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Meeting House Place Nitrogen Load Calculations
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Total Perimeter Land Area = 54.3 acres

MVC WQMP Adjusted Nitrogen Load Limit (Edgartown Great Pond) = 1.40 kg/ac/year

MVC WQMP maximum nitrogen load for 54.3 acres = 76.0 kg/year

A & B 28 lots @29,553 sf average per lot

Maximum interior house square footage = 3,800 sf + garage

Average footprint – roofs + covered decks & porches = 6,000 sf per lot

(average 3,200 sf footprint, 800 sf garage, 2,000 sf decks/porches)

Average uncovered porch & deck – 1,000 sf per lot

Average driveway square footage – 2,500 sf per lot

Pools – 14 lots x 800 sf per lot (20'x40') (no Nitrogen contribution)

Patios – 2,000 sf per lot

Maximum number bedrooms = 5 per lot

Fertilized lawn & gardens = 4,000 sf per lot per policy (all land within lots exclusive of zoning setbacks, roofs, covered decks & porches, uncovered decks & porches, driveway, pool & patio shall be considered "landscaped area" as per MVC WQMP)

Proposed "no-cut no-touch" setbacks (30 front/15 side/10 rear) = 10,806 sf/lot average = 37% of average lot area

Roads

Roads – sections A & B = 2,000 linear feet x 16 feet wide = 32,000 sf

Road shoulders – 2,000 linear feet x 6 feet (3 feet per side) = 12,000 sf

Townhouses 14 units + road on 1.4 ac lot

Total square footage = 10,626 sf

Average footprint: roof + covered decks = 10,626 sf total/14 units =

760 sf/unit + 200 sf deck/unit = 960 sf per unit

Average driveway square foot – 357 sf per unit (50' x 10' including parking)

Patios – 714 sf per unit

Maximum number of bedrooms (10 units @ 2 BR, 4 units @ 1 BR)

Fertilized lawn & gardens = 800 per unit

Road – section T – 190 linear feet x 16 feet wide = 3,040 sf

Road shoulders – 190 linear feet x 6 feet (3 feet per side) = 1,140 sf

"No-cut no-touch" setbacks (30/10/10) = 15,868 sf = 26% of Townhouse lot

2.

Nitrogen Loading Estimates

*N loads from Wastewater

1. Standard Title V nitrogen contribution

185.5 gal/day x 365 days = 67,700 gal/year

67,700 x 90% leach rate x 3.785 lit/gal x 26.25 mg/l N / 1,000,000 =
6.05 kg/yr/dwlg

2. Wastewater facility contribution

67,700 x .9 x 3.785 x 3 mg/l N / 1,000,000 = 0.69 kg /yr/dwlg unit

Meeting House Wastewater facility N contribution:

28 lots x 0.69 = 19.3 kg/year

14 units x 0.69 = 9.7 kg/year

Total 29.0 kg/year

*Roads (runoff into vegetated areas)

Impervious roads = 32,000 sf + 3,040 sf = 35,040 sf

MVC WQMP Formula:

35,040 sf x 46.9 inches annual precip / 12 inches per ft x 90% leaching rate x 28.3
liters/cu ft x 0.75 mg/liter N per policy / 1,000,000 = **2.6 kg/year**

*Road Shoulders

Road Shoulders = 12,000 sf + 1,140 sf = 13,140 sf

MVC WQMP:

13,140 sf x 46.9 inches precip / 12 inch per ft x 65% 28.3 liters/cu ft x
0.75 mg/liter / 1,000,000 = **0.7 kg/year**

*Roofs + Covered Decks & Porches (runoff into mulched and vegetated areas)

28 x 6,000 sf + 14 x 960 sf = 181,440 sf

MVC WQMP Formula:

181,440 sf x 46.9 inches annual precip / 12 inches per foot x 90% leaching rate x 28.3
liters/cu ft x 0.38 mg/liter N per policy / 1,000,000 = **6.9 kg/year**

*Driveways (runoff into vegetated shoulders)

Driveways = 28 lots x 2,500 sf + 14 units x 357 sf = 75,000 sf

MVC WQMP Formula:

75,000 sf x 46.9 inches annual precip / 12 inches per foot x
65% leaching rate x 28.3 liters/cu ft x 0.75 mg/liter N per policy / 1,000,000 =
4.0 kg/year

3. Nitrogen Loading Estimates (continued)

***Uncovered Porch & Decks (runoff into mulched and vegetated areas)**

28 lots x 1,000 sf + 10 units x 357 sf = 33,000 sf
 33,000 sf x 46.9 inches precip per year / 12 inches per foot x
 65% leaching rate x 28.3 liters/cu ft x 0.75 mg/liter / 1,000,000 = **1.8 kg**

***Pools**

14 x 800 sf per pool (assume 20' x 40')

No Nitrogen Load

***Patios (runoff into mulched and vegetated areas)**

28 x 2,000 sf + 10 x 714 sf = 66,000 sf
 66,000 sf x 46.9 inches precip per year / 12 inches per foot x 90% leaching rate x 28.3
 liters/cu ft x 0.38 mg/liter N (roofs) / 1,000,000 = **2.5 kg**

***Fertilized Lawn & Gardens**

28 lots x 4,000 sf per lot = 112,000 sf
 14 units x 800 sf per unit = 11,200 sf
 123,200 sf x 3 lbs N per 1,000 sf x 20% leaching rate / 2.205 lb/kg = **33.5 kg/year**

Remaining Land Calculations (treated the same as fertilized lawn & gardens)

Average Lot size	29,553 sf	Townhouse Lot	60,984 sf lot
No-touch setbacks	10,506 sf	No-touch setbacks	15,868 sf
Roof/covered porches	6,000 sf	Roof/covered porches	13,440 sf
Uncovered Porch/Deck	1,000 sf	Road	3,040 sf
Driveway	2,500 sf	Road Shoulders	1,140 sf
Pool (800 sf for 1/2 lots)	400 sf	Driveways	5,000 sf
Patios	2,000 sf	Patios	10,000 sf
Fertilized lawn/gardens	4,000 sf	Fertilized lawn/gardens	11,200 sf
Total ave. lot used area= 26,406 sf		Total ave. lot used area= 59,688 sf	
29,553 sf average lot area –		60,984 sf lot area –	
26,406 sf lot area used =		59,688 sf lot area used =	
3,147 sf remaining land per lot		1,296 sf remaining land in lot	
28 lots x 3,147 sf/lot remaining land =		1,296 sf remaining land x	
88,116 sf remaining land x 3 lbs N per		3 lbs N per 1,000 sf x	
1,000 sf x 20% leach rate / 2.205 lb/kg		20% leach rate / 2.205 lb/kg	
= 24.0 kg/yr from remaining land		= 0.4 kg/yr from remaining land	

4.

Nitrogen Loading Estimates (continued)

**Totals = 29.0 + 2.6 + 0.7 + 6.9 + 4.0 + 1.8 + 2.5 + 33.5 + 24.0 + 0.4 =
105.4 kg/year prior to mitigation
(max permitted nitrogen load per MVC WQMP = 76.0 kg/year)**

******* Note: Fertilized lawn and gardens shall be limited to a maximum of 4,000 sf per lot. "Remaining land" shall not be fertilized but shall be assumed to contribute the same amount of nitrogen as fertilized lawn and shrubs**

Mitigation

Hotchkiss lots

6.05 kg/yr – 0.69 kg/yr wastewater facility = **5.36 kg N reduction per lot
if sewered**

12 Hotchkiss lots x 5.36 kg N reduction per lot = **64.3 kg N total reduction if
all 12 Hotchkiss lots sewered**

Total nitrogen load from project if all 12 Hotchkiss Lane lots tie in:

105.4 kg total N load before mitigation (see above)

-64.3 N reduction if all 12 Hotchkiss lots sewered

**41.1 kg / year net N generation (54% of allowed N generation,
46% below the allowed N generation, based on MVC policy)**

If the applicant gets 6 Hotchkiss lots or other lots in the Edgartown Great Pond watershed to tie into sewer, the total nitrogen load after mitigation is 105.4 kg N – 32.2 kg N (6 lots x 5.36 kg/lot) = 73.2 kg N/year, 96% of allowed per policy, 4% below allowed N generation per policy. Each additional Hotchkiss lot that ties into town sewer reduces the N generation by an additional 7% below MVC policy numbers.