	12.68	12.497	11.819	10.562	11.125	10.377	10.09
17	10.099	11.078	12.025	12.368	12.754	12.559	12.47	11.822	10.624	11.325	10.35	10.091
18	10.046	11.073	12.09	12.311	12.814	12.617	12.448	11.818	10.626	11.16	10.333	10.096
19	10.045	11.068	12.145	12.27	12.974	12.821	12.447	11.81	10.621	11.055	10.303	10.094
20	10.045	11.052	12.181	12.244	12.91	13.024	12.533	11.796	10.612	11.034	10.295	10.081
21	10.019	11.038	12.241	12.232	12.797	13.233	12.589	11.779	10.599	10.973	10.287	10.079
22	9.957	11.074	12.325	12.341	12.564	13.277	12.618	11.763	10.61	10.918	10.267	10.078
23	10.025	11.115	12.547	12.32	12.395	13.232	12.644	11.747	10.606	11.052	10.248	10.042
24	10.114	11.14	12.762	12.326	12.276	13.22	12.652	11.737	10.527	11.076	10.241	10.126
25	10.141	11.143	12.78	12.346	12.277	13.09	12.662	11.726	10.438	11.052	10.227	10.052
26	10.272	11.138	12.808	12.376	12.273	13.029	12.672	11.749	10.45	10.929	10.205	10.023
27	10.378	11.144	12.832	12.37	12.333	12.892	12.668	11.742	10.528	10.873	10.199	10.048
28	10.432	11.175	12.854	12.301	12.735	12.713	12.576	11.695	10.528	10.834	10.25	9.977
29	10.451	11.199	12.846	12.267	13.274	12.529	12.563	11.311	10.479		10.175	10.018
30	10.46	11.195	12.843	12.239	13.569	12.58	12.534	10.618	10.511		10.166	9.992
31	10.459		12.826	12.227		12.8		10.581	10.503		10.134	

**Table D-1 (continued).** Cell 1 daily average stage (ft NGVD) for WY 2003.

Day	May-02	Jun-02	Jul-02	Aug-02	Sep-02	Oct-02	Nov-02	Dec-02	Jan-03	Feb-03	Mar-03	Apr-03
1	9.987	9.881	11.35	11.415	13.072	12.897	13.118	13.12	13.084	13.376	13.18	13.537
2	9.974	10.103	11.364	11.411	13.375	12.878	13.087	13.105	13.114	13.492	13.152	13.398
3	9.921	10.262	11.291	11.404	13.538	12.851	13.053	13.14	13.288	13.52	13.143	13.306
4	9.93	10.369	11.363	11.397	13.726	12.887	13.021	13.129	13.398	13.463	13.159	13.247
5	9.869	10.419	11.479	11.42	13.873	13.042	12.99	13.107	13.452	13.572	13.171	13.202
6	9.909	10.453	11.514	11.506	13.848	13.068	13.113	13.093	13.454	13.555	13.175	13.172
7	9.875	10.168	11.531	11.668	13.62	13.185	13.153	13.07	13.367	13.596	13.18	13.144
8	9.894	9.947	11.64	11.849	13.535	13.178	13.113	13.049	13.286	13.643	13.185	13.116
9	9.939	10.262	11.513	12.095	13.543	13.143	13.078	13.224	13.328	13.659	13.185	13.116
10	9.931	10.055	11.436	12.194	13.498	13.133	13.05	13.745	13.489	13.66	13.193	13.124
11	9.927	9.824	11.369	12.183	13.594	13.072	13.017	14.002	13.576	13.657	13.358	13.094
12	10.006	9.902	11.482	12.181	13.813	13.04	12.989	14.054	13.524	13.637	13.546	13.066
13	10.058	10.043	11.966	12.242	13.841	13.008	12.965	13.986	13.404	13.636	13.646	13.04
14	10.145	10.104	11.954	12.414	13.759	13.112	12.934	13.776	13.356	13.575	13.695	13.178
15	10.221	10.392	11.741	12.59	13.605	13.541	12.903	13.576	13.373	13.436	13.732	13.351
16	10.271	10.635	11.446	12.587	13.475	13.482	12.906	13.424	13.415	13.346	13.76	13.483
17	10.273	10.556	11.303	12.555	13.347	13.397	12.995	13.326	13.399	13.292	13.843	13.427
18	10.227	10.608	11.072	12.544	13.264	13.317	13.686	13.266	13.306	13.247	14.097	13.41
19	10.21	10.546	11.163	12.538	13.226	13.248	13.666	13.22	13.242	13.212	13.922	13.194
20	10.216	10.487	10.835	12.534	13.184	13.195	13.612	13.287	13.198	13.235	13.704	13.16
21	10.181	10.641	10.807	12.562	13.146	13.156	13.663	13.47	13.172	13.395	13.71	13.126
22	10.111	11.014	10.972	12.585	13.111	13.119	13.744	13.564	13.211	13.489	13.702	13.14
23	10	10.884	10.709	12.59	13.079	13.09	13.68	13.471	13.172	13.532	13.68	13.117
24	9.921	11.05	10.669	12.585	13.05	13.058	13.511	13.439	13.139	13.392	13.78	13.049
25	9.876	11.299	10.613	12.575	13.024	13.088	13.386	13.37	13.115	13.328	13.803	13.001
26	9.826	11.396	10.892	12.563	12.991	13.135	13.308	13.287	13.186	13.309	13.634	13.21
27	9.783	11.316	11.3	12.55	12.96	13.401	13.253	13.232	13.222	13.253	13.556	13.366
28	9.755	11.224	11.369	12.546	12.934	13.294	13.209	13.188	13.227	13.212	13.919	13.267
29	9.719	11.322	11.395	12.569	12.912	13.233	13.171	13.157	13.268		14.053	13.562
30	9.639	11.268	11.407	12.607	12.879	13.188	13.14	13.126	13.265		13.969	13.751
31	9.659		11.415	12.7		13.149		13.104	13.29		13.753	

**Table D-1 (continued).** Cell 1 daily average stage (ft NGVD) for WY 2004.

Day	May-03	Jun-03	Jul-03	Aug-03	Sep-03	Oct-03	Nov-03	Dec-03	Jan-04	Feb-04	Mar-04	Apr-04
1	13.646	13.723	13.199	13.655	14.046	14.244	12.87	12.821	12.986	13.827	13.34	12.773
2	13.322	13.521	13.16	13.857	13.989	14.081	12.858	12.947	12.963	13.966	13.273	12.743
3	13.085	13.412	13.229	13.896	13.829	13.79	12.869	13.061	12.95	13.921	13.225	12.716
4	12.994	13.396	13.226	13.885	13.788	13.572	13.092	13.074	12.933	13.644	13.192	12.688
5	13.024	13.45	13.191	13.811	13.839	13.573	13.268	13.068	12.915	13.453	13.161	12.659
6	13.032	13.686	13.162	13.849	13.665	13.451	13.547	13.06	12.895	13.335	13.153	12.631
7	13.015	13.715	13.162	13.678	13.559	13.343	13.819	13.035	12.87	13.255	13.162	12.607
8	12.989	13.893	13.138	13.607	13.601	13.268	13.585	13.009	12.849	13.195	13.163	12.584
9	12.964	13.971	13.099	13.785	13.655	13.215	13.433	12.986	12.832	13.152	13.164	12.563
10	12.933	13.91	13.062	13.889	13.752	13.175	13.334	12.986	12.813	13.125	13.145	12.547
11	12.904	13.741	13.028	14.047	13.8	13.174	13.264	12.986	12.793	13.095	13.113	12.534
12	12.961	13.489	12.992	14.167	13.671	13.215	13.21	13.043	12.774	13.072	13.091	12.825
13	13.008	13.359	12.957	14.018	13.57	13.218	13.169	13.025	12.769	13.05	13.075	13.173
14	13.125	13.28	12.973	13.85	13.508	13.218	13.134	13.095	12.784	13.03	13.084	13.296
15	13.135	13.225	13.097	13.732	13.614	13.19	13.101	13.432	12.787	13.012	13.104	13.338
16	13.11	13.194	13.268	13.5	13.611	13.155	13.072	13.732	12.811	12.996	13.163	13.316
17	13.097	13.178	13.49	13.389	13.506	13.12	13.03	13.602	12.883	12.972	13.2	13.252
18	13.064	13.155	13.591	13.449	13.395	13.101	12.997	13.56	12.896	12.945	13.167	13.2
19	13.059	13.229	13.708	13.432	13.309	13.078	12.973	13.521	12.901	12.919	13.134	13.165
20	13.038	13.204	13.819	13.568	13.25	13.059	12.949	13.414	13.018	12.896	13.104	13.129
21	12.999	13.362	13.716	13.8	13.208	13.035	12.924	13.315	13.072	12.873	13.072	13.099
22	13.043	13.784	13.604	13.784	13.165	13.027	12.895	13.246	13.097	12.85	13.046	13.075
23	13.05	14.032	13.526	13.849	13.13	13.021	12.87	13.205	13.113	12.829	13.014	13.048
24	12.861	14.042	13.588	13.898	13.099	12.991	12.846	13.175	13.12	12.808	12.986	13.015
25	12.815	13.796	13.44	13.937	13.104	12.977	12.827	13.14	13.133	12.84	12.961	12.989
26	13.212	13.61	13.338	13.955	13.41	12.979	12.803	13.116	13.135	13.136	12.933	12.96
27	13.444	13.583	13.508	13.7	13.769	12.956	12.782	13.09	13.117	13.465	12.905	12.937
28	13.91	13.438	13.672	13.526	13.806	12.938	12.759	13.068	13.093	13.543	12.877	12.91
29	14.145	13.331	13.737	13.643	14.034	12.933	12.735	13.049	13.062	13.437	12.853	12.908
30	14.162	13.255	13.663	13.758	14.206	12.912	12.708	13.029	13.102		12.83	12.88
31	13.949		13.582	14.067		12.888		13.009	13.405		12.803	

**Table D-1 (continued).** Cell 1 daily average stage (ft NGVD) for WY 2005.

Day	May-04	Jun-04	Jul-04	Aug-04	Sep-04	Oct-04	Nov-04	Dec-04	Jan-05	Feb-05	Mar-05	Apr-05
1	12.852	12.23	13.447	13.869	13.727	14.437	13.058	13.076	12.78	13.212	13.872	13.509
2	12.819	12.191	13.444	14.137	13.51	14.211	13.039	13.055	12.848	13.203	13.707	13.502
3	12.823	12.161	13.367	14.221	13.294	13.947	13.025	13.034	12.796	13.188	13.553	13.464
4	12.84	12.175	13.366	14.262	13.421	13.785	13.009	13.011	12.772	13.188	13.58	13.363
5	12.809	12.215	13.404	14.248	13.678	13.537	12.997	12.99	13.009	13.195	13.573	13.293
6	12.78	12.237	13.433	14.144	14.003	13.377	12.981	12.972	13.238	13.197	13.468	13.238
7	12.748	12.323	13.409	14.018	14.306	13.499	12.963	12.952	13.358	13.2	13.414	13.197
8	12.716	12.546	13.561	13.854	14.381	13.475	12.946	12.931	13.331	13.2	13.383	13.518
9	12.689	12.615	13.606	13.736	14.531	13.378	12.93	12.95	13.264	13.2	13.483	13.559
10	12.66	12.715	13.522	13.721	14.495	13.309	12.913	12.933	13.223	13.197	13.752	13.524
11	12.638	12.811	13.511	13.684	14.232	13.336	12.9	12.915	13.186	13.187	13.88	13.466
12	12.607	12.826	13.604	13.732	13.898	13.351	12.887	12.968	13.156	13.176	13.925	13.476
13	12.576	12.841	13.538	13.828	13.669	13.418	12.872	12.947	13.129	13.168	13.768	13.377
14	12.539	12.829	13.438	13.798	13.535	13.398	12.892	12.921	13.217	13.163	13.579	13.299
15	12.511	12.799	13.417	13.697	13.437	13.422	12.961	12.895	13.55	13.155	13.486	13.239
16	12.5	12.845	13.479	13.968	13.354	13.395	12.95	12.871	13.78	13.14	13.474	13.192
17	12.479	13.019	13.464	14.026	13.32	13.374	12.93	12.871	13.794	13.133	13.636	13.2
18	12.45	13.173	13.468	14.262	13.296	13.36	12.912	12.871	13.637	13.122	13.814	13.324
19	12.53	13.41	13.648	14.416	13.249	13.348	12.982	12.855	13.522	13.115	13.902	13.384
20	12.655	13.445	13.77	14.377	13.341	13.311	12.969	12.833	13.434	13.107	13.782	13.47
21	12.575	13.528	13.655	13.992	13.595	13.319	13.032	12.813	13.356	13.098	13.598	13.404
22	12.526	13.592	13.54	13.816	14.14	13.274	13.022	12.795	13.36	13.087	13.641	13.317
23	12.487	13.655	13.491	13.895	14.396	13.238	13.049	12.78	13.293	13.08	13.681	13.256
24	12.54	13.559	13.43	13.877	14.403	13.217	13.031	12.791	13.302	13.07	13.713	13.208
25	12.509	13.459	13.409	13.98	14.26	13.181	13.097	12.8	13.268	13.137	13.646	13.164
26	12.454	13.389	13.427	14.166	14.26	13.157	13.049	12.786	13.226	13.563	13.63	13.126
27	12.415	13.311	13.55	14.279	14.474	13.133	13.121	12.763	13.28	13.733	13.665	13.155
28	12.379	13.247	13.648	14.266	14.572	13.111	13.082	12.744	13.252	13.873	13.836	13.175
29	12.341	13.24	13.75	14.046	14.604	13.095	13.131	12.747	13.24		13.774	13.114
30	12.306	13.354	13.789	13.875	14.561	13.075	13.1	12.838	13.23		13.603	13.074
31	12.266		13.704	13.883		13.065		12.784	13.223		13.543	

**Table D-1 (continued).** Cell 1 daily average stage (ft NGVD) for WY 2006.

Day	May-05	Jun-05	Jul-05	Aug-05	Sep-05	Oct-05	Nov-05	Dec-05	Jan-06	Feb-06	Mar-06	Apr-06
1	13.046	13.566	14.155	13.66	13.864	14.157	12.958	12.127	13.056	12.582	13.325	13.313
2	13.024	13.949	14.006	13.943	13.914	14.031	13.313	12.116	13.034	12.545	13.331	13.256
3	13.033	14.123	13.945	13.967	14.011	14.1	13.306	12.105	13.014	12.523	13.276	13.214
4	13.255	14.198	13.957	13.936	14.091	14.231	12.996	12.102	12.992	12.846	13.247	13.178
5	13.68	14.212	13.905	13.731	14.242	14.331	12.837	12.116	12.973	13.495	13.278	13.147
6	13.907	14.227	13.874	13.573	14.279	14.351	12.588	12.096	12.953	13.816	13.206	13.113
7	13.881	14.173	13.785	13.47	14.289	14.381	12.436	12.07	12.927	14.127	13.136	13.085
8	13.75	14.096	13.777	13.437	14.174	14.323	12.53	12.093	12.907	14.159	13.104	13.056
9	13.564	13.992	13.91	13.514	13.977	14.167	12.313	12.117	12.886	14.034	13.078	13.037
10	13.438	14.057	13.937	13.438	13.825	14.206	12.2	12.102	12.869	13.802	13.052	13.021
11	13.352	14.18	13.913	13.369	13.706	14.149	12.099	12.09	12.851	13.612	13.03	12.994
12	13.284	14.189	13.956	13.574	13.789	14.192	12.014	12.073	12.829	13.479	13.009	12.968
13	13.229	13.959	13.883	13.505	13.774	14.155	11.966	12.058	12.812	13.383	12.986	12.939
14	13.189	13.728	13.794	13.439	13.659	13.962	11.955	12.052	12.806	13.313	12.965	12.913
15	13.158	13.587	13.716	13.419	13.57	13.768	11.951	12.355	12.776	13.262	12.938	12.887
16	13.135	13.483	13.604	13.335	13.506	13.608	11.95	12.655	12.756	13.227	13.066	12.86
17	13.102	13.532	13.491	13.344	13.457	13.491	11.933	12.743	12.742	13.196	13.047	13.02
18	13.071	13.455	13.512	13.299	13.428	13.403	12.627	12.615	12.723	13.169	13.003	13.009
19	13.041	13.457	13.497	13.245	13.407	13.575	12.057	12.78	12.704	13.145	12.973	13.006
20	13.011	13.658	13.413	13.231	13.649	13.925	12.787	13.081	12.687	13.125	13.172	13.173
21	13	13.815	13.338	13.334	13.741	13.947	12.585	13.282	12.671	13.104	13.343	13.262
22	13.042	13.776	13.283	13.482	13.646	13.872	12.649	13.383	12.654	13.085	13.349	13.236
23	13.012	13.825	13.241	13.689	13.704	13.761	12.48	13.36	12.638	13.064	13.346	13.192
24	12.982	13.918	13.258	13.841	13.66	13.687	12.261	13.294	12.619	13.046	13.866	13.198
25	12.953	13.79	13.276	13.994	13.582	14.139	12.183	13.248	12.601	13.038	14.089	13.162
26	12.941	13.701	13.333	13.72	13.531	14.409	12.141	13.21	12.578	13.383	14.203	13.125
27	13.108	13.77	13.306	13.31	13.732	14.473	12.132	13.173	12.557	13.464	14.069	13.097
28	13.194	13.958	13.272	13.569	14.007	14.309	12.116	13.145	12.535	13.399	13.803	13.056
29	13.281	14.09	13.302	13.73	14.072	13.892	12.13	13.121	12.521		13.613	13.018
30	13.264	14.169	13.325	13.836	14.206	13.457	12.147	13.097	12.521		13.481	12.985
31	13.3		13.414	13.851		13.123		13.075	12.608		13.384	

**Table D-2. Cell 2 daily average stage (ft NGVD) for WY 2002.**

Day	May-01	Jun-01	Jul-01	Aug-01	Sep-01	Oct-01	Nov-01	Dec-01	Jan-02	Feb-02	Mar-02	Apr-02
1	10.429	10.806	11.784	11.704	11.832	13.469	12.255	11.774	12.572	11.515	11.675	11.48
2	10.403	10.861	11.792	11.876	11.94	13.643	12.245	11.782	13.085	11.481	11.663	11.453
3	10.393	10.876	11.797	12.92	11.934	13.572	12.156	11.781	13.04	11.448	11.622	11.455
4	10.421	10.867	11.847	13.333	11.923	13.389	11.959	11.753	12.515	11.41	11.552	11.482
5	10.474	10.891	11.934	13.521	11.917	13.326	11.781	11.72	12.381	11.373	11.541	11.457
6	10.502	10.951	11.875	13.517	11.908	13.219	11.95	11.691	12.363	11.355	11.562	11.429
7	10.519	10.99	11.804	13.451	11.892	13.105	12.171	11.703	12.282	11.338	11.689	11.405
8	10.534	11.111	11.741	13.333	11.913	12.988	12.186	11.684	12.186	11.299	11.983	11.388
9	10.544	11.097	11.756	13.342	12.105	12.835	12.048	11.661	12.168	11.28	11.973	11.373
10	10.563	11.079	11.836	13.303	12.336	12.671	11.98	11.695	12.154	11.351	11.945	11.359
11	10.56	11.062	12.07	13.153	12.832	12.467	11.988	11.819	12.128	11.908	11.926	11.34
12	10.555	11.054	12.264	12.909	12.735	12.293	11.974	11.895	12.105	12.478	11.93	11.327
13	10.545	11.053	12.328	12.69	12.616	12.223	11.934	12.01	12.086	12.87	11.926	11.313
14	10.532	11.054	12.677	12.585	12.688	12.21	11.929	11.987	12.06	13.009	11.889	11.33
15	10.52	11.06	12.968	12.455	12.945	12.276	11.926	11.961	12.148	12.83	11.863	11.337
16	10.524	11.071	13.07	12.346	12.843	12.273	11.904	11.938	12.471	12.656	11.837	11.333
17	10.517	11.068	13.468	12.305	12.3	12.261	11.892	11.931	12.616	12.726	11.809	11.321
18	10.502	11.097	13.85	12.248	12.134	12.164	11.893	11.913	12.645	12.847	11.786	11.309
19	10.497	11.102	13.586	12.094	12.161	12.049	11.895	11.898	12.671	12.923	11.763	11.296
20	10.49	11.167	13.129	11.91	12.125	11.916	11.885	11.878	12.659	12.909	11.745	11.283
21	10.488	11.312	12.551	11.887	11.981	11.912	11.874	11.853	12.652	12.744	11.722	11.27
22	10.547	11.43	12.246	11.954	11.927	12.143	11.865	11.843	12.636	12.538	11.69	11.352
23	10.607	11.508	12.348	11.886	11.908	12.738	11.854	11.833	12.612	12.598	11.668	11.479
24	10.639	11.55	12.762	11.837	11.875	12.839	11.845	11.823	12.254	12.552	11.65	11.441
25	10.638	11.58	13.16	11.816	11.853	12.785	11.829	11.811	11.818	12.555	11.626	11.415
26	10.717	11.606	13.244	11.806	11.843	12.772	11.817	11.835	11.734	12.519	11.607	11.392
27	10.777	11.64	12.758	11.807	11.967	12.608	11.809	11.837	11.673	12.034	11.585	11.366
28	10.789	11.718	12.248	11.803	12.392	12.464	11.791	11.956	11.647	11.796	11.564	11.338
29	10.788	11.762	12.076	11.79	12.778	12.502	11.777	12.202	11.61		11.54	11.316
30	10.771	11.777	11.979	11.774	13.162	12.601	11.775	12.204	11.576		11.521	11.289
31	10.768		11.844	11.761		12.418		12.243	11.545		11.504	



**Table D-2 (continued).** Cell 2 daily average stage (ft NGVD) for WY 2003.

Day	May-02	Jun-02	Jul-02	Aug-02	Sep-02	Oct-02	Nov-02	Dec-02	Jan-03	Feb-03	Mar-03	Apr-03
1	11.261	10.887	12.484	11.488	12.422	11.888	12.442	12.6	12.088	12.365	12.072	12.395
2	11.238	10.988	12.828	11.465	12.437	11.892	12.425	12.593	12.087	12.413	12.073	12.262
3	11.2	11.195	13.043	11.45	12.446	11.886	12.403	12.581	12.036	12.431	12.073	12.226
4	11.17	11.288	13.044	11.437	12.629	11.887	12.38	12.566	11.949	12.425	12.076	12.217
5	11.14	11.255	12.93	11.425	12.692	11.886	12.35	12.561	11.859	12.54	12.081	12.212
6	11.11	11.197	12.636	11.415	12.708	11.883	12.338	12.549	11.777	12.592	12.079	12.208
7	11.083	11.155	12.291	11.411	12.727	11.88	12.312	12.529	11.689	12.594	12.079	12.203
8	11.061	11.137	12.658	11.405	12.778	11.88	12.291	12.515	11.703	12.692	12.079	12.191
9	11.029	11.143	12.915	11.401	12.767	11.879	12.273	12.566	11.654	12.83	12.079	12.206
10	11.002	11.115	13.007	11.393	12.74	11.874	12.254	13.005	11.621	12.9	12.077	12.25
11	10.968	11.091	12.986	11.381	12.676	11.875	12.24	13.403	11.623	12.866	12.088	12.245
12	10.937	11.126	12.965	11.374	12.591	11.868	12.227	13.309	11.76	12.833	12.041	12.225
13	10.925	11.335	12.919	11.393	12.421	11.864	12.199	12.625	11.924	12.748	12.003	12.209
14	10.927	11.589	12.827	11.491	12.35	11.885	12.188	12.444	11.963	12.759	11.961	12.135
15	10.918	12.134	12.77	11.787	12.35	12.018	12.177	12.405	11.913	12.761	11.956	12.047
16	10.913	12.581	12.483	11.815	12.338	12.065	12.189	12.378	11.841	12.763	12.054	12.015
17	10.907	12.729	12.432	11.832	12.216	12.076	12.342	12.356	11.75	12.76	12.474	12.009
18	10.89	12.769	12.253	11.862	12.005	12.089	12.627	12.338	11.723	12.761	12.952	12.018
19	10.883	12.74	12.132	11.872	11.947	12.093	12.663	12.323	11.717	12.751	13.165	12.049
20	10.887	12.557	12.033	11.889	11.939	12.093	12.593	12.337	11.826	12.764	13.1	12.282
21	10.947	12.575	11.905	11.852	11.933	12.091	12.52	12.426	11.902	12.841	13.057	12.415
22	11.012	12.843	11.902	11.913	11.925	12.074	12.529	12.443	11.91	12.882	12.994	12.325
23	10.976	12.983	12.059	12.099	11.918	12.058	12.647	12.338	11.921	12.871	12.955	12.201
24	10.943	13.015	11.928	12.214	11.914	12.043	12.704	12.207	11.88	12.654	12.954	12.055
25	10.913	13.173	11.768	12.318	11.914	12.024	12.711	12.147	11.899	12.481	13.112	11.935
26	10.907	13.265	11.662	12.24	11.905	12.032	12.71	12.123	11.992	12.458	12.988	12.018
27	10.931	13.262	11.603	12.177	11.899	12.321	12.689	12.108	12.005	12.286	12.814	12.432
28	11.004	13.149	11.572	12.074	11.892	12.426	12.665	12.098	12.061	12.126	13.126	12.597
29	11.001	12.804	11.547	12.236	11.883	12.439	12.641	12.088	12.109		13.176	12.737
30	10.937	12.284	11.525	12.356	11.869	12.45	12.619	12.085	12.182		12.824	12.753
31	10.919		11.51	12.416		12.45		12.089	12.238		12.573	

**Table D-2 (continued).** Cell 2 daily average stage (ft NGVD) for WY 2004.

Day	May-03	Jun-03	Jul-03	Aug-03	Sep-03	Oct-03	Nov-03	Dec-03	Jan-04	Feb-04	Mar-04	Apr-04
1	12.827	12.659	12.105	12.159	12.404	13.365	12.113	12.052	12.291	12.501	12.57	12.015
2	12.85	12.471	12.084	12.477	12.434	13.042	12.102	12.04	12.287	12.915	12.542	11.978
3	12.834	12.352	12.213	13.078	12.526	12.66	12.139	12.04	12.284	12.848	12.513	11.966
4	12.813	12.198	12.418	13.088	12.43	12.561	12.137	12.048	12.277	12.62	12.494	11.95
5	12.68	12.02	12.405	13.048	12.322	12.601	12.17	12.056	12.272	12.49	12.473	11.929
6	12.435	11.929	12.394	13.098	12.583	12.598	12.227	12.058	12.26	12.416	12.448	11.907
7	12.255	12.392	12.381	12.999	12.658	12.56	12.487	12.062	12.237	12.314	12.431	11.894
8	12.081	12.697	12.334	12.998	12.759	12.518	12.501	12.243	12.238	12.233	12.403	11.888
9	11.91	12.905	12.185	13.26	12.697	12.484	12.473	12.386	12.235	12.21	12.378	11.876
10	11.779	12.926	12.019	13.183	12.526	12.456	12.484	12.397	12.212	12.189	12.352	11.877
11	11.738	12.898	11.915	13.28	12.325	12.43	12.479	12.403	12.193	12.175	12.324	11.869
12	11.714	12.849	11.843	13.428	12.182	12.407	12.448	12.393	12.198	12.169	12.302	11.94
13	11.697	12.599	11.783	13.314	12.183	12.385	12.418	12.39	12.192	12.157	12.276	12.033
14	11.683	12.377	11.784	13.153	12.129	12.368	12.386	12.422	12.186	12.15	12.256	12.038
15	11.673	12.284	11.836	13.134	11.989	12.348	12.359	12.605	12.169	12.149	12.249	12.119
16	11.681	12.269	11.847	12.877	11.939	12.316	12.326	12.718	12.162	12.14	12.294	12.153
17	11.69	12.255	11.955	12.702	11.903	12.297	12.301	12.73	12.149	12.13	12.316	12.132
18	11.687	12.251	12.109	12.568	11.876	12.275	12.278	12.635	12.165	12.098	12.292	12.12
19	11.686	12.246	12.189	12.665	11.836	12.258	12.26	12.465	12.183	12.094	12.268	12.108
20	11.682	12.472	12.198	12.57	11.734	12.24	12.218	12.374	12.173	12.09	12.245	12.102
21	11.675	12.519	12.116	12.812	11.618	12.237	12.201	12.355	12.168	12.082	12.227	12.097
22	11.724	12.926	12	12.989	11.636	12.227	12.183	12.349	12.163	12.07	12.203	12.085
23	11.788	13.268	11.991	13.075	11.609	12.209	12.17	12.356	12.147	12.059	12.159	12.076
24	11.828	13.252	11.981	13.159	11.589	12.185	12.165	12.358	12.142	12.058	12.15	12.072
25	11.875	13.08	12.238	13.209	11.612	12.18	12.151	12.348	12.132	12.113	12.128	12.057
26	11.929	12.791	12.406	13.253	11.702	12.191	12.122	12.338	12.126	12.556	12.107	12.051
27	12.167	12.482	12.375	13.042	11.701	12.189	12.105	12.329	12.127	12.891	12.088	12.043
28	12.947	12.268	12.204	12.835	11.911	12.183	12.097	12.321	12.116	12.716	12.075	12.018
29	13.267	12.178	12.097	12.77	12.33	12.176	12.057	12.313	12.102	12.596	12.054	12.017
30	13.332	12.133	12.043	12.748	13.026	12.154	12.06	12.309	12.087		12.048	12.007
31	13.13		12.078	12.417		12.136		12.302	12.126		12.042	

**Table D-2 (continued).** Cell 2 daily average stage (ft NGVD) for WY 2005.

Day	May-04	Jun-04	Jul-04	Aug-04	Sep-04	Oct-04	Nov-04	Dec-04	Jan-05	Feb-05	Mar-05	Apr-05
1	11.999	11.263	11.95	12.941	13.226	13.991	11.828	11.678	11.655	11.711	11.993	12.208
2	11.983	11.227	11.877	13.509	13.026	13.8	11.84	11.66	11.64	11.709	11.976	12.1
3	12.004	11.212	11.866	13.604	12.78	13.572	11.838	11.652	11.624	11.705	11.98	11.995
4	12.024	11.25	11.845	13.619	12.786	13.312	11.878	11.652	11.617	11.705	12.16	11.879
5	12.016	11.295	11.844	13.601	13.114	13.038	11.897	11.652	11.617	11.698	12.512	11.769
6	12.001	11.348	11.849	13.536	13.345	12.61	11.91	11.654	11.623	11.699	12.419	11.697
7	11.985	11.557	11.895	13.416	13.611	12.499	11.915	11.654	11.619	11.704	12.266	11.688
8	11.966	12.2	12.062	13.001	13.739	12.692	11.928	11.654	11.617	11.703	12.223	11.791
9	11.947	12.122	12.083	12.808	13.819	12.498	11.923	11.661	11.615	11.719	12.376	11.782
10	11.934	12.052	12.079	12.762	13.764	12.289	11.895	11.67	11.615	11.73	12.946	11.779
11	11.918	11.998	12.09	12.619	13.294	12.256	11.898	11.663	11.62	11.719	13.276	11.754
12	11.894	11.916	12.121	12.498	12.881	12.33	11.842	11.655	11.624	11.706	13.463	11.693
13	11.869	11.829	12.081	12.794	12.66	12.379	11.86	11.654	11.631	11.706	13.389	11.673
14	11.831	11.781	11.988	12.905	12.442	12.302	11.873	11.635	11.663	11.701	13.08	11.625
15	11.799	11.74	11.94	12.781	12.429	12.282	11.851	11.607	11.713	11.693	12.587	11.533
16	11.792	11.733	11.862	13.049	12.267	12.223	11.822	11.625	11.718	11.685	12.524	11.425
17	11.763	11.721	11.895	13.293	12.129	12.067	11.836	11.634	11.731	11.677	12.813	11.485
18	11.734	11.788	11.877	13.595	12.036	11.92	11.772	11.645	11.724	11.667	13.149	11.487
19	11.708	12.098	11.99	13.819	12.052	11.93	11.756	11.676	11.706	11.656	13.362	11.478
20	11.684	12.353	12.687	13.852	12.085	11.905	11.756	11.662	11.716	11.651	13.359	11.472
21	11.666	12.358	12.66	13.063	12.563	11.899	11.742	11.662	11.717	11.647	13.031	11.459
22	11.641	12.445	12.538	12.661	13.206	11.938	11.727	11.662	11.72	11.636	12.884	11.448
23	11.614	12.395	12.323	12.821	13.691	11.987	11.721	11.671	11.717	11.632	12.98	11.441
24	11.584	12.2	12.209	13.061	13.808	11.994	11.718	11.696	11.717	11.628	13.035	11.423
25	11.56	12.055	12.098	13.23	13.753	11.938	11.712	11.737	11.716	11.632	12.879	11.406
26	11.514	12.031	11.922	13.477	14.015	11.888	11.705	11.757	11.723	11.795	12.601	11.394
27	11.484	11.987	11.871	13.653	14.026	11.858	11.703	11.734	11.722	11.921	12.516	11.402
28	11.392	11.961	12.092	13.679	14.088	11.801	11.701	11.728	11.717	12.015	12.811	11.404
29	11.329	11.976	12.707	13.555	14.137	11.824	11.692	11.713	11.716		13.012	11.393
30	11.303	11.947	12.749	13.354	14.116	11.818	11.685	11.659	11.715		12.758	11.385
31	11.274		12.798	13.332		11.815		11.664	11.711		12.392	

**Table D-2 (continued).** Cell 2 daily average stage (ft NGVD) for WY 2006.

Day	May-05	Jun-05	Jul-05	Aug-05	Sep-05	Oct-05	Nov-05	Dec-05	Jan-06	Feb-06	Mar-06	Apr-06
1	11.388	12.258	13.498	12.149	12.252	12.378	11.899	11.724	11.607	11.345	11.9	11.983
2	11.378	12.824	13.454	12.74	12.242	12.335	12.958	11.711	11.604	11.339	11.895	11.965
3	11.4	13.221	13.401	12.933	12.414	12.367	12.383	11.705	11.602	11.335	11.887	11.944
4	11.66	13.475	13.412	12.941	12.593	12.507	12.065	11.711	11.582	11.462	11.872	11.925
5	12.297	13.579	13.366	12.66	12.901	12.807	11.888	11.716	11.573	12.265	11.855	11.908
6	12.811	13.628	13.349	12.566	13.058	13.075	11.529	11.731	11.563	12.793	11.85	11.882
7	12.975	13.62	13.221	12.414	13.164	13.188	11.469	11.703	11.54	12.979	11.83	11.863
8	12.892	13.485	12.786	12.379	12.763	13.231	11.81	11.706	11.526	12.722	11.807	11.847
9	12.699	13.409	12.785	12.252	12.461	12.753	11.484	11.778	11.519	12.309	11.8	11.826
10	12.507	13.408	12.947	12.095	12.358	12.717	11.313	11.762	11.514	12.115	11.789	11.787
11	12.276	13.547	13.015	11.975	12.194	12.589	11.226	11.768	11.504	12.145	11.783	11.759
12	12.045	13.619	13.131	11.839	12.064	12.515	11.174	11.751	11.493	12.082	11.77	11.743
13	11.94	13.477	13.164	11.934	11.977	12.252	11.131	11.743	11.493	12.029	11.758	11.733
14	11.906	12.789	12.814	11.911	11.971	12.062	11.128	11.732	11.505	11.922	11.748	11.721
15	11.863	12.366	12.621	11.895	11.918	11.936	11.145	11.731	11.471	11.911	11.72	11.721
16	11.835	12.104	12.511	11.879	11.879	11.879	11.153	11.727	11.458	11.884	11.701	11.718
17	11.812	12.165	12.363	11.868	11.85	11.931	11.159	11.738	11.46	11.869	11.701	11.706
18	11.79	12.237	12.254	11.854	11.83	11.882	11.259	11.731	11.448	11.859	11.694	11.68
19	11.77	12.144	12.2	11.842	11.811	11.883	11.445	11.718	11.435	11.851	11.681	11.649
20	11.752	12.258	12.117	11.858	11.843	11.749	11.562	11.72	11.429	11.845	11.672	11.63
21	11.745	12.73	11.918	11.91	11.811	11.698	12.089	11.723	11.429	11.841	11.671	11.614
22	11.772	12.933	11.905	11.96	11.835	11.678	12.063	11.718	11.415	11.834	11.659	11.602
23	11.762	12.814	11.924	11.924	11.835	11.866	12.012	11.707	11.418	11.826	11.655	11.585
24	11.752	12.925	11.903	11.91	11.828	12.384	11.983	11.698	11.415	11.81	11.957	11.565
25	11.739	13.137	11.911	11.958	11.813	12.929	11.831	11.704	11.405	11.814	12.6	11.555
26	11.735	13.057	11.934	12.388	11.821	13.115	11.741	11.686	11.387	11.876	12.776	11.547
27	11.864	12.76	11.898	12.478	11.894	13.251	11.71	11.662	11.369	11.931	12.438	11.543
28	11.992	13.059	11.891	12.433	11.931	13.261	11.696	11.645	11.361	11.911	12.162	11.516
29	12.124	13.294	11.891	12.404	12.039	12.962	11.697	11.645	11.363		12.068	11.479
30	12.162	13.435	11.895	12.357	12.277	12.273	11.729	11.623	11.365		12.067	11.452
31	12.108		11.928	12.321		11.983		11.612	11.362		12.01	

**Table D-3. Cell 3 daily average stage (ft NGVD) for WY 2002.**

Day	May-01	Jun-01	Jul-01	Aug-01	Sep-01	Oct-01	Nov-01	Dec-01	Jan-02	Feb-02	Mar-02	Apr-02
1	10.444	10.54	10.844	11.38	11.706	12.178	12.358	10.838	12.776	11.29	11.604	11.673
2	10.407	10.646	10.796	10.953	11.756	12.384	12.419	10.825	13.277	11.32	11.505	11.618
3	10.357	10.702	10.752	11.944	11.774	12.488	12.233	10.809	13.163	11.338	11.515	11.581
4	10.355	10.663	10.752	12.001	11.818	12.708	11.883	10.793	12.614	11.342	11.536	11.646
5	10.352	10.644	10.851	12.042	11.821	12.772	11.218	10.776	12.404	11.341	11.524	11.768
6	10.341	10.689	10.939	11.983	11.811	12.948	11.345	10.761	12.316	11.34	11.471	11.741
7	10.317	10.878	11.013	12.008	11.798	13.028	11.571	10.788	12.28	11.348	11.575	11.713
8	10.296	10.976	11.072	11.999	11.84	12.932	11.791	10.932	12.213	11.354	11.888	11.689
9	10.264	11.099	11.177	11.941	12.019	12.783	11.713	11.033	12.157	11.349	11.934	11.635
10	10.291	11.134	11.348	11.915	11.736	12.577	11.596	11.178	12.146	11.405	11.927	11.592
11	10.34	11.192	11.544	11.888	11.009	12.293	11.546	11.494	12.165	11.747	11.908	11.622
12	10.384	11.345	11.712	11.853	11.282	12.152	11.496	11.83	12.171	11.822	11.889	11.782
13	10.461	11.299	11.836	11.817	11.41	12.08	11.453	11.947	12.183	12.035	11.864	11.869
14	10.546	11.248	12.05	11.772	11.544	12.025	11.415	11.939	12.177	12.117	11.848	11.857
15	10.616	11.21	12.223	11.709	11.884	11.979	11.377	11.957	12.264	12.231	11.831	11.873
16	10.581	11.164	12.245	11.611	12.129	11.944	11.34	11.969	12.528	12.482	11.816	11.867
17	10.536	11.117	12.715	11.553	11.882	11.869	11.294	11.979	12.602	12.734	11.797	11.832
18	10.492	11.077	13.114	11.502	11.678	11.67	11.26	11.988	12.614	12.892	11.801	11.771
19	10.485	11.034	12.799	11.494	11.501	11.496	11.229	11.986	12.63	12.967	11.89	11.791
20	10.485	10.986	12.349	11.518	11.596	11.402	11.195	11.992	12.617	12.905	11.913	11.86
21	10.383	10.982	11.761	11.51	11.795	11.574	11.159	11.973	12.608	12.713	11.883	11.797
22	10.335	11.066	11.473	11.593	11.743	12.098	11.12	11.968	12.601	12.581	11.898	11.739
23	10.362	11.083	11.814	11.681	11.752	12.52	11.085	11.974	12.573	12.537	11.886	11.668
24	10.373	11.052	11.836	11.718	11.823	12.191	11.056	11.986	12.151	12.584	11.87	11.668
25	10.343	11.018	11.996	11.688	11.914	12.216	11.02	12.005	11.389	12.61	11.843	11.668
26	10.398	10.974	12.236	11.636	11.963	11.653	10.986	12.082	11.2	12.492	11.813	11.604
27	10.427	10.956	12.037	11.639	11.778	11.342	10.949	12.075	11.234	11.956	11.796	11.536
28	10.413	10.962	11.733	11.695	11.238	11.608	10.915	12.125	11.255	11.803	11.749	11.477
29	10.431	10.925	11.725	11.7	11.383	11.625	10.888	12.15	11.244		11.735	11.422
30	10.498	10.883	11.713	11.698	11.826	11.793	10.862	12.163	11.217		11.716	11.374
31	10.498		11.569	11.683		12.043		12.322	11.268		11.693	

**Table D-3 (continued).** Cell 3 daily average stage (ft NGVD) for WY 2003.

Day	May-02	Jun-02	Jul-02	Aug-02	Sep-02	Oct-02	Nov-02	Dec-02	Jan-03	Feb-03	Mar-03	Apr-03
1	11.317	10.448	11.066	11.792	11.79	12.128	12.159	12.159	12.255	12.128	12.347	12.372
2	11.26	10.549	11.34	11.755	12.265	12.133	12.133	12.13	12.255	12.351	12.331	12.294
3	11.203	10.588	11.474	11.736	12.422	12.122	12.111	12.095	12.135	12.355	12.345	12.273
4	11.143	10.636	11.381	11.715	12.209	12.105	12.107	12.056	11.931	12.242	12.293	12.235
5	11.085	10.719	11.263	11.686	11.548	12.047	12.081	12.026	11.735	12.2	12.23	12.188
6	11.026	10.695	11.026	11.642	11.329	11.987	12.08	11.997	11.788	12.114	12.17	12.139
7	10.968	10.692	10.9	11.595	11.78	11.956	12.113	11.986	12.002	12.079	12.117	12.088
8	10.909	10.736	11.311	11.653	12.143	12.015	12.1	11.992	12.205	12.167	12.053	12.037
9	10.855	10.774	11.575	11.788	12.132	12.047	12.072	12.082	12.206	12.34	11.998	12.031
10	10.799	10.764	11.649	11.812	12.077	12.059	12.045	12.287	12.002	12.291	12.021	12.127
11	10.747	10.753	11.61	11.794	12.123	12.043	12.052	12.313	12.042	12.155	12.274	12.132
12	10.692	10.781	11.591	11.822	12.389	12.02	12.061	12.283	12.128	12.167	12.272	12.173
13	10.651	11.103	11.796	11.904	12.162	12.012	12.058	11.752	12.18	12.11	12.18	12.117
14	10.616	11.905	11.791	12.016	12.052	12.023	12.043	11.882	12.305	12.209	12.137	12.03
15	10.588	12.511	11.475	12.287	12.004	12.098	12.049	11.957	12.238	12.306	12.256	11.93
16	10.561	12.892	11.217	12.122	12.016	12.08	12.08	11.913	12.198	12.394	12.479	11.953
17	10.53	12.744	11.557	12.008	12.09	12.009	12.284	11.935	12.166	12.451	12.58	12.005
18	10.492	12.437	11.66	12.015	12.085	11.941	12.477	11.954	12.148	12.477	12.671	12.047
19	10.473	12.2	11.768	12.017	12.104	11.925	12.468	11.97	12.145	12.465	12.74	12.358
20	10.459	12.116	11.887	12.005	12.107	11.935	12.424	12.066	12.285	12.486	12.543	12.362
21	10.463	11.666	11.887	12.14	12.11	11.937	12.271	12.369	12.246	12.454	12.367	12.162
22	10.442	11.735	11.795	12.271	12.11	11.963	12.085	12.382	12.118	12.258	12.215	12.134
23	10.387	11.758	11.886	12.287	12.113	12.035	12.098	12.372	12.024	12.224	12.25	12.123
24	10.343	11.735	11.77	12.13	12.099	12.057	12.109	12.181	11.984	12.141	12.202	12.084
25	10.298	11.713	11.736	12.069	12.079	12.079	12.096	12.229	11.95	12.23	12.339	12.044
26	10.256	11.661	11.789	12.034	12.077	12.119	12.157	12.258	12.153	12.398	12.274	12.323
27	10.213	11.556	11.87	12.189	12.073	12.179	12.204	12.256	12.184	12.38	12.222	12.613
28	10.268	11.392	11.834	12.011	12.085	12.204	12.224	12.253	12	12.37	12.374	12.527
29	10.346	11.207	11.814	11.497	12.082	12.184	12.233	12.245	12.032		11.844	12.248
30	10.321	10.779	11.831	11.149	12.075	12.174	12.2	12.253	12.111		12.224	12.133
31	10.349		11.829	11.46		12.176		12.255	12.055		12.413	

**Table D-3 (continued).** Cell 3 daily average stage (ft NGVD) for WY 2004.

Day	May-03	Jun-03	Jul-03	Aug-03	Sep-03	Oct-03	Nov-03	Dec-03	Jan-04	Feb-04	Mar-04	Apr-04
1	11.938	11.728	12.126	11.5	11.122	11.214	11.277	12.088	12.139	11.602	11.707	11.046
2	12.27	12.016	12.093	11.727	10.945	11.078	11.268	12.128	12.121	11.305	11.698	11.005
3	12.481	12.127	12.088	12.085	11.071	11.153	11.24	12.183	12.075	11.373	11.705	10.976
4	12.598	12.055	12.041	11.547	11.087	11.445	11.261	12.209	12.032	11.862	11.71	10.941
5	12.329	12.024	11.995	11.125	10.725	11.588	11.415	12.166	11.988	11.9	11.693	10.91
6	12.18	11.733	11.95	11.003	10.875	11.832	11.408	12.13	11.977	11.927	11.649	10.878
7	12.117	11.784	11.898	10.962	11.474	11.96	11.403	12.069	11.96	11.96	11.609	10.855
8	12.05	11.457	11.845	11.191	11.466	11.921	11.721	12.02	11.917	11.956	11.569	10.832
9	11.991	11.537	11.788	11.666	11.37	11.869	11.715	12.033	11.875	11.928	11.525	10.81
10	11.952	12.177	11.732	11.227	11.154	11.821	11.851	12.192	11.841	11.949	11.48	10.795
11	11.985	12.222	11.67	11.113	11.12	11.776	12.128	12.304	11.788	11.953	11.436	10.783
12	12.021	11.764	11.583	11.212	11.109	11.732	12.133	12.25	11.805	11.923	11.396	10.933
13	12.178	12.079	11.492	11.15	11.123	11.687	12.133	12.197	11.777	11.925	11.353	11.139
14	12.192	12.151	11.434	11.058	11.12	11.648	12.131	12.189	11.742	11.923	11.319	11.132
15	12.149	12.267	11.425	11.337	11.11	11.619	12.13	12.095	11.706	11.946	11.295	11.157
16	12.117	12.258	11.404	11.184	11.069	11.582	12.131	11.82	11.697	11.951	11.313	11.175
17	12.166	12.232	11.368	11.47	11.058	11.537	12.136	12.024	11.683	11.938	11.319	11.146
18	12.142	12.229	11.309	10.96	11.044	11.507	12.139	12.151	11.672	11.937	11.323	11.109
19	12.169	12.214	11.413	10.878	11.041	11.467	12.139	12.224	11.668	11.905	11.312	11.078
20	12.268	12.329	11.553	10.651	11.006	11.433	12.131	12.267	11.701	11.901	11.311	11.053
21	12.216	12.18	11.524	10.715	10.999	11.399	12.091	12.231	11.741	11.901	11.3	11.026
22	12.199	12.352	11.306	10.939	10.978	11.382	12.038	12.236	11.711	11.877	11.265	10.995
23	12.218	12.541	11.269	10.907	10.945	11.362	12.03	12.248	11.669	11.838	11.218	10.973
24	12.39	12.058	11.053	10.993	10.912	11.338	12.013	12.255	11.622	11.854	11.189	10.947
25	12.51	11.688	11.314	10.973	10.913	11.326	11.971	12.255	11.584	11.948	11.203	10.918
26	12.755	12.007	11.271	11.073	11.008	11.322	12.046	12.255	11.603	12.182	11.201	10.891
27	12.785	12.108	11.178	10.875	11.561	11.299	12.158	12.25	11.764	11.627	11.191	10.869
28	12.461	12.056	11.082	11.044	11.389	11.279	12.159	12.218	11.843	11.479	11.171	10.84
29	11.891	12.158	11.197	11.033	11.221	11.293	12.122	12.197	11.878	11.695	11.142	10.829
30	11.553	12.151	11.508	10.695	11.239	11.299	12.053	12.187	11.934		11.116	10.805
31	11.278		11.456	10.476		11.284		12.143	12.049		11.088	

**Table D-3 (continued).** Cell 3 daily average stage (ft NGVD) for WY 2005.

Day	May-04	Jun-04	Jul-04	Aug-04	Sep-04	Oct-04	Nov-04	Dec-04	Jan-05	Feb-05	Mar-05	Apr-05
1	10.782	10.251	11.221	11.613	11.353	12.289	11.887	10.7	10.881	10.691	11.517	10.703
2	10.752	10.227	11.079	11.698	11.171	11.974	11.916	10.816	10.862	10.668	10.95	10.697
3	10.758	10.317	11.065	11.555	11.221	11.634	11.941	10.921	10.85	10.662	11	10.711
4	10.758	10.498	11.043	11.555	11.175	11.309	11.964	10.907	10.83	10.649	11.141	10.685
5	10.73	10.488	11.023	11.556	11.412	11.022	11.988	10.899	10.816	10.639	11.127	10.675
6	10.703	10.655	11.003	11.516	11.615	10.96	12.006	10.878	10.796	10.627	10.957	10.649
7	10.677	10.922	11.006	11.438	11.726	10.91	11.992	10.867	10.786	10.615	10.848	10.627
8	10.651	11.386	11.151	11.174	11.726	10.886	12.013	10.849	10.774	10.604	10.889	10.99
9	10.625	11.608	11.157	11.258	11.779	10.678	12.084	10.84	10.761	10.6	11.042	11.155
10	10.619	11.779	11.123	11.719	11.995	10.564	12.093	10.828	10.75	10.595	11.521	11.055
11	10.596	11.833	11.122	11.956	11.835	10.608	12.145	10.81	10.727	10.575	11.485	10.89
12	10.57	11.724	11.184	11.877	11.508	10.968	12.22	10.781	10.713	10.552	11.606	10.832
13	10.549	11.593	11.091	12.12	11.162	10.945	12.198	10.771	10.71	10.543	11.476	10.813
14	10.511	11.479	10.947	12.297	11.04	10.77	12.172	10.763	10.749	10.532	10.856	10.783
15	10.478	11.425	10.982	12.287	11.017	10.845	12.108	10.794	10.987	10.514	10.583	10.764
16	10.459	11.386	10.857	12.367	11.036	10.825	12.044	10.767	11.393	10.505	10.721	10.729
17	10.436	11.449	10.993	12.402	11.269	10.794	11.976	10.765	11.678	10.491	10.715	10.699
18	10.402	11.579	10.892	12.395	11.186	10.769	11.913	10.77	11.782	10.479	11.052	10.793
19	10.371	11.784	10.741	12.418	11.201	10.852	11.765	10.761	11.589	10.464	11.244	10.912
20	10.34	11.831	11.322	12.245	11.098	10.962	11.562	10.75	11.349	10.451	11.303	10.879
21	10.313	11.909	11.437	11.428	11.011	11.261	11.37	10.791	11.038	10.441	10.811	10.873
22	10.285	11.951	11.401	10.974	11.175	11.396	10.982	10.782	10.904	10.435	10.797	10.84
23	10.253	11.973	11.163	11.153	11.585	11.524	10.78	10.78	10.808	10.422	10.864	10.807
24	10.219	11.889	11.154	11.439	11.639	11.619	10.604	10.838	10.799	10.408	10.785	10.784
25	10.184	11.618	11.169	11.41	11.644	11.674	10.752	10.901	10.782	10.6	10.598	10.744
26	10.151	11.55	10.981	11.48	12.412	11.768	10.748	10.922	10.765	11.328	10.429	10.719
27	10.149	11.506	11.011	11.54	12.401	11.829	10.73	10.917	10.759	11.795	10.552	10.729
28	10.241	11.475	11.277	11.401	12.361	11.84	10.723	10.936	10.74	11.995	10.507	10.721
29	10.311	11.487	11.561	11.313	12.412	11.849	10.695	10.915	10.732		10.469	10.678
30	10.308	11.395	11.128	11.248	12.427	11.867	10.682	10.905	10.716		10.527	10.644
31	10.282		11.514	11.462		11.854		10.897	10.706		10.493	



**Table D-3 (continued).** Cell 3 daily average stage (ft NGVD) for WY 2006.

Day	May-05	Jun-05	Jul-05	Aug-05	Sep-05	Oct-05	Nov-05	Dec-05	Jan-06	Feb-06	Mar-06	Apr-06
1	10.625	10.909	11.811	11.157	11.3	11.698	10.783	11.763	10.583	10.375	11.127	10.646
2	10.611	11.296	11.659	11.484	11.241	12.005	10.864	11.758	10.573	10.357	11.085	10.628
3	10.636	11.543	11.305	10.947	11.319	11.918	11.149	11.753	10.556	10.344	11.074	10.607
4	10.807	11.938	11.379	10.616	11.294	11.579	10.861	11.745	10.527	10.518	11.046	10.586
5	11.126	12.206	11.067	10.703	11.331	11.683	11.066	11.741	10.514	11.156	11.006	10.565
6	11.414	12.38	10.832	11.127	11.354	11.672	10.745	11.752	10.491	11.709	10.945	10.539
7	11.056	12.476	10.619	11.34	11.317	11.605	10.908	11.75	10.468	11.512	10.983	10.518
8	10.976	12.407	10.513	11.479	11.22	11.592	11.262	11.748	10.452	11.284	10.904	10.497
9	10.915	12.272	10.77	11.479	11.183	11.411	11.29	11.778	10.468	10.985	10.796	10.481
10	10.864	12.02	11.154	11.302	11.465	10.788	11.148	11.792	10.541	10.628	10.777	10.469
11	10.851	12.127	11.169	11.075	11.22	10.784	11.008	11.782	10.582	10.857	10.776	10.454
12	10.828	12.312	11.02	10.994	10.936	11.18	11.117	11.789	10.57	11.086	10.767	10.425
13	10.8	12.136	10.855	11.2	10.747	10.96	11.128	11.777	10.559	11.067	10.736	10.402
14	10.779	11.183	10.588	11.252	10.867	10.822	11.133	11.771	10.556	11.025	10.733	10.38
15	10.764	10.669	10.553	11.264	10.835	10.686	11.14	11.753	10.52	11.006	10.766	10.362
16	10.743	10.355	10.678	11.2	10.829	10.602	11.152	11.59	10.502	10.976	10.704	10.345
17	10.719	10.553	10.828	11.014	10.812	10.834	11.165	11.382	10.495	10.967	10.677	10.325
18	10.697	10.855	10.796	10.825	10.793	10.901	11.238	11.274	10.495	10.943	10.687	10.425
19	10.669	10.893	10.767	10.852	10.776	11.092	11.382	11.213	10.561	10.934	10.645	10.588
20	10.644	11.073	10.791	10.89	11.025	11.175	11.508	10.744	10.614	10.941	10.575	10.615
21	10.635	11.023	10.676	10.991	11.087	11.309	11.851	10.624	10.597	10.906	10.535	10.584
22	10.672	10.899	10.739	11.146	11.111	10.705	11.973	10.776	10.576	10.883	10.573	10.565
23	10.649	10.677	10.751	11.102	11.189	10.762	11.87	10.77	10.578	10.864	10.584	10.541
24	10.624	10.609	10.761	11.306	11.231	11.056	11.794	10.756	10.568	10.895	10.942	10.514
25	10.601	10.903	10.831	11.645	11.201	11.02	11.74	10.745	10.532	10.886	11.863	10.492
26	10.607	11.072	10.891	11.609	11.162	10.99	11.752	10.708	10.512	11.114	12.235	10.472
27	10.747	10.902	10.88	11.848	11.269	10.955	11.736	10.684	10.503	11.285	11.625	10.465
28	10.826	11.283	10.859	11.546	11.802	10.92	11.723	10.665	10.47	11.155	10.595	10.432
29	10.912	11.527	10.851	11.329	11.846	10.885	11.727	10.654	10.43		10.433	10.399
30	10.945	11.59	10.851	11.311	11.511	10.855	11.758	10.62	10.419		10.674	10.372
31	10.891		10.904	11.311		10.82		10.604	10.402		10.647	