Appendix 3A-5: Water Year 2012 Annual Flows and Total Phosphorus Loads and Concentrations by Structure

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This appendix provides the annual flows, and total phosphorus (TP) loads and flow-weighted mean concentrations (FWMCs) by structure for Water Year 2012 (WY2012) (May 1, 2011–April 30, 2012). **Tables 1** through **5** present this information for Stormwater Treatment Area (STA) 1 Inflow Basin; Water Conservation Areas 1, 2, and 3 (WCA-1, WCA-2, and WCA-3); and Everglades National Park (ENP), respectively. Note that the same color font within a table indicates the same source level.

For WY2012, total flows, TP loads, and TP FWMCs into the Everglades Protection Area (EPA) are calculated from the totals of WCA-1, WCA-2, WCA-3, and ENP minus that coming from numerous structures: S-10A, S-10C, S-10D, S-11A, S-11B, S-11C, S12-A, S-12B, S-12C, S-12D, S-333-S-334, and S-355A/S-355B. The totals into the EPA are as follows:

- Flow – 1,389.166 acre-feet (ac-ft) in thousands
- TP load – 36,723 kilograms (kg)
- TP FWMC – 21 parts per billion (ppb)

For WY2012, total flows, TP loads, and TP FWMCs from the EPA are calculated from the totals of WCA-1, WCA-2, and WCA-3 for structures S-39, G-300, G-301, G-94A, G-94B, G-94C, S-7, S-38, S-34, S-150, S-8, S-31, S-337, S-343A, S-343B, S-344, S-197, and S-333–S-334 (from WCA-3 to ENP). The totals from the EPA are as follows:

- Flow – 173.101 ac-ft in thousands
- TP load – 4,944 kg
- TP FWMC – 23 ppb

Table 1. Water Year 2012 (WY2012) (May 1, 2011–April 30, 2012) annual flows, total phosphorus (TP) loads, and TP flow-weighted mean concentrations (FWMCs) for Stormwater Treatment Area 1 (STA–1) Inflow Basin.

Into STA-1 Inflow Basin

Structure	Flow (1,000 ac-ft)	TP	
		Load (kg)	FWMC (ppb)
S-5A_P	146.520	22,029	122
S-5A from EAA	106.383	15,077	115
S-5A from East Beach	4.249	2,147	410
S-5A from Lake O	35.408	3,375	77
S-5AW from Lake O	0.000	0	76
S-5AW from L-8 Basin	0.000	0	76
Mass Balance Adjustment	0.480	1,431	2415
S-5AS	0.000	0	NA
S-5AS from Lake O	0.000	0	NA
S-5AS from L-8 Basin	0.000	0	NA
G-300	0.000	0	114
G-301	0.004	1	96
G-311	1.703	179	85
Total	**148.277**	**22,208**	**121**

From STA-1 Inflow Basin

Structure	Flow (1,000 ac-ft)	TP	
		Load (kg)	FWMC (ppb)
S-5AS	23.014	2,420	85
from S-5A	20.807	1,896	74
from EAA	15.111	1,383	74
from East Beach	0.603	197	265
from Lake O	5.029	310	50
from L-8 Basin	0.000	0	49
from WCA-1	0.000	0	n/a
from G-311	1.343	143	86
Mass Balance Adjustment	-0.773	-237	
Net S-5AS	22.240	2,183	80
G-300	0.001	0	87
G-301	0.001	0	83
G-302	96.847	17,121	143
from S-5A	101.193	15,288	122
from EAA	73.489	11,152	123
from East Beach	2.935	1,588	439
from Lake O	24.460	2,496	83
from L-8 Basin	0.000	0	81
from WCA-1	0.002	0	131
from G-311	0.272	29	85
Mass Balance Adjustment	5.000	-789	
Net G-302	101.847	16,332	217
G-311	25.209	4,712	152
from S-5A	24.488	3,485	115
from EAA	17.783	2,542	116
from East Beach	0.710	362	413
from Lake O	5.919	569	78
from L-8 Basin	0.000	0	77
from WCA-1	0.001	0	52
Mass Balance Adjustment	-0.622	-948	
Net G-311	24.587	3,764	163
Total	**148.677**	**22,278**	**121**

Table 2. WY2012 annual flows, TP loads, and TP FWMCs for Water Conservation Area 1 (WCA-1).

Into WCA-1

Structure	Flow (1,000 ac-ft)	TP	
		Load (kg)	FWMC (ppb)
G-300 & G-301	0.002	0.2	85
from EAA	0.001	0	81
from East Beach	0.000	0	287
from Lake O	0.000	0	54
from L-8 Basin	0.000	0	53
from WCA-1	0.000	0	68
from G-311	0.000	0	60
Mass Balance Adjustment	0.000	0	1,693
S-362 (from STA-1E)	76.208	2,010	21
from EAA	27.646	729	21
from East Beach	1.104	29	21
from Lake O	20.128	531	21
from L-8 Basin	9.155	242	21
from WCA-1	0.001	0	21
from G-311	0.370	10	21
C-51W and Wellington	12.616	333	21
from S-361	4.096	108	21
Mass Balance Adjustment	1.092	29	21
G-251 (from STA-1W)	13.394	311	19
from EAA	9.664	224	19
from East Beach	0.386	9	19
from Lake O	3.217	75	19
from L-8 Basin	0.000	0	19
from WCA-1	0.000	0	19
from G-311	0.036	1	19
Mass Balance Adjustment	0.091	2	19
G-310 (from STA-1W)	80.617	2,287	23
from EAA	58.170	1,651	23
from East Beach	2.323	66	23
from Lake O	19.361	549	23
from L-8 Basin	0.000	0	23
from WCA-1	0.002	0	23
from G-311	0.215	6	23
Mass Balance Adjustment	0.545	15	23
Total	**170.221**	**4,609**	**22**

From WCA-1

Structure	Flow (1,000 ac-ft)	TP	
		Load (kg)	FWMC (ppb)
S-10A	0.000	0	NA
S-10C	0.000	0	NA
S-10D	0.000	0	NA
S-39	12.762	252	16
G-300	0.000	0	114
G-301	0.004	1	96
G-94A	1.455	48	27
G-94B	0.002	0	46
G-94C	0.000	0	NA
G-338	2.039	53	21
G-94D	0.000	0	NA
Total	**16.264**	**354**	**18**

Table 3. WY2012 annual flows, TP loads, and TP FWMCs for Water Conservation Area 2 (WCA-2).

Into WCA-2[1]

Structure	Flow (1,000 ac-ft)	TP	
		Load (kg)	FWMC (ppb)
G-335 (from STA-2)	217.570	3,278	12
from EAA	189.504	2,855	12
from East Shore	15.230	229	12
from Lake O	12.837	193	12
Mass Balance Adjustment	0.000	0	12
S-7	168.532	4,291	22
from STA-3/4	99.153	2,263	16 [1]
from Lake O	7.092	162	16
from EAA	82.563	1,884	16
from C-139	3.482	79	16
from SFCD	4.444	101	16
from SSDD	1.571	36	16
from G-371	22.447	2,122	77
from Lake O	8.955	847	77
from EAA	13.491	1,276	77
Back flow	34.089	908	22
Mass Balance Adjustment	12.844	-802	-51
S-10A (from WCA-1)	0.000	0	NA
S-10C (from WCA-1)	0.000	0	NA
S-10D (from WCA-1)	0.000	0	NA
N. Springs Improv. District	0.000	0	NA
Total	**386.102**	**7,769**	**16**

Into WCA-2

Structure	Flow (1,000 ac-ft)	TP	
		Load (kg)	FWMC (ppb)
S-7	34.089	1,674	40
S-11A (from WCA-2)	36.000	526	12
S-11B (from WCA-2)	34.086	422	10
S-11C (from WCA-2)	227.066	3,508	13
S-38	43.944	379	7
S-34	2.849	60	17
Total	**378.033**	**6,569**	**14**

[1] Orange shaded cells indicate the values are proportionally calculated based on summation of EAA model outputs of the S-7 and S-8 basins.

Table 4. WY2012 annual flows, TP loads, and TP FWMCs for Water Conservation Area 3 (WCA-3).

Into WCA-3[1]

Structure	Flow (1,000 ac-ft)	TP	
		Load (kg)	FWMC (ppb)
S-140 (from L-28 Canal)	85.591	5,055	48
S-190 (from Feeder Canal)	49.988	2,351	38
G-407	0.023	2	85
STA-6	9.061	1	75
S-8	204.746	7,542	30
from STA-3/4	120.459	2,749	18
from Lake O	8.616	197	18
from EAA	100.304	2,289	18
from C-139	4.230	97	18
from SFCD	5.399	123	18
from SSDD	1.909	44	18
from G-373	43.376	3,561	67
from Lake O	13.519	1,110	67
from EAA	21.040	1,728	67
from C-139	4.775	392	67
from SFCD	3.184	261	67
from SSDD	0.859	70	67
STA-5	33.381	1,326	32
Back flow	0.000	0	30
Mass Balance Adjustment	7.530	-94	-10
S-150	70.548	2,504	29
from STA-3/4	41.506	947	18
from Lake O	2.969	68	18
from EAA	34.562	789	18
from C-139	1.458	33	18
from SFCD	1.860	42	18
from SSDD	0.658	15	18
from G-371	9.396	889	77
from Lake O	3.749	354	77
from EAA	5.648	534	77
Back flow	0.566	20	29
Mass Balance Adjustment	19.081	648	28
G-404 & G-357	51.514	1,638	26
from STA-3/4	30.307	692	18
from Lake O to G-409	2.168	49	18
from EAA	25.236	576	18
from C-139	1.064	24	18
from SFCD	1.654	31	18
from SSDD	1.358	11	18
from G-373	10.913	896	67
from Lake O	3.401	279	67
from EAA	5.294	435	67
from C-139	1.201	99	67
from SFCD	0.801	66	67
from SSDD	0.216	18	67
STA-5	8.399	334	32
Back flow	0.004	0	26
Mass Balance Adjustment	1.891	-283	-121
S-11A (from WCA-2)	36.000	526	12
S-11B (from WCA-2)	34.086	422	10
S-11C (from WCA-2)	227.066	3,508	13
G-123 (from N. New River)	0.000	0	NA
S-9 (from C-11 West)	113.688	2,179	16
S-9A (from C-11 West)	77.413	1,300	14
Total	**959.723**	**27,028**	**23**

From WCA-3

Structure	Flow (1,000 ac-ft)	TP	
		Load (kg)	FWMC (ppb)
S-150	0.566	13	18
S-8	0.000	0	NA
S-31	0.152	2	10
S-337	8.314	287	28
S-343A	0.000	0	NA
S-343B	0.000	0	NA
S-344	0.000	0	NA
S-12A	5.101	77	12
S-12B	52.875	545	8
S-12C	99.239	753	6
S-12D	176.995	2,236	10
S-333[2]	146.748	2,962	16
S-355A/S-355B	0.000	0	NA
G-409	12.295	579	38
Total	**502.285**	**7,453**	**12**

[1] Orange shaded cells indicate the values are proportionally calculated based on summation of EAA model outputs of the S-7 and S-8 basins.

[2] The value included S-334 from WCA-3.

Table 5. WY2012 annual flows, TP loads, and TP FWMCs for Everglades National Park (ENP).

Into ENP

Structure	Flow (1,000 ac-ft)	TP	
		Load (kg)	FWMC (ppb)
S-12A (from WCA-3)	5.101	77	12
S-12B (from WCA-3)	52.875	545	8
S-12C (from WCA-3)	99.239	753	6
S-12D (from WCA-3)	176.995	2,236	10
S-333-S-334 (from WCA-3)[3]	92.118	1,365	12
S-355A/S-355B (from WCA-3)	0.000	0	NA
S-174 (from L-31W)	0.000	0	NA
S-332D	65.550	557	7
S-18C	104.721	1,217	9
Total	**596.600**	**6,749**	**9**

From ENP

Structure	Flow (1,000 ac-t)	TP	
		Load (kg)	FWMC (ppb)
S-197	12.281	72	5
Total	**12.281**	**72**	**5**

Structures/Locations

C-139 – C-139 Basin
EAA – Everglades Agricultural Area
East Beach – East Beach Water Control District
East Shore – East Shore Drainage District
ENP – Everglades National Park
Lake O – Lake Okeechobee
N. New River – North New River
N. Springs Improv. District – North Springs Improvement District
SFCD – South Florida Conservancy District
SSDD – South Shore Drainage District
STA-1E – Stormwater Treatment Area 1 East
STA-1W – Stormwater Treatment Area 1 West
STA-2 – Stormwater Treatment Area 2
STA-3/4 – Stormwater Treatment Area 3/4
STA-5 – Stormwater Treatment Area 5
STA-6 – Stormwater Treatment Area 6
WCA-1 – Water Conservation Area 1
WCA-2 – Water Conservation Area 2
WCA-3 – Water Conservation Area 3

Units of Measurement

ac-ft – acre-feet
kg – kilograms
ppb – parts per billion

Other Abbreviations

FWMC – flow-weighted mean concentration
NA – not applicable