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Stormwater Report

CASCADES PH. 5

Groveland, Florida

(Job No.: 2SHC-J13)

Submitted To
City of Groveland

Prepared for:
Shea Homes Active Adult, LLC

Prepared by:
Dewberry

June 2015



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STORMWATER DESIGN SUMMARY

The proposed Phase 5 project includes 220 lots contributing to Pond 50 and Pond 60. The Cascades development includes five (5) existing interconnected ponds, including Pond 50 and Pond 60, which were permitted and constructed under St. John's River Water Management District's (SJRWMD) Environmental Resource Permit 40-069-93716 (See Attachment A).

Basin 50 draining to Pond 50 was permitted to include up to 40 lots under permit number 4-069-73716-10 (See Attachment B). Per the permit calculations, each lot has a house and driveway impervious area of 3,000 ft² for a total permitted house impervious area of 2.75 acres (see Attachment B). The current design shows 35 lots within Basin 50 (See Attachment C). Based on our estimate of impervious areas for 52' and 62' lots (see table below), the total impervious area from Basin 50 draining to Pond 50 is 2.58 acres. Basin 51 draining to Pond 50 was permitted to include 255 lots under permit number 4-069-73716-10 (See Attachment B). Per the permit calculations, the total impervious area from Basin 51 is 17.56 acres. Phase 5 includes 129 lots within Basin 51 draining to Pond 50 (See Attachment C). Based on our estimate of impervious areas for 30', 41', 52' and 62' lots (see table below), the total impervious area from Basin 51 within Phase 5 draining to Pond 50 is 14.98 acres. Basin 60 draining to Pond 50 was permitted to include 43 lots under permit number 4-069-73716-10 (See Attachment B). Per the permit calculations, the total impervious area from Basin 60 is 2.96 acres. Phase 5 includes 56 lots within Basin 60 (See Attachment C). Based on our estimate of impervious areas for 52' and 62' lots, the total impervious area within Basin 60 is 4.04 acres (see table below). An interconnection between Pond 50 and Pond 60 is proposed for the Phase 5 construction. Although the current layout exceeds the permitted impervious area for Basin 60, the total impervious area for the three (3) basins is still below the total permitted impervious area (see table below).

	30' Lots (Imp. Area = 1,300 sf)		41' Lots (Imp. Area = 1,539 sf)		52' Lots (Imp. Area = 3,000 sf)		62' Lots (Imp. Area = 3,300 sf)		TOTAL AREA (AC)
	No.	Total Imp. Area (ac.)	No.	Total Imp. Area (ac.)	No.	Total Imp. Area (ac.)	No.	Total Imp. Area (ac.)	
BASIN 50	0	0.00	0	0.00	10	0.69	25	1.89	2.58
BASIN 51	6	0.18	17	0.60	105	7.23	92	6.97	14.98
BASIN 60	0	0.00	0	0.00	30	2.07	26	1.97	4.04
								TOTAL =	21.60
Total Permitted Impervious Area from Basin 50, 51, and 60 =									23.27 ac

WATER QUALITY

Water quality required and provided will be based on the volumes from all basins added together per permit no. 4-069-73716-09 (See Attachment D). Basins 50 and 51 drain to Pond 50, which are interconnected to Pond 60. Basins 50, 51, and 60 are included in the water quality requirement for the three (3) interconnected ponds. The basin area governs the required water quality for the four (4) basins draining to Ponds 50, 60, and 110. The new design for Phase 5 will not change the total area draining to Ponds 50 and 60. Therefore, the water quality provided by the three (3) interconnected Ponds 50, 60, 100 is still sufficient to meet the required water quality.



ATTACHMENT A



ATTACHMENT B

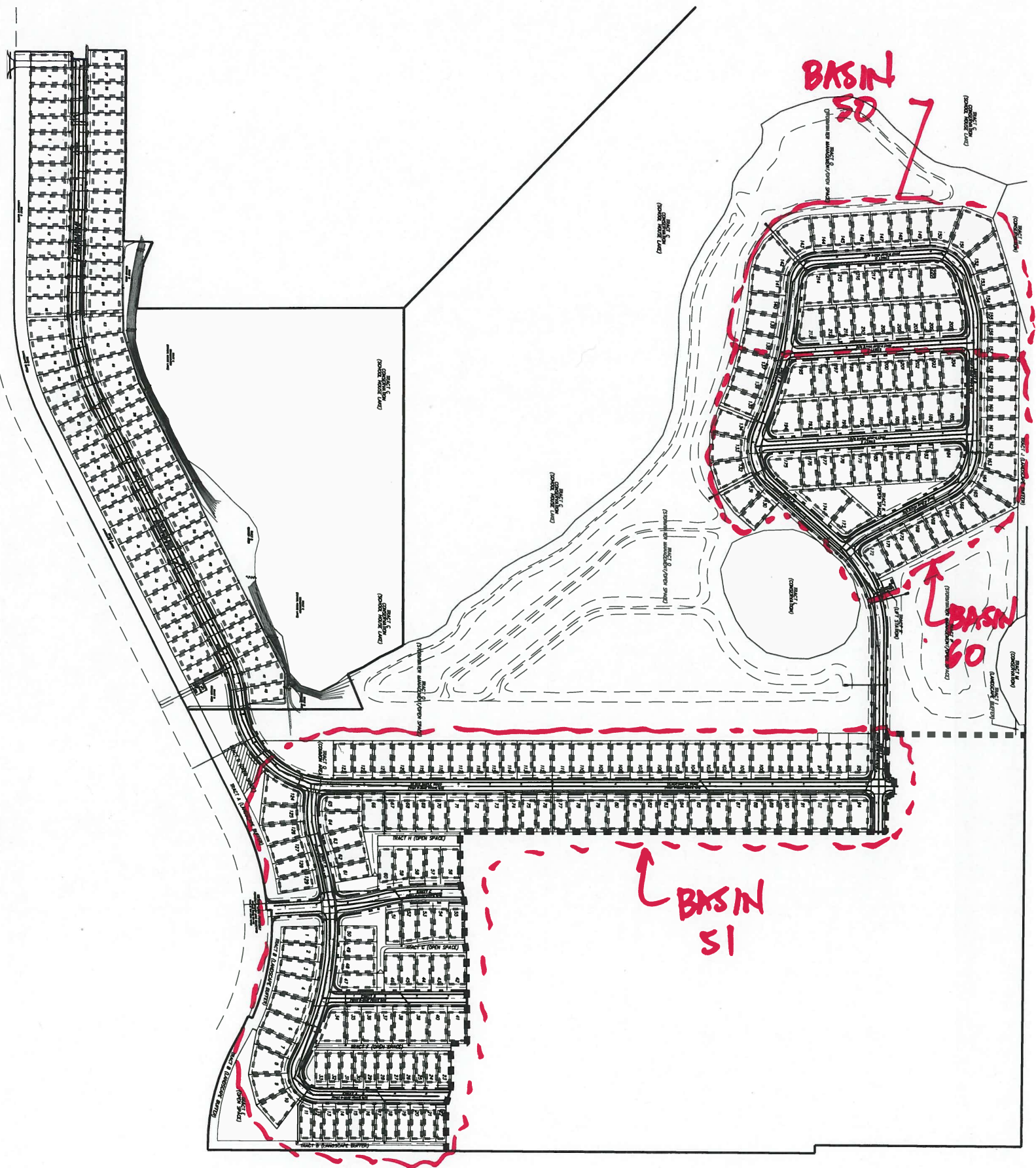
**THE CASCADES - STORMWATER ANALYSIS
BASIN IMPERVIOUS AREA CALCULATIONS**

Basin #	# Houses	Areas		Roadways					Other Area ⁵ (ac)	Sub-total Impervious (ac)	Pond Surface ⁶ (ac)	Total Impervious (ac)
		House ¹ (ac)	Driveways ² (ac)	Length (ft.)	Cul-de-sac (#)	Area (ac)	Length (ft.)	Area (ac)				
20	236	13.54	2.71	12870	1.0	11.23	0	0.00	12.56	40.04	0.00	40.04
20A	0	0.00	0.00	0	0.0	0.00	0	0.00	0.00	0.00	0.00	0.00
50	40	2.30	0.46	2400	2.0	2.09	0	0.00	0.00	4.85	0.00	4.85
50A	0	0.00	0.00	0	0.0	0.00	0	0.00	0.00	0.00	0.00	0.00
51	255	14.63	2.93	9580	0.0	8.36	2100	1.54	0.00	27.46	0.00	27.46
60	43	2.47	0.49	3150	1.0	2.75	0	0.00	0.00	5.71	3.26	8.97
60A	0	0.00	0.00	0	0.0	0.00	0	0.00	0.00	0.00	0.00	0.00
70	112	6.43	1.29	5000	4.0	4.36	5370	3.94	2.63	18.65	0.00	18.65
70A	0	0.00	0.00	0	0.0	0.00	0	0.00	0.00	0.00	0.00	0.00
100	71	4.07	0.81	3880	0.0	3.38	0	0.00	0.00	8.27	0.00	8.27
100A	0	0.00	0.00	0	0.0	0.00	0	0.00	0.00	0.00	0.00	0.00
110	121	6.94	1.39	4160	0.0	3.63	3450	2.53	0.00	14.50	0.00	14.50
110A	0	0.00	0.00	0	0.0	0.00	0	0.00	0.00	0.00	0.00	0.00
120	104	5.97	1.19	4840	0.0	4.22	0	0.00	0.00	11.38	0.00	11.38
120A	0	0.00	0.00	0	0.0	0.00	0	0.00	0.00	0.00	0.00	0.00
130	24	1.38	0.28	480	0.0	0.42	0	0.00	0.00	2.07	0.00	2.07
130A	0	0.00	0.00	0	0.0	0.00	0	0.00	0.00	0.00	0.00	0.00
SHON	0	0.00	0.00	0	0.0	0.00	0	0.00	0.00	0.00	175.46	175.46
SHOFF	n/a ⁷	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1ON	0	0.00	0.00	0	0.0	0.00	0	0.00	0.00	0.00	36.20	36.20
1OFF	n/a ⁷	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SH2	0	0.00	0.00	0	0.0	0.00	0	0.00	0.00	0.00	3.08	3.08
	1006.00											

- NOTES:**
- Houses including all impervious area were assumed to be 2500 s.f.
 - Driveways were assumed to be 500 s.f. on the average.
 - Pavement widths of the internal development roadways were assumed to be an average of 38 ft wide, including two-2 ft curb & gutters and two 5 ft sidewalks.
 - Pavement width of the north/south spine road was assumed to be an average of 32 ft wide, including an 8 ft. trail.
 - Basin 20 contains an Amenity Center that has an assumed impervious area of 50%. Basin 70 includes the offsite portion of the north/south spine road (2.63 ac impervious area offsite).
 - Ponds are dry ponds, except pond 60. No water quality is being done in Pond 60.
 - Impervious calculations for SHOFF and 1OFF are contained in pre-development calculations.



ATTACHMENT C



BASIN 50

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BASIN 60

BASIN 51



ATTACHMENT D

**THE CASCADES - STORMWATER ANALYSIS
WATER QUALITY CALCULATIONS**

Basin #	Area (ac)	Impervious Area (ac)	Water Quality		Normal W.Q. Required (ac-ft)	W.Q. Provided (ac-ft)
			1 in x area (ac-ft)	2.5 in x imp (ac-ft)		
20	102.86	40.04	8.57	8.34	8.57	n/a
50	16.40	4.85	1.37	1.01	8.04	18.11
51	80.12	5.71	6.68	1.19	8.21	Inc. w/50
60	18.40	5.71	1.53	1.19	1.53	n/a
70	51.11	18.65	4.26	3.89	4.26	132.86
100	22.79	8.27	1.90	1.72	1.90	24.09
110	38.93	14.50	3.24	3.02	3.24	2.62
120	33.41	11.38	2.78	2.37	2.78	47.55
130	5.03	2.07	0.42	0.43	0.43	17.49

Notes:

1. The ponds listed below are connected, therefore water quality required and provided will be based on their volumes being added together:

<u>Interconnected Ponds</u>	<u>W.Q. Required</u>	<u>W.Q. Provided</u>
20,100	10.47	24.09
50,60,110	12.82	20.73

2. No water quality is being done in wet Pond 60.