Appendix C

Nitrogen Loading Spreadsheets

Detailed Cost Spreadsheets

Wastewater Scenarios Summary (Collection Systems)

Evaluation of Alternatives - Harwich CWMP Wastewater Scenarios

Data for Cost Analysis	1A	2A	3A	4A	5A	6A	7A	8A
Allen								
Areas tributary to WWTP #3	Allen	Allen	Allen	Allen	Allen	Allen	Allen	Allen
# parcels sewered	234	234	234	234	234	234	185	234
Total lf of roads in sewered area (from GIS)	30,587	30,587	30,587	30,587	30,587	30,587	27,956	30,587
lf roads (90%)/parcel in sewered area	118	118	118	118	118	118	136	118
# pump stations (est. 1/100 parcel)	2	2	2	2	2	2	2	2
Cons. Cost per property (from chart)	22,500	22,500	22,500	22,500	22,500	22,500	25,600	22,500
Collection cost	5,265,000	5,265,000	5,265,000	5,265,000	5,265,000	5,265,000	4,736,000	5,265,000
Length of FMs (collection system to WWTP)	6,095	0	0	0	0	5,720	5,720	0
Additional Pump Station (Collection to WWTF)	1,500,000					1,500,000	1,500,000	
Additional Pump Station O&M	$75,000	$0	$0	$0	$0	$75,000	$75,000	$0
Total water use in watershed	94,100	94,100	94,100	94,100	94,100	94,100	94,100	94,100
ADF to WWTP (100% water use)	61,237	61,237	61,237	61,237	61,237	61,237	54,408	61,237
TOTAL CAPITAL COST	$5,340,000	$5,265,000	$5,265,000	$5,265,000	$5,265,000	$5,340,000	$4,811,000	$5,265,000
Wychmere								
Areas tributary to WWTP #3	Wychmere	Wychmere	Wychmere	Wychmere	Wychmere	Wychmere	Wychmere	Wychmere
# parcels sewered	123	123	123	123	123	123	123	123
Total lf of roads in sewered area (from GIS)	19,222	19,222	19,222	19,222	19,222	19,222	19,222	19,222
lf roads (90%)/parcel in sewered area	141	141	141	141	141	141	141	141
# pump stations (est. 1/100 parcel)	1	1	1	1	1	1	1	1
Cons. Cost per property (from chart)	26,400	26,400	26,400	26,400	26,400	26,400	26,400	26,400
Collection cost	3,247,200	3,247,200	3,247,200	3,247,200	3,247,200	3,247,200	3,247,200	3,247,200
Length of FMs (collection system to WWTP)	0	0	0	0	0	0	0	0
Additional Pump Station (Collection to WWTF)								
Additional Pump Station O&M	$0	$0	$0	$0	$0	$0	$0	$0
Force main + PS cost (PS to WWTP @$175/ft)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total water use in watershed	31,208	31,208	31,208	31,208	31,208	31,208	31,208	31,208
ADF to WWTP (100% water use)	31,208	31,208	31,208	31,208	31,208	31,208	31,208	31,208
TOTAL CAPITAL COST	$3,247,200	$3,247,200	$3,247,200	$3,247,200	$3,247,200	$3,247,200	$3,247,200	$3,247,200
Saquatucket								
Areas tributary to WWTP #3	Saquatucket	Saquatucket	Saquatucket	Saquatucket	Saquatucket	Saquatucket	Saquatucket	Saquatucket
# parcels sewered	508	484	415	415	415	484	248	415
Total lf of roads in sewered area (from GIS)	74,117	81,752	83,655	83,655	83,655	81,752	42,001	83,655
lf roads (90%)/parcel in sewered area	131	152	181	181	181	152	152	181
# pump stations (est. 1/100 parcel)	5	5	4	4	4	5	2	4
Cons. Cost per property (from chart)	24,800	28,300	33,300	33,300	33,300	28,300	28,400	33,300
Collection cost	12,598,400	13,697,200	13,819,500	13,819,500	13,819,500	13,697,200	7,043,200	13,819,500
Length of FMs (collection system to WWTP)	13,308	13,308	16,430	16,430	16,430	13,308	13,308	12,795
Additional Pump Station (Collection to WWTF)	3,000,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000
Additional Pump Station O&M	$150,000	$75,000	$75,000	$75,000	$75,000	$75,000	$75,000	$75,000
Force main + PS cost (PS to WWTP @$175/ft)	$ 5,328,900	$ 3,828,900	$ 4,375,250	$ 4,375,250	$ 4,375,250	$ 3,828,900	$ 3,828,900	$ 3,739,125
Total water use in watershed	291,967	291,967	291,967	291,967	291,967	291,967	291,967	291,967
ADF to WWTP (100% water use)	115,420	111,607	102,370	102,370	102,370	111,607	63,243	102,370
TOTAL CAPITAL COST	$17,927,300	$17,526,100	$18,194,750	$18,194,750	$18,194,750	$17,526,100	$10,872,100	$17,558,625
Pleasant Bay								
Areas tributary to WWTP #3	PB	PB	PB	PB	PB	PB	PB	PB
# parcels sewered	1,295	1,295	1,031	1,295	1,205	1,295	681	1,031
Total lf of roads in sewered area (from GIS)	151,942	151,942	132,613	151,942	139,810	151,942	92,369	132,613
lf roads (90%)/parcel in sewered area	106	106	116	106	104	106	122	116
# pump stations (est. 1/100 parcel)	13	13	10	13	12	13	7	10
Cons. Cost per property (from chart)	20,500	20,500	22,200	20,500	20,300	20,500	23,300	22,200
Collection cost	26,547,500	26,547,500	22,888,200	26,547,500	24,461,500	26,547,500	15,867,300	22,888,200
Length of FMs (collection system to WWTP)	5,400	5,400	23,050	5,411	12,965	5,411	5,411	24,087
Additional Pump Station (Collection to WWTF)	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000
Additional Pump Station O&M	$150,000	$150,000	$150,000	$150,000	$150,000	$150,000	$150,000	$150,000
Force main + PS cost (PS to WWTP @$175/ft)	$ 3,945,000	$ 3,945,000	$ 7,033,750	$ 3,946,925	$ 5,268,875	$ 3,946,925	$ 3,946,925	$ 7,215,225
Total water use in watershed	386,474	386,474	386,474	386,474	386,474	386,474	386,474	386,474
ADF to WWTP (100% water use)	277,465	277,465	216,997	277,465	253,639	277,465	150,664	216,997
TOTAL CAPITAL COST	$30,492,500	$30,492,500	$29,921,950	$30,494,425	$29,730,375	$30,494,425	$19,814,225	$30,103,425
Herring River								
Areas tributary to WWTP #3	Herring	Herring	Herring	Herring	Herring	Herring	Herring	Herring
# parcels sewered	832	956	1,395	1,117	1,117	832	406	635
Total lf of roads in sewered area (from GIS)	98,711	124,459	190,828	147,766	147,766	98,711	60,342	77,569
lf roads (90%)/parcel in sewered area	107	117	123	119	119	107	134	110
# pump stations (est. 1/100 parcel)	8	10	14	11	11	8	4	6
Cons. Cost per property (from chart)	20,700	22,400	23,400	22,700	22,700	20,700	25,200	21,200
Collection cost	17,222,400	21,414,400	32,643,000	25,355,900	25,355,900	17,222,400	10,231,200	13,462,000
Length of FMs (collection system to WWTP)	7,300	7,300	7,300	7,300	7,300	7,300	7,300	3,949
Additional Pump Station (Collection to WWTF)	3,000,000	3,000,000	5,000,000	3,000,000	3,000,000	3,000,000	1,500,000	3,000,000
Additional Pump Station O&M	$150,000	$150,000	$250,000	$150,000	$150,000	$150,000	$75,000	$150,000
Force main + PS cost (PS to WWTP @$175/ft)	$ 4,277,500	$ 4,277,500	$ 6,277,500	$ 4,277,500	$ 4,277,500	$ 4,277,500	$ 2,777,500	$ 3,691,075
Total water use in watershed	613,025	613,025	613,025	613,025	613,025	613,025	613,025	613,025
ADF to WWTP (100% water use)	184,267	200,969	284,797	231,970	231,970	184,267	117,097	152,256
TOTAL CAPITAL COST	$21,499,900	$25,691,900	$38,920,500	$29,633,400	$29,633,400	$21,499,900	$13,008,700	$17,153,075

	1A	2A	3A	4A	5A	6A	7A	8A
Summary Number of Parcels Sewered	2,992	3,092	3,198	3,184	3,094	2,968	1,643	2,438
Summary Collection System cost	$ 64,880,500	$ 70,171,300	$ 77,862,900	$ 74,235,100	$ 72,149,100	$ 65,979,300	$ 41,124,900	$ 58,681,900
Summary Force Main & PS Cost	$ 13,626,400	$ 12,051,400	$ 17,686,500	$ 12,599,675	$ 13,921,625	$ 12,128,325	$ 10,628,325	$ 14,645,425
Summary Total Capital Cost	$78,500,000	$82,200,000	$95,500,000	$86,800,000	$86,100,000	$78,100,000	$51,800,000	$73,300,000
Summary Pumping Station O&M	$525,000	$375,000	$475,000	$375,000	$375,000	$450,000	$375,000	$375,000

	1A	2A	3A	4A	5A	6A	7A	8A
Fm Length (feet)	32,000	26,000	47,000	29,000	37,000	32,000	32,000	41,000
Fm Length (Miles)	6.1	4.9	8.9	5.5	7.0	6.1	6.1	7.8
Linear Feet of Roads (*90%)	337,121	367,166	411,215	389,855	378,936	343,993	217,701	309,281
Miles of Roads (*90%)	64	70	78	74	72	65	41	59
Estimated Miles of Sewer	70	74	87	79	79	71	47	66

Wastewater Scenarios Summary (Treatment Systems)

Evaluation of Alternatives - Harwich CWMP Wastewater Scenarios

Data for Cost Analysis	1A	2A	3A	4A	5A	6A	7A	8A
WWTP #1 Gravel Pit (HR-12)								
ADF to WWTP #3 (100% water use)	184,000	262,000	697,000	427,000	427,000	184,000	117,000	0
Short Term Peak Flow (2.2 x ADF)	404,800	576,400	1,533,400	939,400	939,400	404,800	257,400	0
Unit Construction Cost (from chart) ($/gpd)	22.0	19.0	14.0	15.0	15.0	22.0	26.0	
Treatment goal (mg/L TN)	5	5	5	5	5	5	5	5
Capital cost for WWTP (120%)	$ 10,686,720	$ 13,141,920	$ 25,761,120	$ 16,909,200	$ 16,909,200	$ 10,686,720	$ 8,030,880	$ -
Regional Solution With Chatham? (80%)	100%	100%	100%	100%	100%	100%	100%	100%
Added % for lower TOC (Zone II)	100%	100%	100%	100%	100%	100%	100%	100%
Revised capital cost for WWTP	$ 10,686,720	$ 13,141,920	$ 25,761,120	$ 16,909,200	$ 16,909,200	$ 10,686,720	$ 8,030,880	$ -
Acres Required (100,000 GPD/ACRE)+(5AC for Treatment)	8	9	15	11	11	8	7	5
LAND PURCHASE COSTS (25k / PER ACRE)								
Effluent Disposal Cost (225,000 per acre)	$ 621,000	$ 884,250	$ 2,352,375	$ 1,441,125	$ 1,441,125	$ 621,000	$ 394,875	$ -
Length of FMs (WWTP to Recharge) (feet)	0	0	0	0	0	0	0	0
Force main cost (@$175/ft)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Force main cost (Ocean Outfall @$2,500/ft)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Additional Implementation Cost (Legal and Permitting)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL CAPITAL COST	$11,307,720	$14,026,170	$28,113,495	$18,350,325	$18,350,325	$11,307,720	$8,425,755	$0
O&M Dollars Per gpd of Flow	5.0	3.8	2.5	3.0	3.0	5.0	5.0	0.0
ANNUAL O&M COST	$920,000	$995,600	$1,742,500	$1,281,000	$1,281,000	$920,000	$585,000	$0
WWTP #2 High School (SH-2)								
ADF to WWTP #3 (100% water use)	208,000	143,000	0	0	0	143,000	95,000	0
Short Term Peak Flow (2.2 x ADF)	457,600	314,600	0	0	0	314,600	209,000	0
Unit Construction Cost (from chart) ($/gpd)	22.0	24.0				24.0	26.0	
Treatment goal (mg/L TN)	5	5	5	5	5	5	5	5
Capital cost for WWTP (120%)	$ 12,080,640	$ 9,060,480	$ -	$ -	$ -	$ 9,060,480	$ 6,520,800	$ -
Regional Solution With Chatham? (80%)	100%	100%	100%	100%	100%	100%	100%	100%
Added % for lower TOC (Zone II)	100%	100%	100%	100%	100%	100%	100%	100%
Revised capital cost for WWTP	$ 12,080,640	$ 9,060,480	$ -	$ -	$ -	$ 9,060,480	$ 6,520,800	$ -
Acres Required (100,000 GPD/ACRE)+(5AC for Treatment)	8	7	5	5	5	7	6	5
LAND PURCHASE COSTS (25k / PER ACRE)								
Effluent Disposal Cost (225,000 per acre)	$ 702,000	$ 482,625	$ -	$ -	$ -	$ 482,625	$ 320,625	$ -
Length of FMs (WWTP to Recharge) (feet)	0	0	0	0	0	0	0	0
Force main cost (@$175/ft)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Force main cost (Ocean Outfall @$2,500/ft)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Additional Implementation Cost (Legal and Permitting)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL CAPITAL COST	$12,782,640	$9,543,105	$0	$0	$0	$9,543,105	$6,841,425	$0
O&M Dollars Per gpd of Flow	4.3	5.3	0.0	0.0	0.0	5.5	6.5	0.0
ANNUAL O&M COST	$894,400	$757,900	$0	$0	$0	$786,500	$617,500	$0
WWTP #3 Gravel Pit (PB-3)								
ADF to WWTP #3 (100% water use)	278,000	278,000	0	278,000	254,000	278,000	151,000	0
Short Term Peak Flow (2.2 x ADF)	611,600	611,600	0	611,600	558,800	611,600	332,200	0
Unit Construction Cost (from chart) ($/gpd)	18.0	18.0	0.0	18.0	19.0	18.0	24.0	0.0
Treatment goal (mg/L TN)	5	5	5	5	3	5	3	5
Capital cost for WWTP (120%)	$ 13,210,560	$ 13,210,560	$ -	$ 13,210,560	$ 12,740,640	$ 13,210,560	$ 9,567,360	$ -
Regional Solution With Chatham? (80%)	100%	100%	100%	100%	80%	100%	100%	100%
Added % for lower TOC (Zone II) or Est. Cost	130%	130%	130%	130%	$4,359,485	130%	130%	130%
Revised capital cost for WWTP	$ 17,173,728	$ 17,173,728	$ -	$ 17,173,728	$ 14,551,997	$ 17,173,728	$ 12,437,568	$ -
Acres Required (100,000 GPD/ACRE)+(5AC for Treatment)	9	9	5	9	9	9	7	5
LAND PURCHASE COSTS (25k / PER ACRE)	$ 229,000	$ 229,000	$ -	$ 229,000	$ 220,000	$ 229,000	$ 182,000	$ -
Effluent Disposal Cost (225,000 per acre)	$ 938,250	$ 938,250	$ -	$ 938,250	$ 857,250	$ 938,250	$ 509,625	$ -
Length of FMs (WWTP to Recharge) (feet)	0			0	17,437	0		0
Additional Chatham Pumping Station					$ 2,000,000			
Additional Chatham Pumping Station O&M					$ 100,000			
Force main cost (@$175/ft)	$ -	$ -	$ -	$ -	$ 3,051,475	$ -	$ -	$ -
Force main cost (Ocean Outfall @$2,500/ft)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Additional Implementation Cost (Legal and Permitting)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL CAPITAL COST	$18,340,978	$18,340,978	$0	$18,340,978	$18,680,722	$18,340,978	$13,129,193	$0
O&M Dollars Per gpd of Flow	3.8	3.8	0.0	3.8	1.7	3.8	5.2	0.0
Additional O&M Cost for TOC in Zone II	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
ANNUAL O&M COST	$1,612,400	$1,612,400	$0	$1,612,400	$1,039,800	$1,612,400	$1,087,200	$0
WWTP #4 Harwich Port Golf Club (OW-2)								
ADF to WWTP #3 (100% water use)	0	0	0	0	0	61,000	54,000	0
Short Term Peak Flow (2.2 x ADF)	0	0	0	0	0	134,200	118,800	0
Unit Construction Cost (from chart) ($/gpd)						34.0	33.0	
Treatment goal (mg/L TN)	5	5	5	5	5	5	5	5
Capital cost for WWTP (120%)	$ -	$ -	$ -	$ -	$ -	$ 5,475,360	$ 4,704,480	$ -
Regional Solution With Chatham? (80%)	100%	100%	100%	100%	100%	100%	100%	100%
Added % for lower TOC (Zone II)	100%	100%	100%	100%	100%	100%	100%	100%
Revised capital cost for WWTP	$ -	$ -	$ -	$ -	$ -	$ 5,475,360	$ 4,704,480	$ -
Acres Required (100,000 GPD/ACRE)+(5AC for Treatment)	5	5	5	5	5	9	8	5
LAND PURCHASE COSTS (25k / PER ACRE)						$ 217,000	$ 206,000	
Effluent Disposal Cost (225,000 per acre)	$ -	$ -	$ -	$ -	$ -	$ 823,500	$ 729,000	$ -
Length of FMs (WWTP to Recharge) (feet)	0	0	0	0	0	0	0	0
Force main cost (@$175/ft)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Force main cost (Ocean Outfall @$2,500/ft)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Additional Implementation Cost (Legal and Permitting)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL CAPITAL COST	$0	$0	$0	$0	$0	$6,515,860	$5,639,480	$0
O&M Dollars Per gpd of Flow	0.0	0.0	0.0	0.0	0.0	7.8	8.2	0.0
ANNUAL O&M COST	$0	$0	$0	$0	$0	$475,800	$442,800	$0
WWTP #5 Town Gardens (HR-18)								
ADF to WWTP #3 (100% water use)	0	0	0	0	0	0	0	564,000
Short Term Peak Flow (2.2 x ADF)	0	0	0	0	0	0	0	1,240,800
Unit Construction Cost (from chart) ($/gpd)								14.5
Treatment goal (mg/L TN)	5	5	5	5	5	5	5	5
Capital cost for WWTP (120%)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 21,589,920
Regional Solution With Chatham? (80%)	100%	100%	100%	100%	100%	100%	100%	100%
Added % for lower TOC (Zone II)	100%	100%	100%	100%	100%	100%	100%	100%
Revised capital cost for WWTP	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 21,589,920
Acres Required (100,000 GPD/ACRE)+(5AC for Treatment)	5	5	5	5	5	5	5	13
LAND PURCHASE COSTS (25k / PER ACRE)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
Effluent Disposal Cost (225,000 per acre)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,903,500
Length of FMs (WWTP to Outfall (feet))	0	0	0	0	0	0	0	25,362
Force main cost (@$175/ft)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 4,438,350
Force main cost (Ocean Outfall @$2,500/ft)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 63,405,000
Additional Implementation Cost (Legal and Permitting)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,000,000
TOTAL CAPITAL COST	$0	$0	$0	$0	$0	$0	$0	$92,336,770
O&M Dollars Per gpd of Flow	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0
ANNUAL O&M COST	$0	$0	$0	$0	$0	$0	$0	$1,692,000
WWTP #6 Innovative / Alternative Systems								
# proposed I/A systems 19 mg/L TN	0	0	0	0	0	0	5369	0
# proposed I/A systems 13 mg/L TN	0	0	0	0	0	0	1226	0
Capital cost I/A systems (15K and 20K)	$ -	$ -	$ -	$ -	$ -	$ -	$ 105,055,000	$ -
Annual O&M cost I/A systems @ $2,500 per system	$ -	$ -	$ -	$ -	$ -	$ -	$ 11,118,500	$ -
TOTAL CAPITAL COST	$0	$0	$0	$0	$0	$0	$105,055,000	$0
ANNUAL O&M COST	$0	$0	$0	$0	$0	$0	$11,118,500	$0

	1A	2A	3A	4A	5A	6A	7A	8A
Summary ADF to WWTP #3 (100% water use)	670,000	683,000	697,000	705,000	681,000	666,000	417,000	564,000
Capital Cost for WWTP	$ 39,941,088	$ 39,376,128	$ 25,761,120	$ 34,082,928	$ 31,461,197	$ 42,396,288	$ 31,693,728	$ 21,589,920
Summary Capital Cost I/A Systems	$ -	$ -	$ -	$ -	$ -	$ -	$ 105,055,000	$ -
Summary Land Purchase + Eff Disp. Cost	$ 2,490,250	$ 2,534,125	$ 2,352,375	$ 2,608,375	$ 2,518,375	$ 3,311,375	$ 2,342,125	$ 1,903,500
Summary Force Main Cost	$ -	$ -	$ -	$ -	$ 3,051,475	$ -	$ -	$ 4,438,350
Summary Ocean Outfall Cost	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 63,405,000
Summary Additional Implementation Cost	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,000,000
Summary Annual O&M Cost WWTP	$ 3,426,800	$ 3,365,900	$ 1,742,500	$ 2,893,400	$ 2,320,800	$ 3,794,700	$ 2,732,500	$ 1,692,000
Summary Annual O&M Cost I/A Systems	$ -	$ -	$ -	$ -	$ -	$ -	$ 11,118,500	$ -
Summary Total Capital Cost	$42,400,000	$41,900,000	$28,100,000	$36,700,000	$37,000,000	$45,700,000	$139,100,000	$92,300,000
Summary Total O&M Cost	$3,400,000	$3,400,000	$1,700,000	$2,900,000	$2,300,000	$3,800,000	$13,900,000	$1,700,000

Final Recommended Plan
Harwich MA - 2012
Allen Harbor

Build-out									
Name	Watershed #	Total (kg/yr)	Septic (kg/yr)	% Removal	Net Septic Load (kg/yr)	Attenuation % (Stream)	Attenuated Septic Load (kg/yr)	Attenuated Septic Load (kg/day)	From Table VIII-2 Attenuated Septic Load Thresholds (kg/day)
Stream GT 10	1	269	224	0%	224				
Stream LT 10	2	942	744	30%	521				
Stream Total		1211	968		745	30%	521	1.428	0.642
Harbor	3	1999	1774	100%	0		0	0.000	0.841
Harbor Total		**3210**	**2742**		**745**		**521**	**1.428**	**1.483**
Treated Load			**1997**	**73%**					

Final Recommended Plan
Harwich MA - 2012
Wychmere Harbor

Build-out									
Name	Watershed #	Total (kg/yr)	Septic (kg/yr)	% Removal	Net Septic Load (kg/yr)	Attenuation % (Stream)	Attenuated Septic Load (kg/yr)	Attenuated Septic Load (kg/day)	From Table VIII-2 Attenuated Septic Load Thresholds (kg/day)
Harbor	4	1523	1206	100%	0		0	0.000	0.000
Harbor Total		**1523**	**1206**		**0**		**0**	**0.000**	**0.000**
Treated Load			**1206**	**100%**					

Final Recommended Plan
Harwich MA - 2012
Saquatucket Harbor

Build-out												
Name	Watershed #	Total (kg/yr)	Septic (kg/yr)	Outflow %	Total (kg/yr)	Septic (kg/yr)	% Removal	Net Septic Load (kg/yr)	Attenuation %	Attenuated Septic Load (kg/yr)	Attenuated Septic Load (kg/day)	From Table VIII-2 Attenuated Septic Load Thresholds
Grass Pond	13	1152	903	100%	1152	903	43%	515	50%	257		
Banks St Bogs LT10	12	2284	1941		2284	1941	10%	1747		1747		
Banks St Bogs GT10	11	322	175		322	175	1%	173		173		
			Recharge to Upper Muddy Creek Watershed 13									
							Removed Septic (kg/yr)	Recharge Septic (kg/yr)				
Cold Spring Brook Recharge							1567					
John Joseph Recharge							0					
E. Saq Stream Recharge							989					
Harbor Load Recharge							1012					
Allen Harbor Load Recharge							0					
Wychmere Harbor Load Recharge							1206					
Total Septic Load From Harwich							4774					
Recharge at what Concentration.			0	mg/l				0	50%	0		
Banks St Bogs Total					**3758**	**3019**	**19%**	**2435**	**35%**	**1415**		
Paddocks Pond	14	898	648	100%	898	648	2%	635	50%	318		
Cold Spring Brook LT10	10	2825	2064		2825	2064	47%	1094		1094		
Cold Spring Brook GT10	9	1178	861		1178	861	0%	861		861		
Cold Spring Brook Total					**8659**	**6592**	**24%**	**5025**	**35%**	**2397**		
Black Pond	5	18	6	14%	2	1	0%	1	50%	0		
John Joseph Pond GT10	6	109	89		109	89	0%	89		89		
John Joseph Pond LT10	7	500	335		500	335	0%	335		335		
John Joseph Pond Total		627	430	27%	164	114	0%	114	74%	30		
Chatham Road WELLS	8	1004	667	80%	803	534	0%	534		534		
Saq Harbor LT10N	15	1166	1009		1166	1009	98%	20		20		
E. Saquatucket Stream Total					**2133**	**1657**	**60%**	**668**	**15%**	**496**	**1.359**	**1.274**
Harbor LT10S	16	1113	1012		1113	1012	100%	0		0	0.000	0.507
Harbor Total					**11905**	**9261**		**5693**		**1915**	**5.246**	**5.28**
Treated Load						**3568**	**39%**					

Final Recommended Plan
Harwich MA - 2012
Pleasant Bay

Build-out												
Name	Watershed #	Total (kg/yr)	Septic (kg/yr)	Outflow %	Total (kg/yr)	Septic (kg/yr)	% Removal	Net Septic Load (kg/yr)	Attenuation %	Attenuated Septic Load (kg/yr)	Attenuated Septic Load (kg/day)	Attenuated load; table3,pg 6 of 6/25/10 SMAST memo
Grassy Pond	9	189	7		189	7	0%	7	50%	4		
Grassy Pond to Mud Pond				9%	17	1		1		0		
Mud Pond (Harwich)	12	47	0		47	0	0%	0		0		
Mud Pond (Brewster)	12	7	0		7	0	0%	0		0		
Mud Pond Total					71	1		0	50%	0		
Hawksnest Pond	76	126	0		126	0	0%	0	50%	0		
Hawksnest Pond to Mill Pond				14%	18	0		0		0		
Mill Pond (Harwich)	68	1231	1017		1231	1017	0%	1017		1017		
Mill Pond (Chatham)	68	232	112		232	112	0%	112		112		
Mill Pond Fresh Total					1481	1129		1129	50%	565		
Mill Pond to Goose Pond				6%	89	68		68		34		
Goose Pond (Chatham)	69	355	137		349	137	0%	137		137		
Goose Pond Total					438	205		205	50%	86		
Goose Pond to Trout Pond				19%	83	39	0%	39		16		
Trout Pond (Chatham)	70	325	211		325	211	0%	211		211		
Trout Pond Total					408	250		250	50%	114		
Mud Pond				24%	17	0		0		0		
Round Cove GT 10	61	1238	1064		1238	1064	100%	0		0		
Round Cove LT 10	62	1295	1052		1295	1052	30%	736		736		
Round Cove Total					**2485**	**1989**		**609**		**609**	**1.670**	**1.865**
Hawksnest Pond				20%	25	0		0		0		
Mill Pond Fresh				23%	341	260		260		130		
Goose Pond				32%	140	66		66		27		
Upper Muddy Crk 10 W(Harwich)	83	1980	1703		1980	1703	79%	358		358		
Upper Muddy Crk 10 W(Chatham)	83	0	0		0	0	58%	0		0		
Upper Muddy Crk(Harwich)	81	2863	2394		2863	2394	80%	479		479		
Upper Muddy Crk (Chatham)	81	1139	886		1139	886	58%	372		372		
Upper Muddy (Unaccounted)	81	35	0		35	0	0%	0		0		
Upper Muddy Crk (Regional?)	81	72	25		72	25	0%	25		25		
Upper Muddy Crk 10E (Chatham)	82	162	131		162	131	58%	55		55		
Atmospheric		59			59							
		Recharge to Upper Muddy Creek Watershed 83										
							Removed Septic (kg/yr)	Recharge Septic (kg/yr)				
Round Cove Recharge							1380					
Muddy Creek Recharge							4945					
Pleasant Bay Recharge							2155					
Total Septic Load From Harwich							8480					
Recharge at what Concentration.			3	mg/l				978				
Upper Muddy Creek Total					**6816**	**5464**		**1614**	**57%**	**1042**	**4.204**	**2.59**
Trout Pond				100%	408	250		250		114		
Muddy Crk WELL	77	1037	876		1037	876	100%	0		0		
Lower Muddy Crk (Chatham)	78	1161	959		1161	959	50%	480		480		
Lower Muddy Crk (Harwich)	78	708	508		708	508	50%	254		254		
Lower Muddy Crk (Regional?)		11	8		11	8	0%	8		8		
Lower Muddy Crk10E (Chatham)	79	178	141		178	141	50%	71		71		
Lower Muddy Crk 10W(Harwich)	80	1376	1109		1376	1109	50%	555		555		
Atmospheric		80			80							
Lower Muddy Creek Total					4959	3851		1616		1480	**4.055**	**4.3**
Muddy Creek Total					**11775**	**9315**		**3230**	**2%**	**2472**	**6.773**	**6.89**
Grassy Pond				91%	172	6		6		3		
Mud Pond Harwich				76%	54	0		0		0		
Pleasant Bay Rd WELL_HAR	29	528	464		528	464	100%	0		0		
Pleasant Bay GT 10 BreHar (Harwich)	49	687	610		687	610	72%	171		171		
Pleasant Bay GT 10 Harwich	50	1080	879		1080	879	74%	229		229		
Pleasant Bay LT 10 Harwich	53N	1178.6	604.6		1179	605	64%	218		218		
Wequasset Inn	53N	867	867		867	867	83%	152		152	Net Load Based on 11,000 gpd@ 1	
Pleasant Bay LT 10 Harwich	53S	516	456		516	456	47%	242		242		
Pleasant Bay Total					**5083**	**3887**	**74%**	**1017**		**1014**		

Final Recommended Plan
Harwich MA - 2012
Herring River

Total Buildout Septic Attenuated Loads

Name	Watershed #	Pres Total Unattenuated (kg/yr)	BO Septic Unattenuated (kg/yr)	Outflow %	Total (kg/yr)	Septic (kg/yr)	% Removal	Net Septic Load (kg/yr)	Attenuation %	Attenuated Septic Load (kg/yr)	Attenuated Septic Load (kg/day)	Threshold
Lothrup Rd GT10 N	19	2019	1968.1	100%	2019	1968.1	28%	1417	0%	1417		kg/day
Lothrup Road GT 10N **WWTF**										68		
Flax Pond	22	696	5.9	100%	696	5.9	100%	0	50%	0		
Lothrup Rd LT10	20	4073	3597.2	100%	4073	3597.2	100%	0	0%	0		
				Recharge to Watershed 20								
							Removed Septic (kg/yr)	Recharge Septic (kg/yr)				
Lothrup Recharge							6410					
West Res Recharge							3168					
East Res Recharge							5108					
Lower Herring Recharge							2840					
Scenario Recharge Outside Watershed							6771					
Remove Dennisport							-870					
added Recharge Other Areas	Total of 110,500 galons per day						3600					
Total Recharge							27027					
Recharge			3	mg/l				3209	0%	3209		
Lothrup Rd GT10 S	**21**	**2496**	2255.9	100%	2496	2255.9	100%	0	0%	0		
Lothrup Rd GT10 S WWTF										90		
Aunt Edies Pond	**AEP**	**183**	**83**	100%	183	83		83		83		
Cornelius Pond	**CP**	**240**	**0**	100%	240	0		0		0		
Walker Pond (Alone)	**WP**	266	0	53%	141	0		0		0		
Lothrup Totals					9848	7910		1500	50%	2433	6.666	4.504
Cornelius Pond GT10	16	**49**	59.1	100%	49	59.1	100%	0	0%	0		
Cornelius Pond LT10	17	**66**	23.7	100%	66	23.7	100%	0	0%	0		
Walker to Cornelius		**266**	236.5	**47%**	125	111		0	50%	0		
Cornelius Pond Total					240	194		0	50%	0		
Aunt Edies Pond GT10	14	**58**	47.8	100%	58	47.8	0%	48	0%	48		
Aunt Edies Pond LT10	15	**125**	118	100%	125	118	0%	118	0%	118		
Aunt Edies Pond Total					183	166		166	50%	83		
Walker Pond	**18**	**266**	236.5	100%	266	236.5	100%	0	50%	0		
West Reservoir LT10	24	5132	4874	100%	5132	4874	65%	1706	0%	1706		
West Reservoir GT10	23	1854	1469	100%	1854	1469	0%	1469	0%	1469		
White Pond	1	114	258.7	55%	63	142.285	0%	142	50%	71		
Elbow Pond	**2**	309	120.1	100%	309	120.1	0%	120	50%	60		
Herring River N LT 10	**13**	2504	2621.5	100%	2504	2621.5	0%	2622	0%	2622		
N_HarWell	**4**	20	41.4	100%	20	41.4	0%	41	0%	41		
Robbins Pond	**3**	180	41.4	100%	180	41.4	0%	41	50%	21		
Herring River N GT10	12	266	364.5	100%	266	364.5	0%	365	0%	365		
Seymour Pond	SEP	2147	358	25%	537	89.41814375		89		89		
Hinckleys Pond	HP	12086	1870	100%	12086	1869.925569		1870		1870		
West Reservoir Totals					22951	11634		8465	25%	6235	17.083	12.137
Seymour Pond LT10	6	**1477**	572.2	100%	1477	572	0%	572	0%	572		
Seymour Pond GT10	7	**496**	573.6	100%	496	574	0%	574	0%	574		
Sheep To Seymour Pond		**1393**	64	13%	174	8		8		8		
Seymour Pond Total		**3366**	**1209.66**		2147	1154		1154	69%	358		
Long Pond GT10 S	11	**625**	578.1	100%	625	578	0%	578	0%	578		
Long Pond LT10	10	**7244**	3640.7	100%	7244	3641	0%	3641	0%	3641		
Long Pond GT10 N	9	**706**	825.1	100%	706	825	0%	825	0%	825		
Sheep Pond		**1393**	64	30%	417	19		19		19		
Seymour Pond Total		**2147**	358	40%	859	143		143		143		
Long Pond Total		12115	5465		9850	5206		5206	73%	1406		
Long Pond		**9850**	1406	100%	9850	1406		1406		1406		
Hinckleys Pond	5	**2236**	1304	100%	2236	1304	0%	1304	0%	1304		
Hinckleys Pond Total		12086	2710		12086	2710		2710	31%	1870		
Sheep Pond	**8**	**1393**	638.6	100%	1393	638.6	0%	639	90%	64		
East Resevior	25	107	17.4	100%	107	17.4	100%	0	0%	0	0.000	0.047
Upper Herring R_Main_LT10	27	3005	2901.1	100%	3005	2901.1	100%	0	0%	0		
Upper Herring R_Main_GT10	26	1848	2189	100%	1848	2189	100%	0	0%	0		
Atmospheric		0	0	100%	0	0	0%	0	0%	0		
Total		**4960**	**5107.5**		**4960**	**5107.5**		**0**		**0**	**0.000**	**0.000**
Lower Herring R_Main_LT10	29	2732	2331	100%	2732	2331	100%	0	0%	0		
Lower Herring R_Main_GT10	28	566	509.2	100%	566	509.2	100%	0	0%	0		
Atmospheric		0	0	100%	0	0	0%	0	0%	0		
Total		**3298**	**2840.2**		**3298**	**2840.2**		**0**		**0**	**0.000**	**7.063**

Allen Scenario 1A

Build-out									
Name	Watershed #	Total (kg/yr)	Septic (kg/yr)	% Removal	Net Septic Load (kg/yr)	Attenuation % (Stream)	Attenuated Septic Load (kg/yr)	Attenuated Septic Load (kg/day)	From Table VIII-2 Attenuated Septic Load Thresholds (kg/day)
Stream GT 10	1	269	224	0%	224				
Stream LT 10	2	942	744	30%	521				
Stream Total		1211	968		745	30%	521	1.428	0.642
Harbor	3	1999	1774	100%	0		0	0.000	0.841
Harbor Total		**3210**	**2742**		**745**		**521**	**1.428**	**1.483**
Total Treated Load			**1997**	**73%**					

Wychmere Scenario 1A

Build-out									
Name	Watershed #	Total (kg/yr)	Septic (kg/yr)	% Removal	Net Septic Load (kg/yr)	Attenuation % (Stream)	Attenuated Septic Load (kg/yr)	Attenuated Septic Load (kg/day)	From Table VIII-2 Attenuated Septic Load Thresholds (kg/day)
Harbor	4	1523	1206	100%	0		0	0.000	0.000
Harbor Total		**1523**	**1206**		**0**		**0**	**0.000**	**0.000**
Treated Load			**1206**	**100%**					

Saquatucket Scenario 1A

Build-out												
Name	Watershed #	Total (kg/yr)	Septic (kg/yr)	Outflow %	Total (kg/yr)	Septic (kg/yr)	% Removal	Net Septic Load (kg/yr)	Attenuation %	Attenuated Septic Load (kg/yr)	Attenuated Septic Load (kg/day)	From Table VIII-2 Attenuated Septic Load Thresholds (kg/day)
Grass Pond	13	1152	903	100%	1152	903	43%	515	50%	257		
Banks St Bogs LT10	12	2284	1941		2284	1941	10%	1747		1747		
Banks St Bogs GT10	11	322	175		322	175	1%	173		173		
					Recharge to Upper Muddy Creek Watershed 13							
							Removed	Recharge				
Cold Spring Brook Recharge							2021					
John Joseph Recharge							0					
E. Saq Stream Recharge							989					
Harbor Load Recharge							1012					
Allen Harbor Load Recharge							1997					
Wychmere Harbor Load Recharge							1206					
Total Septic Load From Harwich							7225					
Recharge at what Concentration			5	mg/l				1389	50%	695		
Banks St Bogs Total					**3758**	**3019**	**19%**	**2435**	**35%**	**1867**		
Paddocks Pond	14	898	648	100%	898	648	2%	635	50%	318		
Cold Spring Brook LT10	10	2825	2064		2825	2064	69%	640		640		
Cold Spring Brook GT10	9	1178	861		1178	861	0%	861		861		
Cold Spring Brook Total					**8659**	**6592**	**31%**	**4571**	**35%**	**2395**		
Black Pond	5	18	6	14%	2	1	0%	1	50%	0		
John Joseph Pond GT10	6	109	89		109	89	0%	89		89		
John Joseph Pond LT10	7	500	335		500	335	0%	335		335		
John Joseph Pond Total		627	430	27%	164	114	0%	114	74%	30		
Chatham Road WELLS	8	1004	667	80%	803	534	0%	534		534		
Saq Harbor LT10N	15	1166	1009		1166	1009	98%	20		20		
E. Saquatucket Stream Total					**2133**	**1657**	**60%**	**668**	**15%**	**496**	**1.359**	**1.274**
Harbor LT10S	16	1113	1012		1113	1012	100%	0		0	0.000	0.507
Harbor Total					**11905**	**9261**		**5239**		**1913**	**5.242**	**5.28**
Treated Load						**4022**	**43%**					

Pleasant Bay Scenario 1A

Build-out

Name	WS #	Total (kg/yr)	Septic (kg/yr)	Outflow %	Total (kg/yr)	Septic (kg/yr)	% Removal	Net Septic Load (kg/yr)	Attenuation %	Attenuated Septic Load (kg/yr)	Attenuated Septic Load (kg/day)	Attenuated load; table3,pg 6 of 6/25/10 SMAST memo
Grassy Pond	9	189	7		189	7	0%	7	50%	4		
Grassy Pond to Mud Pond				*9%*	*17*	*1*		*1*		*0*		
Mud Pond (Harwich)	12	47	0		47	0	0%	0		0		
Mud Pond (Brewster)	12	7	0		7	0	0%	0		0		
Mud Pond Total					71	1		0	50%	0		
Hawksnest Pond	76	126	0		126	0	0%	0	50%	0		
Hawksnest Pond to Mill Pond				*14%*	*18*	*0*		*0*		*0*		
Mill Pond (Harwich)	68	1231	1017		1231	1017	0%	1017		1017		
Mill Pond (Chatham)	68	232	112		232	112	0%	112		112		
Mill Pond Fresh Total					1481	1129		1129	50%	565		
Mill Pond to Goose Pond				*6%*	*89*	*68*		*68*		*34*		
Goose Pond (Chatham)	69	355	137		349	137	0%	137		137		
Goose Pond Total					438	205		205	50%	86		
Goose Pond to Trout Pond				*19%*	*83*	*39*	*0%*	*39*		*16*		
Trout Pond (Chatham)	70	325	211		325	211	0%	211		211		
Trout Pond Total					408	250		250	50%	114		
Mud Pond				*24%*	*17*	*0*		*0*		*0*		
Round Cove GT 10	61	1238	1064		1238	1064	100%	0		0		
Round Cove LT 10	62	1295	1052		1295	1052	30%	736		736		
Round Cove Total					**2485**	**1990**		**610**		**610**	**1.671**	**1.865**
Hawksnest Pond				*20%*	*25*	*0*		*0*		*0*		
Mill Pond Fresh				*23%*	*341*	*260*		*260*		*130*		
Goose Pond				*32%*	*140*	*66*		*66*		*27*		
Upper Muddy Crk 10 W(Harwich)	83	1980	1703		1980	1703	99%	10		10		
Upper Muddy Crk 10 W(Chatham)	83	0	0		0	0	58%	0		0		
Upper Muddy Crk(Harwich)	81	2863	2394		2863	2394	100%	0		0		
Upper Muddy Crk (Chatham)	81	1139	886		1139	886	58%	372		372		
Upper Muddy (Unaccounted)	81	35	0		35	0	0%	0		0		
Upper Muddy Crk (Regional?)	81	72	25		72	25	0%	25		25		
Upper Muddy Crk 10E (Chatham)	82	162	131		162	131	58%	55		55		
Atmospheric		59			59							
Recharge to Upper Muddy Creek Watershed 83												
							Removed Septic (kg/yr)	Recharge Septic (kg/yr)				
Round Cove Recharge							1380					
Muddy Creek Recharge							5771					
Pleasant Bay Recharge							2871					
Total Septic Load From Harwich							10022					
Recharge at what Concentration.			5	mg/l				1904				
Upper Muddy Creek Total					**6816**	**5464**		**788**	**57%**	**1085**	**4.204**	**2.59**
Trout Pond				*100%*	*408*	*250*		*250*		*114*		
Muddy Crk WELL	77	1037	876		1037	876	100%	0		0		
Lower Muddy Crk (Chatham)	78	1161	959		1161	959	50%	480		480		
Lower Muddy Crk (Harwich)	78	708	508		708	508	50%	254		254		
Lower Muddy Crk (Regional?)		11	8		11	8	0%	8		8		
Lower Muddy Crk10E (Chatham)	79	178	141		178	141	50%	71		71		
Lower Muddy Crk 10W(Harwich)	80	1376	1109		1376	1109	50%	555		555		
Atmospheric		80			80							
Lower Muddy Creek Total					4959	3851		1616		1480	**4.055**	**4.3**
Muddy Creek Total					**11775**	**9315**		**2404**	**2%**	**2514**	**6.888**	**6.89**
Grassy Pond				*91%*	*172*	*6*		*6*		*3*		
Mud Pond Harwich				*76%*	*54*	*0*		*0*		*0*		
Pleasant Bay Rd WELL_HAR (Harwich)	29	528	464		528	464	100%	0		0		
Pleasant Bay GT 10 BreHar	49	687	610		687	610	72%	171		171		
Pleasant Bay GT 10 Harwich	50	1080	879		1080	879	74%	229		229		
Pleasant Bay LT 10 Harwich	53N	1178.6	604.6		1179	605	64%	218		218		
Wequasset Inn	53N	867	867		867	867	83%	152		152		
Pleasant Bay LT 10 Harwich	53S	516	456		516	456	47%	242		242		
Pleasant Bay Total					**5083**	**3887**	**74%**	**1017**		**1014**		

Allen Scenario 2A

Build-out									
Name	Watershed #	Total (kg/yr)	Septic (kg/yr)	% Removal	Net Septic Load (kg/yr)	Attenuation % (Stream)	Attenuated Septic Load (kg/yr)	Attenuated Septic Load (kg/day)	From Table VIII-2 Attenuated Septic Load Thresholds (kg/day)
Stream GT 10	1	269	224	0%	224				
Stream LT 10	2	942	744	30%	521				
Stream Total		1211	968		745	30%	521	1.428	0.642
Harbor	3	1999	1774	100%	0		0	0.000	0.841
Harbor Total		**3210**	**2742**		**745**		**521**	**1.428**	**1.483**
Treated Load			**1997**	**73%**					

Wychmere Scenario 2A

Build-out									
Name	Watershed #	Total (kg/yr)	Septic (kg/yr)	% Removal	Net Septic Load (kg/yr)	Attenuation % (Stream)	Attenuated Septic Load (kg/yr)	Attenuated Septic Load (kg/day)	From Table VIII-2 Attenuated Septic Load Thresholds
Harbor	4	1523	1206	100%	0		0	0.000	0.000
Harbor Total		**1523**	**1206**		**0**		**0**	**0.000**	**0.000**
Treated Load			**1206**	**100%**					

Saquatucket Scenario 2A

Name	Watershed #	Total (kg/yr)	Septic (kg/yr)	Outflow %	Total (kg/yr)	Septic (kg/yr)	% Removal	Net Septic Load (kg/yr)	Attenuation %	Attenuated Septic Load (kg/yr)	Attenuated Septic Load (kg/day)	From Table VIII-2 Attenuated Septic Load Thresholds (kg/day)
							Build-out					
Grass Pond	13	1152	903	100%	1152	903	43%	515	50%	257		
Banks St Bogs LT10	12	2284	1941		2284	1941	10%	1747		1747		
Banks St Bogs GT10	11	322	175		322	175	1%	173		173		
			Recharge to Upper Muddy Creek Watershed 13									
							Removed Septic	Recharge Septic (kg/yr)				
Cold Spring Brook Recharge							1877					
John Joseph Recharge							0					
E. Saq Stream Recharge							989					
Harbor Load Recharge							1012					
Allen Harbor Load Recharge							0					
Wychmere Harbor Load Recharge							1206					
Total Septic Load From Harwich							5084					
Recharge at what Concentration.			5	mg/l				978	50%	488.8076923		
Banks St Bogs Total					**3758**	**3019**	**19%**	**2435**	**35%**	**1733**		
Paddocks Pond	14	898	648	100%	898	648	2%	635	50%	318		
Cold Spring Brook LT10	10	2825	2064		2825	2064	62%	784		784		
Cold Spring Brook GT10	9	1178	861		1178	861	0%	861		861		
Cold Spring Brook Total					**8659**	**6592**	**28%**	**4715**	**35%**	**2402**		
Black Pond	5	18	6	14%	2	1	0%	1	50%	0		
John Joseph Pond GT10	6	109	89		109	89	0%	89		89		
John Joseph Pond LT10	7	500	335		500	335	0%	335		335		
John Joseph Pond Total		627	430	27%	164	114	0%	114	74%	30		
Chatham Road WELLS	8	1004	667	80%	803	534	0%	534		534		
Saq Harbor LT10N	15	1166	1009		1166	1009	98%	20		20		
E. Saquatucket Stream Total					**2133**	**1657**	**60%**	**668**	**15%**	**496**	**1.359**	**1.274**
Harbor LT10S	16	1113	1012		1113	1012	100%	0		0	0.000	0.507
Harbor Total					**11905**	**9261**		**5383**		**1920**	**5.261**	**5.28**
Treated Load						**3878**	**42%**					

Pleasant Bay Scenario 2A

Build-out

Name	Watershed #	Total (kg/yr)	Septic (kg/yr)	Outflow %	Total (kg/yr)	Septic (kg/yr)	% Removal	Net Septic Load (kg/yr)	Attenuation %	Attenuated Septic Load (kg/yr)	Attenuated Septic Load (kg/day)	Attenuated load; table3,pg 6 of 6/25/10 SMAST memo
Grassy Pond	9	189	7		189	7	0%	7	50%	4		
Grassy Pond to Mud Pond				9%	17	1		1		0		
Mud Pond (Harwich)	12	47	0		47	0	0%	0		0		
Mud Pond (Brewster)	12	7	0		7	0	0%	0		0		
Mud Pond Total					71	1		0	50%	0		
Hawksnest Pond	76	126	0		126	0	0%	0	50%	0		
Hawksnest Pond to Mill Pond				14%	18	0		0		0		
Mill Pond (Harwich)	68	1231	1017		1231	1017	0%	1017		1017		
Mill Pond (Chatham)	68	232	112		232	112	0%	112		112		
Mill Pond Fresh Total					1481	1129		1129	50%	565		
Mill Pond to Goose Pond				6%	89	68		68		34		
Goose Pond (Chatham)	69	355	137		349	137	0%	137		137		
Goose Pond Total					438	205		205	50%	86		
Goose Pond to Trout Pond				19%	83	39	0%	39		16		
Trout Pond (Chatham)	70	325	211		325	211	0%	211		211		
Trout Pond Total					408	250		250	50%	114		
Mud Pond				24%	17	0		0		0		
Round Cove GT 10	61	1238	1064		1238	1064	100%	0		0		
Round Cove LT 10	62	1295	1052		1295	1052	30%	736		736		
Round Cove Total					**2485**	**1990**		**610**		**610**	**1.671**	**1.865**
Hawksnest Pond				20%	25	0		0		0		
Mill Pond Fresh				23%	341	260		260		130		
Goose Pond				32%	140	66		66		27		
Upper Muddy Crk 10 W(Harwich)	83	1980	1703		1980	1703	99%	10		10		
Upper Muddy Crk 10 W(Chatham)	83	0	0		0	0	58%	0		0		
Upper Muddy Crk(Harwich)	81	2863	2394		2863	2394	100%	0		0		
Upper Muddy Crk (Chatham)	81	1139	886		1139	886	58%	372		372		
Upper Muddy (Unaccounted)	81	35	0		35	0	0%	0		0		
Upper Muddy Crk (Regional?)	81	72	25		72	25	0%	25		25		
Upper Muddy Crk 10E (Chatham)	82	162	131		162	131	58%	55		55		
Atmospheric		59			59							
			Recharge to Upper Muddy Creek Watershed 83									
							Removed Septic	Recharge Septic				
Round Cove Recharge							1380					
Muddy Creek Recharge							5771					
Pleasant Bay Recharge							2870					
Total Septic Load From Harwich							10021					
Recharge at what Concentration.			5	mg/l				1927				
Upper Muddy Creek Total					**6816**	**5464**		**788**	**57%**	**1095**	**4.204**	**2.59**
Trout Pond				100%	408	250		250		114		
Muddy Crk WELL	77	1037	876		1037	876	100%	0		0		
Lower Muddy Crk (Chatham)	78	1161	959		1161	959	50%	480		480		
Lower Muddy Crk (Harwich)	78	708	508		708	508	50%	254		254		
Lower Muddy Crk (Regional?)		11	8		11	8	0%	8		8		
Lower Muddy Crk10E (Chatham)	79	178	141		178	141	50%	71		71		
Lower Muddy Crk 10W(Harwich)	80	1376	1109		1376	1109	50%	555		555		
Atmospheric		80			80							
Lower Muddy Creek Total					4959	3851		1616		1480	**4.055**	**4.3**
Muddy Creek Total					**11775**	**9315**		**2404**	**2%**	**2524**	**6.914**	**6.89**
Grassy Pond				91%	172	6		6		3		
Mud Pond Harwich				76%	54	0		0		429		
Pleasant Bay Rd WELL_HAR	29	528	464		528	464	100%	0		0		
Pleasant Bay GT 10 BreHar	49	687	610		687	610	72%	171		171		
Pleasant Bay GT 10 Harwich	50	1080	879		1080	879	74%	229		229		
Pleasant Bay LT 10 Harwich	53N	1179	604		1179	604	64%	217		217		
Wequasset Inn	53N	867	867		867	867	83%	152		152	Net Load Based on 11,000 gpd@	
Pleasant Bay LT 10 Harwich	53S	516	456		516	456	47%	242		242		
Pleasant Bay Total					**5083**	**3887**	**74%**	**1017**		**1443**		

Allen Scenario 3A

Build-out									
Name	Watershed #	Total (kg/yr)	Septic (kg/yr)	% Removal	Net Septic Load (kg/yr)	Attenuation % (Stream)	Attenuated Septic Load (kg/yr)	Attenuated Septic Load (kg/day)	From Table VIII-2 Attenuated Septic Load Thresholds (kg/day)
Stream GT 10	1	269	224	0%	224				
Stream LT 10	2	942	744	30%	521				
Stream Total		1211	968		745	30%	521	1.428	0.642
Harbor	3	1999	1774	100%	0		0	0.000	0.841
Harbor Total		**3210**	**2742**		**745**		**521**	**1.428**	**1.483**
Treated Load			**1997**	**73%**					

Wychmere Scenario 3A

Build-out									
Name	Watershed #	Total (kg/yr)	Septic (kg/yr)	% Removal	Net Septic Load (kg/yr)	Attenuation % (Stream)	Attenuated Septic Load (kg/yr)	Attenuated Septic Load (kg/day)	From Table VIII-2 Attenuated Septic Load Thresholds
Harbor	4	1523	1206	100%	0		0	0.000	0.000
Harbor Total		**1523**	**1206**		**0**		**0**	**0.000**	**0.000**
Treated Load			**1206**	**100%**					

Saquatucket Scenario 3A

Build-out

Name	Watershed #	Total (kg/yr)	Septic (kg/yr)	Outflow %	Total (kg/yr)	Septic (kg/yr)	% Removal	Net Septic Load (kg/yr)	Attenuation %	Attenuated Septic Load (kg/yr)	Attenuated Septic Load (kg/day)	From Table VIII-2 Attenuated Septic Load Thresholds (kg/day)
Grass Pond	13	1152	903	100%	1152	903	43%	515	50%	257		
Banks St Bogs LT10	12	2284	1941		2284	1941	10%	1747		1747		
Banks St Bogs GT10	11	322	175		322	175	1%	173		173		
			Recharge to Upper Muddy Creek Watershed 13									
							Removed Septic (kg/yr)	Recharge Septic (kg/yr)				
Cold Spring Brook Recharge							1567					
John Joseph Recharge							0					
E. Saq Stream Recharge							989				3568	
Harbor Load Recharge							1012					
Allen Harbor Load Recharge							0					
Wychmere Harbor Load Recharge							1206					
Total Septic Load From Harwich							4774					
Recharge at what Concentration.			0	mg/l				0	50%	0		
Banks St Bogs Total					**3758**	**3019**	**19%**	**2435**	**35%**	**1415**		
Paddocks Pond	14	898	648	100%	898	648	2%	635	50%	318		
Cold Spring Brook LT10	10	2825	2064		2825	2064	47%	1094		1094		
Cold Spring Brook GT10	9	1178	861		1178	861	0%	861		861		
Cold Spring Brook Total					**8659**	**6592**	**24%**	**5025**	**35%**	**2397**		
Black Pond	5	18	6	14%	2	1	0%	1	50%	0		
John Joseph Pond GT10	6	109	89		109	89	0%	89		89		
John Joseph Pond LT10	7	500	335		500	335	0%	335		335		
John Joseph Pond Total		627	430	27%	164	114	0%	114	74%	30		
Chatham Road WELLS	8	1004	667	80%	803	534	0%	534		534		
Saq Harbor LT10N	15	1166	1009		1166	1009	98%	20		20		
E. Saquatucket Stream Total					**2133**	**1657**	**60%**	**668**	**15%**	**496**	**1.359**	**1.274**
Harbor LT10S	16	1113	1012		1113	1012	100%	0		0	0.000	0.507
Harbor Total					**11905**	**9261**		**5693**		**1915**	**5.246**	**5.28**
Treated Load						**3568**	**39%**					

Pleasant Bay Scenario 3A

Build-out

Name	Watershed #	Total (kg/yr)	Septic (kg/yr)	Outflow %	Total (kg/yr)	Septic (kg/yr)	% Removal	Net Septic Load (kg/yr)	Attenuation %	Attenuated Septic Load (kg/yr)	Attenuated Septic Load (kg/day)	Attenuated load; table3,pg 6 of 6/25/10 SMAST memo
Grassy Pond	9	189	7		189	7	0%	7	50%	4		
Grassy Pond to Mud Pond				9%	17	1		1		0		
Mud Pond (Harwich)	12	47	0		47	0	0%	0		0		
Mud Pond (Brewster)	12	7	0		7	0	0%	0		0		
Mud Pond Total					71	1		0	50%	0		
Hawksnest Pond	76	126	0		126	0	0%	0	50%	0		
Hawksnest Pond to Mill Pond				14%	18	0		0		0		
Mill Pond (Harwich)	68	1231	1017		1231	1017	0%	1017		1017		
Mill Pond (Chatham)	68	232	112		232	112	0%	112		112		
Mill Pond Fresh Total					1481	1129		1129	50%	565		
Mill Pond to Goose Pond				6%	89	68		68		34		
Goose Pond (Chatham)	69	355	137		349	137	0%	137		137		
Goose Pond Total					438	205		205	50%	86		
Goose Pond to Trout Pond				19%	83	39	0%	39		16		
Trout Pond (Chatham)	70	325	211		325	211	0%	211		211		
Trout Pond Total					408	250		250	50%	114		
Mud Pond				24%	17	0		0		0		
Round Cove GT 10	61	1238	1064		1238	1064	100%	0		0		
Round Cove LT 10	62	1295	1052		1295	1052	30%	736		736		
Round Cove Total					**2485**	**1990**		**610**		**610**	**1.671**	**1.865**
Hawksnest Pond				20%	25	0		0		0		
Mill Pond Fresh				23%	341	260		260		130		
Goose Pond				32%	140	66		66		27		
Upper Muddy Crk 10 W(Harwich)	83	1980	1703		1980	1703	59%	698		698		
Upper Muddy Crk 10 W(Chatham)	83	0	0		0	0	58%	0		0		
Upper Muddy Crk(Harwich)	81	2863	2394		2863	2394	58%	1005		1005		
Upper Muddy Crk (Chatham)	81	1139	886		1139	886	58%	372		372		
Upper Muddy (Unaccounted)	81	35	0		35	0	0%	0		0		
Upper Muddy Crk (Regional?)	81	72	25		72	25	0%	25		25		
Upper Muddy Crk 10E (Chatham)	82	162	131		162	131	58%	55		55		
Atmospheric		59			59							
				Recharge to Upper Muddy Creek Watershed 83			Removed Septic (kg/yr)	Recharge Septic (kg/yr)				
Round Cove Recharge							1380					
Muddy Creek Recharge							4078					
Pleasant Bay Recharge							2871					
Total Septic Load From Harwich							8328					
Recharge at what Concentration.			0	mg/l				0				
Upper Muddy Creek Total					**6816**	**5464**		**2481**	**57%**	**995**	**4.204**	**2.59**
Trout Pond				100%	408	250		250		114		
Muddy Crk WELL	77	1037	876		1037	876	100%	0		0		
Lower Muddy Crk (Chatham)	78	1161	959		1161	959	50%	480		480		
Lower Muddy Crk (Harwich)	78	708	508		708	508	50%	254		254		
Lower Muddy Crk (Regional?)		11	8		11	8	0%	8		8		
Lower Muddy Crk10E (Chatham)	79	178	141		178	141	50%	71		71		
Lower Muddy Crk 10W(Harwich)	80	1376	1109		1376	1109	50%	555		555		
Atmospheric		80			80							
Lower Muddy Creek Total					4959	3851		1616		1480	**4.055**	**4.3**
Muddy Creek Total					**11775**	**9315**		**4098**	**2%**	**2425**	**6.645**	**6.89**
Grassy Pond				91%	172	6		6		3		
Mud Pond Harwich				76%	54	0		0		0		
Pleasant Bay Rd WELL_HAR	29	528	464		528	464	100%	0		0		
Pleasant Bay GT 10 BreHar (Harwich)	49	687	610		687	610	72%	171		171		
Pleasant Bay GT 10 Harwich	50	1080	879		1080	879	74%	229		229		
Pleasant Bay LT 10 Harwich	53N	1178.6	604.6		1179	605	64%	218		218		
Wequasset Inn	53N	867	867		867	867	82.5%	152		152	Net Load Based on 11,000 gpd @	
Pleasant Bay LT 10 Harwich	53S	516	456		516	456	47%	242		242		
Pleasant Bay Total					**5083**	**3887**	**74%**	**1017**		**1014**		

Allen Scenario 4A

Build-out

Name	Watershed #	Total (kg/yr)	Septic (kg/yr)	% Removal	Net Septic Load (kg/yr)	Attenuation % (Stream)	Attenuated Septic Load (kg/yr)	Attenuated Septic Load (kg/day)	From Table VIII-2 Attenuated Septic Load Thresholds
Stream GT 10	1	269	224	0%	224				
Stream LT 10	2	942	744	30%	521				
Stream Total		1211	968		745	30%	521	1.428	0.642
Harbor	3	1999	1774	100%	0		0	0.000	0.841
Harbor Total		**3210**	**2742**		**745**		**521**	**1.428**	**1.483**
Treated Load			**1997**	**73%**					

Wychmere Scenario 4A

Build-out

Name	Watershed #	Total (kg/yr)	Septic (kg/yr)	% Removal	Net Septic Load (kg/yr)	Attenuation % (Stream)	Attenuated Septic Load (kg/yr)	Attenuated Septic Load (kg/day)	From Table VIII-2 Attenuated Septic Load Thresholds
Harbor	4	1523	1206	100%	0		0	0.000	0.000
Harbor Total		**1523**	**1206**		**0**		**0**	**0.000**	**0.000**
Treated Load			**1206**	**100%**					

Saquatucket Scenario 4A

Build-out

Name	Watershed #	Total (kg/yr)	Septic (kg/yr)	Outflow %	Total (kg/yr)	Septic (kg/yr)	% Removal	Net Septic Load (kg/yr)	Attenuation %	Attenuated Septic Load (kg/yr)	Attenuated Septic Load (kg/day)	From Table VIII-2 Attenuated Septic Load Thresholds
Grass Pond	13	1152	903	100%	1152	903	43%	515	50%	257		
Banks St Bogs LT10	12	2284	1941		2284	1941	10%	1747		1747		
Banks St Bogs GT10	11	322	175		322	175	1%	173		173		
			Recharge to Upper Muddy Creek Watershed 13									
							Removed Septic (kg/yr)	Recharge Septic (kg/yr)				
Cold Spring Brook Recharge							1567					
John Joseph Recharge							0					
E. Saq Stream Recharge							989					
Harbor Load Recharge							1012					
Allen Harbor Load Recharge							0					
Wychmere Harbor Load Recharge							1206					
Total Septic Load From Harwich							4774					
Recharge at what Concentration.			0	mg/l				0	50%	0		
Banks St Bogs Total					**3758**	**3019**	**19%**	**2435**	**35%**	**1415**		
Paddocks Pond	14	898	648	100%	898	648	2%	635	50%	318		
Cold Spring Brook LT10	10	2825	2064		2825	2064	47%	1094		1094		
Cold Spring Brook GT10	9	1178	861		1178	861	0%	861		861		
Cold Spring Brook Total					**8659**	**6592**	**24%**	**5025**	**35%**	**2397**		
Black Pond	5	18	6	14%	2	1	0%	1	50%	0		
John Joseph Pond GT10	6	109	89		109	89	0%	89		89		
John Joseph Pond LT10	7	500	335		500	335	0%	335		335		
John Joseph Pond Total		627	430	27%	164	114	0%	114	74%	30		
Chatham Road WELLS	8	1004	667	80%	803	534	0%	534		534		
Saq Harbor LT10N	15	1166	1009		1166	1009	98%	20		20		
E. Saquatucket Stream Total					**2133**	**1657**	**60%**	**668**	**15%**	**496**	**1.359**	**1.274**
Harbor LT10S	16	1113	1012		1113	1012	100%	0		0	0.000	0.507
Harbor Total					**11905**	**9261**		**5693**		**1915**	**5.246**	**5.28**
Treated Load						**3568**	**39%**					

Pleasant Bay Scenario 4A

Name	Watershed #	Total (kg/yr)	Septic (kg/yr)	Outflow %	Total (kg/yr)	Septic (kg/yr)	% Removal	Net Septic Load (kg/yr)	Attenuation %	Attenuated Septic Load (kg/yr)	Attenuated Septic Load (kg/day)	Attenuated load; table3,pg 6 of 6/25/10 SMAST memo
					Build-out							
Grassy Pond	9	189	7		189	7	0%	7	50%	4		
Grassy Pond to Mud Pond				9%	17	1		1		0		
Mud Pond (Harwich)	12	47	0		47	0	0%	0		0		
Mud Pond (Brewster)	12	7	0		7	0	0%	0		0		
Mud Pond Total					71	1		0	50%	0		
Hawksnest Pond	76	126	0		126	0	0%	0	50%	0		
Hawksnest Pond to Mill Pond				14%	18	0		0		0		
Mill Pond (Harwich)	68	1231	1017		1231	1017	0%	1017		1017		
Mill Pond (Chatham)	68	232	112		232	112	0%	112		112		
Mill Pond Fresh Total					1481	1129		1129	50%	565		
Mill Pond to Goose Pond				6%	89	68		68		34		
Goose Pond (Chatham)	69	355	137		349	137	0%	137		137		
Goose Pond Total					438	205		205	50%	86		
Goose Pond to Trout Pond				19%	83	39	0%	39		16		
Trout Pond (Chatham)	70	325	211		325	211	0%	211		211		
Trout Pond Total					408	250		250	50%	114		
Mud Pond				24%	17	0		0		0		
Round Cove GT 10	61	1238	1064		1238	1064	100%	0		0		
Round Cove LT 10	62	1295	1052		1295	1052	30%	736		736		
Round Cove Total					**2485**	**1989**		**609**		**609**	**1.670**	**1.865**
Hawksnest Pond				20%	25	0		0		0		
Mill Pond Fresh				23%	341	260		260		130		
Goose Pond				32%	140	66		66		27		
Upper Muddy Crk 10 W(Harwich)	83	1980	1703		1980	1703	100%	0		0		
Upper Muddy Crk 10 W(Chatham)	83	0	0		0	0	58%	0		0		
Upper Muddy Crk(Harwich)	81	2863	2394		2863	2394	100%	0		0		
Upper Muddy Crk (Chatham)	81	1139	886		1139	886	58%	372		372		
Upper Muddy (Unaccounted)	81	35	0		35	0	0%	0		0		
Upper Muddy Crk (Regional?)	81	72	25		72	25	0%	25		25		
Upper Muddy Crk 10E (Chatham)	82	162	131		162	131	58%	55		55		
Atmospheric		59			59							
		Recharge to Upper Muddy Creek Watershed 83										
							Removed Septic (kg/yr)	Recharge Septic (kg/yr)				
Round Cove Recharge							1380					
Muddy Creek Recharge							5793					
Pleasant Bay Recharge							2155					
Total Septic Load From Harwich							9328					
Recharge at what Concentration.			5	mg/l				1794				
Upper Muddy Creek Total					**6816**	**5464**		**778**	**57%**	**1033**	**2.831**	**2.59**
Trout Pond				100%	408	250		250		114		
Muddy Crk WELL	77	1037	876		1037	876	100%	0		0		
Lower Muddy Crk (Chatham)	78	1161	959		1161	959	50%	480		480		
Lower Muddy Crk (Harwich)	78	708	508		708	508	50%	254		254		
Lower Muddy Crk (Regional?)		11	8		11	8	0%	8		8		
Lower Muddy Crk10E (Chatham)	79	178	141		178	141	50%	71		71		
Lower Muddy Crk 10W(Harwich)	80	1376	1109		1376	1109	51%	543		543		
Atmospheric		80			80							
Lower Muddy Creek Total					4959	3851		1605		1469	**4.025**	**4.3**
Muddy Creek Total					**11775**	**9315**		**2383**	**2%**	**2452**	**6.719**	**6.89**
Grassy Pond				91%	172	6		6		3		
Mud Pond Harwich				76%	54	0		0		0		
Pleasant Bay Rd WELL_HAR	29	528	464		528	464	100%	0		0		
Pleasant Bay GT 10 BreHar	49	687	610		687	610	72%	171		171		
Pleasant Bay GT 10 Harwich	50	1080	879		1080	879	74%	229		229		
Pleasant Bay LT 10 Harwich	53N	1178.6	604.6		1179	605	64%	218		218		
Wequasset Inn	53N	867	867		867	867	83%	152		152	Net Load Based on 11,000 god @ 10 mg/l	
Pleasant Bay LT 10 Harwich	53S	516	456		516	456	47%	242		242		
Pleasant Bay Total					**5083**	**3887**	**74%**	**1017**		**1014**		

Allen Scenario 5A

Build-out

Name	Watershed #	Total (kg/yr)	Septic (kg/yr)	% Removal	Net Septic Load (kg/yr)	Attenuation % (Stream)	Attenuated Septic Load (kg/yr)	Attenuated Septic Load (kg/day)	From Table VIII-2 Attenuated Septic Load Thresholds (kg/day)
Stream GT 10	1	269	224	0%	224				
Stream LT 10	2	942	744	30%	521				
Stream Total		1211	968		745	30%	521	1.428	0.642
Harbor	3	1999	1774	100%	0		0	0.000	0.841
Harbor Total		**3210**	**2742**		**745**		**521**	**1.428**	**1.483**
Treated Load			**1997**	**73%**					

Wychmere Scenario 5A

Build-out									
Name	Watershed #	Total (kg/yr)	Septic (kg/yr)	% Removal	Net Septic Load (kg/yr)	Attenuation % (Stream)	Attenuated Septic Load (kg/yr)	Attenuated Septic Load (kg/day)	From Table VIII-2 Attenuated Septic Load Thresholds
Harbor	4	1523	1206	100%	0		0	0.000	0.000
Harbor Total		**1523**	**1206**		**0**		**0**	**0.000**	**0.000**
Treated Load			**1206**	**100%**					

Saquatucket Scenario 5A

Name	Watershed #	Total (kg/yr)	Septic (kg/yr)	Outflow %	Total (kg/yr)	Septic (kg/yr)	% Removal	Net Septic Load (kg/yr)	Attenuation %	Attenuated Septic Load (kg/yr)	Attenuated Septic Load (kg/day)	From Table VIII-2 Attenuated Septic Load Thresholds (kg/day)
							Build-out					
Grass Pond	13	1152	903	100%	1152	903	43%	515	50%	257		
Banks St Bogs LT10	12	2284	1941		2284	1941	10%	1747		1747		
Banks St Bogs GT10	11	322	175		322	175	1%	173		173		
			Recharge to Upper Muddy Creek Watershed 13									
							Removed Septic (kg/yr)	Recharge Septic (kg/yr)				
Cold Spring Brook Recharge							1567					
John Joseph Recharge							0					
E. Saq Stream Recharge							989					
Harbor Load Recharge							1012					
Allen Harbor Load Recharge							0					
Wychmere Harbor Load Recharge							1206					
Total Septic Load From Harwich							4774					
Recharge at what Concentration.			0	mg/l				0	50%	0		
Banks St Bogs Total					**3758**	**3019**	**19%**	**2435**	**35%**	**1415**		
Paddocks Pond	14	898	648	100%	898	648	2%	635	50%	318		
Cold Spring Brook LT10	10	2825	2064		2825	2064	47%	1094		1094		
Cold Spring Brook GT10	9	1178	861		1178	861	0%	861		861		
Cold Spring Brook Total					**8659**	**6592**	**24%**	**5025**	**35%**	**2397**		
Black Pond	5	18	6	14%	2	1	0%	1	50%	0		
John Joseph Pond GT10	6	109	89		109	89	0%	89		89		
John Joseph Pond LT10	7	500	335		500	335	0%	335		335		
John Joseph Pond Total		627	430	27%	164	114	0%	114	74%	30		
Chatham Road WELLS	8	1004	667	80%	803	534	0%	534		534		
Saq Harbor LT10N	15	1166	1009		1166	1009	98%	20		20		
E. Saquatucket Stream Total					**2133**	**1657**	**60%**	**668**	**15%**	**496**	**1.359**	**1.274**
Harbor LT10S	16	1113	1012		1113	1012	100%	0		0	0.000	0.507
Harbor Total					**11905**	**9261**		**5693**		**1915**	**5.246**	**5.28**
Treated Load						**3568**	**39%**					

Pleasant Bay Scenario 5A

Build-out

Name	Watershed #	Total (kg/yr)	Septic (kg/yr)	Outflow %	Total (kg/yr)	Septic (kg/yr)	% Removal	Net Septic Load (kg/yr)	Attenuation %	Attenuated Septic Load (kg/yr)	Attenuated Septic Load (kg/day)	Attenuated load; table3,pg 6 of 6/25/10 SMAST memo
Grassy Pond	9	189	7		189	7	0%	7	50%	4		
Grassy Pond to Mud Pond				9%	17	1		1		0		
Mud Pond (Harwich)	12	47	0		47	0	0%	0		0		
Mud Pond (Brewster)	12	7	0		7	0	0%	0		0		
Mud Pond Total					71	1		0	50%	0		
Hawksnest Pond	76	126	0		126	0	0%	0	50%	0		
Hawksnest Pond to Mill Pond				14%	18	0		0		0		
Mill Pond (Harwich)	68	1231	1017		1231	1017	0%	1017		1017		
Mill Pond (Chatham)	68	232	112		232	112	0%	112		112		
Mill Pond Fresh Total					1481	1129		1129	50%	565		
Mill Pond to Goose Pond				6%	89	68		68		34		
Goose Pond (Chatham)	69	355	137		349	137	0%	137		137		
Goose Pond Total					438	205		205	50%	86		
Goose Pond to Trout Pond				19%	83	39	0%	39		16		
Trout Pond (Chatham)	70	325	211		325	211	0%	211		211		
Trout Pond Total					408	250		250	50%	114		
Mud Pond				24%	17	0		0		0		
Round Cove GT 10	61	1238	1064		1238	1064	100%	0		0		
Round Cove LT 10	62	1295	1052		1295	1052	30%	736		736		
Round Cove Total					**2485**	**1989**		**609**		**609**	**1.670**	**1.865**
Hawksnest Pond				20%	25	0		0		0		
Mill Pond Fresh				23%	341	260		260		130		
Goose Pond				32%	140	66		66		27		
Upper Muddy Crk 10 W(Harwich)	83	1980	1703		1980	1703	79%	358		358		
Upper Muddy Crk 10 W(Chatham)	83	0	0		0	0	58%	0		0		
Upper Muddy Crk(Harwich)	81	2863	2394		2863	2394	80%	479		479		
Upper Muddy Crk (Chatham)	81	1139	886		1139	886	58%	372		372		
Upper Muddy (Unaccounted)	81	35	0		35	0	0%	0		0		
Upper Muddy Crk (Regional?)	81	72	25		72	25	0%	25		25		
Upper Muddy Crk 10E (Chatham)	82	162	131		162	131	58%	55		55		
Atmospheric		59			59							
		Recharge to Upper Muddy Creek Watershed 83										
							Removed Septic (kg/yr)	Recharge Septic (kg/yr)				
Muddy Creek Recharge							4945					
Pleasant Bay Recharge							2155					
Total Septic Load From Harwich							8480					
Recharge at what Concentration.			3	mg/l				978				
Upper Muddy Creek Total					**6816**	**5464**		**1614**	**57%**	**1042**	**4.204**	**2.59**
Trout Pond				100%	408	250		250		114		
Muddy Crk WELL	77	1037	876		1037	876	100%	0		0		
Lower Muddy Crk (Chatham)	78	1161	959		1161	959	50%	480		480		
Lower Muddy Crk (Harwich)	78	708	508		708	508	50%	254		254		
Lower Muddy Crk (Regional?)		11	8		11	8	0%	8		8		
Lower Muddy Crk10E (Chatham)	79	178	141		178	141	50%	71		71		
Lower Muddy Crk 10W(Harwich)	80	1376	1109		1376	1109	50%	555		555		
Atmospheric		80			80							
Lower Muddy Creek Total					4959	3851		1616		1480	**4.055**	**4.3**
Muddy Creek Total					**11775**	**9315**		**3230**	**2%**	**2472**	**6.773**	**6.89**
Grassy Pond				91%	172	6		6		3		
Mud Pond Harwich				76%	54	0		0		0		
Pleasant Bay Rd WELL_HAR	29	528	464		528	464	100%	0		0		
Pleasant Bay GT 10 BreHar (Harwich)	49	687	610		687	610	72%	171		171		
Pleasant Bay GT 10 Harwich	50	1080	879		1080	879	74%	229		229		
Pleasant Bay LT 10 Harwich	53N	1178.6	604.6		1179	605	64%	218		218		
Wequasset Inn	53N	867	867		867	867	83%	152		152	Net Load Based on 11,000 gpd@ 1	
Pleasant Bay LT 10 Harwich	53S	516	456		516	456	47%	242		242		
Pleasant Bay Total					**5083**	**3887**	**74%**	**1017**		**1014**		

Allen Scenario 6A

Build-out									
Name	Watershed #	Total (kg/yr)	Septic (kg/yr)	% Removal	Net Septic Load (kg/yr)	Attenuation % (Stream)	Attenuated Septic Load (kg/yr)	Attenuated Septic Load (kg/day)	From Table VIII-2 Attenuated Septic Load Thresholds
Stream GT 10	1	269	224	0%	224				
Stream LT 10	2	942	744	30%	521				
Stream Total		1211	968		745	30%	521	1.428	0.642
Harbor	3	1999	1774	100%	0		0	0.000	0.841
Harbor Total		**3210**	**2742**		**745**		**521**	**1.428**	**1.483**
Treated Load			**1997**	**73%**					

Wychmere Scenario 6A

Build-out									
Name	Watershed #	Total (kg/yr)	Septic (kg/yr)	% Removal	Net Septic Load (kg/yr)	Attenuation % (Stream)	Attenuated Septic Load (kg/yr)	Attenuated Septic Load (kg/day)	From Table VIII-2 Attenuated Septic Load Thresholds (kg/day)
Harbor	4	1523	1206	100%	0		0	0.000	0.000
Harbor Total		**1523**	**1206**		**0**		**0**	**0.000**	**0.000**
Treated Load			**1206**	**100%**					

Saquatucket Scenario 6A

Build-out

Name	Watershed #	Total (kg/yr)	Septic (kg/yr)	Outflow %	Total (kg/yr)	Septic (kg/yr)	% Removal	Net Septic Load (kg/yr)	Attenuation %	Attenuated Septic Load (kg/yr)	Attenuated Septic Load (kg/day)	From Table VIII-2 Attenuated Septic Load Thresholds (kg/day)
Grass Pond	13	1152	903	100%	1152	903	43%	515	50%	257		
Banks St Bogs LT10	12	2284	1941		2284	1941	10%	1747		1747		
Banks St Bogs GT10	11	322	175		322	175	1%	173		173		
			Recharge to Upper Muddy Creek Watershed 13									
							Removed	Recharge				
Cold Spring Brook Recharge							1877					
John Joseph Recharge							0					
E. Saq Stream Recharge							989					
Harbor Load Recharge							1012					
Allen Harbor Load Recharge							0					
Wychmere Harbor Load Recharge							1206					
Total Septic Load From Harwich							5084					
Recharge at what Concentration.			5	mg/l				978	50%	488.8076923		
Banks St Bogs Total					**3758**	**3019**	**19%**	**2435**	**35%**	**1733**		
Paddocks Pond	14	898	648	100%	898	648	2%	635	50%	318		
Cold Spring Brook LT10	10	2825	2064		2825	2064	62%	784		784		
Cold Spring Brook GT10	9	1178	861		1178	861	0%	861		861		
Cold Spring Brook Total					**8659**	**6592**	**28%**	**4715**	**35%**	**2402**		
Black Pond	5	18	6	14%	18	1	0%	1	50%	0		
John Joseph Pond GT10	6	109	89		109	89	0%	89		89		
John Joseph Pond LT10	7	500	335		500	335	0%	335		335		
John Joseph Pond Total		627	430	27%	168	114	0%	114	74%	30		
Chatham Road WELLS	8	1004	667	80%	803	534	0%	534		534		
Saq Harbor LT10N	15	1166	1009		1166	1009	98%	20		20		
E. Saquatucket Stream Total					**2137**	**1657**	**60%**	**668**	**15%**	**496**	**1.359**	**1.274**
Harbor LT10S	16	1113	1012		1113	1012	100%	0		0	0.000	0.507
Harbor Total					**11909**	**9261**		**5383**		**1920**	**5.261**	**5.28**
Treated Load						**3878**	**42%**					

Pleasant Bay Scenario 6A

Build-out

Name	WS #	Total (kg/yr)	Septic (kg/yr)	Outflow %	Total (kg/yr)	Septic (kg/yr)	% Removal	Net Septic Load (kg/yr)	Attenuation %	Attenuated Septic Load (kg/yr)	Attenuated Septic Load (kg/day)	Attenuated load; table3,pg 6 of 6/25/10 SMAST memo
Grassy Pond	9	189	7		189	7	0%	7	50%	4		
Grassy Pond to Mud Pond				9%	17	1		1		0		
Mud Pond (Harwich)	12	47	0		47	0	0%	0		0		
Mud Pond (Brewster)	12	7	0		7	0	0%	0		0		
Mud Pond Total					71	1		0	50%	0		
Hawksnest Pond	76	126	0		126	0	0%	0	50%	0		
Hawksnest Pond to Mill Pond				14%	18	0		0		0		
Mill Pond (Harwich)	68	1231	1017		1231	1017	0%	1017		1017		
Mill Pond (Chatham)	68	232	112		232	112	0%	112		112		
Mill Pond Fresh Total					1481	1129		1129	50%	565		
Mill Pond to Goose Pond				6%	89	68		68		34		
Goose Pond (Chatham)	69	355	137		349	137	0%	137		137		
Goose Pond Total					438	205		205	50%	86		
Goose Pond to Trout Pond				19%	83	39	0%	39		16		
Trout Pond (Chatham)	70	325	211		325	211	0%	211		211		
Trout Pond Total					408	250		250	50%	114		
Mud Pond				24%	17	0		0		0		
Round Cove GT 10	61	1238	1064		1238	1064	100%	0		0		
Round Cove LT 10	62	1295	1062	0.49	1295	1062	30%	743		743		
Round Cove Total					**2485**	**1999**		**616**		**616**	**1.689**	**1.865**
Hawksnest Pond				20%	25	0		0		0		
Mill Pond Fresh				23%	341	260		260		130		
Goose Pond				32%	140	66		66		27		
Upper Muddy Crk 10 W(Harwich)	83	1980	1703		1980	1703	99%	10		10		
Upper Muddy Crk 10 W(Chatham)	83	0	0		0	0	58%	0		0		
Upper Muddy Crk(Harwich)	81	2863	2394		2863	2394	100%	0		0		
Upper Muddy Crk (Chatham)	81	1139	886		1139	886	58%	372		372		
Upper Muddy (Unaccounted)	81	35	0		35	0	0%	0		0		
Upper Muddy Crk (Regional?)	81	72	25		72	25	0%	25		25		
Upper Muddy Crk 10E (Chatham)	82	162	131		162	131	58%	55		55		
Atmospheric		59			59							
		Recharge to Upper Muddy Creek Watershed 83					Removed Septic (kg/yr)	Recharge Septic (kg/yr)				
Round Cove Recharge							1383					
Muddy Creek Recharge							5771					
Pleasant Bay Recharge							2155					
Total Septic Load From Harwich							9309					
Recharge at what Concentration.			5	mg/l				1790				
Upper Muddy Creek Total					**6816**	**5464**		**788**	**57%**	**1036**	**4.204**	**2.59**
Trout Pond				100%	408	250		250		114		
Muddy Crk WELL	77	1037	876		1037	876	100%	0		0		
Lower Muddy Crk (Chatham)	78	1161	959		1161	959	50%	480		480		
Lower Muddy Crk (Harwich)	78	708	508		708	508	50%	254		254		
Lower Muddy Crk (Regional?)		11	8		11	8	0%	8		8		
Lower Muddy Crk10E (Chatham)	79	178	141		178	141	50%	71		71		
Lower Muddy Crk 10W(Harwich)	80	1376	1109		1376	1109	50%	555		555		
Atmospheric		80			80							
Lower Muddy Creek Total					4959	3851		1616		1480	**4.055**	**4.3**
Muddy Creek Total					**11775**	**9315**		**2404**	**2%**	**2466**	**6.756**	**6.89**
Grassy Pond				91%	172	6		6		3		
Mud Pond Harwich				76%	54	0		0		0		
Pleasant Bay Rd WELL_HAR	29	528	464		528	464	100%	0		0		
Pleasant Bay GT 10 BreHar (Harwich)	49	687	610		687	610	72%	171		171		
Pleasant Bay GT 10 Harwich	50	1080	879		1080	879	74%	229		229		
Pleasant Bay LT 10 Harwich	53N	1178.6	604.6		1179	605	64%	218		218		
Wequasset Inn	53N	867	867		867	867	83%	152		152	Net Load Based on 11,000 gpd @ 1	
Pleasant Bay LT 10 Harwich	53S	516	456		516	456	47%	242		242		
Pleasant Bay Total					**5083**	**3887**	**74%**	**1017**		**1014**		

Allen Scenario 7A

Build-out									
Name	Watershed #	Total (kg/yr)	Septic (kg/yr)	% Removal	Net Septic Load (kg/yr)	Attenuation % (Stream)	Attenuated Septic Load (kg/yr)	Attenuated Septic Load (kg/day)	From Table VIII-2 Attenuated Septic Load Thresholds
Stream GT 10	1	269	224	27%	164				
Stream LT 10	2	942	744	27%	543				
Stream Total		1211	968		707	30%	495	1.355	0.642
Harbor	3	1999	1774	100%	0		0	0.000	0.841
Harbor Total		**3210**	**2742**		**707**		**495**	**1.355**	**1.483**
Treated Load			**2035**	**74%**					

Wychmere Scenario 7A

Build-out									
Name	Watershed #	Total (kg/yr)	Septic (kg/yr)	% Removal	Net Septic Load (kg/yr)	Attenuation % (Stream)	Attenuated Septic Load (kg/yr)	Attenuated Septic Load (kg/day)	From Table VIII-2 Attenuated Septic Load Thresholds (kg/day)
Harbor	4	1523	1206	100%	0		0	0.000	0.000
Harbor Total		**1523**	**1206**		**0**		**0**	**0.000**	**0.000**
Treated Load			**1206**	**100%**					

Saquatucket Scenario 7A

Build-out

Name	Watershed #	Total (kg/yr)	Septic (kg/yr)	Outflow %	Total (kg/yr)	Septic (kg/yr)	% Removal	Net Septic Load (kg/yr)	Attenuation %	Attenuated Septic Load (kg/yr)	Attenuated Septic Load (kg/day)	From Table VIII-2 Attenuated Septic Load Thresholds (kg/day)
Grass Pond	13	1152	903	100%	1152	903	27%	659	50%	330	100% of Watershed is on I/A	
Banks St Bogs LT10	12	2284	1941		2284	1941	27%	1417		1417	100% of Watershed is on I/A	
Banks St Bogs GT10	11	322	175		322	175	27%	128		128	100% of Watershed is on I/A	
			Recharge to Upper Muddy Creek Watershed 13									
							Removed Septic (kg/yr)	Recharge Septic (kg/yr)				
Cold Spring Brook Recharge							826				40% sewered;13% is on I/A	
John Joseph Recharge							0					
E. Saq Stream Recharge							404				40% sewered;13% is on I/A	
Harbor Load Recharge							1012					
Allen Harbor Load Recharge							0					
Wychmere Harbor Load Recharge							1206					
Total Septic Load From Harwich							3447					
Recharge at what Concentration.			5	mg/l				663	50%	331		
Banks St Bogs Total					**3758**	**3019**	**27%**	**2204**	**35%**	**1434**		
Paddocks Pond	14	898	648	100%	898	648	29%	460	50%	230	100% of Watershed is on I/A	
Cold Spring Brook LT10	10	2825	2064		2825	2064	57%	888		888	40% sewered;60% is on I/A	
Cold Spring Brook GT10	9	1178	861		1178	861	27%	629		629	100% of Watershed is on I/A	
Cold Spring Brook Total					**8659**	**6592**	**37%**	**4180**	**35%**	**2067**		
Black Pond	5	18	6	14%	18	1	27%	1	50%	0	100% of Watershed is on I/A	
John Joseph Pond GT10	6	109	89		109	89	27%	65		65	100% of Watershed is on I/A	
John Joseph Pond LT10	7	500	335		500	335	27%	245		245	100% of Watershed is on I/A	
John Joseph Pond Total		627	430	27%	168	114	27%	83	74%	22		
Chatham Road WELLS	8	1004	667	80%	803	534	27%	390		390	100% of Watershed is on I/A	
Saq Harbor LT10N	15	1166	1009		1166	1009	58%	424		424	40% sewered;60% is on I/A	
E. Saquatucket Stream Total					**2137**	**1657**	**46%**	**897**	**15%**	**710**	**1.944**	**1.274**
Harbor LT10S	16	1113	1012		1113	1012	100%	0		0	0.000	0.507
Harbor Total					**11909**	**9261**		**5077**		**1799**	**4.928**	**5.28**
Treated Load						**4184**	**45%**					

Pleasant Bay Scenario 7A

Build-out

Name	Watershed #	Total (kg/yr)	Septic (kg/yr)	Outflow %	Total (kg/yr)	Septic (kg/yr)	% Removal	Net Septic Load (kg/yr)	Attenuation %	Attenuated Septic Load (kg/yr)	Attenuated Septic Load (kg/day)	Attenuated load; table3,pg 6 of 6/25/10 SMAST memo
Grassy Pond	9	189	7		189	7	0%	7	50%	4		
Grassy Pond to Mud Pond				9%	17	1		1		0		
Mud Pond (Harwich)	12	47	0		47	0	0%	0		0		
Mud Pond (Brewster)	12	7	0		7	0	0%	0		0		
Mud Pond Total					71	1		0	50%	0		
Hawksnest Pond	76	126	0		126	0	27%	0	50%	0		
Hawksnest Pond to Mill Pond				14%	18	0		0		0		
Mill Pond (Harwich)	68	1231	1017		1231	1017	50%	509		509		
Mill Pond (Chatham)	68	232	112		232	112	58%	47		47		
Mill Pond Fresh Total					1481	1129		556	50%	278		
Mill Pond to Goose Pond				6%	89	68		33		17		
Goose Pond (Chatham)	69	355	137		349	137	58%	58		58		
Goose Pond Total					438	205		91	50%	37		
Goose Pond to Trout Pond				19%	83	39		17		7		
Trout Pond (Chatham)	70	325	211		325	211	58%	89		89		
Trout Pond Total					408	250		106	50%	48		
Mud Pond				24%	17	0		0		0		
Round Cove GT 10	61	1238	1064		1238	1064	87%	138		138		
Round Cove LT 10	62	1295	1052		1295	1052	50%	526		526		
Round Cove Total					**2485**	**1990**		**538**		**538**	**1.473**	**1.865**
Hawksnest Pond				20%	25	0		0		0		
Mill Pond Fresh				23%	341	260		128		64		
Goose Pond				32%	140	66		29		12		
Upper Muddy Crk 10 W(Harwich)	83	1980	1703		1980	1703	67%	571		571		
Upper Muddy Crk 10 W(Chatham)	83	0	0		0	0	58%	0		0		
Upper Muddy Crk(Harwich)	81	2863	2394		2863	2394	100%	0		0		
Upper Muddy Crk (Chatham)	81	1139	886		1139	886	58%	372		372		
Upper Muddy (Unaccounted)	81	35	0		35	0	0%	0		0		
Upper Muddy Crk (Regional?)	81	72	25		72	25	0%	25		25		
Upper Muddy Crk 10E (Chatham)	82	162	131		162	131	58%	55		55		
Atmospheric		59			59							
		Recharge to Upper Muddy Creek Watershed 83										
							Removed Septic (kg/yr)	Recharge Septic (kg/yr)				
Round Cove Recharge							926					
Muddy Creek Recharge							2905					
Pleasant Bay Recharge							1483				separate plant	
Total Septic Load From Harwich							5313					
Recharge at what Concentration.			3	mg/l				613				
Upper Muddy Creek Total					**6816**	**5464**		**1180**	**57%**	**736**	**2.016**	**2.59**
Trout Pond				100%	408	250		106		48		
Muddy Crk WELL	77	1037	876		1037	876	50%	438		438		
Lower Muddy Crk (Chatham)	78	1161	959		1161	959	58%	403		403		
Lower Muddy Crk (Harwich)	78	708	508		708	508	50%	254		254		
Lower Muddy Crk (Regional?)		11	8		11	8	0%	8		8		
Lower Muddy Crk10E (Chatham)	79	178	141		178	141	58%	59		59		
Lower Muddy Crk 10W(Harwich)	80	1376	1109		1376	1109	50%	555		555		
Atmospheric		80			80							
Lower Muddy Creek Total					4959	3851		1822		1764	**4.834**	**4.3**
Muddy Creek Total					**11775**	**9315**		**3002**	**2%**	**2450**	**6.713**	**6.89**
Grassy Pond				91%	172	6		6		3		
Mud Pond Harwich				76%	54	0		0		211		
Pleasant Bay Rd WELL_HAR	29	528	464		528	464	100%	0		0		
Pleasant Bay GT 10 BreHar (Harwich)	49	687	610		687	610	69%	189		189		
Pleasant Bay GT 10 Harwich	50	1080	879		1080	879	68%	281		281		
Pleasant Bay LT 10 Harwich	53N	1178.6	604.6		1179	605	50%	302		302		
Wequasset Inn	53N	867	867		867	867	83%	152		152	net load based on 11,000 gpd@ 10 mg/l	
Pleasant Bay LT 10 Harwich	53S	516	456		516	456	50%	228		228		
Pleasant Bay Total					**5083**	**3887**	**70%**	**1159**		**2678**		