S&ME

To: Mr. Gary McNeely

From: Paul G. Penniger, L.S.S.
Martin Mabe

Re: Chesapeake Pointe Lot 36 – Amenity septic system design flow.

As you are aware, we have been discussing the Chesapeake Pointe Amenity site over the last several months to help formulate a reasonable design flow for the proposed amenity site. Attached are 30 plus days of consecutive water meter readings and the 2003 calendar year monthly readings for the Harbour septic system. This septic system was greatly oversized. The floor plan for the Chesapeake Pointe Amenity site is similar to the Harbour and The Farms.

Based on the similarity of The Farms site plan and the Harbour, the water records at the Harbour should be an excellent indicator of expected flows from the Chesapeake Pointe amenity site.

Since there is not a defined design flow in the rules for an amenity site, we attempted to use the water records to calculate water use per lot at the amenity site. There are a maximum of 77 lots at Chesapeake Point, however the actual number will depend on how many septic permits your office can issue.

We have calculated a design flow of 700 gallons per day. This is based on 8 gal/day/lot multiplied by a maximum of 80 lots (~~actual lot count~~ will be a maximum of 77 lots). This results in 640 gallons per day, however we have rounded up to 700 gallons per day for an additional safety factor. Initial design plans call for a 25% reduction system utilizing 600 linear feet of line with a LP PPBPS repair (with a LTAR of 0.3, 389 linear feet of repair would be needed and we have 574 linear feet of repair laid out on site).

Please find attached the above listed information provided to ICHD on August 31, 2003 and scaled site plans of the amenity area and off-site septic area. The attached scaled map shows the proposed septic easement for the septic drain field and supply line route. Once all lots have received Improvement Permits then the plat will be recorded showing the actual septic easement. We would like for ICHD to issue the Improvement Permit based on the proposed easements, with the understanding that the Authorization to Construct can not be issued until the septic easements are recorded. Please review the attached information and call to discuss.

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August 21, 2003

To: Mr. Brady Freeman, R.S.

From: Paul G. Penninger

RE: The Farms Amenity septic system design flow.

As you are aware, we have been collecting water meter reading from the Harbour Amenity site over the past month to help formulate a reasonable design flow for The Farms proposed amenity site. Attached are 30 plus days of consecutive water meter readings and the past year's monthly readings. The meter readings suggest that the Harbour septic system was greatly oversized.

The Farms Amenity site will be very similar to that at the Harbour. Comparing old Harbour site plans to the proposed Farms plans, the pool are nearly identical in size. The Farms will have 6 tennis courts compared to The Harbour's 2 courts. The farms will also have a soccer field and a horseshoe pit. The Harbour has a boat ramp and water access that The Farms will not.

The Cabana Buildings are similar, with the Farms Building having a slightly larger floor space. The "party room" at the Harbour is approximately 1224 ft^2, and The Farms proposes approximately 1500 ft^2 of "gathering rooms and kids rooms". We do not know if it will happen, but The Farms is proposing one full time staff person at the site. Plans show a separate bathroom at The Farms tennis courts. This could be designed as a separate system for the tennis courts and ball fields or integrated with the pool and cabana building.

Based on the similarity of the proposed Farms site plan with the Harbour and the similar proposed price range homes in these subdivisions, the water records at the Harbour should be an excellent indicator of expected flows from The Farms amenity site.

Since there is not a defined design flow in the rules for an amenity site, we attempted to use the water records to calculate water use per lot at the amenity site. There are 344 lots at the Harbour. All but six have been sold, and most are built out and occupied. The Farms is proposing 460 building lots. The actual number will depend on how many septic permits your office can issue.

On average for the 30 days we have daily readings, the Harbour used 0.50 gal/lot/day at the amenity site and the total average daily flow was 171 gpd. The design flow was 2260 gpd or 6.5 gal/lot/day at the Harbour. From July 5 to Aug 5, the highest daily flow was 1030 gpd. The next highest flow was 440 gpd or approx. 20% of the design flow.

Based on this data, 2-2.5 gal/lot/day or approximately 1000 gpd may be a reasonable design flow for The Farms Amenity site. We need to discuss whether this number will or will not include the proposed tennis court restroom. Please review the attached information and call to discuss.

Harbour Amenity system water readings and summary.

Date	Water Meter Reading (gal)	water use by pool and septic system (gal)	Pool Meter Reading (gal)	Water use by pool only (gal)	actual water to septic system (gal)	Approx. water use Per home (344 lots) (gal/lot)	
24-Jun	1727300						
25-Jun	1727980	680			680	1.98	
26-Jun	1728760	780			780	2.27	
27-Jun	1729830	1070			1070	3.11	
28-Jun	1730870	1040			1040	3.02	
29-Jun	1731050	180			180	0.52	
30-Jun	1731300	250			250	0.73	
1-Jul	1732600	1300			1300	3.78	
2-Jul	1733750	1150			1150	3.34	
3-Jul	1734030	280			280	0.81	
4-Jul	1734350	320			320	0.93	
5-Jul	1734520	170	634670		170	0.49	dates prior to Jul. 5 do not reflect sub. of pool water.
6-Jul	1734820	300	634670	0	300	0.87	
7-Jul	1735030	210	634850	180	30	0.09	
8-Jul	1735910	880	635290	440	440	1.28	
9-Jul	1736050	140	635290	0	140	0.41	
10-Jul	1736130	80	635290	0	80	0.23	
11-Jul	1736720	590	635640	350	240	0.70	
12-Jul							
13-Jul	1737290	570	635640	0	570	1.66	sat +sun
14-Jul	1737690	400	636030	390	10	0.03	
15-Jul	1738440	750	636700	670	80	0.23	
16-Jul	1738520	80	636700	0	80	0.23	
17-Jul	1738730	210	636700	0	210	0.61	
18-Jul	1740350	1620	638290	1590	30	0.09	
19-Jul	1740500	150	638290	0	150	0.44	
20-Jul	1740610	110	638290	0	110	0.32	
21-Jul	1740700	90	638290	0	90	0.26	
22-Jul	1741240	540	638740	450	90	0.26	
23-Jul	1741360	120	638740	0	120	0.35	
24-Jul	1741450	90	638740	0	90	0.26	
25-Jul	1742040	590	639250	510	80	0.23	
26-Jul	1742210	170	639250	0	170	0.49	
27-Jul	1742280	70	639250	0	70	0.20	
28-Jul	1743310	1030	639250	0	1030	2.99	
29-Jul	1743440	130	639250	0	130	0.38	
30-Jul							
31-Jul							
1-Aug	1774790	31350	668690	29440	31350	91.13	pool filter prob. refilling pool.
2-Aug	1774950	160	668690	0	160	0.47	
3-Aug	1774990	40	668690	0	40	0.12	
4-Aug	1775040	50	668690	0	50	0.15	
5-Aug	1775070	30	668690	0	30	0.09	
	Average	**335**			**171**	**0.50**	avg. from July 5 to Aug 5 excluding July 30-31 and Aug 1

Harbour Amenity Monthly Water Use Summary

Month	Water Use (Gal.)	Approx. Daily Use (gal)	Approx. Daily use per lot (gal)
Jun-02	49810	1660	4.83
Jul-02	23540	841	2.44
Aug-02	13700	381	1.11
Sep-02	8310	277	0.81
Oct-02	5930	180	0.52
Nov-02	840	29	0.08
Dec-02	19650	634	1.84
Jan-03	2680	74	0.22
Feb-03	190	6	0.02
Mar-03	410	16	0.05
Apr-03	2280	76	0.22
May-03	5960	199	0.58
Jun-03	12280	384	1.12

These number include any water used at the pool that did not enter the septic system. The Jun, July, and Aug number are probably artifically high due to this. There may have been a plumbing problem in December because this number also seems high.

Harbour

Service Information 00859 290047 1 -CLUBHOUSE /

Notes

(1-5) House No Pre Street Name Suf Apart (70) Route - 859
Addr CLUBHOUSE (71) Sequence - 21
(6) Zip - MOORESVILLE NC 28115 (72) Tap Fee -
(96) Tract- (97) Lot- (73) Paid Date
(7) Service Type - RES RESIDENTIAL Meter Information
(9) Units - 1 (74) Number - 95043640
(75) Type - S
(76) Conversion- 1
(77) Size - 5/8
(78) Make -
(79) Location - LT OF DRIVE
(80) Comments -
(81) Digits - (82) 2nd -
(83) Installed -
(84) Pr Number -
(85) Pr Consump-
(86) WSFE - 1 SSFE - 0
(88) MasterAcct-
Create Dt - 02/04/98
Total Pen - 0.00

	Read Dt	Meter One	Meter Two	Consumptn	E
Curr	6/30/03	1731070		12280/32	
(10)	05/29/03	1718790		5960/30	
(15)	04/29/03	1712830		2280/31	
(20)	03/28/03	1710550		410	
(25)	03/03/03	1710140		190	
(30)	01/31/03	1709950		2680	
(35)	12/26/02	1707270		19650	
(40)	11/26/02	1687620		840	
(45)	10/28/02	1686780		5930	
(50)	09/26/02	1680850		8310	
(55)	08/29/02	1672540		13700/30	
(60)	07/24/02	1658840		23540	
(65)	06/26/02	1635300		49810	

NOT USED

Everything Complete Yes/Xit/Cust/Serv/Oth/Rate/Inv/Hist/Note/Bal/Attr/SO?

6-30-03 1731070 12280

12280/32 = 384/d

13700/30 = 457

P.2 704 525 7330 Carolina Water Service