

September 30, 1982

SBN- 336  
T.F. B 7.1.2

United States Nuclear Regulatory Commission  
Washington, D. C. 20555

Attention: Ms. Janis B. Kerrigan, Acting Chief  
Licensing Branch No. 3  
Division of Licensing

References: (a) Construction Permit CPPR-135 and CPPR-136, Docket  
Nos. 50-443 and 50-444  
(b) USNRC Letter, dated July 27, 1982, "Request for Additional  
Information", F. J. Miraglia to W. C. Tallman

Subject: Response to 240 Series RAIs; (Hydrologic and Geotechnical  
Engineering Branch)

Dear Ms. Kerrigan:

We have enclosed responses to the following 240 Series Requests for  
Additional Information (RAIs) which were forwarded in Reference (b):

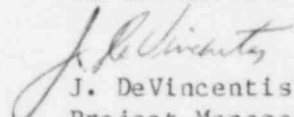
240.38, 240.39, 240.41

The response to RAI 240.40 will be submitted in the near future.

A draft copy of these responses was forwarded to the NRC Staff reviewer  
(Robert Jachowski) on August 24, 1982.

Very truly yours,

YANKEE ATOMIC ELECTRIC COMPANY

  
J. DeVincentis  
Project Manager

Boo1

ALL:dd

In your response to Question 240.32 (Hydrologic Engineering Question 240.02) you stated that the PMF on Hampton Harbor watershed combined with the PMH will increase the stillwater level at the plant site less than 0.1 feet above that calculated for the SPF combined with the PMH. However, no detailed analysis has been provided to support this assertion. Provide detailed analysis supporting this contention.

RESPONSE: The original design stillwater level analysis performed for the PSAR and FSAR routed a maximum PMH open coast stillwater level of +18.6 feet MLW (includes an astronomical tide of +10.6 feet MLW) concurrent with a peak SPF discharge of 72,800 cubic feet per second into Hampton Harbor to the Seabrook site. The routing model described in FSAR Section 2.4.5.2 (b-5.) was used in this analysis with a computer incremental time step of 0.25 hours. The maximum stillwater level calculated inside Hampton Harbor was +19.0 feet MLW, and when including the additional affect of hurricane winds blowing across Hampton Harbor, the maximum stillwater level calculated for the Seabrook site was +19.7 feet MLW. When a computer incremental time step of 0.05 hours was used, the maximum stillwater levels calculated within Hampton Harbor and at the Seabrook site were +18.7 and +19.4 feet MLW, respectively. This analysis included a maximum open coast stillwater level of +18.7 feet MLW. Therefore, the stillwater levels used in the FSAR flooding analysis of Seabrook are conservative.

The PMF discharge was routed into Hampton Harbor concurrent with a maximum open coast stillwater level of +18.7 feet MLW. The PMF discharge hydrograph used in this analysis was that shown in Figure 2.4-9 of the FSAR with a peak discharge of 136,500 CFS. When using a computer incremental time step of 0.05 hours, a maximum stillwater level within Hampton Harbor of +18.75 feet MLW was calculated. When the PMF discharge hydrograph is replaced in the analysis with a discharge hydrograph having a peak discharge of 29,250 CFS (less than that for the SPF), a maximum stillwater level within Hampton Harbor of +18.70 feet MLW was calculated.

These values of +18.70 feet and +18.75 feet MLW are less than the maximum stillwater level within Hampton Harbor of +19.0 feet MLW used in the FSAR flood analysis and result in less than the +19.7 feet MLW that was used at the Seabrook site in the FSAR analysis.

Sensitivity studies have shown that discharge rates versus duration in the SPF and PMF range are insignificant in raising Hampton Harbor water levels during the PMH occurrence due to the area-hydrograph relationship of the harbor and harbor's rapid response to the PMH open coast water levels flowing through the harbor entrance, and over the beach dune system at water levels above about 12 feet MLW.

Table 240.38-1 summarizes the four cases discussed above.

Attached are the computer printouts for the two above described flood routing cases. The first page is input data describing the geometry of Hampton Harbor, the beach front, and the harbor entrance. On the remaining pages, the second column is the flood discharge input, the third column is the open coast stillwater level input, the fourth and fifth columns are computational steps, the sixth column is the Hampton Harbor stillwater level output, the seventh column is the flow through the harbor entrance, and the eighth column is the flow across the beach berm.

Table 240.38-1

COMPARISON OF PMH FLOODING CASES

Peak Hydrologic Flow Rate (CFS)	Model Time Step (HRS)	Peak Water Level, Ft. MLW*		
		Open Coast	Inside Harbor	At the Site
72,800	0.25	18.6	19.0	19.7
72,800	0.05	18.7	18.7	19.4
136,500	0.05	18.7	18.75	19.4
29,250	0.05	18.7	18.70	19.4

\* MLW = MSL + 4.1

WATER LEVELS IN A BAY DUE TO COMBINED FLOOD AND HURRICANE EVENTS

BY R. FRASAD

BAY ELV 0.00 DT 0.3 L 2800. N 0.021 NO CH 1 NO WEIR 1

ELV	AREA	STORAGE
0.00	0	0
0.00	689	0
3.00	820	98598060
6.00	951	214315200
9.00	1271	359500680
12.00	2349	596031480
15.00	3426	973369980
18.00	4503	1491450840
21.00	5580	2150274060

-4.0	750.0	0.0	750.0	4.0	750.0	8.0	1270.0	10.0	1200.0	12.0	1641.0
13.0	1424.0	14.0	1790.0	16.0	1648.0	18.0	2088.0	20.0	1947.0	22.0	2386.0

-4.0	0.0	0.0	0.0	4.0	0.0	8.0	0.0	10.0	0.0	12.0	0.0
13.0	3500.0	14.0	3500.0	16.0	3500.0	18.0	3500.0	20.0	3500.0	22.0	3500.0

PMH

NEW MAX PMF HYDROGRAPH

TIME	FLD G	SEA EL	SEAI	BAY EL	BAYI	GC (I)	+	GW (I)
0.05	13400	0.99	0.95	0.04	0.04	13616		0.
0.10	13800	1.06	1.04	0.18	0.26	12998		0.
0.15	14200	1.18	1.13	0.33	0.40	12920		0.
0.20	14600	1.27	1.22	0.48	0.55	12769		0.
0.25	15000	1.36	1.31	0.63	0.70	12555		0.
0.30	15400	1.44	1.40	0.78	0.86	12152		0.
0.35	15800	1.51	1.47	0.93	1.01	11547		0.
0.40	16200	1.59	1.55	1.08	1.16	10849		0.
0.45	16600	1.66	1.63	1.23	1.30	10042		0.
0.50	17000	1.74	1.70	1.37	1.45	9109		0.
0.55	17400	1.83	1.79	1.52	1.59	8208		0.
0.60	17800	1.92	1.89	1.66	1.73	7352		0.
0.65	18200	2.02	1.97	1.80	1.86	6324		0.
0.70	18600	2.11	2.06	1.93	2.00	5093		0.
0.75	19000	2.20	2.15	2.06	2.12	3503		0.
0.80	19800	2.29	2.25	2.18	2.25	-533		0.
0.85	20600	2.38	2.34	2.29	2.34	-1807		0.
0.90	21400	2.47	2.43	2.39	2.44	-3022		0.
0.95	22200	2.56	2.52	2.49	2.54	-3809		0.
1.00	23000	2.65	2.61	2.59	2.64	-4592		0.
1.05	24400	2.77	2.71	2.70	2.75	-4403		0.
1.10	25200	2.90	2.84	2.80	2.86	-3760		0.
1.15	27200	3.02	2.96	2.93	2.99	-4061		0.
1.20	28600	3.15	3.08	3.04	3.10	-3672		0.
1.25	30000	3.27	3.21	3.16	3.22	-2792		0.
1.30	31400	3.39	3.33	3.29	3.35	-3913		0.
1.35	32800	3.51	3.45	3.42	3.48	-4663		0.
1.40	34200	3.64	3.58	3.55	3.61	-5679		0.
1.45	35600	3.76	3.70	3.68	3.75	-6706		0.
1.50	37000	3.88	3.82	3.82	3.88	-7791		0.
1.55	40000	4.02	3.95	3.95	4.02	-8433		0.
1.60	43000	4.17	4.10	4.10	4.17	-9116		0.
1.65	46000	4.31	4.24	4.26	4.34	-10458		0.
1.70	49000	4.46	4.38	4.42	4.51	-12067		0.
1.75	52000	4.60	4.53	4.60	4.68	-13886		0.
1.80	59800	4.74	4.67	4.78	4.87	-16218		0.
1.85	67600	4.89	4.82	4.98	5.09	-19401		0.
1.90	75400	5.03	4.96	5.21	5.32	-23206		0.
1.95	83200	5.18	5.10	5.45	5.57	-27387		0.
2.00	91000	5.32	5.25	5.71	5.84	-31905		0.
2.05	93000	5.48	5.40	5.98	6.12	-36224		0.
2.10	95000	5.64	5.56	6.20	6.30	-37774		0.
2.15	97000	5.80	5.72	6.41	6.52	-40064		0.
2.20	99000	5.96	5.88	6.62	6.73	-42358		0.
2.25	101000	6.12	6.04	6.83	6.94	-44642		0.
2.30	103200	6.28	6.20	7.04	7.15	-46902		0.
2.35	105400	6.44	6.36	7.25	7.36	-49157		0.
2.40	107600	6.61	6.53	7.46	7.56	-51433		0.
2.45	109800	6.77	6.69	7.67	7.77	-53724		0.
2.50	112000	6.93	6.85	7.88	7.98	-56028		0.
2.55	116400	7.11	7.02	8.09	8.19	-59229		0.
2.60	120800	7.28	7.19	8.30	8.41	-62527		0.
2.65	125200	7.46	7.37	8.52	8.63	-66095		0.
2.70	129600	7.63	7.55	8.74	8.85	-69855		0.
2.75	134000	7.81	7.72	8.96	9.07	-73791		0.
2.80	134500	7.97	7.89	9.11	9.19	-73638		0.
2.85	135000	8.14	8.06	9.25	9.32	-74311		0.
2.90	135500	8.30	8.22	9.39	9.46	-75170		0.

2 95	136000	8 47	8 38	9 53	9 59	-75953	0
3 00	136500	8 52	8 55	9 66	9 73	-76675	0
3 05	134800	8 50	8 72	9 80	9 87	-77088	0
3 10	133100	8 58	8 89	9 93	10 00	-77064	0
3 15	131400	9 15	9 07	10 06	10 12	-76163	0
3 20	129700	9 33	9 24	10 18	10 25	-75133	0
3 25	128000	9 50	9 41	10 31	10 37	-73964	0
3 30	127000	9 67	9 59	10 43	10 49	-72407	0
3 35	126000	9 88	9 78	10 56	10 62	-70519	0
3 40	125000	10 06	9 97	10 68	10 75	-68611	0
3 45	124000	10 25	10 16	10 81	10 88	-66656	0
3 50	123000	10 44	10 35	10 94	11 01	-64660	0
3 55	122800	10 64	10 54	11 08	11 14	-62457	0
3 60	122600	10 83	10 73	11 21	11 28	-60123	0
3 65	122400	11 03	10 93	11 36	11 43	-57897	0
3 70	122200	11 22	11 13	11 50	11 58	-55753	0
3 75	122000	11 42	11 32	11 66	11 73	-53701	0
3 80	121900	11 65	11 53	11 81	11 89	-50631	0
3 85	121800	11 88	11 76	11 97	12 06	-46610	-616
3 90	121700	12 10	11 99	12 09	12 15	-34539	-881
3 95	121600	12 33	12 22	12 21	12 28	-21109	-595
4 00	121500	12 56	12 45	12 36	12 43	11640	282
4 05	120000	12 81	12 69	12 55	12 64	18562	1053
4 10	118500	13 06	12 94	12 75	12 85	27340	2972
4 15	117000	13 31	13 19	12 96	13 07	32134	5827
4 20	115500	13 56	13 44	13 18	13 29	35582	9492
4 25	114000	13 81	13 69	13 41	13 53	37943	13308
4 30	112600	14 03	13 92	13 65	13 77	37595	15242
4 35	111200	14 25	14 14	13 89	14 00	35961	15310
4 40	109800	14 46	14 35	14 12	14 23	35246	15642
4 45	108400	14 68	14 57	14 35	14 46	34610	15642
4 50	107000	14 90	14 79	14 58	14 69	34256	16140
4 55	105200	15 24	15 07	14 80	14 91	43973	27649
4 60	103400	15 58	15 41	15 04	15 16	57976	49729
4 65	101600	15 92	15 75	15 26	15 37	74180	83307
4 70	99800	16 26	16 09	15 53	15 66	81287	97872
4 75	98000	16 60	16 43	15 82	15 97	87318	110426
4 80	96400	16 84	16 72	16 13	16 28	86619	116604
4 85	94800	17 08	16 96	16 44	16 60	80174	104927
4 90	93200	17 31	17 20	16 73	16 88	76575	96659
4 95	91600	17 55	17 43	17 01	17 15	73836	90582
5 00	90000	17 79	17 67	17 28	17 41	71991	86653
5 05	88600	17 91	17 85	17 54	17 67	61511	63501
5 10	87200	18 03	17 97	17 76	17 87	46280	36024
5 15	85800	18 16	18 10	17 94	18 02	39024	25451
5 20	84400	18 28	18 22	18 07	18 14	40872	27671
5 25	83000	18 40	18 34	18 20	18 26	42103	29099
5 30	81800	18 46	18 43	18 32	18 39	31357	16032
5 35	80600	18 52	18 49	18 43	18 48	12958	2725
5 40	79400	18 58	18 55	18 51	18 55	6488	680
5 45	78200	18 64	18 61	18 58	18 62	-11137	-1594
5 50	77000	18 70	18 67	18 63	18 66	15779	3985
5 55	75600	18 68	18 69	18 71	18 75	-39062	-24270
5 60	74200	18 66	18 67	18 72	18 73	-37500	-22411
5 65	72800	18 64	18 65	18 73	18 74	-47005	-35177
5 70	71400	18 62	18 63	18 73	18 74	-47592	-36110
5 75	70000	18 60	18 61	18 72	18 71	-49723	-39451
5 80	69000	18 50	18 55	18 70	18 69	-58940	-55511
5 85	68000	18 40	18 45	18 66	18 64	-68466	-75185
5 90	67000	18 30	18 35	18 60	18 57	-72239	-84180
5 95	66000	18 20	18 25	18 53	18 49	-74959	-91186
6 00	65000	18 10	18 15	18 45	18 40	-76295	-95085
6 05	63800	17 92	18 01	18 36	18 30		

6.10	62600	17.74	17.83	18.25	18.20	-89498	-132869
6.15	61400	17.56	17.65	18.12	18.05	-92418	-143152
6.20	60200	17.38	17.47	17.97	17.90	-93627	-147246
6.25	59000	17.20	17.29	17.78	17.69	-89138	-132903
6.30	57500	16.98	17.09	17.61	17.53	-92302	-140182
6.35	56000	16.76	16.87	17.43	17.34	-94216	-137527
6.40	54500	16.54	16.65	17.25	17.16	-96448	-135282
6.45	53000	16.32	16.43	17.06	16.97	-98268	-132608
6.50	51500	16.10	16.21	16.88	16.78	-99875	-129708
6.55	50400	15.86	15.98	16.69	16.60	-102150	-127406
6.60	49300	15.62	15.74	16.51	16.41	-104813	-125393
6.65	48200	15.38	15.50	16.32	16.22	-107014	-122827
6.70	47100	15.14	15.26	16.13	16.03	-108948	-119914
6.75	46000	14.90	15.02	15.94	15.84	-110183	-115938
6.80	45000	14.68	14.79	15.75	15.66	-110648	-110838
6.85	44000	14.46	14.57	15.57	15.47	-110680	-105579
6.90	43000	14.24	14.35	15.39	15.30	-110915	-100526
6.95	42000	14.02	14.13	15.21	15.12	-111261	-95586
7.00	41000	13.80	13.91	15.04	14.95	-111693	-90731
7.05	40000	13.58	13.69	14.82	14.71	-107460	-81243
7.10	39000	13.36	13.47	14.61	14.50	-105077	-73586
7.15	38000	13.14	13.25	14.41	14.31	-103789	-66963
7.20	37000	12.92	13.03	14.22	14.13	-102942	-60679
7.25	36000	12.70	12.81	14.04	13.95	-102979	-54482
7.30	35460	12.50	12.60	13.87	13.78	-104033	-48424
7.35	34920	12.30	12.40	13.70	13.61	-104880	-42455
7.40	34380	12.10	12.20	13.54	13.46	-106013	-36730
7.45	33840	11.90	12.00	13.38	13.30	-107356	-31165
7.50	33300	11.70	11.80	13.23	13.16	-108880	-25724
7.55	32640	11.50	11.60	13.09	13.01	-110552	-20259
7.60	31980	11.30	11.40	12.95	12.88	-111770	-17333
7.65	31320	11.10	11.20	12.81	12.74	-112819	-14671
7.70	30660	10.90	11.00	12.67	12.60	-113831	-12011
7.75	30000	10.70	10.80	12.53	12.47	-114813	-9342
7.80	29600	10.50	10.60	12.40	12.33	-115773	-6659
7.85	29200	10.30	10.40	12.27	12.20	-116724	-4014
7.90	28800	10.10	10.20	12.14	12.07	-117662	-1404
7.95	28400	9.90	10.00	12.01	11.94	-118678	0
8.00	28000	9.70	9.80	11.80	11.70	-119444	0
8.05	27600	9.52	9.61	11.60	11.50	-119513	0
8.10	27200	9.34	9.43	11.41	11.31	-111446	0
8.15	26800	9.16	9.25	11.22	11.12	-109544	0
8.20	26400	8.98	9.07	11.03	10.93	-107777	0
8.25	26000	8.80	8.89	10.84	10.75	-106131	0
8.30	25600	8.62	8.71	10.66	10.57	-104593	0
8.35	25200	8.44	8.53	10.48	10.39	-103152	0
8.40	24800	8.26	8.35	10.30	10.21	-101798	0
8.45	24400	8.08	8.17	10.12	10.04	-100522	0
8.50	24000	7.90	7.99	9.95	9.86	-98413	0



WATER LEVELS IN A BAY DUE TO COMBINED FLOOD AND HURRICANE EVENTS

E. R. BRAD

BAY ELV DT L N NC CH NO WEIR  
 0 00 0.3 2800 0.021 1 1

ELV	AREA	STORAGE
0.00	0.	0.
0.00	689.	0.
3.00	820.	98598060.
6.00	951.	214315200.
9.00	1271.	359500680.
12.00	2349.	596031480.
15.00	3426.	973369980.
18.00	4503.	1491450840.
21.00	5580.	2150274060.

-4 0	750.0	0.0	750.0	4.0	750.0	8.0	1270.0	10.0	1200.0	12.0	1641.0
13 0	1424.0	14.0	1790.0	16.0	1648.0	18.0	2088.0	20.0	1947.0	22.0	2386.0

-4 0	0.0	0.0	0.0	4.0	0.0	8.0	0.0	10.0	0.0	12.0	0.0
13 0	3500.0	14.0	3500.0	16.0	3500.0	18.0	3500.0	20.0	3500.0	22.0	3500.0

TIME	FLD G	SEA EL	SEAI	BAY EL	BAYI	GC(I) +	GW(I)
0.05	440.	0.99	0.95	0.00	0.00	13876.	0.
0.10	480.	1.08	1.04	0.08	0.12	14111.	0.
0.15	520.	1.18	1.13	0.16	0.20	14630.	0.
0.20	560.	1.27	1.22	0.24	0.28	15128.	0.
0.25	600.	1.36	1.31	0.33	0.37	15611.	0.
0.30	720.	1.44	1.40	0.42	0.46	15968.	0.
0.35	840.	1.51	1.47	0.51	0.55	16196.	0.
0.40	960.	1.59	1.55	0.60	0.65	16405.	0.
0.45	1080.	1.66	1.63	0.70	0.74	16592.	0.
0.50	1200.	1.74	1.70	0.79	0.84	16755.	0.
0.55	1340.	1.83	1.79	0.89	0.94	17014.	0.
0.60	1480.	1.92	1.88	0.99	1.04	17365.	0.
0.65	1620.	2.02	1.97	1.10	1.15	17689.	0.
0.70	1760.	2.11	2.06	1.20	1.25	17971.	0.
0.75	1900.	2.20	2.15	1.31	1.36	18227.	0.
0.80	2020.	2.29	2.25	1.42	1.48	18434.	0.
0.85	2140.	2.38	2.34	1.53	1.59	18593.	0.
0.90	2260.	2.47	2.43	1.65	1.70	18720.	0.
0.95	2380.	2.56	2.52	1.76	1.82	18814.	0.
1.00	2500.	2.65	2.61	1.88	1.93	18875.	0.
1.05	2660.	2.77	2.71	1.99	2.05	19228.	0.
1.10	2860.	2.90	2.84	2.11	2.17	19859.	0.
1.15	3040.	3.02	2.96	2.24	2.30	20417.	0.
1.20	3220.	3.15	3.08	2.37	2.43	20919.	0.
1.25	3400.	3.27	3.21	2.50	2.56	21362.	0.
1.30	3560.	3.39	3.33	2.63	2.70	21723.	0.
1.35	3720.	3.51	3.45	2.77	2.84	22004.	0.
1.40	3880.	3.64	3.58	2.91	2.98	22228.	0.
1.45	4040.	3.76	3.70	3.05	3.12	22639.	0.
1.50	4200.	3.88	3.82	3.17	3.23	23286.	0.
1.55	4440.	4.02	3.95	3.30	3.37	24000.	0.
1.60	4680.	4.17	4.10	3.43	3.50	24818.	0.
1.65	4920.	4.31	4.24	3.57	3.64	25486.	0.
1.70	5160.	4.46	4.38	3.71	3.78	26074.	0.
1.75	5400.	4.60	4.53	3.86	3.93	26579.	0.
1.80	5600.	4.74	4.67	4.01	4.08	27008.	0.
1.85	5800.	4.89	4.82	4.16	4.24	27363.	0.
1.90	6000.	5.03	4.96	4.32	4.39	27649.	0.
1.95	6200.	5.18	5.10	4.47	4.55	27866.	0.
2.00	6400.	5.32	5.25	4.63	4.71	28018.	0.
2.05	6640.	5.48	5.40	4.79	4.87	28351.	0.
2.10	6880.	5.64	5.56	4.96	5.04	28837.	0.
2.15	7120.	5.80	5.72	5.12	5.21	29211.	0.
2.20	7360.	5.96	5.88	5.29	5.38	29496.	0.
2.25	7600.	6.12	6.04	5.46	5.55	29697.	0.
2.30	7880.	6.28	6.20	5.64	5.72	29852.	0.
2.35	8160.	6.44	6.36	5.81	5.90	29956.	0.
2.40	8440.	6.61	6.53	5.99	6.08	29976.	0.
2.45	8720.	6.77	6.69	6.14	6.21	31692.	0.
2.50	9000.	6.93	6.85	6.29	6.36	32580.	0.
2.55	9400.	7.11	7.02	6.44	6.52	33608.	0.
2.60	9800.	7.28	7.19	6.60	6.68	34721.	0.
2.65	10200.	7.46	7.37	6.77	6.85	35647.	0.
2.70	10600.	7.63	7.55	6.94	7.02	36421.	0.
2.75	11000.	7.81	7.72	7.11	7.20	37054.	0.
2.80	11400.	7.97	7.89	7.29	7.38	37316.	0.
2.85	11800.	8.14	8.06	7.47	7.56	37425.	0.
2.90	12200.	8.30	8.22	7.66	7.75	37774.	0.

2.95	12600.	8.47	8.38	7.84	7.93	37933.	0
3.00	13000.	8.63	8.55	8.03	8.12	37942.	0
3.05	13420.	8.80	8.72	8.22	8.31	38071.	0
3.10	13840.	8.98	8.89	8.41	8.51	38293.	0
3.15	14260.	9.15	9.07	8.60	8.70	38314.	0
3.20	14680.	9.33	9.24	8.80	8.90	38177.	0
3.25	15100.	9.50	9.41	9.00	9.09	37893.	0
3.30	15460.	9.69	9.59	9.12	9.18	34431.	0
3.35	15820.	9.88	9.78	9.26	9.32	48093.	0
3.40	16180.	10.06	9.97	9.40	9.47	51441.	0
3.45	16540.	10.25	10.16	9.56	9.63	53859.	0
3.50	16900.	10.44	10.35	9.72	9.80	55914.	0
3.55	17340.	10.64	10.54	9.88	9.97	57942.	0
3.60	17780.	10.83	10.73	10.05	10.14	59924.	0
3.65	18220.	11.03	10.93	10.23	10.32	61646.	0
3.70	18660.	11.22	11.13	10.41	10.51	63151.	0
3.75	19100.	11.42	11.32	10.60	10.69	64456.	0
3.80	19420.	11.65	11.53	10.79	10.89	66489.	0
3.85	19740.	11.88	11.76	10.99	11.09	69125.	0
3.90	20060.	12.10	11.99	11.19	11.29	71405.	0
3.95	20380.	12.33	12.22	11.40	11.50	73636.	3476.
4.00	20700.	12.56	12.45	11.62	11.73	74978.	7128.
4.05	21040.	12.81	12.69	11.86	11.97	76368.	10974.
4.10	21380.	13.06	12.94	12.07	12.17	80853.	15351.
4.15	21720.	13.31	13.19	12.23	12.32	87128.	23441.
4.20	22060.	13.56	13.44	12.42	12.52	90503.	32668.
4.25	22400.	13.81	13.69	12.63	12.73	93056.	41990.
4.30	22720.	14.03	13.92	12.86	12.97	93968.	50392.
4.35	23040.	14.25	14.14	13.10	13.21	94612.	57691.
4.40	23360.	14.46	14.35	13.35	13.47	95292.	64634.
4.45	23680.	14.68	14.57	13.61	13.74	95192.	71136.
4.50	24000.	14.90	14.79	13.88	14.02	94334.	77183.
4.55	24380.	15.24	15.07	14.16	14.30	97328.	86722.
4.60	24760.	15.58	15.41	14.46	14.61	103483.	99715.
4.65	25140.	15.92	15.75	14.78	14.95	107630.	111791.
4.70	25520.	16.26	16.09	15.10	15.25	113816.	125347.
4.75	25900.	16.60	16.43	15.37	15.51	122706.	141501.
4.80	26170.	16.84	16.72	15.68	15.83	123744.	151059.
4.85	26440.	17.08	16.96	15.99	16.15	120181.	154894.
4.90	26710.	17.31	17.20	16.30	16.46	116475.	156527.
4.95	26980.	17.55	17.43	16.62	16.77	112495.	157856.
5.00	27250.	17.79	17.67	16.93	17.08	108197.	158897.
5.05	27540.	17.91	17.85	17.23	17.39	97289.	152227.
5.10	27830.	18.03	17.97	17.52	17.67	79749.	106968.
5.15	28120.	18.16	18.10	17.75	17.86	71100.	84425.
5.20	28410.	18.28	18.22	17.94	18.03	63469.	66729.
5.25	28700.	18.40	18.34	18.08	18.15	64800.	68931.
5.30	28810.	18.46	18.43	18.21	18.28	58626.	56039.
5.35	28920.	18.52	18.49	18.33	18.39	48202.	37711.
5.40	29030.	18.58	18.55	18.43	18.47	42741.	29514.
5.45	29140.	18.64	18.61	18.51	18.55	37866.	23059.
5.50	29250.	18.70	18.67	18.58	18.62	35065.	19682.
5.55	29140.	18.68	18.69	18.65	18.69	10483.	1756.
5.60	29030.	18.66	18.67	18.68	18.70	-27901.	-12431.
5.65	28920.	18.64	18.65	18.68	18.67	-22596.	-8173.
5.70	28810.	18.62	18.63	18.67	18.67	-32438.	-16840.
5.75	28700.	18.60	18.61	18.66	18.65	-30668.	-15080.
5.80	28460.	18.50	18.55	18.64	18.64	-45566.	-33322.
5.85	28220.	18.40	18.45	18.60	18.58	-55852.	-50278.
5.90	27980.	18.30	18.35	18.54	18.51	-60409.	-59154.
5.95	27740.	18.20	18.25	18.46	18.43	-63466.	-65695.
6.00	27500.	18.10	18.15	18.38	18.34	-65110.	-69595.
6.05	27250.	17.92	18.01	18.28	18.25	-72464.	-84783.

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6.10	27000	17.74	17.83	18.18	18.13	-80220	-107276
6.15	26750	17.56	17.65	18.05	17.99	-83662	-117748
6.20	26500	17.38	17.47	17.88	17.80	-81814	-112229
6.25	26250	17.20	17.29	17.71	17.62	-80991	-109549
6.30	25900	16.98	17.09	17.54	17.45	-83553	-116062
6.35	25550	16.76	16.87	17.36	17.27	-86167	-122708
6.40	25200	16.54	16.65	17.17	17.07	-87405	-125324
6.45	24850	16.32	16.43	16.97	16.87	-88330	-121592
6.50	24500	16.10	16.21	16.78	16.68	-89749	-118310
6.55	24200	15.86	15.98	16.59	16.49	-92018	-115740
6.60	23900	15.62	15.74	16.40	16.30	-94815	-113573
6.65	23600	15.38	15.50	16.20	16.11	-97175	-110953
6.70	23300	15.14	15.26	16.01	15.91	-99067	-108069
6.75	23000	14.90	15.02	15.82	15.72	-100483	-104980
6.80	22740	14.68	14.79	15.63	15.53	-101103	-101142
6.85	22480	14.46	14.57	15.44	15.35	-101188	-96727
6.90	22220	14.24	14.35	15.26	15.17	-101494	-91649
6.95	21960	14.02	14.13	15.08	14.99	-102001	-86762
7.00	21700	13.80	13.91	14.87	14.77	-99010	-78688
7.05	21460	13.58	13.69	14.65	14.54	-95569	-70251
7.10	21220	13.36	13.47	14.44	14.34	-94341	-63768
7.15	20980	13.14	13.25	14.25	14.15	-93550	-57643
7.20	20740	12.92	13.03	14.06	13.97	-93514	-51897
7.25	20500	12.70	12.81	13.88	13.79	-95059	-46381
7.30	20270	12.50	12.60	13.71	13.62	-96271	-40759
7.35	19900	12.30	12.40	13.54	13.46	-97287	-35136
7.40	19600	12.10	12.20	13.38	13.30	-98577	-29572
7.45	19300	11.90	12.00	13.23	13.15	-100084	-24156
7.50	19000	11.70	11.80	13.08	13.00	-101768	-18846
7.55	18720	11.50	11.60	12.93	12.86	-102974	-16334
7.60	18440	11.30	11.40	12.79	12.71	-104063	-13761
7.65	18160	11.10	11.20	12.64	12.57	-105139	-11113
7.70	17880	10.90	11.00	12.50	12.43	-106204	-8447
7.75	17600	10.70	10.80	12.36	12.30	-107256	-5794
7.80	17300	10.50	10.60	12.23	12.16	-108293	-3152
7.85	17000	10.30	10.40	12.09	12.03	-109313	-517
7.90	16700	10.10	10.20	11.94	11.86	-109045	0
7.95	16400	9.90	10.00	11.73	11.62	-105915	0
8.00	16100	9.70	9.80	11.52	11.42	-104304	0
8.05	15860	9.52	9.61	11.32	11.22	-102434	0
8.10	15620	9.34	9.43	11.12	11.02	-100421	0
8.15	15380	9.16	9.25	10.93	10.83	-98590	0
8.20	15140	8.98	9.07	10.74	10.64	-96907	0
8.25	14900	8.80	8.89	10.55	10.46	-95355	0
8.30	14620	8.62	8.71	10.37	10.28	-93920	0
8.35	14340	8.44	8.53	10.19	10.10	-92586	0
8.40	14060	8.26	8.35	10.01	9.92	-90859	0
8.45	13780	8.08	8.17	9.83	9.75	-88706	0
8.50	13500	7.90	7.99	9.66	9.58	-86755	0

240.39

(2.4.5)

Provide an evaluation of the effect on the wave overtopping rate resulting from the increased Design Stillwater Level using the combined PMF/PMH rather than SPF/PMH event.

RESPONSE: Since the design stillwater level when using the PMF/PMH event does not exceed the FSAR value of +19.7 feet MLW (+15.6 feet MSL), wave overtopping rates provided in the FSAR are still the upper design values. These values, however, have been increased by 70 percent to account for wind affects.

When using the Regulatory Guide 1.59 maximum open coast stillwater level of +17.8 feet MLW, the maximum stillwater level at the Seabrook site is +18.9 feet MLW (+14.8 feet MSL). With this lower design stillwater level than that used in the FSAR, there is less wave overtopping.

It is not apparent from our review of the ponding level on plant grade that concurrent intense precipitation was included in your wave overtopping runoff/ponding analysis. Therefore, provide a detailed analysis on the routing of the combined precipitation runoff from Probable Maximum Precipitation and wave overtopping runoff from the PMF/PMH event.

- a) If credit is taken for flow through the storm drainage system, provide justification that the storm drainage system cannot become blocked during this event.
- b) Identify the maximum water surface levels by location and elevation from the vertical seawall to the overflow weir (seawall).
- c) Identify plant access openings and sill elevations that may be affected by the runoff on plant grade.

## RESPONSE:

- a) Credit is not taken for flow through the Storm Drainage System for the PMF/PMH event. However, during a PMF/PMH event, significant blockage of the system is considered an unlikely event and, therefore, discharge through the Storm Drainage System would reduce the maximum standing water elevation on the plant site to less than the 20.6 feet MSL presented in the FSAR.
- b) Response to be supplied later.
- c) The following is a list of safety-related buildings where ponding water resulting from the PMF/PMH is critical, or approaches being critical to entering the building. Elevations listed represent the sill of the access opening.

	<u>Building</u>	<u>Sill Elevation (Ft.)</u>
1.	Fuel Storage Building	20.5 (a)
2.	Main Steam and Feed Water Pipe Chase-East & West	21.0
3.	Service Water Pump House	21.0
4.	R.H.R. and Containment Spray Equipment Vault	20.67 (b)

- (a) New and spent fuel are locally protected from rising water with a concrete barrier. The barrier heights are 25.5 and 25.0 feet, respectively.
- (b) The high point of the sloping floor beyond the sill restricts rising water from penetrating the building. The high point is at El. 21.0 feet.