NUTRIENT LOADING TO LAGOON POND

2000

THE MARTHA'S VINEYARD COMMISSION

THE MARTHA'S VINEYARD COMMISSION

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ACKNOWLEDGMENTS

MANY THANKS TO THE FOLLOWING INDIVIDUALS AND ORGANIZATIONS:

Jo-Ann Taylor designed the project with the assistance of William Wilcox, and served as principal investigator, author, and MVC project quality assurance officer. Shawn McCormack assembled the land use database. William Wilcox provided on-the-spot support throughout the project. Irene Fyler performed bookkeeping duties.

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EXECUTIVE SUMMARY

Lagoon Pond is a 538 acre coastal pond situated on the north shore of Martha's Vineyard, shared by the Towns of Tisbury and Oak Bluffs. It is permanently opened to Vineyard Haven Harbor by means of a drawbridge. The pond supports commercially important shellfish resources, as well as diverse fish populations, including herring which are an important food source for both commercial offshore fish species and nearshore recreational fish species such as bluefish and striped bass. In recent years, the pond has shown symptoms of stress which may reflect increased human activity in the watershed. There has been extensive residential growth in the watershed. The issue of nitrogen loading is a key to developing an appropriate response to issues including the nature of future growth in the watershed of each pond. The unknowns under investigation included: the quality of the groundwater discharging into each pond and where the discharge is occurring; the projected nitrogen loads based on buildout including various scenarios, and what effect they will have; the steps that should be taken by the towns to assure that the water quality in the pond is maintained.

The entire watershed for the pond covers **4,406.2** acres, including **538** acres for the pond itself. The present nitrogen load to the watershed is approximately **17,240** kilograms per year, from the following sources:

	Kilograms/year
Rain, runoff	**6,413**
Septic Systems	
Residential	**7,597**
Commercial, municipal	**1,436**
Farms	**1,062**
Lawns	**732**
Total	**17,240**

Land use investigations revealed **34** commercial units on **16.35** acres of commercial land and **1,724** houses and guesthouses on **1,377.54** acres of residential land, of which **349.36** acres have potential for further subdivision. Of **1,541.81** acres of vacant land, protected open space accounts for **654.82** acres. Of the remainder, **370.38** acres of land is potentially available for further subdivision, and the remaining **516.61** acres of vacant land is without further subdivision potential. Farms occupy the remaining **111.74** acres in the watershed.

MVC developed a recommended nitrogen loading limit of **17,000** kilograms per year for the entire watershed, and compared the limit with the existing and projected nitrogen loads:

	Kilograms/year
Current Nitrogen Load	**17,240**
Nitrogen Load at Low Growth	**20,668**
Nitrogen Load at Moderate Growth	**22,439**
Nitrogen Load at High Growth	**26,806**

The conclusion from the calculations is that the proposed limit is quite close to the present load. Water quality sampling data also support that conclusion.

MVC developed **nitrogen management recommendations** for the watershed as follows:

1. ADOPT 17,000 KILOGRAMS AS AN ANNUAL LOAD LIMIT FOR THE WATERSHED.

SEPTIC SYSTEMS

- Determine growth needs and desires for the watershed area in both towns.
- Encourage advanced nitrogen removal for new septic systems and consider possible extension of Tisbury municipal sewer service area.
- Revise zoning and board of health regulations to support the 17,000 kg limit. Consider a watershed-wide DCPC to develop and implement those regulations.
- Maximize acquisition or protection of much of the remaining open space in the watershed. Particularly consider the 370.38 acres with further subdivision potential.

RAINFALL AND RUNOFF

- Construct and maintain structural solutions where needed to remediate existing problems, particularly in the vicinity of Mud Creek in Tisbury and the specific sites at Hudson Avenue, Lagoon Road and Vineyard Avenue Extension in Oak Bluffs. Review town regulations regarding proper drainage design in future projects; Tisbury might want to adopt stormwater regulations similar to those adopted by the Oak Bluffs Board of Health.

LAWNS AND LANDSCAPING

- Educate homeowners and professional landscapers about using native plants and about fertilizer impacts.

AGRICULTURE

- Encourage low-nitrogen farm activities where practical, such as in conjunction with open space ventures. Examples are legumes such as clover, alfalfa and beans, and grass seed mixture for hay and pasture.

SHELLFISH AND HERRING

- Promote shellfish as nutrient consumers, along with herring. Ensure that their habitats are protected.

2. FURTHER ASSESSMENT AND MONITORING

- Continue water sampling, particularly focusing on the "tributaries" of Mud Creek and Brush Pond. Include some continuous recorded logs of dissolved oxygen over several daily cycles together.

- Perform updates to the eelgrass inventory, at five year intervals. Watch for changes in the algae and weed population.

- Continue to investigate the complexities of circulation in the pond. Ensure that the flushing formulas used to calculate the nitrogen loading limit are appropriate for the realities of circulation in this unusually long, narrow and deep water body. Investigate stratification in the deeper areas.

WATER QUALITY MEASUREMENTS

When looking at water quality in terms of load and limits, it is important to look at the existing water quality conditions. Water sampling results provide numerical data, and habitat conditions are evident by observations of the health of nutrient-sensitive species like eelgrass.

NUTRIENT CYCLE

Nitrogen and phosphorous are the "building blocks" of plant material. Phosphate particles are filtered out over distance and remain adsorbed to soil particles. **Nitrate, on the other hand, is extremely soluble and stable and will travel great distances in groundwater to be discharged to the pond.** Nitrogen enters the ground as organic nitrogen, ammonium (NH_4^+) or nitrate (NO_3^-) from wastes or fertilizers. Most nitrogen that is introduced to aerobic subaqueous environments, such as the central aquifer of Martha's Vineyard, is converted to nitrate. In the soil, in the layer between the ground surface and the water table, organic nitrogen is converted to ammonium (NH_4^+) and ammonium to nitrate (NO_3^-), the stable form of nitrogen in groundwater. In addition to being the stable form of nitrogen for traveling in the groundwater, nitrate is, along with ammonium, a form of nitrogen which is readily taken up and used by plants. There is a process known as denitrification which reduces nitrate (NO_3^-) to N_2O and N_2, forms of nitrogen which are not readily usable by plants. However, this process only occurs in a reducing environment such as peat. Most of the nitrate in the groundwater will reach the pond and become available for plant growth. The reducing environment may be recreated in a peat bed, recirculating sand filter or Bioclere system, which may be constructed as part of a septic system.

Nutrients in excess may stimulate excessive undesirable plant growth. Such plant growth may occur in the form of rooted plants and/or algae, at the expense of growth of more desirable forms of plant life such as eelgrass. The health of the eelgrass beds depends on the availability of sunlight for photosynthesis. In nutrient-rich waters, certain forms of epiphytic algae may attach themselves to the individual blades of eelgrass, effectively cutting off the supply of sunlight and reducing growth and overall health. In poor condition, the eelgrass is then less resistant to disease. Some algae blooms, such as red tide, may be quite destructive in terms of immediate consequences. Fish kills may occur when too much of the oxygen in the water is used by the bacteria which decompose dead plant matter. Decaying algae and seaweed may create localized odor problems. A more insidious effect of nutrient enrichment is the long

term filling in of the pond with organic matter, which process is known as eutrophication. Loading the pond with organic matter would have the long term effect of changing the bottom from sand and gravel to organic mud. The sand and gravel bottom is preferred shellfish habitat as well as spawning and nursery habitat for a number of fish species including the commercially important winter flounder.

The nutrient which is typically the limiting factor for plant growth in fresh water is phosphorous. The typical nutrient limiting growth in salt ponds is nitrogen. The ratio of total nitrogen/total phosphorous determines whether growth is limited by nitrogen (TN/TP < 15/1) or by phosphorous (TN/TP > 15/1). According to the draft Island Coastal Ponds Water Quality Study[1], most of Lagoon Pond is nitrogen limited, except for the fresh waters of Mud Creek and Upper Lagoon Pond.

EELGRASS AND ALGAE

There is some evidence that eelgrass in Lagoon Pond is in a state of decline. Massachusetts' Department of Environmental Protection performed mapping of the aerial extent of the eelgrass beds in 1994 and updated the maps in 2000. The maps reveal less extensive eelgrass coverage in 2000. There is a particularly striking loss evident from the tip of Hines Point to Lagoon Avenue, on the Tisbury side of the main body of the pond. Extensive beds there in 1994 were greatly reduced in lateral extent in 2000, almost to the point of disappearance. In 1999, Phil Colarusso, of the U.S. Environmental Protection Agency, performed a different type of analysis, looking at the condition of the eelgrass crop, as well as overall distribution. His preliminary conclusions are that eelgrass in Lagoon Pond is in a rapid state of decline.

According to the Island Coastal Ponds Water Quality Study[2], the Upper Pond produced a significant algae bloom in late August and September, 1995, when particulate carbon and nitrogen exceeded the rest of the Pond by 5 to 8 times, and the chlorophyll A levels were about 15 times the rest of the sampling sites in the Pond. Oak Bluffs Shellfish Constable David Grunden[3] reported evidence of a dinoflagellate Prorocentrum, that is known to be hazardous to shellfish. M.V. Shellfish Group Director Rick Karney[4] has reported repeated problems at the shellfish hatchery with dinoflagellate blooms, particularly around Labor Day.

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[1] M.V. Shellfish Group et al, 1998, draft Island Coastal Ponds Water Qaulity Study

[2] M.V. Shellfish Group et al, 1998, Island Coastal Ponds Water Quality Study

[3] Grunden, David, 2000, personal communication

[4] Karney, Rick, 2000, personal communication

WATER QUALITY SAMPLING RESULTS

In the U.S.G.S. hydrology study, Delaney reported Island-wide nitrate concentrations: "Nitrate-nitrogen concentration, nitrate reported as nitrogen, is generally low (median concentration 0.6 mg/L - maximum concentration less than 6 mg/L) at 48 sampling sites throughout the Island."[5]. The Diagnostic/Feasibility Study for Lagoon Pond Oak Bluffs/Tisbury[6] reported elevated nitrogen levels of 4 to 10 mg/l in shallow groundwater wells in areas associated with dense housing, peaking in spring and late summer. Nutrients were also associated with runoff. The Mud Creek and Brush Pond tributaries contributed peak loading in response to rain events, over the first one to two hours of a summer rain storm. Upper Lagoon Pond contributed elevated nitrogen levels (1.0 to 2.5 mg/l), with nutrient washout 3 to 4 hours after the start of a summer rainstorm. According to the Island Coastal Ponds Water Quality Study, Mud Creek, Brush Pond and Upper Lagoon Pond remained sources of elevated nutrient levels in 1995 and 1996. Nutrient levels at Mud Creek, Brush Pond and Upper Lagoon Pond were considerably higher than those of most of the other Island samples, and in some instances even exceeded levels measured in Buzzards Bay. Compare, for instance, the levels of Dissolved Inorganic Nitrogen found at Brush Pond, Mud Creek and Upper Lagoon Pond to those in the Outer Harbor:

DISSOLVED INORGANIC NITROGEN (uM/L)

	Brush Pond	Mud Creek	Upper L. Pond	Outer Harbor
Max	5.12	68.21	14.22	1.96
Min	.22	1.4	.3	.3
Average	2.36	17.00	3.32	.98

In general, the "tributaries" had elevated levels of ammonium and nitrate when compared to the "in-pond" stations. This was the case during the sampling rounds in spring and late summer/early fall sampling rounds at the Upper Pond. Mud Creek was considerably elevated above the rest of the Pond for these two parameters throughout the study. Brush Pond had elevated levels at various times throughout the course of the study.

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5 Delaney, David F., U.S.G.S., 1980, "Groundwater Hydrology of Martha's Vineyard, Massachusetts"

6 Poole, Bruce M., 1989, Diagnostic/Feasibility Study for Lagoon Pond, Oak Bluffs/Tisbury

WATERSHED DELINEATION & RECHARGE ESTIMATES

WATERSHED DELINEATION

The Lagoon Pond watershed was delineated based on a number of available sources of groundwater contours. In 1980, Delaney mapped groundwater contours that illustrate the general recharge area for the pond[7]. In 1984, the Martha's Vineyard Commission[8] used the Delaney contours to estimate a recharge area of approximately 4470 acres. In his 1986 report[9], Arthur Gaines estimated the watershed area to be 13.5-19.7 square kilometers (3336-4868 acres), with the suggestion that the larger estimate may be more in keeping with observed discharge. The larger estimate corresponds with the 1984 MVC estimate as based on the Delaney contours. The smaller estimate corresponds with groundwater contours mapped by Clifford Kaye, as shown in the MVC's 1977 draft Water Quality Management Plan. Bruce Poole[10] reported an estimate of 4868 acres, using the high end of the Gaines/Delaney estimate.

MVC used the existing references as a basis for the overall delineation, then used new information to refine the boundaries, where available. More recent groundwater contours have been made available in conjunction with the new Zone II delineations and with planning for the Town of Tisbury's proposed sewer system. The sewer planning study[11] provided detail in the area of downtown Tisbury. The groundwater contours in the Zone II delineation[12] provide detail in the densely developed part of the Oak Bluffs side. The two new references provide helpful detail in the most densely developed areas, where the detail is most useful. The "tail" of the watershed is not as distinctive, but covers territory, such as the State Forest, that is unlikely to be developed.

MVC used the above references to plot the watershed as shown on the attachment. MVC then measured the watershed with a planimeter, at 4,367.4 acres. MVC checked the watershed measurement by GIS scanned calculation of 4,445.02 acres. MVC averaged the two and arrived at a final figure of 4,406.2 acres, including 538 acres for the pond itself, a figure that is consistent with earlier delineations.

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[7] Delaney, David, USGS, 1980, "Groundwater Hydrology of Martha's Vineyard, Massachusetts"

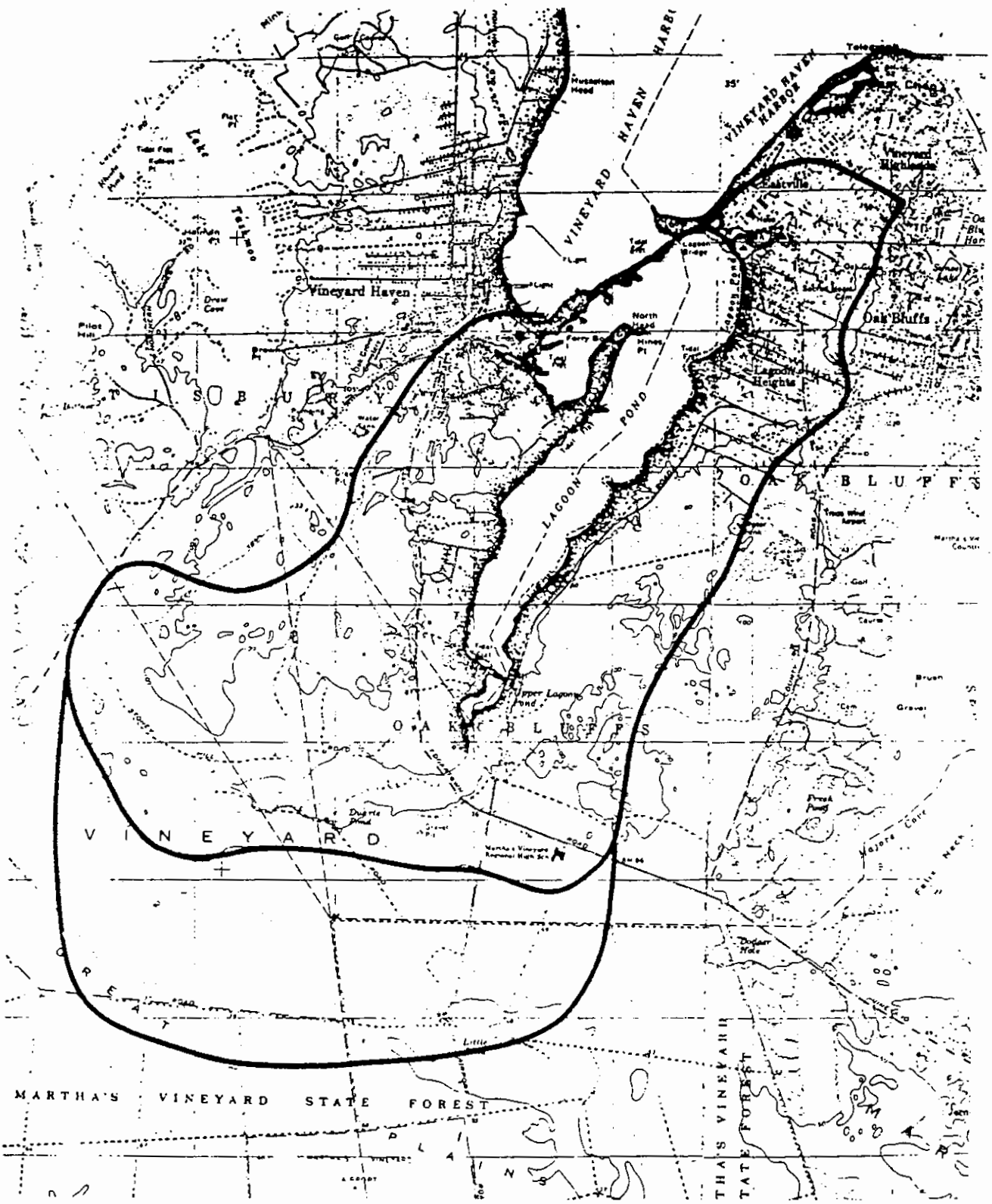
[8] Martha's Vineyard Commission (Russell Smith), 1984, letter to Arthur Gaines

[9] Gaines, Arthur Jr., W.H.O.I. 1989, Lagoon Pond Study: An Assessment of Environmental Issues and Observations on the Estuarine System

[10] Poole, Bruce, SP Engineering, 1986, Diagnostic/Feasibility Study for Lagoon Pond, Oak Bluffs/Tisbury

[11] Stone Environmental, Inc., 1999, draft Hydrogeological Evaluation of Groundwater Options, Town of Tisbury, Massachusetts

[12] Whitman & Howard, Inc., 1994, A Numerical Groundwater Flow Model and Zone II Delineation for the Farm Neck Well, Oak Bluffs, Massachusetts



"Approximate demarkation of the groundwater recharge area for Lagoon Pond. The smaller area corresponds more closely with the analysis of Kaye (in MVC. 1977) while the larger area more nearly follows Delaney Discharge calculations for Lagoon Pond suggest the larger area may be more appropriate."

Taken from Gaines, Arthur, Jr., W.H.O.I., 1986, Lagoon Pond Study: An Assessment of Environmental Issues and Observations on the Estuarine System

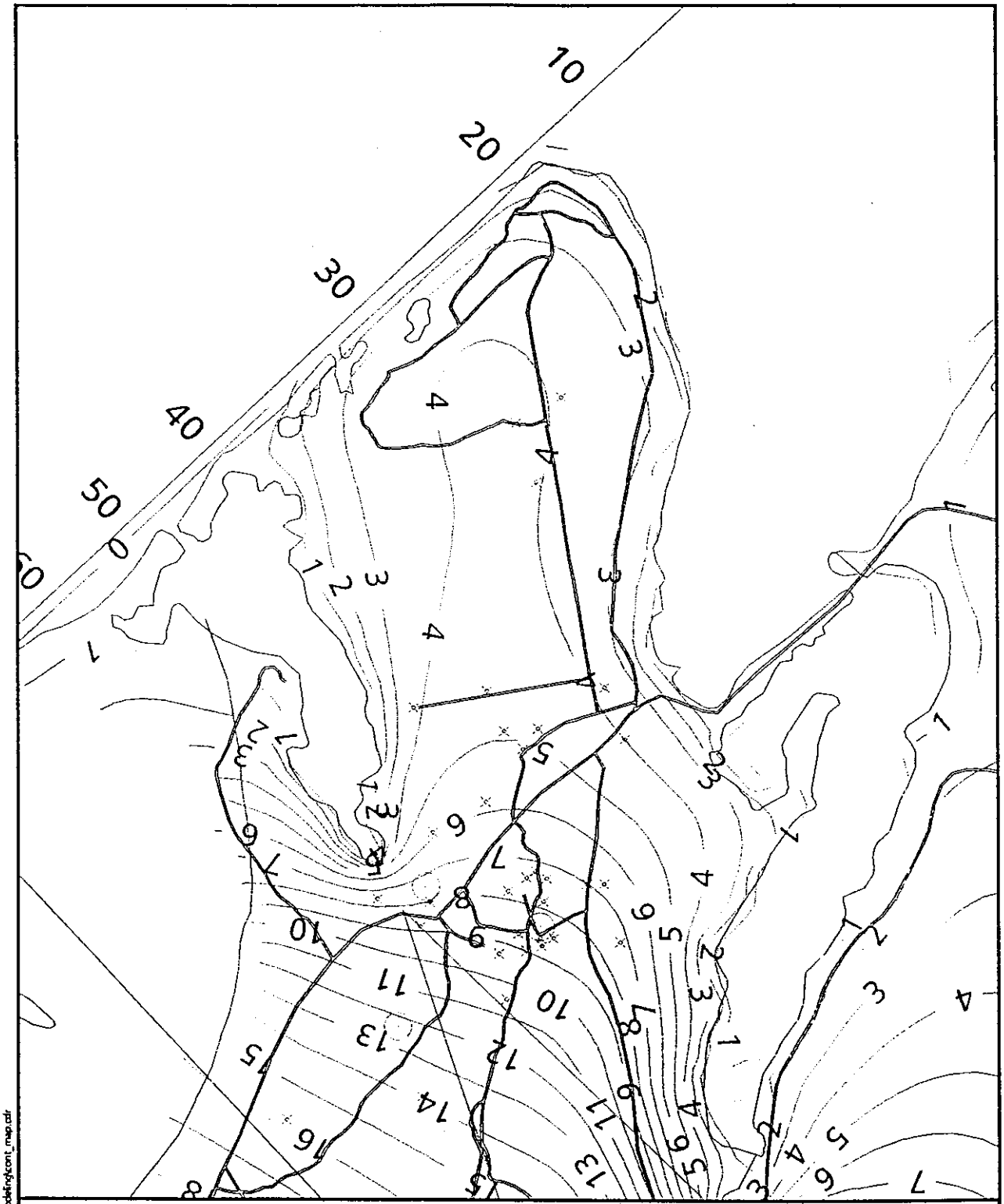
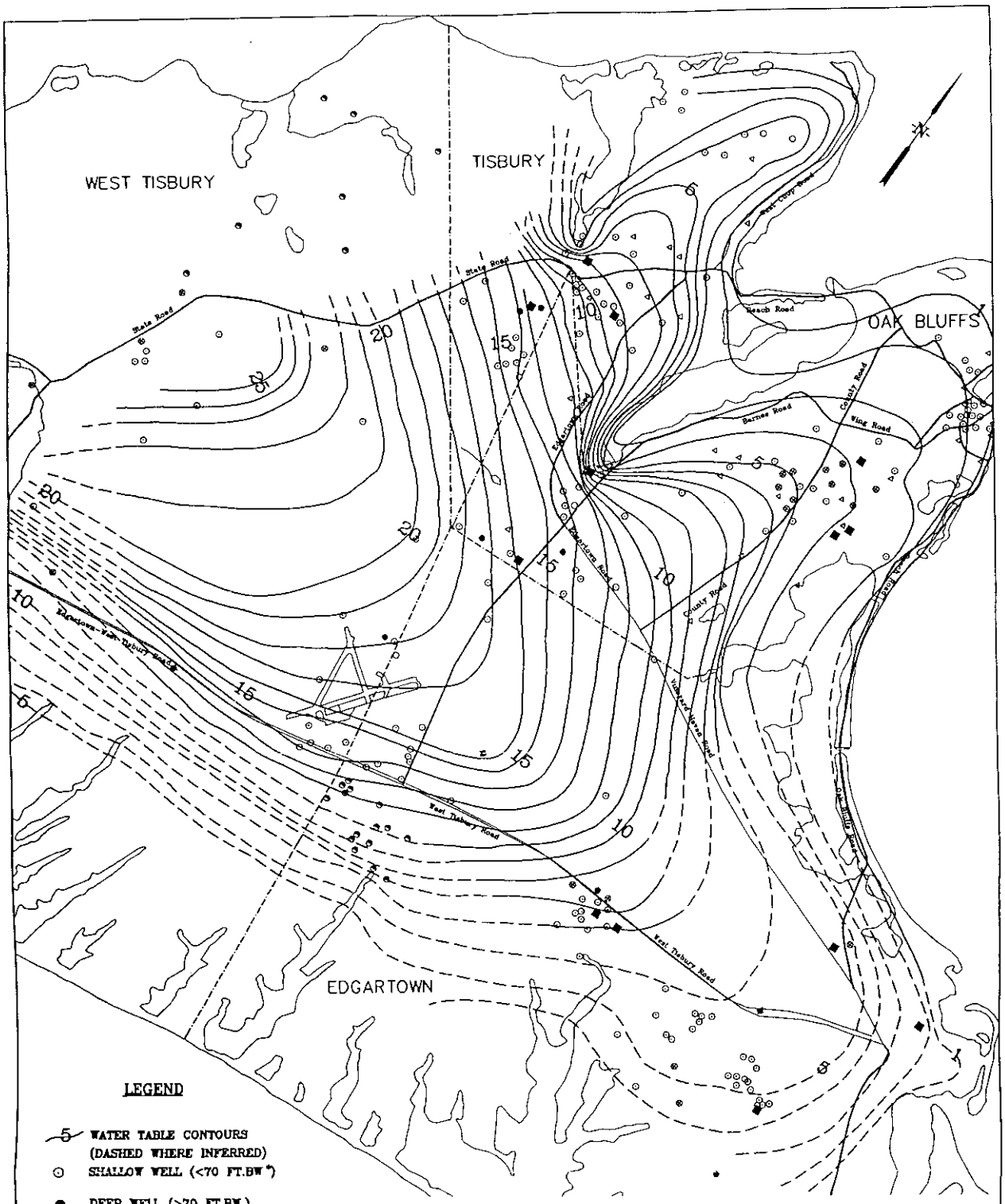


FIGURE B-1. GROUNDWATER CONTOUR MAP
TISBURY, MASSACHUSETTS

Appendix B
Source: Earth Tech, 1999

o:\pre99\10194W-Tisbury\gw_modeling\cont_map.cdr

Taken from Stone Environmental, Inc., 1999



LEGEND

- 5 WATER TABLE CONTOURS (DASHED WHERE INFERRED)
- ⊙ SHALLOW WELL (<70 FT.BW*)
- ● DEEP WELL (>70 FT.BW.)
- △ SHALLOW BORING (<70 FT.)
- ■ PUMPING STATION
- ⊖ PRIVATE WELL

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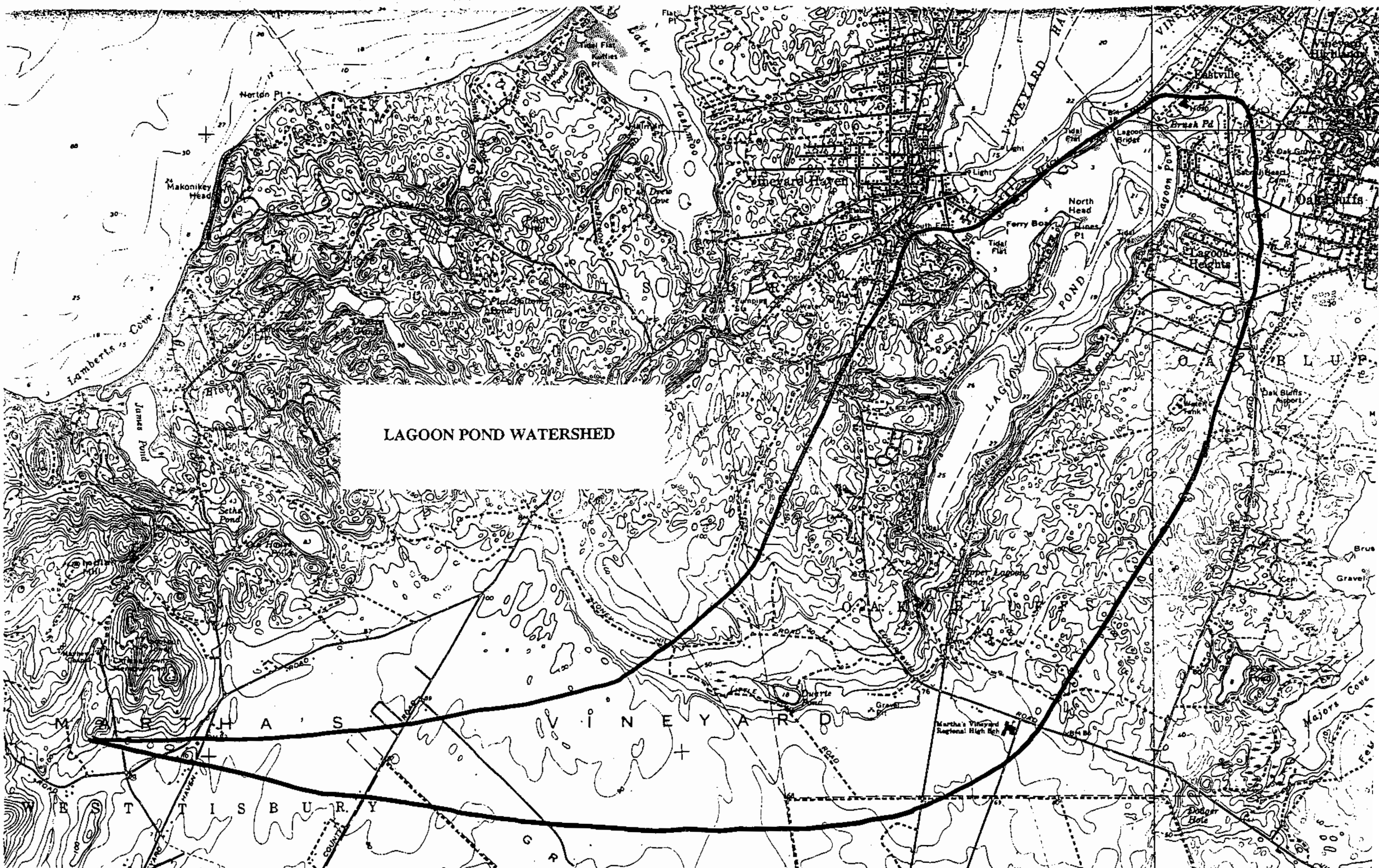
- ◆ DEEP WELL
- ⊕ SHALLOW WELL

* BW=BELOW WATER TABLE

TAKEN FROM WHITMAN & HOWARD, INC., 1994

WATER TABLE CONTOURS
ADJUSTED TO LONG-TERM AVERAGE
OAK BLUFFS, MASSACHUSETTS
SCALE: 1"=4000'


LAGOON POND WATERSHED
Makonikey Head
Norton Pt
Lamberts Cove
James Pond
Lake Tashmoo
Vineyard Haven
VINEYARD HAVEN
North Head
Ferry Boat
Tidal Flat
LAGOON POND
Lagoon Pond
Lagoon Heights
Eastville
Oak Bluffs
Oak Bluffs Airport
Upper Lagoon Pond
Martha's Vineyard Regional High Sch
Dodger Hole
Majors Cove
M A R T H A ' S V I N E Y A R D
W E S T T I S B U R Y
O A K B L U F F S

ANNUAL RECHARGE ESTIMATES

The average annual precipitation as recorded in Edgartown was 45.82 inches from 1945 to 1975 (New England Climatic Service-Climatological Summary). A portion of this rainfall reaches the water table and flows toward the pond. The remainder is lost to evaporation or is taken up by vegetation. The portion reaching the groundwater is not precisely known, but estimates have been made for various locations around Cape Cod and Martha's Vineyard, as shown below:

ANNUAL RECHARGE IN INCHES

Source	*Location*	*Recharge*
USGS, 1980	Martha's Vineyard	22.2
Leblanc et al, 1986	Cape Cod West	22.2
Eichner et al, 1992	Falmouth, Bourne	21
Leblanc, 1982	Otis Air Force Base	21
Eichner et al, 1992	Sandwich, Mashpee	19
Eichner et al, 1992	Barnstable, Dennis & Yarmouth	18
Leblanc et al, 1986	Cape Cod East	18
Delaney et al, 1972	Truro	18.3
Eichner et al, 1992	Brewster, Harwich	17
Eichner et al, 1992	Chatham, Orleans, Eastham, Wellfleet, Truro & Provincetown	16

MVC used a recharge estimate of 22.2 inches, from the USGS source for Martha's Vineyard. The estimate is also consistent with the estimates for western Cape Cod. Using the recharge estimate of 22.2 inches, MVC calculated the recharge for the 4406.2 acre Lagoon Pond watershed (3,868.2 acres without the 538 acre pond area) to be **8.8 million cubic meters, or 2.33 billion gallons (6.38 million gallons per day).**

In addition to the groundwater recharge, the 538 acre pond surface receives rainfall in the amount of 45.82 inches per year. Annual rainfall totals 2.5 million cubic meters, or 669.3 million gallons, or 1.8 million gallons per day.

NITROGEN LOADING TO THE WATERSHED

Pond water quality is greatly influenced by human use and development of the surrounding lands. In Banks' History of Martha's Vineyard Dukes County Massachusetts[13], there is much information about land use in the Lagoon Pond area by the Indians and by the early white settlers. Appended to this document is a section which contains many interesting passages from Banks' history, including identification of many place names. Regarding the first recorded residents, Banks wrote about the early settlements, including one at the head of the pond:

> "It is probable that smaller communities made abiding-places within the limits of the territorial authority of each petty sachem. In this way, I believe, we may infer that Wekwetuckauke (the lagoon), Sanchacantacket, Onkokemmaug (North Tisbury) and Nashowakemmuck (Chilmark) were the locations of such subordinate villages. Of the character of these settlements it can be said that they had no permanency. Composed as they were of loosely constructed wigwams, they were easily transported from place to place, as the requirements of the season demanded. In the summer they were doubtless picketed about the inlets of the coast, while in winter they were removed to the protection of the woods and hills from the icy blasts of the north. The circumscribed territory, however, prevented extended migration, and within a small compass the various companies owning fealty to the local great men, moved from place to place, when the refuse heaps became too large or the game grew too wary. Their dwellings were known as wigwams, a corruption of the Algonquian word 'wekowomut', meaning in our language, a house. The younger Mayhew described these structures as 'made with small poles like an arbor covered with mats, and their fire is in the midst, over which they leave a place for the smoak to go out at'. This was in 1650, and probably is a correct description of them as they were used before the coming of the whites. The Island Indians did not use skins for a covering like those on the mainland, as there were not any animals numerous enough to supply them for that purpose. The mats were woven from the common marsh flag, or flower-de-luce, and probably long, native grasses were added for binding."

Banks wrote about the pastoral setting of the interior woodlands at that time: "...while westward on the shores of the Lagoon were the dingy wigwams of the remnants of the Indian race. Over

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13 Banks, Charles Edward M.D., 1966 by Dukes County Historical Society, History of Martha's Vineyard Dukes County Massachusetts

all this section great groves of tall pine and spreading oaks furnished welcome shade to the herds of cattle that browsed in the 'Great Pasture' on the borders of Squash meadow, and the only sounds that echoed through these woods were the calls of lowing kine, the bleating of a stray sheep, and the occasional crack of a woodsman's axe. This condition lasted for a generation in the first third of the nineteenth century, before its primeval stillness was invaded by a throng of people who were destined to turn it into a 'city' of paved streets and electric lights.".

RESIDENTIAL LAND USE AND PROJECTIONS

MVC identified individual lots in the watershed as built or unbuilt (MVC buildout database, 1999) and constructed spreadsheets identifying individual lots in each of the three towns. Those spreadsheets are appended to this document. Land use investigations revealed 1,724 houses and guesthouses in the watershed. In addition to estimating the present number of houses in the watershed, it is important to project the number of dwellings at buildout, when all of the available land is ultimately developed or protected or open space. In order to project buildout scenarios, it is necessary to understand the growth controls in place. On the Oak Bluffs side, most of the watershed is located in the R-3 zoning district (60,000 ft^2 minimum lot size). Some land in the northern part is in the R-1 district (10,000 ft^2), and some land in the southern part is in the R4 District (120,000 ft^2 minimum lot size). The diminutive Health Care District is also located within the watershed. On the Tisbury side of the main body of the pond, waterfront lands are evenly divided between R-20 (20,000 ft^2 minimum lot size) and R-50 (50,000 ft^2) zoning districts. Land use on the West Arm is residential (R-50) on the Hines Point side and commercial (Waterfront District) on the other. The Town-owned Lagoon Harbor Park is regulated by its own Lagoon Harbor Park District. Growth controls are presented in table form on the following page.

GROWTH CONTROLS NOW IN PLACE **LAGOON POND**

We are looking only at those growth controls which have an affect on nutrient loading. Other controls are in place which affect other things.

OAK BLUFFS

1 Coastal District of Planning Concern
there will be no guesthouses built in the Inland Zone of the Coastal DCPC

2 Lagoon Pond District of Planning Concern
any subdivision requires a report by the Conservation Commission
15,000 square feet of land are required for each bedroom
guesthouses and accessory structures are included in the bedroom count per lot

3 Groundwater Protection District (Zone 2):
one quarter acre (10,890 square feet) of land is required for each bedroom

4 Zoning Districts
- A R1 District
  - i Minimum lot size is 10,000 square feet.
  - ii Single family dwellings, agriculture, home business and municipal uses permitted.
  - iii Guest apartment, or guest house approved by special permit provided there is 7500 square feet of open space on the lot.
  - iv Multiple family dwellings approved by special permit.
- B R2 District
  - i Minimum lot size is 20,000 square feet.
  - ii Permitted uses are the same as R1 District.
- C R3 District
  - i Minimum lot size is 60,000 square feet.
  - ii Permitted uses are the same as R1 and R2 Districts.
- D R4 District
  - i Minimum lot size is 120,000 square feet.
  - ii Permitted uses are the same as R1, R2 and R3 Districts.

TISBURY

1 Lagoon Pond District of Planning Concern
any subdivision requires a report by the Conservation Commission
15,000 square feet of land are required for each bedroom
guest houses and eccessory structures are included in the bedroom count per lot

4 Zoning Districts
- A R10 District
  - i Minimum lot size is 10,000 square feet.
  - ii Single family dwellings, agriculture, home business and municipal uses permitted.
  - iii Guest house approved by special permit provided the lot is 25 percent larger than minimum required lot size.
  - iv Multiple family dwellings approved by special permit provided lot is no smaller than minimum required lot size.
- B R20 District
  - i Mimimum lot size is 20,000 square feet.
  - ii Permitted uses are the same as R10 District.
- C R50 District
  - i Minimum lot size is 50,000 square feet.
  - ii Permitted uses are the same as R10 and R20 Districts.

WEST TISBURY

1 Zoning Districts
- A Agricultural - Residential Districts (AR-1A, AR-1B, AR-2, AR-3)
  - i Minimum lot size is three (3) acres.
  - ii Single family dwellings, agriculture, home business and municipal uses permitted.
  - iii Guest house under 800 square feet provided lot exceeds minimum lot size.
  - iv Conversion of a single family dwelling into a two family dwelling.
  - v Accessory apartments, maximum of two bedrooms and 800 square feet. May only be rented to year-round residents.
  - vi Seasonal camps, one per three acres of land on an un-subdivided lot.
- B Limited Retail or Wholesale Business Districts (B-1, B-2)
  - i All retail and wholesale uses permitted, restaurants, garages, amusement services, trade shops, etc., require special permit.
  - ii All uses from AR Districts, accessory apartments and guest houses by special permit.
  - iii Ratio of gross floor size to lot size shall not exceed one (1) to two (2).
  - iv Minimum lot size is 40,000 square feet.
- C Light Industrial District
  - i Same uses from Business District, including those requiring special permits.
  - ii No single family dwellings.
  - iii Manufacturing and industrial uses permitted.
  - iv Minimum lot size is 20,000 square feet.
  - v Septage flow will not exceed 5.5 GPD per 1,000 square feet of non-residential lot area.

BUILDOUT PROJECTIONS

MVC reviewed existing controls as summarized in the previous table, and developed three different buildout scenarios. The concept of buildout implies that all available land is used for something, whether it is used as a houselot, farmland, protected open space or commercial use. It may be that ultimate buildout never happens, but speculation is possible and should be based on growth controls in place. In the high growth scenario, new lots would be 3 acres in West Tisbury and in Oak Bluffs' R4 District, with about 5% subtracted for roads. Other projected subdivisions would be: 1.5 acres in Oak Bluffs' R3 District, .5 acre in Tisbury's R20 and just over one quarter acre (.31) in Tisbury's R10 and Oak Bluffs' R1 Districts. Roads are included in all numbers. When lots fall within either the Lagoon Pond DCPC or a Zone 2, subdivision was limited in the projections as it would be by those restrictions. Roads are included in all calculations.

Under a moderate growth scenario, new subdivisions would have lots that are 4.5 acres in West Tisbury and in Oak Bluffs' R4 District, 2 acres in Oak Bluffs' R3, one acre in Tisbury's R20, .5 acre in Oak Bluffs' R1 and in Tisbury's R10.

Under a low growth scenario, new lots would be six acres in West Tisbury and in Oak Bluffs' R4 District, with about 5% subtracted for roads, 3 acres in Oak Bluffs' R3 District, 1.5 acres in Tisbury's R20, and .75 acre in Tisbury's R10 and in Oak Bluffs' R1.

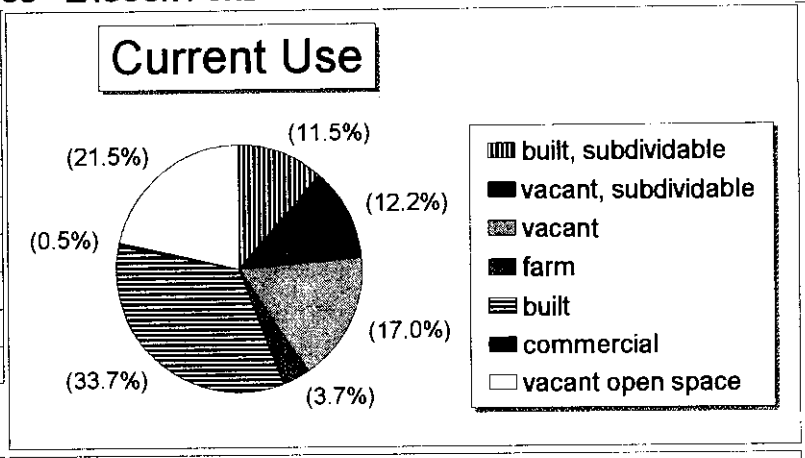
The 1,724 houses and guesthouses in the watershed are sited on 1,377.54 acres of residential land, of which 349.36 acres have potential for further subdivision. Of 1,541.81 acres of vacant land, protected open space accounts for 654.82 acres. Of the remainder, 370.38 acres of land is potentially available for further subdivision, and the remaining 516.61 acres of vacant land is without further subdivision potential. Farms occupy the remaining 111.74 acres in the watershed.

The pie chart that follows is meant to graphically display the land use and projections:

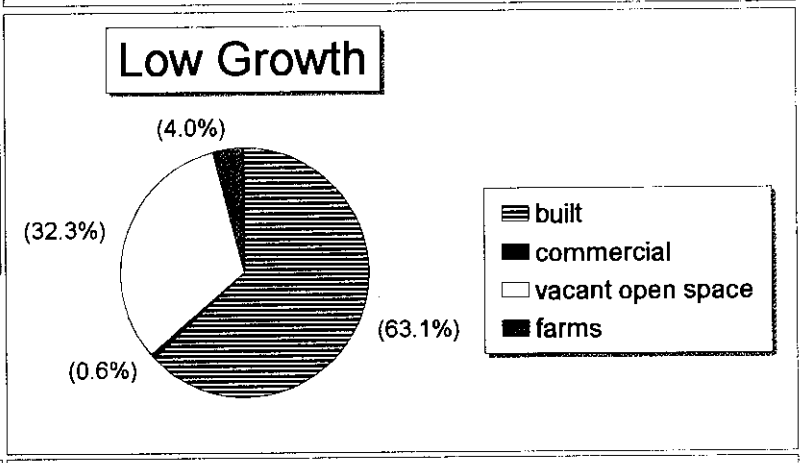
LAND USE AND BUILD OUT SCENARIOS - LAGOON POND

filename: TOTALLAG.WK4

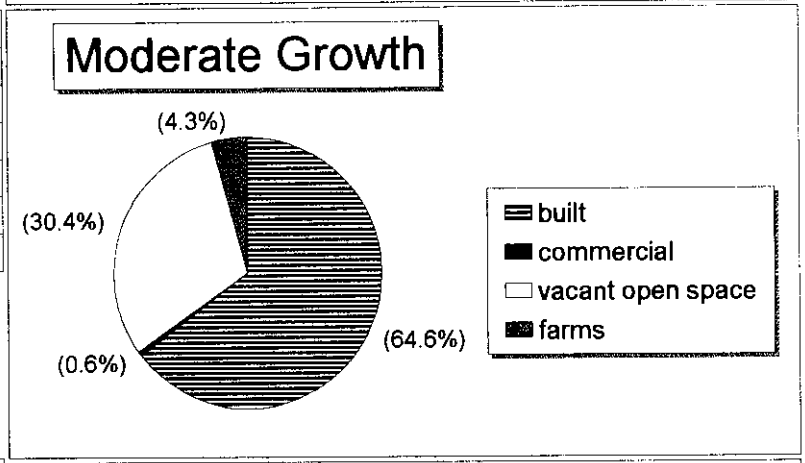
Land Use	Acres
built, subdividable	349.36
vacant, subdividable	370.38
vacant	516.61
farm	111.74
built	1028.18
commercial	16.35
vacant open space	654.82
houses:	1677
commercial units:	34



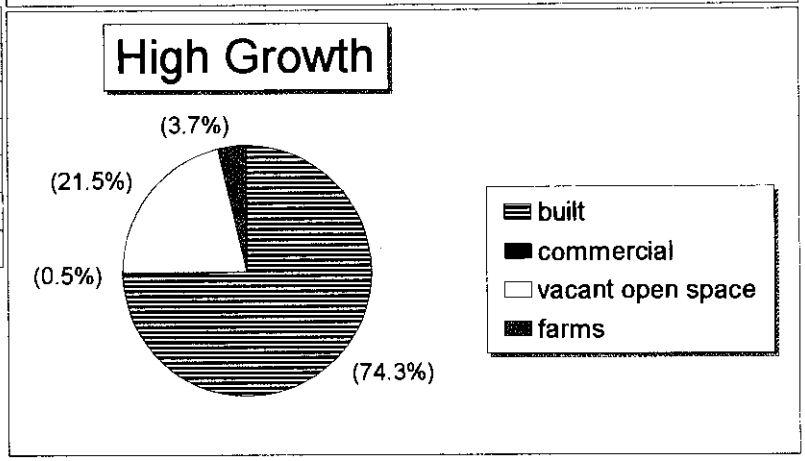
Land Use	Acres
built	1746
commercial	16.35
vacant open space	894.2
farms	111.74
houses:	2324
commercial units:	34



Land Use	Acres
built	1677
commercial	16.35
vacant open space	790.2
farms	111.74
houses:	2548
commercial units:	34



Land Use	Acres
built	2264.53
commercial	16.35
vacant open space	654.82
farms	111.74
houses:	3077
commercial units:	34



LOAD ESTIMATES

Next, MVC assigned nitrogen load estimates to the current land use and to the projections. MVC used statistical averages to calculate persons per year-round household and ratio of seasonal to year-round dwellings (MISER - Mass. Institute for Social and Economic Research). In Oak Bluffs, 2.26 persons reside in each year-round dwelling, and 49% of dwellings are seasonally occupied. The recent Oak Bluffs Master Plan Survey found an average of 4.77 persons per seasonal dwelling (Oak Bluffs Master Plan, 1998), and that figure was used to estimate numbers of seasonal persons throughout the watershed. It is assumed that each year-round dwelling is occupied by guests for 25 days. Seasonal dwellings are assumed to be occupied by 4.77 persons for 75 days and by the year-round number for an additional 30 days of shoulder seasons. In Tisbury, each year-round dwelling is occupied by 2.33 persons, and 30% of dwellings are seasonally occupied. In West Tisbury, 2.87 persons occupy each year-round dwelling, and 29% of dwellings are seasonally occupied.

Numbers of guesthouses were estimated from the controls in place. Oak Bluffs allows "accessory dwellings" provided there are 7500 square feet of vacant land on the lot. Board of Health regulations for the Lagoon Pond DCPC and the Zone 2's effectively reduce the number of potential guesthouses by about half. Tisbury allows "guesthouses" on lots that are larger than the minimum lot size by 25%. Lagoon Pond DCPC regulations reduce the numbers. West Tisbury allows "subordinate dwellings" on lots of three acres or more. There are only 11 lots of 3 acres or more in the West Tisbury portion of the watershed. Guesthouses were presumed to house the same number of persons as the principal dwelling.

MVC calculated the septic load based on 35 mg/l nitrogen and 48 gal/person/day, as was used for the Edgartown Great Pond watershed[14], as follows:

SEPTIC SYSTEMS

35 mg/l N in sewage X 48 gallons/person/day = .0062 kg/person/year Nitrogen

Oak Bluffs 1053 dwellings + 53 guesthouses (518 + 26 seasonal: 4.77 persons/house X 75 days + 2.26 persons/house X 30 days)

544 houses X 425.55 persons/year X .00622 = 1440 kg

(535 + 27 year-round: 2.26 persons/house X 365 days + 2.26 persons/house X 25 days)

562 houses X 881.4 persons/year X .00622 = 3081 kg

Tisbury 445 dwellings + 31 guesthouses (135 + 9 seasonal: 4.77 persons/house X 75 days + 2.33 persons/house X 30 days)

144 houses X 427.65 persons/year X .00622 = 383 kg

(310 + 22 year-round: 2.33 persons/house X 365 days + 2.33 persons/house X 25 days)

332 houses X 908.7 persons/year X .00622 = 1877 kg

West Tisbury 142 dwellings + 18 guesthouses (41seasonal: 4.77 persons/house X 75 days + 2.87 persons/house X 30 days)

41 houses X 443.85 persons/year X .00622 = 113 kg

(101 year-round: 2.87 persons/house X 365 days + 2.87 persons/house X 25 days)

101 houses X 1119.3 persons/year X .00622 =703 kg

total septic systems: **4521 + 2260 +816 = 7597 kg N/year**

[14] Martha's Vineyard Commission, 1999, Edgartown Great Pond: Nutrient Loading and Recommended Management Program

The projected loads were calculated in similar proportions, assuming the same occupancy rates and seasonality. The projected loads are as follows:

Load from Residential Septic Systems

Existing	7,597 kg
Low Growth	10,738 kg
Moderate Growth	11,876 kg
High Growth	14,138 kg

RAIN AND RUNOFF

Rain and runoff contribute atmospheric nitrogen to the watershed. After extensive literature review and consideration of wet deposition data at Provincetown since 1981, the Boston University Marine Program[15] uses a value of 15 kg per hectare for total nitrogen in rainfall. MVC calculated the load from rainfall directly on the pond to be 3,267 kg of total nitrogen, using the value 15 kg per hectare.

Rain also falls on the landward portion of the watershed. MVC has calculated this groundwater recharge to be 8.8 million gallons per year. When the total acreage of lots in the watershed is added, the lots add up to about 79% of the total acreage measured by planimeter. Because of the density of development, it is easy to believe that 21% of the watershed area could be found in roadways that are not included in the acreage of lot. MVC divided the recharge at the rate of 79% background nitrogen levels and 21% runoff nitrogen levels. Assigning 21% of the watershed to runoff areas may be on the high side, but it is not unrealistic, considering that much of the watershed slopes fairly steeply towards the pond and that runoff discharge is known to contribute to the water quality "hot spots" in the pond, particularly at Mud Creek. MVC used values of .05 mg/l and 1.5 mg/l, respectively, for nitrate nitrogen in rainfall discharged through groundwater and rainfall discharged as runoff, as recommended by the Buzzards Bay Project[16].

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15 Jennifer Bowen, BU Marine Program, 2000, personal communication

16 J. E. Costa et al, 1999, Buzzards Bay Project Technical Report, Managing anthropogenic nitrogen inputs to coastal embayments: Technical basis and evaluation of a management strategy adopted for Buzzards Bay

Calculations for Existing Nitrogen Load: Lagoon Pond

RAIN/RUNOFF

through groundwater recharge:	
.05 mg/l X 6.9 million m^3 X 1000 l/m^3 X kg/1 million mg =345 kg	
through runoff:	
1.5 mg/l X 1.9 mill. m^3 X 1000 l/m^3 X kg/1 million mg = 2801 kg	
through direct precipitation on pond surface: *(pond surface =538 acres)*	
15 kg/hectare X 538 acres X 1 hectare/ 2.47 acres =3267.2 kg	
total rain/runoff:	**345 + 2801 + 3267 kg N/year = 6413 kg N/year**

A total of 6413 kg of atmospheric nitrogen per year is estimated to contribute to the watershed from rainfall in the form of rain, groundwater discharge and runoff. For planning purposes, the rain and runoff contribution is expected to remain constant through all growth scenarios.

COMMERCIAL AND MUNICIPAL LOAD AND PROJECTIONS

Although the vast majority of the watershed is residentially zoned, there is a special commercial area on the Tisbury side. Tisbury's commercial Waterfront District is an integral part of the heart of Tisbury's working waterfront. This commercial part of the watershed stands in stark contrast to the remaining residential lands. The commercial waterfront retains the boat-building and maintenance industries which have occupied the waterfront since colonial days. Of special planning interest are the large structures remaining from the days when much of the Island's building supplies were brought in bulk, landed and stored right on shore. The building trades are still represented in the large warehouse-sized structures, but pressures on these land-intensive uses have driven many to relocate to Tisbury's State Road business area. The fate of these large structures and associated vacant lands is a definite planning concern.

In addition to the individual commercial uses, there are a number of municipal and other large contributors. The Island's high school, skating rink and hospital are located within the watershed. The Town of Oak Bluffs used to operate septage lagoons for disposal of septage from on-lot systems. The lagoons are closed, but have input nutrients that will continue to influence the pond for approximately another 19 years. Two large elderly housing projects, Hillside Village and Woodside Village, are located within the watershed.

MVC calculated existing load at 35 mg/l, using Title V figures for gallons per day for various uses, unless other data were available. The load from Martha's Vineyard Hospital is based on measured discharges from the hospital's treatment plant. Projections were based on increased intensity of use. For instance, the "warehouse" loads are the boatyards and building trades occupying very large

structures with little nitrogen contribution. In the low growth scenario, these lots remain at the same intensity of use, and are assigned the same flows. The vacant commercial lots are also assigned the "warehouse" flows for low-intensity uses. In the moderate growth scenario, these land intensive uses have been squeezed out of the waterfront and replaced by the next level of intensity, represented by "retail" flows. (The progression from "warehouse" to "retail" is intended to represent a change in intensity of use and increased sewage flows. There is no reason to believe that the boatyards would all become retail stores.) In the high growth scenario, the next level of intensity is represented by "office" flows. The projections for the lots that are now used at "office" level intensity include use as restaurants and mixed uses that would include some restaurant seats and some other high intensity uses.

The estimated load and projections are as follows:

Commercial/Municipal Load

Present	1,436 kg
Low Growth	1,382 kg
Moderate Growth	1,557 kg
High Growth	2,948 kg

Note that the Low Growth scenario projects a reduction in load. That reduction results from the recent closure of the Oak Bluffs septage lagoons, and from Tisbury's proposal to provide sewer service to a number of the commercial properties in the Waterfront District.

The table on the following pages details the commercial and municipal influences in the watershed, with load projections:

Lagoon Pond - Commercial

Lagoon Pond - Office														
town	map	lot	quare feet		flow (gpd)						gpd low growth	gpd mod growth	gpd high growth	basis for projection
WT	16	98	11785		883.875						883.875	883.875	7500	office; office; mixed
VH	14	A3	7840		588						588	588	7500	office; office; mixed
VH	19	A20	2560		192						192	192	3500	office; office; restaurant
VH	19	A19.03	2372		177.9						177.9	177.9	3500	office; office; restaurant
WT	16	98.13	1678		125.85						125.85	125.85	1400	office; office; restaurant
WT	16	98.14	1643		123.225						123.225	123.225	1400	office; office; restaurant
WT	16	98.12	1595		119.625						119.625	119.625	1400	office; office; restaurant
VH	10	B1	1456		109.2						109.2	109.2	1400	office; office; restaurant
VH	9	B25.02	1003		75.225						0	0	0	sewer service
VH	9	B25.09	484		36.3						0	0	0	sewer service
		total:	**32416**		**2431.2**	**gallons per day**					**2319.675**	**2319.675**	**27600**	
Lagoon Pond - Retail														
town	**map**	**lot**	**quare feet**		**flow (gpd)**									
WT	16	71	4392		219.6						219.6	329.4	1000	retail; office; mixed
VH	9	C14	2452		122.6						0	0	0	sewer service
VH	9	B29	2328		116.4						0	0	0	sewer service
VH	9	C15	2258		112.9						0	0	0	sewer service
VH	9	B31.02	420		21						0	0	0	sewer service
		total:	*11650*		*592.5*						*219.6*	*329.4*	*1000*	
Tisbury Marketplace (in GPD):					*475*	*					0	0	0	sewer service
			total:		**1067.5**	**gallons per day**					**219.6**	**329.4**	**1000**	
*	(50% flows toward Lagoon = 475)													
Lagoon Pond - Wharehouse														
town	**map**	**lot**	**quare fe**	**flow at 15 gallons per day per employee**										
VH	19	A20	11660	30							30	583	874.5	warehouse; retail; office
VH	10	B1	2720	30							0	0	0	sewer service
VH	9	B2	25000	30							30	1250	1875	warehouse; retail; office
VH	9	B31.02	3616	30							0	0	0	sewer service
VH	9	B33	25032	30							0	0	0	sewer service
VH	9	B32	5000	30							0	0	0	sewer service
VH	9	B30	3772	30							0	0	0	sewer service
VH	19	A19.02	600	30							30	30	45	warehouse; retail; office
		total:	**77400**	240							**90**	**1863**	**2794.5**	
15 gallons per day per person):				**240**	*									
*	assuming 2 persons per wharehouse													

Lagoon Pond - Miscellaneous														
town	map	lot	quare feet		type		flow	total (gallons per day)						
OB				180 days	MVRHS		20 gpd/ stud/2	3750	***	4700	5671	6656	mod per school
OB					Woodside	45 units	48 gpd/ unit	2160		3456	3456	3456	72 units
OB					septage lagoons		4.5mg/yr(1/2)	6164	** ***	0	0	0	lagoons closed
OB	12	134			P.A. Club	200 seat	35 gpd/seat	7000		7000	7000	7000	same use is likely
OB	50	30		100 days	ice arena			1700		1700	1700	1700	same use is likely
VH	12	B4	3472		inn	8 beds	48 gpd/ bedroom	384		384	384	384	same use is likely
VH					Hillside	40 units	48 gpd/ unit	1920		2400	2400	2400	50 units
VH	18	A7			campground	150 tents	75 gpd/tent	3750		3750	3750	3750	same use is likely
WT	16	84	24997		supermarket		800 gpd	800		800	800	800	same use is likely
VH	9	C16	660		fuel	2 islands	300 gpd/ island	600		0	0	0	sewer service
WT	16	103			greenhouse		15 gpd/ person	30	*	30	30	30	same use is likely
WT	9	4	1885		greenhouse		15 gpd/ person	30	*	30	30	30	same use is likely
WT	9	1.01	3516		winery		15 gpd/person	30	*	30	30	30	same use is likely
							Total Flow, miscellaneous:	**28318**		**24280**	**25251**	**26236**	
*	assuming 2 persons per structure												
**	load ends in 19 years (2018)												
***	use 1/2 flow -- boundary												
Lagoon Pond - Vacant Commercial Lots													
town	map	lot											
WT	16	81.01								30	120	243	warehouse; retail, office
VH	9	C12								0	0	0	sewer service
WT	16	81.02								30	120	243	warehouse; retail, office
WT	16	257								30	120	243	warehouse; retail, office
WT	16	104								30	120	243	warehouse; retail, office
WT	16	71.01								30	120	243	warehouse; retail, office
WT	16	82								30	120	243	warehouse; retail, office
WT	16	224								30	120	243	warehouse; retail, office
VH	9	C13								0	0	0	sewer service
VH	9	B31								0	0	0	sewer service
WT	9	2								30	120	243	warehouse; retail, office
WT	16	98.02								30	120	243	warehouse; retail, office
										270	**1080**	**2187**	
							CONCLUSIONS			**low growth**	**mod. growth**	**high growth**	
filename: COMLAG.WK4					Total flow from commercial sources in gallons per day:			**28318**		**27179.275**	**30843.075**	**59817.5**	
					Total nitrogen from commercial sources in kg per year								
					(where one liter yields 35 mg of nitrogen):			**1359.264**		**1304.6052**	**1480.4676**	**2871.24**	
					plus Hospital at a measured kg per year of:			**76.52**		**76.52**	**76.52**	**76.52**	
							TOTAL LOAD:	**1435.784**		**1381.1252**	**1556.9876**	**2947.76**	

LAWNS

A certain amount of nitrogen leaches into the groundwater from residential application of lawn fertilizer. In order to assess the impacts of lawns, MVC performed a field survey of lawn sizes and intensity of fertilization, for each neighborhood in the watershed. Intensity of fertilization was determined by the appearance of the lawns, and lawn size was measured by tape measure and by pacing with a known stride. A leaching loss rate of 25% was used to calculate nitrogen input to the groundwater, as shown in the table on the following page. Existing load was estimated to be 732 kg per year.

For the buildout projections, various assumptions were made regarding lawn care and size. For the low growth scenario, average lawn fertilizer application rate increases to 1.5 lb per 1000 square foot per year (from the present average of 1.42 lb), lawn size proportions remain constant, and the number of households that maintain a lawn remains steady at 60%. For the moderate growth scenario, lawn size proportions remain the same, fertilizer application rates increases to 1.5 lb per 1000 square feet per year, and 65% of households maintain lawns. For the high growth scenario, fertilizer application rates increase to 2.2 lb per 1000 square feet per year, lawn size proportions remain constant and 65% of households maintain lawns.

Lawn Load

Present load	732 kg
Low Growth	1,074 kg
Moderate Growth	1,531 kg
High Growth	2,245 kg

Lawn Fertilizer - Lagoon Pond					
Area A		**Houses:**	1060	**Average Lawn Area (sq. ft):**	3300
Level of Care	**% of houses**	**houses**	**net lawn area (sq. ft)**	**application rate (lbs / 1000 sq. ft)**	**total applied**
Good	4	42	139920	3	419.76
Average +	20	212	699600	2	1399.20
Average	45	477	1574100	1	1574.10
Poor / None	31	329	1084380	0	0.00
Area B		**Houses:**	400	**Average Lawn Area (sq. ft):**	6000
Level of Care	**% of houses**	**houses**	**net lawn area (sq. ft)**	**application rate (lbs / 1000 sq. ft)**	**total applied**
Good	7	28	168000	3	504.00
Average +	7	28	168000	2	336.00
Average	36	144	864000	1	864.00
Poor / None	50	200	1200000	0	0.00
Area C (Hines Point)		**Houses:**	40	**Average Lawn Area (sq. ft):**	9900
Level of Care	**% of houses**	**houses**	**net lawn area (sq. ft)**	**application rate (lbs / 1000 sq. ft)**	**total applied**
Good	8	3	31680	3	95.04
Average +	17	7	67320	2	134.64
Average	36	14	142560	1	142.56
Poor / None	39	16	154440	0	0.00
Area D (West Tiz)		**Houses:**	140	**Average Lawn Area (sq. ft):**	8600
Level of Care	**% of houses**	**houses**	**net lawn area (sq. ft)**	**application rate (lbs / 1000 sq. ft)**	**total applied**
Good	2	3	24080	3	72.24
Average +	17	24	204680	2	409.36
Average	42	59	505680	1	505.68
Poor / None	39	55	469560	0	0.00
				Total Fertilizer Application (lbs):	6456.58
				25% Leached into Groundwater:	1614.15
				in kilograms:	732.18

AGRICULTURAL USES

Farms occupy 111.74 acres in the watershed. Each farm in the watershed was identified by use and acreage. Each use was assigned a rate of fertilization and a leaching loss rate. The total contribution from agricultural uses was estimated at 1062 kilograms per year. Agricultural use and nitrogen contribution were assumed to remain constant for all growth scenarios.

FARMS - Lagoon Pond Watershed

town	map	lot	lot size		use
VH	45	A1	33.6	Thimble Farm	20 acres row crop
OB	40	3	6.3	Elisha R. Smith	6 acres pasture
OB	40	4	21.5	Bayes Norton Farm	20 acres row crop
VH	46	A1	22.23		
WT	9	1.01	8.2	Mathiesen	10 acres vineyards
WT	9	4	8.9		
WT	16	103	4.7	Vineyard Gardens	4 acres nursery
WT	17	106	2.5	Oak Lane Nursery	1.5 acres nursery

Row Crops			
acres	kg per acre per year	leaching loss	total load
40	68	33%	897.6 kg
Nursery			
acres	kg per acre per year	leaching loss	total load
5.5	68	6%	20.57 kg
Vineyards			
acres	kg per acre per year	leaching loss	total load
10	27	40%	108 kg
Pasture			
acres	kg per acre per year	leaching loss	total load
6	18	33%	35.64 kg

total load from farms, in kg N per year: 1061.81

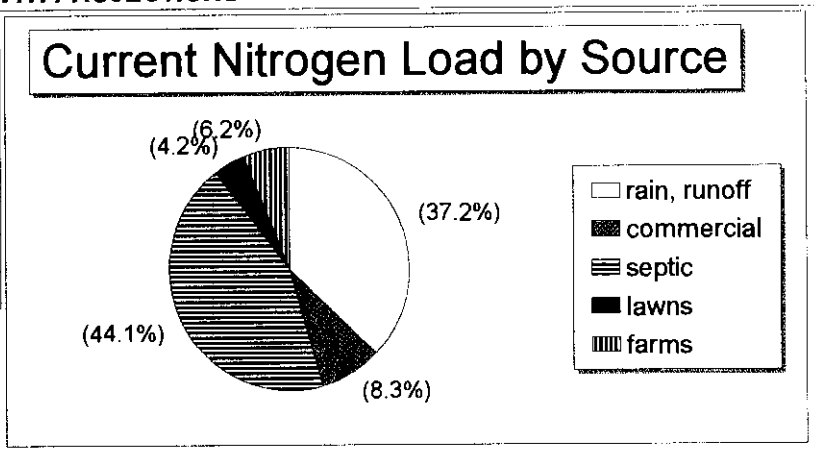
TOTAL LOAD AND PROJECTIONS

The following graphics illustrate the results of the M.V.C.'s investigations into nitrogen loads from existing and potential future land uses:

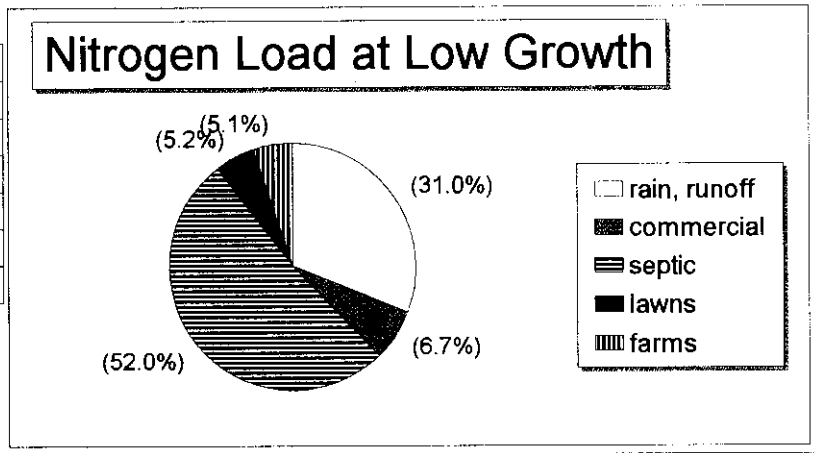
	Kilograms/Year
Current Nitrogen Load	17,240
Nitrogen Load at Low Growth	20,668
Nitrogen Load at Moderate Growth	22,439
Nitrogen Load at High Growth	26,806

NITROGEN LOADING IN THREE GROWTH PROJECTIONS

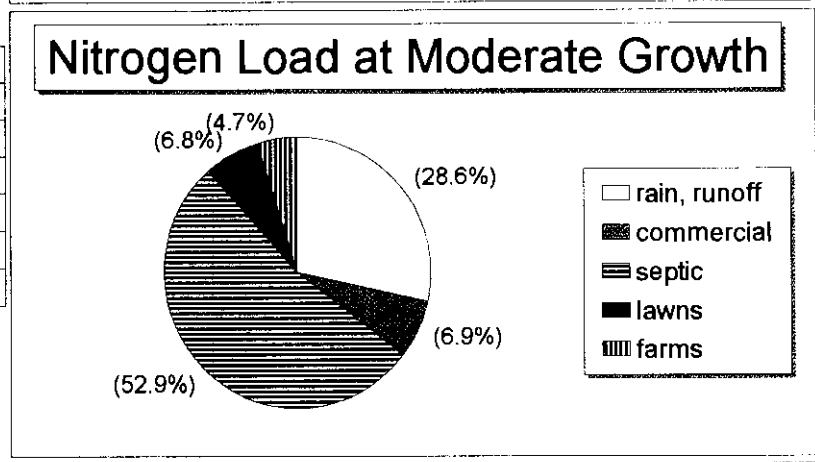
Source	Kg N/year
rain, runoff	6413
commercial	1436
septic	7597
lawns	732
farms	1062
houses, guesthouses:	1724
total:	**17240**



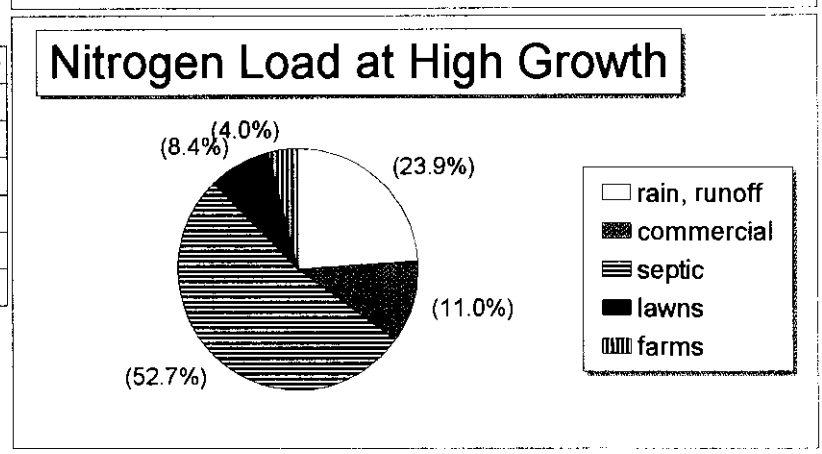
Source	Kg N/year
rain, runoff	6413
commercial	1381
septic	10738
lawns	1074
farms	1062
houses, guesthouses:	2443
total:	**20668**

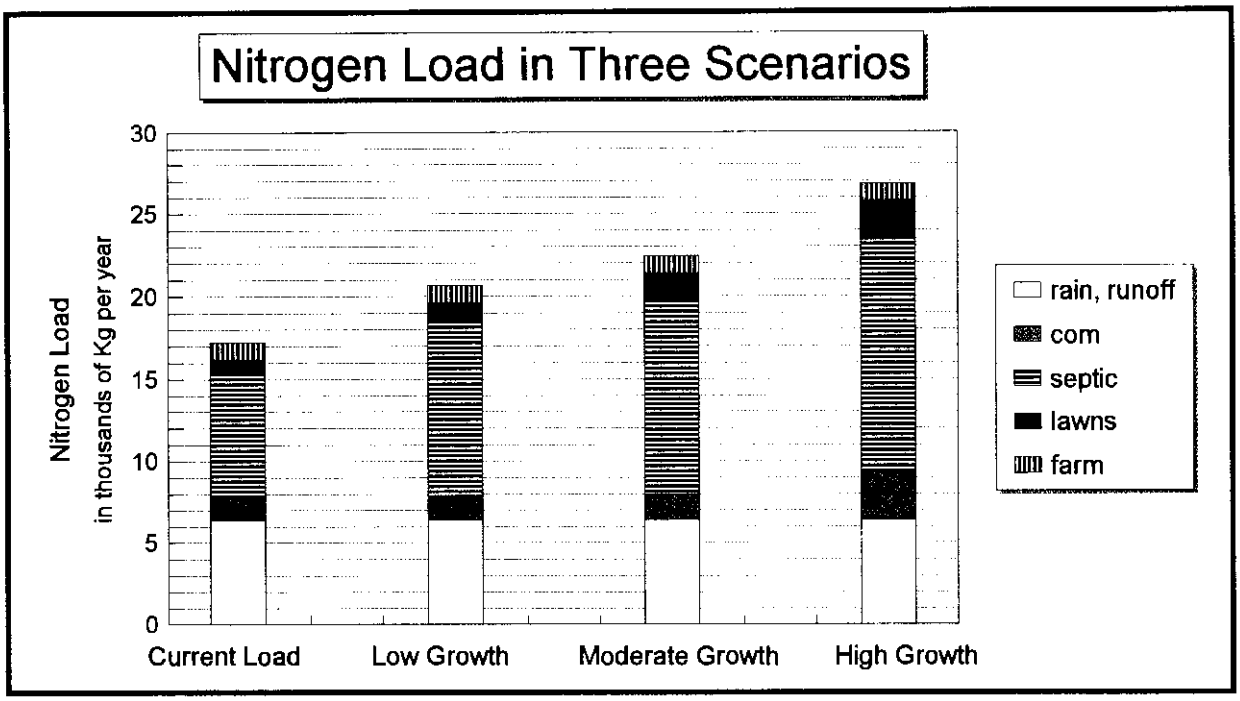


Source	Kg N/year
rain, runoff	6413
commercial	1557
septic	11876
lawns	1531
farms	1062
houses, guesthouses:	2690
total:	**22439**



Source	Kg N/year
rain, runoff	6413
commercial	2948
septic	14138
lawns	2245
farms	1062
houses, guesthouses:	3239
total:	**26806**





Current Load

rain, runoff	com	septic	lawns	farm
6413	1436	7597	732	1062

Low Growth Load

rain, runoff	com	septic	lawns	farm
6413	1381	10738	1074	1062

Moderate Growth Load

rain, runoff	com	septic	lawns	farm
6413	1557	11876	1531	1062

High Growth Load

rain, runoff	com	septic	lawns	farm
6413	2948	14138	2245	1062

FLUSHING CHARACTERISTICS, LOAD LIMIT

A number of factors determine the extent to which seawater influences the pond. Tidal flushing is defined by bathymetry and other physical characteristics within the pond itself and by the size and nature of the inlet. At some point in its early history, Lagoon Pond must have been fully open to Vineyard Haven Harbor. Most of Beach Road, Lagoon Harbor Park, and Eastville Beach are on a baymouth barrier beach that built itself across the opening, similar to the barriers that protect Sengekontacket Pond and Katama Bay. The barrier beach protecting Lagoon Pond was known in our early written history as "Canal Flats". From the earliest maps, we know that the present inlet at the drawbridge did not exist in the late 18th century. Our earliest maps, such as the DesBarres chart of 1775, show the inlet at the head-of-the-harbor side of the barrier. Ferry Boat Island acquired its name during that time period. Isaac Chase's ferry operated from the little island. Recorded history tells us that the Bass Creek inlet was partially closed by the gale of 1815 and was subsequently closed by fill in 1835. The inlet was in its present location as early as 1845, as shown on the chart. It is likely that the inlet has had a history of shifting episodically in response to storms, as is the habit of barrier beach inlets. Needless to say, the inlet position has had a dramatic effect on circulation in the West Arm. When the Bass Creek inlet was open, there was quite a tidal flow through it, as the relict channel illustrates. The tidal channel which ran the length of the West Arm shows up well on the 1847 Survey chart, and still appears on modern aerial photos and charts, although it has shoaled in considerably. Private concerns have dredged in the Mud Creek area and the Town of Tisbury also performed some dredging there. Maintenance dredging in the West Arm is needed for navigation and berthing associated with two boatyards and the Town Landing.

In the early part of this century, the Town and Commonwealth stabilized the present entrance to Lagoon Pond by construction of the Eastville jetty and by dredging the present channel. The Commonwealth also constructed and reconstructed the existing bascule drawbridge with a 30' horizontal clearance across the inlet. In 1968, the U.S. Army Corps of Engineers adopted the entrance channel for commercial navigation and dredged it to a depth of 8', a width of 100' and a length of 200', and extended the Eastville jetty by 200'. There has been no maintenance dredging of the channel.

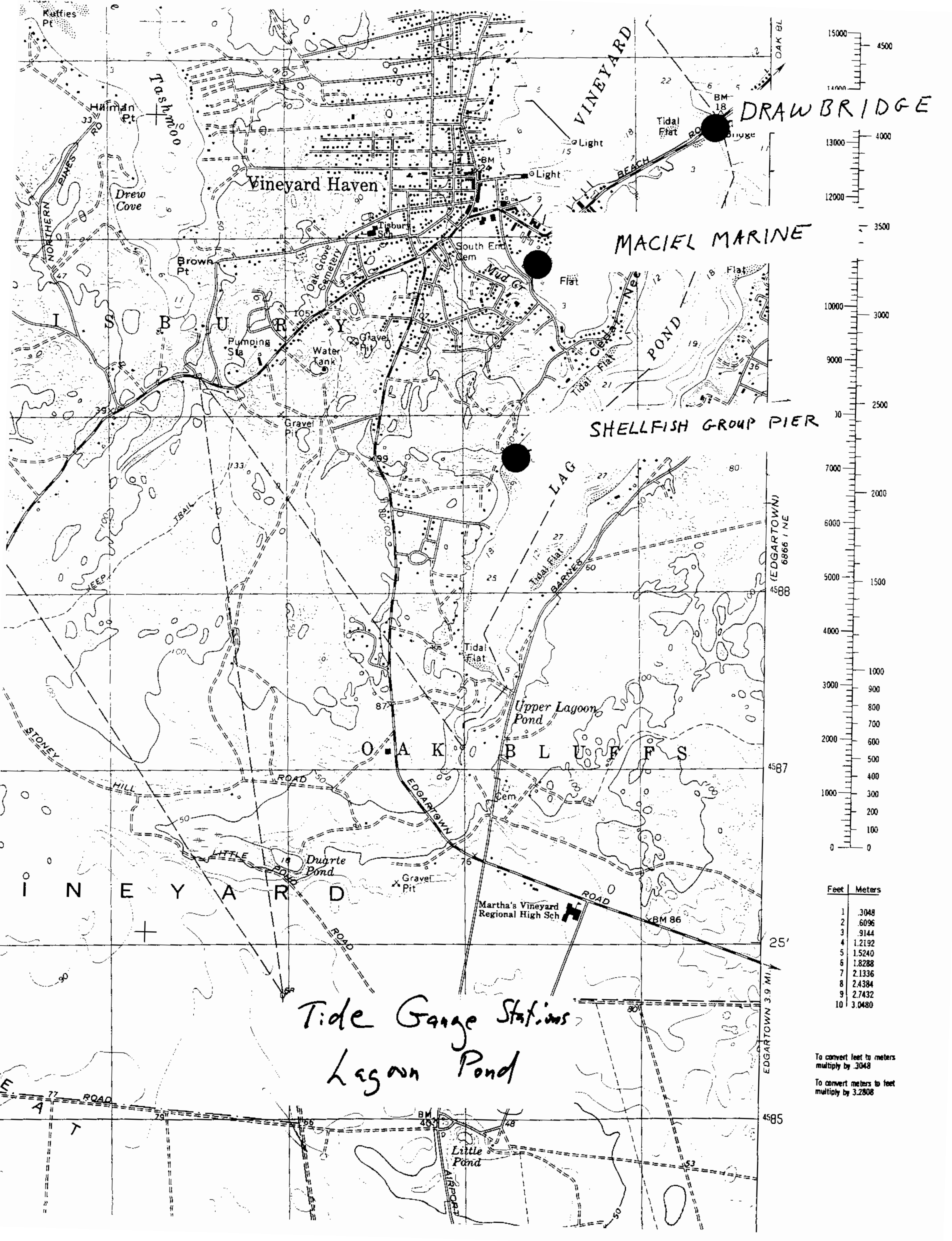
A box culvert connects Mud Creek to Lagoon Pond. Because boat access is not a concern, a roadway crosses the inlet over the culvert. Another type of fixed opening is the anadromous fish run, a pond opening designed

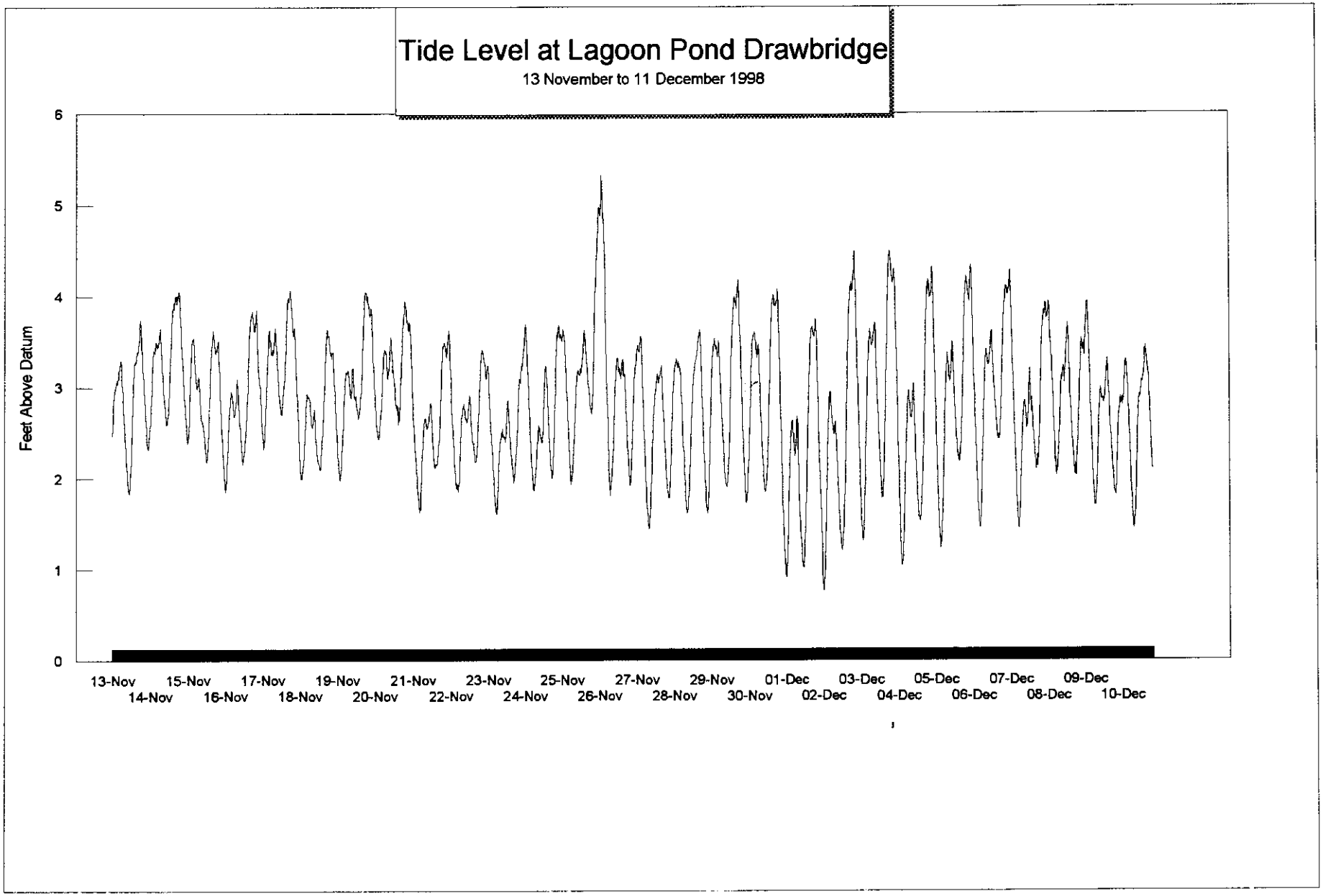
specifically to facilitate the spawning (and capture) of herring and alewives. The importance of anadromous fish runs should not be underestimated. The herring and alewives figure prominently in the marine food chain as "bait fish" which are eaten by larger fish, some of which have significant commercial and recreational value. They need access to the freshwater ponds to spawn, in order to keep up the stock. These fish also manage pond nutrients, in a way, by consuming nutrients in the pond while growing. The runs have cultural value as well, particularly the historic runs. The towns of Oak Bluffs and Tisbury cooperated with the M.V. Shellfish Group, the Mass. Division of Marine Fisheries and the USDA Soil Conservation Service to construct a fixed run for Upper Lagoon Pond, the site of a historic run. According to the 1995 Annual Town Report of the Oak Bluffs Shellfish Department "After years of planning, construction and stocking of fish, the Oak Bluffs and Tisbury Herring Advisory Boards petitioned the director of Marine Fisheries, Phil Coates, for local control of the herring run at the Head of Lagoon Pond. On January 13, 1995 the Oak Bluffs Board of Selectmen received a letter from the Division of Marine Fisheries granting the Towns of Oak Bluffs and Tisbury local control of the herring fishery. Twenty-eight licenses were sold this first year and the harvest of herring has once again become an annual event in Oak Bluffs." According to the 1997 Tisbury report "We had a successful herring season once again. The herring run seems to be a popular spot with the increase of herring coming into Lagoon Pond. The result has made fishing for bass & blues very rewarding in Lagoon Pond."

TIDAL EXCHANGE

In 1998, MVC recorded tidal data through a lunar cycle in the pond. Three Global water level recorders were placed in the pond from November 10 through December 10. The three locations selected were at the Drawbridge, at the marina in the West Arm and at the MV Shellfish Group Hatchery toward the southern end of the main body of the pond. The gauges were programmed to record the water depth over the pressure transducer at 10 minute intervals. The devices are temperature, pressure and salinity compensated. The manufacturer indicates .2% accuracy. There was a storm on November 16, and no other unusual weather occurrences.

All three tide curves are semi-diurnal and show strong similarities of both the major and the minor features of the tidal hydrograph. The average tide range was found to be very close to 1.75 feet (0.53 meters) at all three stations. There is significant coincidence of the time of high and low water at all three stations, typically within 20 minutes or less. The curve is flood dominated, as indicated by the duration of each phase of the tidal cycle. Average time of the flood stage ranges from 6:39 hours at the Drawbridge to


DRAWBRIDGE
MACIEL MARINE
SHELLFISH GROUP PIER
Tide Gauge Stations
Lagoon Pond
Vineyard Haven
VINEYARD
Tashmoo
Hillman Pt
Drew Cove
Brown Pt
NORTHERN PINES RD
Light
Tidal Flat
BEACH RD
Tisbury Sch
South End Cem
Oak Grove Cemetery
Mud Cr
Flat
Cedar Nec
POND
LAG
Pumping Sta
Water Tank
Gravel Pit
TISBURY
JEEP
TRAIL
BARNES
Tidal Flat
Upper Lagoon Pond
OAK BLUFFS
STONEY HILL ROAD
EDGARTOWN ROAD
LITTLE POND ROAD
Duarte Pond
Martha's Vineyard Regional High Sch
BM 86
VINEYARD
ROAD
Little Pond
AIRPORT
(EDGARTOWN) 6866 I NE
EDGARTOWN 3.9 MI.
OAK BL
4588
4587
4585
25'
Feet | Meters
1 .3048
2 .6096
3 .9144
4 1.2192
5 1.5240
6 1.8288
7 2.1336
8 2.4384
9 2.7432
10 3.0480
To convert feet to meters multiply by .3048
To convert meters to feet multiply by 3.2808


Tide Level at Lagoon Pond Drawbridge
13 November to 11 December 1998
Feet Above Datum
6
5
4
3
2
1
0
13-Nov
14-Nov
15-Nov
16-Nov
17-Nov
18-Nov
19-Nov
20-Nov
21-Nov
22-Nov
23-Nov
24-Nov
25-Nov
26-Nov
27-Nov
28-Nov
29-Nov
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05-Dec
06-Dec
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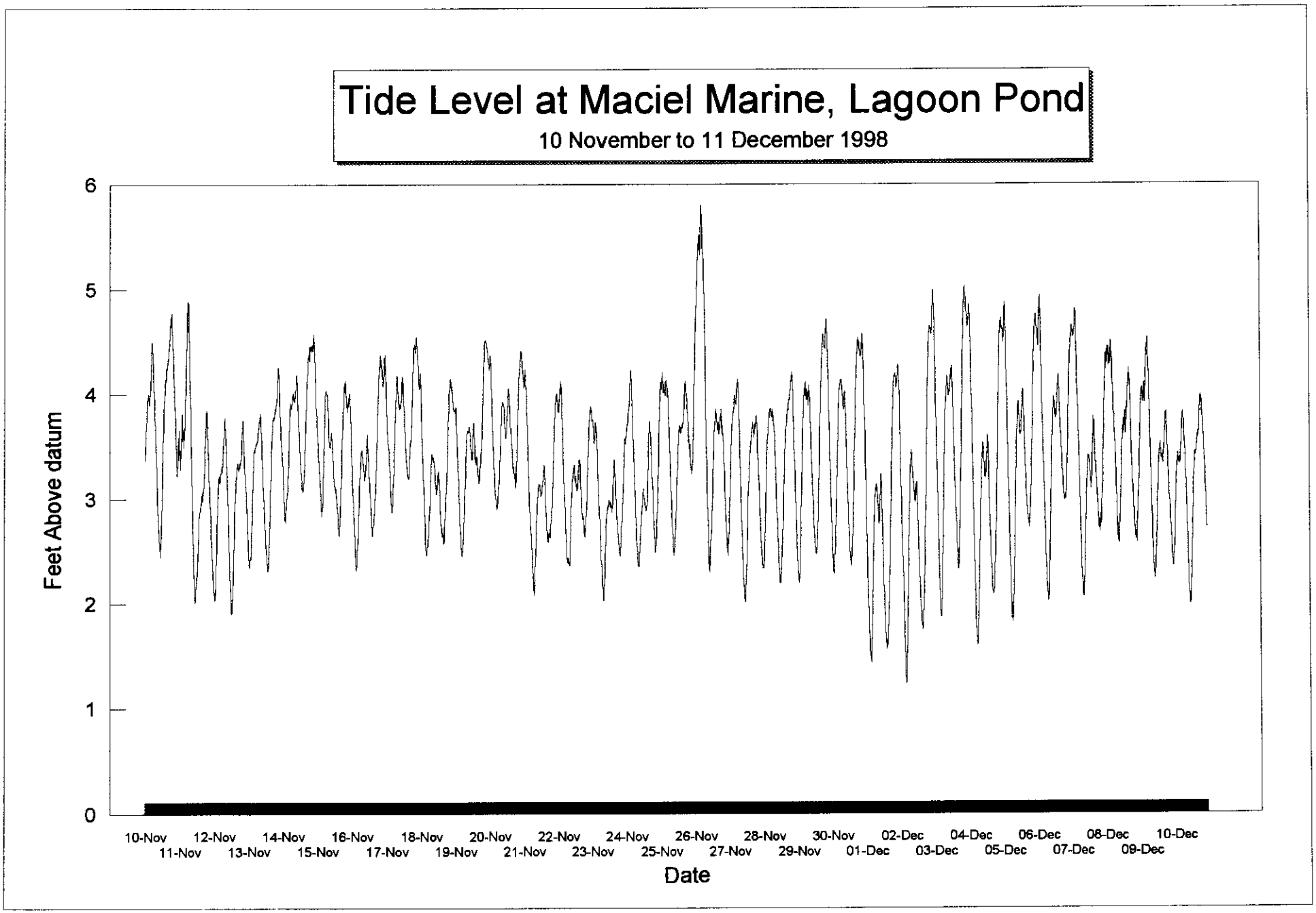
08-Dec
09-Dec
10-Dec


Tide Level at Maciel Marine, Lagoon Pond
10 November to 11 December 1998
Feet Above datum
0
1
2
3
4
5
6
10-Nov
11-Nov
12-Nov
13-Nov
14-Nov
15-Nov
16-Nov
17-Nov
18-Nov
19-Nov
20-Nov
21-Nov
22-Nov
23-Nov
24-Nov
25-Nov
26-Nov
27-Nov
28-Nov
29-Nov
30-Nov
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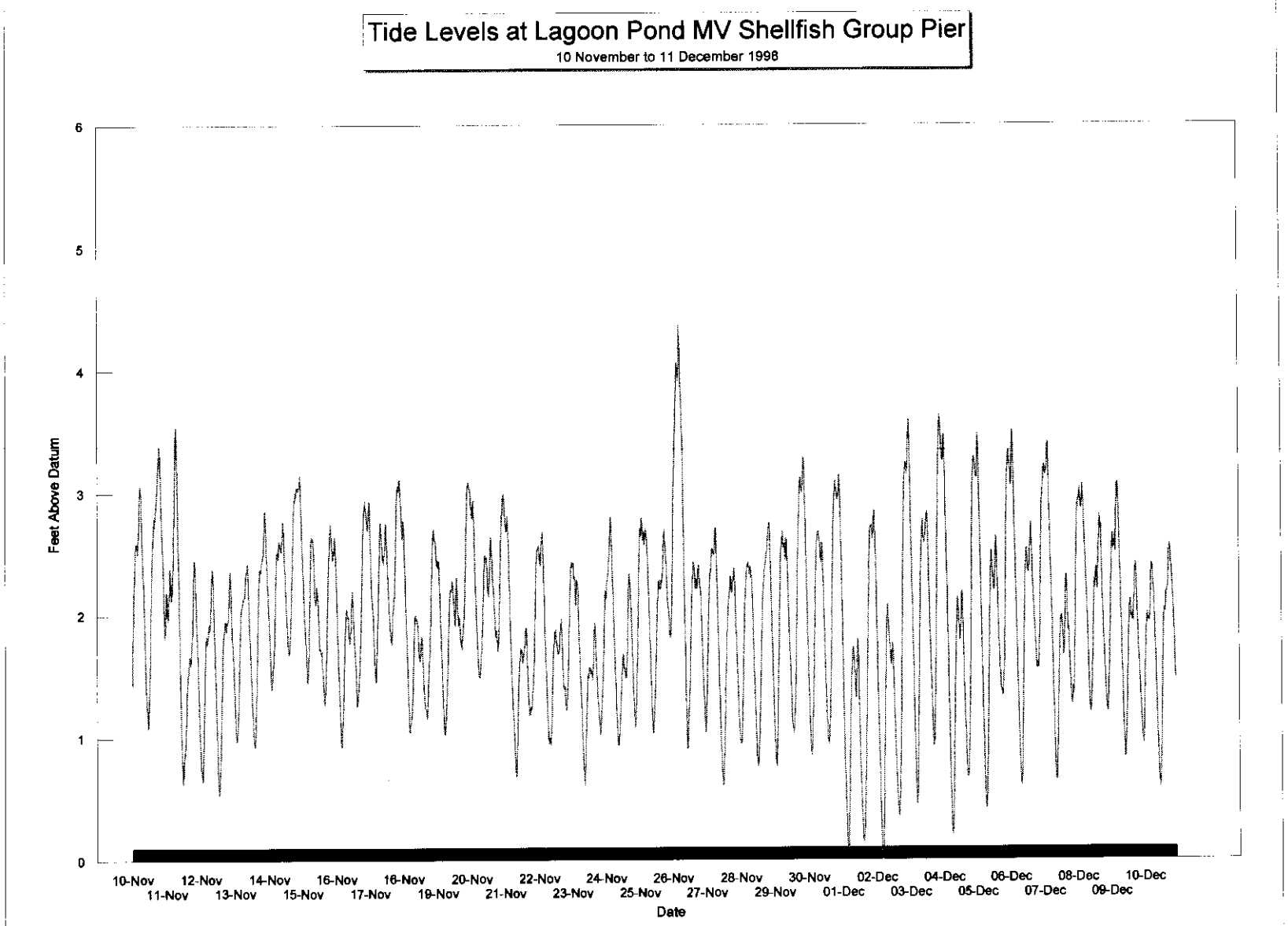
02-Dec
03-Dec
04-Dec
05-Dec
06-Dec
07-Dec
08-Dec
09-Dec
10-Dec
Date


Tide Levels at Lagoon Pond MV Shellfish Group Pier
10 November to 11 December 1998
Feet Above Datum
0
1
2
3
4
5
6
10-Nov
11-Nov
12-Nov
13-Nov
14-Nov
15-Nov
16-Nov
17-Nov
18-Nov
19-Nov
20-Nov
21-Nov
22-Nov
23-Nov
24-Nov
25-Nov
26-Nov
27-Nov
28-Nov
29-Nov
30-Nov
01-Dec
02-Dec
03-Dec
04-Dec
05-Dec
06-Dec
07-Dec
08-Dec
09-Dec
10-Dec
Date

6:51 hours at the West Arm. On average, ebb tide persists from 5:45 hours at the Shellfish Group pier to 5:37 hours at the West Arm. On average, a tidal cycle requires 12:31 hours to complete in the main body of the pond and 12:28 hours in the West Arm. There are approximately 1.93 tidal cycles per day.

In 1978, M.V.C.[17] investigated tidal circulation in the pond. Nearly coincident rise and fall of the tide and approximately equal tide ranges at all three stations indicated good tidal circulation. The 1998 M.V.C. findings are consistent with the earlier assessment of good tidal circulation. Perhaps the good circulation comes from the depth and elongation of the main body of the pond. Prevailing southwest and northwest winds cut across the pond diagonally, and are tempered by the high bluffs on either side of the pond. Tidal circulation in the pond is not impacted by the prevailing winds, as might occur in a broad and shallow pond.

In his 1986 report[18], Gaines found a double high tide feature, with a pattern of salinity variation that suggested to Gaines that harbor water entering the Lagoon is efficiently carried into the pond and that ebbing water is efficiently carried out of the inlet. A more gradual salinity change would have indicated sloshing of the same water back and forth. He suggested subsidence of the incoming salt water into the deeper basins, with subsequent ebb of surface water, making for a very efficient tidal exchange system. He also found high salinities near the southern end of the pond, indicating "some kind of upwelling process is active to displace the fresher water and bring more saline water to the surface at the head of the Lagoon.". He also found that freshwater input was fairly uniform in the main body of the pond, but that the West Arm showed strong freshwater influence from Mud Creek.

In the Diagnostic/Feasibility Study[19], Poole stated a tidal range of .73 meters, quite different from the MVC measurement of .53 meters. Poole recorded tide levels for several tidal cycles (5/21-24/86 and 6/29-30/86), rather than throughout a lunar cycle as was done in the MVC investigation. Poole's measurements may not have been representative of the full cycle.

Further investigation of the complexities of circulation in the Lagoon may be appropriate. The pond has an unusual configuration, to say the least. The main body

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[17] Martha's Vineyard Commission, 1978, "Lagoon Pond Hydrographic Survey"
[18] Gaines, Arthur Jr., W.H.O.I., 1986, Lagoon Pond Study: An Assessment of Environmental Issues and Observations on the Estuarine System
[19] Poole, Bruce M., 1989, Diagnostic/Feasibility Study for Lagoon Pond, Oak Bluffs/Tisbury

of the pond is long, narrow and deep, and, in contrast, the West Arm is shallow throughout. If there was some stratification in the deeper parts of the pond, it is conceivable that there could be some impact on circulation. M.V.C. has not found any evidence of stratification, but that doesn't mean it could not occur during some wind and tide conditions. It is possible that stratification could leave some of the deeper water out of the tidal cycle, and it is possible, as some have suggested, that stratification increases flushing because the fresh water may leave first, taking most of the nutrients.

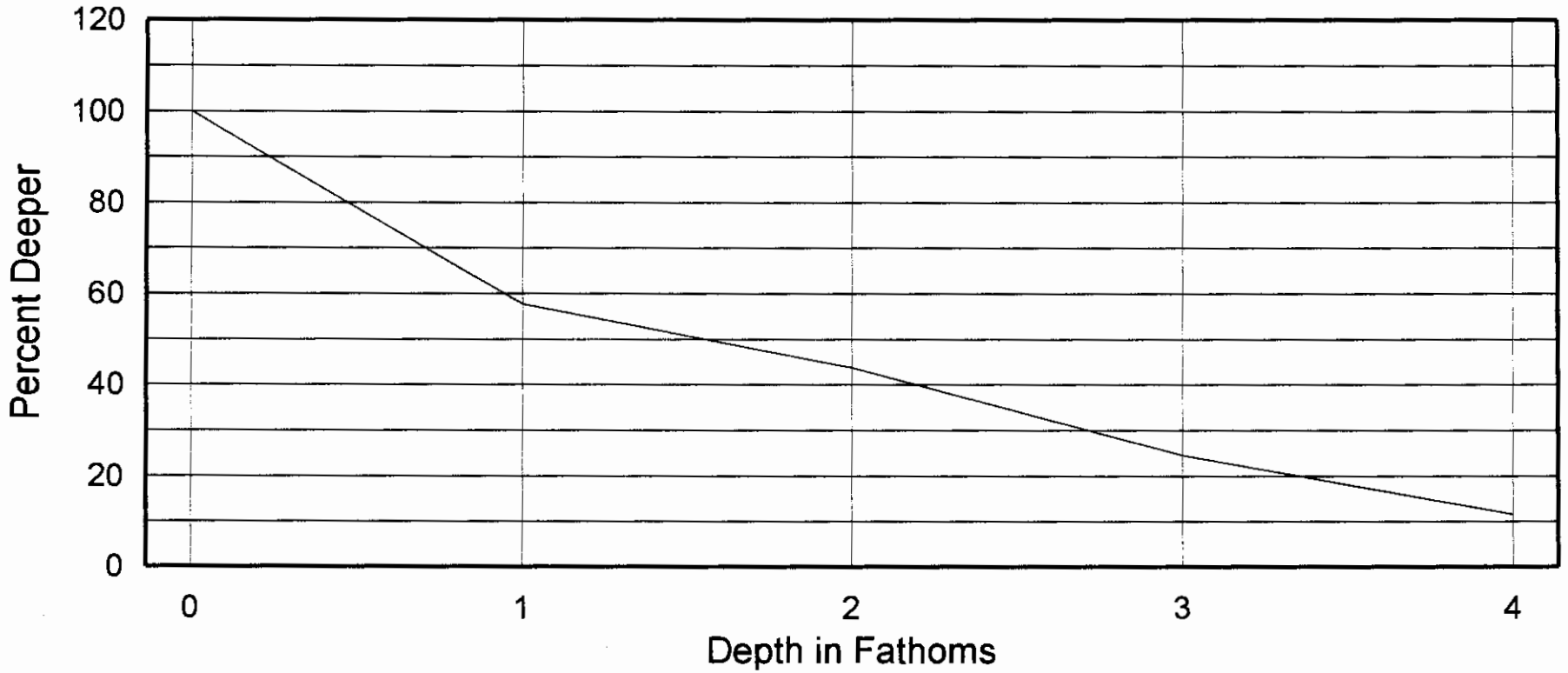
RESIDENCE TIME

Residence time is the number of days of tidal flushing required to completely exchange old water for new, or the time it takes for newly input fresh water to arrive at the Drawbridge and exit the pond through the inlet. There are two simple ways to compute tidal flushing. The average depth at mid-tide may be divided by the tidal range. M.V.C. estimated an average depth of 2.83 meters at Mean Low Water, using a planimeter and the 1984 N.O.A.A. chart for Martha's Vineyard - Eastern Part to create the hypsograph as shown on the following page. Using M.V.C.'s depth estimate (adding part of the tidal range, for an average depth at mid-tide of 3.095 meters) and the MVC tidal range measurement of .53 meters results in a flushing estimate of 5.8 tidal cycles. Assuming that not all water indicated in the tide range is actually completely new water exchanged for old water, this figure can be modified to give the estimated time to exchange 95% of the old water. This is three times the calculated flushing time, or 17.52 tidal cycles. At 1.93 tidal cycles per day, this yields a residence time of 8.76 days.

Another method to calculate flushing involves dividing the Mean Low Water volume by the difference in volume between Mean High Water and Mean Low Water. According to M.V.C.'s planimeter measurements and depth calculations, the Mean Low Water Volume is 1650.43 million gallons and the tidal prism is 308.79 million gallons. Computing flushing time from those volume estimates results in an estimate of 5.34 tidal cycles, which corresponds to 8.3 days estimated to exchange 95% of the pond's water. This estimate is quite consistent with the estimate of 8.76 days, computed from the depth and tidal range. Averaging the two, M.V.C. has selected 8.53 days as the most likely estimate for residence time.

The M.V.C. estimate stands in marked contrast to some of Poole's calculations. Poole estimated a tidal exchange of 23.1 percent per tide or 46.2 percent per day. Poole considered that the exchange would be adequate, if the tidal waters were better mixed: "However, the influent saltwater

HYPSOGRAPHIC CURVE FOR LAGOON POND



— Source: NOAA, 1984, Martha's Vineyard Eastern Part

enters the estuary from underneath, and on low wind days mixing is poorly accomplished by advection or convection currents.". In order to estimate tidal flushing, Poole used a calculation known as the modified Prism Method (Ketchum, 1951), to estimate a flushing rate of 42.9 per year for the West Arm and 4.5 flushings per year for the main body of the pond (80.9 days for the main body of the pond and 8.5 days for the West Arm). He checked that calculation by using another method, called the Fractional Freshwater Method, which compares pond and harbor salinities. Using that method with a mean in-pond salinity of 32.9 ppt, he calculated a flushing rate of 58.9 days, or 6.2 tidal flushings per year. Why is there such a disparity between the MVC estimate and two of the Poole flushing estimates? It could be that the Modified Prism Method and the Fractional Freshwater Method are designed to calculate estuarine flushing that involves river discharge. Because there is no river discharge in Lagoon Pond, those methods may not be applicable. In its latest report on nitrogen loading[20], the Buzzards Bay Project has indicated that Ketchum's flushing formula may be more appropriate for v-shaped estuaries that receive most freshwater and nitrogen from riverine discharge and that the method is inappropriate for embayments that receive little fresh water or that receive most of the fresh water from groundwater.

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20 J. E. Costa et al, 1999, Buzzards Bay Project Technical Report, Managing anthropogenic nitrogen inputs to coastal embayments: Technical basis and evaluation of a management strategy adopted for Buzzards Bay

NITROGEN LOADING LIMIT

MVC has used the formulas developed by the Buzzards Bay Project, as recently modified[21], to determine the nitrogen loading limit for the pond. With a flushing time of 8.53 days and an average depth at mid-tide of 3.095 meters, the Lagoon falls into the deeper pond category as defined by the Buzzards Bay Project. The revised limits are used for the following calculations:

for Outstanding Resource Waters:

$$50 \text{ mg/m}^3\text{/Vr} = 17{,}084 \text{ kg}$$

for SA Waters:

$$150 \text{ mg/m}^3\text{/Vr (SA waters)} = 51{,}253 \text{ kg}$$

Considering that the pond exhibits some signs of stress from the existing load, as seen in decline of eelgrass beds, e.g., the more conservative approach appears to be the prudent choice. Therefore, even though Lagoon Pond is presently classified "SA", it seems more appropriate to strive for the higher quality of the Outstanding Resource Waters class. The recommended limit for the watershed is **17,000** kilograms per year.

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[21] J. E. Costa et al, 1999, Buzzards Bay Project Technical Report, Managing anthropogenic nitrogen inputs to coastal embayments: Technical basis and evaluation of a management strategy adopted for Buzzards Bay

Loading Limit Calculations

$$\frac{(\text{SA loading rate})(\text{volume at mid-tide})(1 + \text{square root of residence time})}{\text{residence time} \times 1{,}000{,}000}$$

$$= \frac{(150\ mg/m^3)(6{,}823{,}856 m^3)(1 + \text{square root of } .023\ yr)}{.023\ yr \times 1{,}000{,}000}$$

$$= 51{,}253\ kg \quad \text{SA limit}$$

$$\frac{(\text{ORW loading rate})(\text{volume at mid-tide})(1+\text{square root of residence time})}{\text{residence time} \times 1{,}000{,}000}$$

$$= \frac{(50\ mg/m^3)(6{,}823{,}856 m^3)(1 + \text{square root of } .023\ yr)}{.023\ yr \times 1{,}000{,}000}$$

$$= \mathbf{17{,}084\ kg} \quad \text{ORW limit}$$

area of pond = 220.48 hectares

mean depth at MLW = 2.8 m

tidal prism volume = 1,168,544 m^3

volume at mid-tide = 6,823,856 m^3

residence period = 8.53 days = .023 yr

COMPARISON OF LIMIT TO EXISTING AND PROJECTED LOADS

MVC has defined a load limit of 17,000 kilograms per year. MVC has previously determined that the existing load to the system is 17,240 kilograms, the load with low growth would be 20,514 kilograms, the load with moderate projected growth would be 22,285 kilograms, and the load projected for high growth would be 26,652 kilograms. None of the estimates fall under the proposed limit of 17,000 kg.

MANAGEMENT MEASURES

The first management recommendation is to adopt a nitrogen limit of 17,000 kilograms per year for the watershed.

EXISTING NITROGEN LOAD AND PROJECTIONS

	Kilograms/year
Current Nitrogen Load	17,240
Nitrogen Load at Low Growth	20,668
Nitrogen Load at Moderate Growth	22,439
Nitrogen Load at High Growth	26,806

In order to plan for a specific total nitrogen load, it is necessary to review the distribution of the load, and to then address each individual component. The present load is calculated to be distributed as follows:

	Kilograms/year
Septic Systems	
Residential	7,597
Commercial	1,436
Rain	6,413
Farms	1,062
Lawns	732
Total	17,240

Management measures for each individual component follow:

SEPTIC SYSTEMS

The first consideration regarding septic systems is that the two towns should determine their needs and desires for growth in their towns, and more specifically, in the watershed area.

If the towns determine that new growth is appropriate or desirable for the watershed area, then it would be necessary to somehow restrict the nitrogen impact of the new development.

The towns should consider revising zoning and Board of Health regulations to support the 17,000 kilogram limit.

Exclusive of rainfall and pond acreage, the limit allows for 3.7 kg/acre devoted to land use impacts only. (Overall, the limit allows 3.9 kg/acre, including rainfall on the pond and runoff.) The towns have at their disposal a variety of means to control growth, density and the resulting increased nutrient input. The 1998 Oak Bluffs Master Plan includes a recommendation to amend the zoning by-laws for the R-1, R-2 and R-3 districts to remove provision for remainder lots; instead contiguous lots could be combined to achieve the minimum lot sizes of 10,000 square feet in the R-1 District, 20,000 square feet in R-2 and 60,000 square feet in R-3. The Town followed the Planning Board's recommendation and voted the proposed regulation at the April 2000 Annual Town Meeting. There should result a savings in overall density at buildout.

The District of Critical Planning Concern designation process is quite expedient for setting up nutrient control protection, with the potential to create powerful overlay district zoning for one or more towns in a watershed. In fact, the Martha's Vineyard Commission did vote, in 1988 , to designate the Lagoon Pond District as a District of Critical Planning Concern. The District includes the waters of the pond and lands within 1500 feet of the mean high water line of the pond. The District excludes the commercial waterfront on the West Arm and the Lagoon Harbor Park. The designation included the goals "to maintain water quality, prevent pollution, promote wildlife habitat, promote the economic development of fisheries and related industries, and maintain and enhance recreational and other uses of Lagoon Pond and environs.". In the decision, the Martha's Vineyard Commission adopted guidelines for development of regulations for the district, and the towns adopted regulations, including regulations to control density and nutrient inputs. The Oak Bluffs Board of Health adopted a regulation limiting new construction in the District to one bedroom per 15,000 square feet of lot area, and requires, as part of the disposal works permit, information on landscaping and proposed fertilizer use on the property. In the Tisbury Wetlands By-Law Regulations, Section 1.06 includes Lagoon Pond DCPC regulations for fertilizer and pesticide application "The applications of organic and inorganic fertilizers and pesticides within 100 feet of a coastal bank, salt marsh or the 100 year flood zone adjacent to Lagoon Pond and Lake Tashmoo...is prohibited...". A waiver procedure is defined in the regulation. The regulation offers protection from nutrient loading by surface water runoff of landscaping fertilizers.

Several towns in the area have adopted nutrient loading by-laws which target source reduction. The Town of Falmouth adopted an overlay district zoning amendment and amendment to its Subdivision Rules and Regulations in 1982. The Falmouth nutrient control regulation requires developers

within the watersheds of the ponds to provide information regarding the proposed nutrient loading and provides that the Special Permit Granting Authority may withhold approval if the existing condition of the receiving waters is at or above critical eutrophication levels or if the nutrient contribution from the proposed development would generate additional nutrient levels that exceed the receiving waters' critical eutrophic level. Note that the Falmouth regulations specify critical nutrient levels for both drinking water and eutrophication of surface waters. Protection of both drinking water and pond water resources in the same regulation is a sensible and practical approach. The use of 5 parts per million nitrogen for the critical level for drinking water is quite prudent for planning purposes, in order to be sure to meet the federal drinking water standard of 10 parts per million. With regard to eutrophication, the 5 ppm standard may not be protective enough. The Falmouth regulations use .75 milligrams per liter total nitrogen for the saltwater critical eutrophic level and .02 milligrams per liter total phosphorous for the freshwater critical eutrophic level. Actual critical eutrophic levels may vary from pond to pond. Wareham, Bourne and Plymouth adopted amendments to their zoning by-laws in order to protect Buttermilk Bay, a resource shared between them, by limiting the amount of nitrogen entering groundwater and surface waters within the Buttermilk Bay watershed. The three towns adopted overlay districts to their zoning by-laws.

Another way to restrict the impacts of development is to maximize acquisition or protection of much of the remaining open space in the watershed. Individual parcels are identified in the land use database.

Sewage treatment is another means of reducing the impacts of septic systems. Tisbury initially planned a system which did not propose to service any lots in the watershed. At the 2000 Annual Town Meeting, the Town voted to add to the proposed service area, including a number of commercial lots in the watershed. In the discussion on commercial loading, detail is included regarding the planning concerns about growth in that area. The proposed addition to the service area includes some of the lots of greatest planning concern, those with large structures and large vacant areas.

Should the towns choose to encourage or allow residential growth, then it may be prudent to consider more centralized service.

RAINFALL

At first blush, it may seem that there is little potential to manage this source. However, there is something that can and should be done. There is also a good chance that increasingly restrictive air quality regulations should reduce the amount of nitrogen in the atmosphere. Rainfall quality should be monitored to assess any improvement (or degradation). There is potential to revise the limit standard as prudent.

STORMWATER SOLUTIONS

Structural alternatives divert, contain and/or filter runoff in order to control erosion and sedimentation as well as to remove pollutants. Diversion may be as simple as construction of a curb berm at the edge of the road. Containment devices include catch basins and wet and dry detention ponds, where sediments, heavy metals and debris settle out of suspension. Catch basins trap the high velocity "first flush" or first .5" or so of rainfall, which contains most of the contaminants washed from the paved surfaces. By catching the first flush and lowering its velocity, the catch basin allows the contaminants to settle out for later mechanical removal from the basin. Infiltration trenches and basins remove soluble pollutants as well as sediment, metals and debris. Catchment devices may be used in conjunction with wet or dry detention ponds or wet marshes to remove nutrients by means of uptake by plant material.

There are a number of considerations involved in selection of an appropriate structure. Considerations include targeted pollutant, size of planning area and type of watershed, among others. There are resources available to guide in selection of a structure. The Natural Resource Conservation Service (362-9332) is an excellent source for technical assistance. They are located at P.O. Box 709, Barnstable, MA 02630. They should be contacted regarding planning assistance to address the issues of fecal coliform contamination found in runoff, per the Gaines 1991 study. That study pointed out the need to address stormwater remediation particularly in the vicinity of the coves along the southwestern shore There are also a number of reference texts available for study, including: Controlling Urban Runoff: A Practical Manual for Planning and Designing Urban BMP's Thomas Schueler, Metropolitan Washington Council of Governments, 1987, and Decisionmaker's Stormwater Handbook Nancy Phillips, USEPA Region 5, 1992.

Runoff enters Lagoon Pond in a number of locations; notably Lagoon Avenue, Hudson Avenue and Vineyard Avenue Extension in Oak Bluffs, and Mud Creek in Tisbury. Tisbury has begun to explore innovative technologies to treat

stormwater runoff. The Town installed a limestone catch basin at Mud Creek. The limestone is intended to neutralize the acidity of the stormwater, thus helping to settle out pollutants. The Tisbury Board of Health and Department of Public Works have worked cooperatively with the pond advocacy group Tisbury Waterways, Inc., on the project. The latest phase has installed 28 limestone catch basins in the vicinity of Lake Tashmoo. The Town is planning extensive upgrade to the stormwater collection system in the vicinity of Mud Creek.

The Oak Bluffs Board of Health has adopted Stormwater Management Regulations[22] which are intended to "properly manage stormwater by providing adequate protection against pollutants, flooding, siltation, and other drainage problems". The regulations apply to all new construction and alteration in Sensitive Resource Areas, and provide for development of a stormwater management design and plan so that the drainage for the subdivision or project shall not cause an increase or decrease in the volume of runoff discharged off site, for storms of 1, 10, 50 and 100 year frequency.

AGRICULTURE

Because there is much local appreciation and desire to promote agriculture, it would be difficult to restrict agricultural use. In order to protect water quality in the pond, it might be more prudent to focus water quality planning on protection of the immediate shoreline from direct contamination, rather than on the overall nitrogen load.

It may be possible in some circumstances, such as agriculture as an adjunct of open space ventures, to promote low-nitrogen farm activities where practical. Hay and legumes are examples of such crops.

SHELLFISH AND HERRING

Promote shellfish as nutrient consumers, along with herring. Ensure that their habitats are protected. As filter feeders, shellfish "clean" the water of small particulate nutrients. Young herring also consume particulate organic nutrients as they grow, and eventually leave the pond attractively packaged for consumption by bigger fish or by humans.

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22 Oak Bluffs Board of Health Regulations, Section 5.0 Stormwater Management Regulations

LAWNS AND LANDSCAPING

Educate homeowners and professional landscapers about using native plants and about fertilizer impacts. The towns could consider limiting lawn size in the watershed, through DCPC regulations. Application of fertilizers is a practice which is much more difficult to regulate. Education is probably the more effective tool to persuade homeowners to follow label instructions regarding application, to use fertilizers with slow-release nitrogen, or to abstain altogether. Landscaping with native plants is an attractive and low-maintenance alternative to suburban turf. Local nurseries carry native plants in stock. The following reference material, listing species by height for view planning, was prepared by William Wilcox of the University of Massachusetts Cooperative Extension:

NATIVE PLANT SPECIES

3 ft. or less	6-9 ft.	10-15 ft.	15 ft. plus
Kalmia angustifolia Sheep laurel	Aronia arbutifolia Red chokeberry	Hamamelis virginiana Witch hazel	Acer rubrum Swamp Maple
Rhus aromatica Fragrant sumac	Clethra alnifolia Sweet pepperbush	Lindera benzoin Spice bush	Ilex opaca American holly
Rosa carolina Carolina rose	Baccharis halimifolia Groundsel bush	Vaccinium corymbosum Highbush blueberry	
Salix tristis Dwarf gray willow	Ilex verticillata Winterberry	Rhus copallina Shining sumac	
Vaccinium angustifolium Lowbush blueberry	Lyonia mariana Maleberry	Rhus typhina Staghorn sumac	
Ilex glabra compacta Compact inkberry	Malus sargenti* Sargent crab	Amelanchier laevis Allegheny shadbush	
Comptonia peregrina Sweet fern	Myrica pennsylvanica Bayberry	Amelanchier canadensis Shadbush	
Gaylussacia baccata Black huckleberry	Prunus maritima Beach plum	Ilex glabra Inkberry	
Amelanchier stolenifera Creeping shadbush	Rosa virginiana Virginia rose		
Aronia melanocarpa Black chokeberry			

Groundcovers	Grasses (unmowed meadow)	Grasses (mowed lawn)	Weedy Pests, do not plant
Arctostaphylos Uva-ursi Bearberry	Andropogon scoparius Little bluestem	Creeping fescue	Viburnum dentatum Arrowwood
Gaultheria procumbens Checkerberry	Festuca vars. Creeping red fescue & hard fescue		Elagnus umbellata Autumn olive
Gaylussacia brachycera Box huckleberry			Rosa multiflora Japanese rose

*not native, but a worthy addition

FURTHER ASSESSMENT AND MONITORING

There is a need to continue to monitor eelgrass and algae populations. Further investigation of the complexities of circulation in this unusually long, narrow and deep water body may be appropriate. Continued surface water sampling is also in order.

SUMMARY OF MANAGEMENT MEASURES

1. ADOPT 17,000 KILOGRAMS AS AN ANNUAL LOAD LIMIT FOR THE WATERSHED.

SEPTIC SYSTEMS

- Determine growth needs and desires for the watershed area in both towns.
- Encourage advanced nitrogen removal for new septic systems and consider possible extension of Tisbury municipal sewer service area.
- Revise zoning and board of health regulations to support the 17,000 kg limit. Consider a watershed-wide DCPC to develop and implement those regulations.
- Maximize acquisition or protection of much of the remaining open space in the watershed. Particularly consider the 370.38 acres with further subdivision potential.

RAINFALL AND RUNOFF

- Construct and maintain structural solutions where needed to remediate existing problems, particularly in the vicinity of Mud Creek in Tisbury and the specific sites at Hudson Ave., Lagoon Road and Vineyard Ave. Extension in Oak Bluffs. Review town regulations regarding proper drainage design in future projects; Tisbury might want to adopt stormwater regulations similar to those adopted by the Oak Bluffs Board of Health.

LAWNS AND LANDSCAPING

- Educate homeowners and professional landscapers about using native plants and about fertilizer impacts.

AGRICULTURE

- Encourage low-nitrogen farm activities where practical, such as in conjunction with open space ventures. Examples are legumes such as clover, alfalfa and beans, and grass seed mixture for hay and pasture.

SHELLFISH AND HERRING

- Promote shellfish as nutrient consumers, along with herring. Ensure that their habitats are protected.

2. FURTHER ASSESSMENT AND MONITORING

- Continue water sampling, particularly focusing on the "tributaries". Include some continuous recorded logs of dissolved oxygen over several daily cycles together.

- Perform updates to the eelgrass inventory, at five year intervals. Watch for changes in the algae and weed population.

- Continue to investigate the complexities of circulation in the pond. Ensure that the flushing formulas used to calculate the nitrogen loading limit are appropriate for the realities of circulation in this unusually long, narrow and deep water body. Investigate stratification in the deeper areas.

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APPENDIX I

SELECTED HISTORICAL AND NAME REFERENCES FROM BANKS' THE HISTORY OF MARTHA'S VINEYARD DUKES COUNTY MASSACHUSETTS[23]

"It is probable that smaller communities made abiding-places within the limits of the territorial authority of each petty sachem. In this way, I believe, we may infer that Wekwetuckauke (the lagoon), Sanchacantacket, Onkokemmaug (North Tisbury) and Nashowakemmuck (Chilmark) were the locations of such subordinate villages. Of the character of these settlements it can be said that they had no permanency. Composed as they were of loosely constructed wigwams, they were easily transported from place to place, as the requirements of the season demanded. In the summer they were doubtless picketed about the inlets of the coast, while in winter they were removed to the protection of the woods and hills from the icy blasts of the north. The circumscribed territory, however, prevented extended migration, and within a small compass the various companies owning fealty to the local great men, moved from place to place, when the refuse heaps became too large or the game grew too wary. Their dwellings were known as wigwams, a corruption of the Algonquian word 'wekowomut', meaning in our language, a house. The younger Mayhew described these structures as 'made with small poles like an arbor covered with mats, and their fire is in the midst, over which they leave a place for the smoak to go out at'. This was in 1650, and probably is a correct description of them as they were used before the coming of the whites. The island Indians did not use skins for a covering like those on the mainland, as there were not any animals numerous enough to supply them for that purpose. The mats were woven from the common marsh flag, or flower-de-luce, and probably long, native grasses were added for binding."

"*Weaguatickquayage* (1673). This name, denoting the land at the head of Lagoon pond, is spelled in a variety ;of ways, owing to its complicated formation. The more modern form is an abbreviated one, Weahtaqua, and it is sometimes spelled Webbataqua, which is fanciful as well as incorrect. It occurs frequently through New England, and an early instance of it is on the neighboring island of Nantucket. It is a compound of We-a-qua-tukq-auke, which is a word meaning 'land at the head of the tidal cove.' In the Court records of 1685 the bounds of 'homses hole neck' were adjudged by Samuel Tilton and Thomas Mayhew as arbitrators ' to have bin set by towonticut by a fut path which gose from wakuttockquayah unto cuttashimmoo on the other side of the neck.' Matthew Mayhew wrote it Waquittuckquoiake (Deeds, I, 69). 'at holms his hole or the Springs at the head of that Cove called Wehtaqua' (Mass. Arch., CXII, 422; dated June, 1692) shows the gradual elision."

---

23 Banks, Charles Edward M.D., 1966 by Dukes County Historical Society, The History of Martha's Vineyard Dukes County Massachusetts

"*Bass Creek.* A Salt-water creek which emptied the Lagoon. Its original course may have been midway of the beach which separates the harbor, but before 1781 it had cut a channel along the line of Water Street, and was six or seven feet deep a century ago. Small draft vessels entered this creek and discharged cargoes on the shore adjoining the "Great House' and other inns in that vicinity. It derived its name, probably, from an incident occurring in the winter of 1778 following Grey's Raid, when a large number of bass were frozen in the creek and furnished food to the impoverished inhabitants."

"*Ferry Boat Island.* The larger of two grassy islands in front of the Marine Hospital is called Ferry Boat, because it was the landing site of Isaac Chase's ferry in colonial days."

"*Lagoon.* This body of salt water was originally called the harbor of Homes Hole, and later, until about 1740, Waketaquay pond or some form of that Algonquian place name. It is first of record as the 'lagoon of salt water' about 1743, as far as known, being then so called in a deed. From that time forward, this name was applied to it with increasing frequency, until it had supplanted all other names. It is an English derivative from the Spanish and Italian words laguna (Latin lacuna), meaning a lake in general terms. In the restricted sense it is applied to a lake or body of water on a coast, formed by a belt or reef of sand thrown up by sea action. This is the actual topography of our Lagoon, but by whom it was so called at first is not known. The work may have been applied by a Spanish or Italian sailor who happened in the harbor, or by a resident who had sailed the Spanish Main and learned the significance of the word."

"*Quinnaamuk.* This name occurs in an Indian deed dated March 14, 1669, and appears later also as Quinniummuh. (It designated a beach 'commonly called the long beach' and may refer to the long strip of sandy beach separating the Lagoon and harbor at that time. Deeds, II, 51; VI, 412.) Quinniaamuk was one of the Indian fishing stations. The meaning of the work is 'place where the long fish (lamprey eel) is taken. At certain seasons of the year, when an inlet is cut through some of these beaches, there is a rush of these eels for the salt water."

"*Tikhomah.* This was the name of a place near the head of the Lagoon, and is referred to in a deed, or Indian writing, conveying certain property at Weaquitaquayage (Deeds, IV, 348)."

APPENDIX II
PUBLIC SESSIONS, COMMENTS AND RESPONSES

JULY 11, 1999 PRESENTATION TO THE LAGOON POND ASSOCIATION

In July, 1999, MVC and the Islands Watershed Team presented material on water quality in Lagoon Pond at the annual meeting of the Lagoon Pond Association, at Sailing Camp Park in Oak Bluffs. The presentations focused on health of the eelgrass beds and on overall circulation in the pond, including results from MVC's tidal investigations. A large crowd was present. Participants expressed their concern for perceived deterioration in the water quality in the pond, particularly the deterioration of the eelgrass beds.

LAGOON POND
AUGUST 3, 2000, 4:00 P.M.
SAILING CAMP PARK, OAK BLUFFS

The meeting was opened by Jo-Ann Taylor at 4:10 P.M.

In attendance were:

Rick Karney M.V. Shellfish Group

Don Hill Lagoon Pond Association

Derek Cimeno Tisbury Shellfish

Dave Grunden Oak Bluffs Shellfish

Liz Durkee Oak Bluffs Conservation Commission

Participants generally agreed with using a very conservative limit for the Lagoon. They prefer the "ORW" limit of 17,000 kg to the "SA" limit of 51,000 kg. They all suggested that there is much evidence in the pond that the existing load seems to be more than the pond can take, considering the current problems with growth of algae.

D.G. reported evidence of a dinoflagellate Prorocentrum, that is known to be hazardous to shellfish, and suggested circulation studies such as W.H.O.I. did in Sengekontacket. He also noted that the flat just outside of the pond is growing rapidly. R.K. added that they have had repeated problems at the shellfish hatchery with dinoflagellate blooms, particularly around Labor Day; they have had blooms of dinoflagellates that live mostly on bacteria; and that

they have found 5-10% undesirable algae species at the lobster hatchery (closer to the drawbridge) and 90% at the shellfish hatchery (closer to Upper Lagoon Pond). He suggested reviewing the recent Howes calculations that suggested a critical status for the pond. He attributes that to different circulation, and suggested further circulation studies, such as a Drogue study. D.H. noted that the lobster hatchery area is in full sunlight all day, while the shellfish hatchery area (at the bottom of a bluff) is shaded for much of the day. J.T. expressed confidence with the M.V.C. circulation assessment, based on tide gauge and hypsograph data, but proposed that there may be something about the unique geometry of the pond that keeps it from fitting into the Buzzards Bay formula well. That's why the recommended limit is the more conservative "ORW" standard.

LAGOON POND
AUGUST 31, 2000, 4:00 P.M.
SAILING CAMP PARK, OAK BLUFFS

The August 3 session was repeated on August 31, for anyone who was unable to make the August 3 session. The presentation, attendance and comments were similar to the August 3 session.

COMMENTS

Drafts of the report were circulated to DEP and to town boards and other agencies. Written comments were received from Pamela Truesdale, DEP, and David Grunden, Oak Bluffs Shellfish Constable. Oral comments were received from Gary Gonyea, DEP, and William Wilcox, MVC. Those comments were appreciated and considered in editing the draft to produce this final report. The comment letters are included here.

COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS
DEPARTMENT OF ENVIRONMENTAL PROTECTION
20 RIVERSIDE DRIVE, LAKEVILLE, MA 02347 508-946-2700

ARGEO PAUL CELLUCCI
Governor

JANE SWIFT
Lieutenant Governor

BOB DURAND
Secretary

LAUREN A. LISS
Commissioner

August 21, 2000

MEMO
TO: Jo-Ann Taylor, MVC
FROM: Pamela Truesdale, DEP
RE: Draft Final reports for Lagoon and Tisbury Great Ponds

Hi, Jo-Ann. I have read through both of the draft final reports, and overall, both look excellent.

I have only one real comment. This relates to both reports. The only aspect I puzzled over was the growth projections for buildout and nitrogen impacts, i.e. the "low growth", "moderate growth" and "high growth" figures. I think it would be helpful if a better explanation of what these growth numbers mean was incorporated into the text. For example, can you place growth percentage numbers on each of the growth categories...like "low" growth is a 2% increase over current figures (as an example). That would help me (and hopefully anyone else reading the Final Reports) better understand the ramifications of the anticipated nitrogen loadings associated with these growth scenarios.

I thought the reports were detailed and thorough, and although I am familiar with the project, learned quite a lot more in reading them!

Finally, have all of the final public meetings been held on the Vineyard ? If not, I would be most interested in attending one or more of the meetings, in particular to hear what the public comments are, if this is still a possibility. Let me know.

Call me if you have any questions. (508) 946-2881.

Thanks for your excellent work on this grant.

Pamela

Town of Oak Bluffs
Shellfish Department
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David W. Grunden
Shellfish Constable
Herring Warden
Marine Biologist

Town Hall: (508) 693-5511
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September 14, 2000

Jo-Ann Taylor
MV Commission

Hi Jo-Ann,

In reviewing the draft "Nutrient Loading to Lagoon Pond", I wanted to bring up a couple of things. I think it would strengthen the case to use the orw standard if you were more specific about some of the observable indicators of already elevated nitrogen in the pond. The two that come to mind are the increased growth and abundance of the green macro-algae Enteromorpha and the presence of the fungus root rot on the eel grass (Zostera marina). It is has been stated, by Phil Collaruso (I think) that this fungus is only successful against the eel grass because the eel grass plant is already stressed from elevated nitrogen.

The other change I would like to see is the inclusion of both Maderias Cove and Vineyard Ave. Ext. as notable areas that storm water runoff enters the Lagoon (page 37). This would probably help as this report could then be cited in applying for the Coastal Pollution Remediation funding that we discussed the other day.

One other small thing is you should spell out all your anachronisms at least once in the report. Ie: do you mean Best Management Practices by BMP?

Thank you for the opportunity to comment,

Dave

APPENDIX III

SUBDIVISION CANDIDATES
OPEN SPACE LOTS
POTENTIAL OPEN SPACE ACQUISITIONS
LAND USE DATA

Subdivision Candidates: Lagoon Pond Watershed									
martha's vineyard commission									
town	map	lot	acres	built	vacant	ag	other		new DU
Subdivision Candidates: Lagoon Pond Watershed									
martha's vineyard commission									
town	map	lot	acres	built	vacant	ag	other		new DU
VH	9	A23	3.39	1					3
VH	9	A24	3.08	1					3
VH	9	A25	4.54	1					5
VH	11	A29	1.61	1					1
VH	11	A29.01	1.22	1					1
VH	11	A30	2.26	1					2
VH	12	B13	0.72	1					3
VH	12	B15	1.94	1					6
VH	12	B16	1.02	1					3
VH	12	B17	2.65	1					9
VH	12	B8	0.51	1					1
VH	12	C18	0.80	1					2
VH	12	D24	1.48	1					4
VH	12	D27	0.79	1					2
VH	12	G8	1.03	1					3
VH	12	J1	1.59	1					5
VH	12	J2	0.68	1					1
VH	13	B2	4.50	1					3
VH	13	D7	3.40	1					1
VH	14	A1	7.50	1					13
VH	14	A15	1.94	1					1
VH	14	A2	3.38		1				5
VH	14	A3	4.12						7
VH	14	A7	1.09	1					1
VH	14	A8	1.27	1					1
VH	14	A9	1.07	1					1
VH	14	B1	2.49	1					3
VH	14	B1.02	1.08	1					1
VH	14	B1.04	1.23	1					1
VH	14	B1.05	1.23	1					1
VH	14	B1.06	1.23	1					1
VH	14	B2	2.73	1					4
VH	15	A3	3.72	1					4
VH	16	A21.01	4.61		1				5
VH	16	A22	1.94		1				1
VH	16	A23	4.90	1					1
VH	16	A23.02	2.80		1				1
VH	16	A23.03	3.10		1				3
VH	16	A23.04	4.20		1				1
VH	16	M1.02	1.53		1				3
VH	16	N1	1.70	1					1
VH	17	A1	18.00			1			9
VH	17	A10	0.84		1				1
VH	17	A11	6.06			1			2
VH	17	A2	2.20	1					1
VH	17	A4	2.24	1					1
VH	18	A5	1.68	1					2
VH	18	A6	1.76		1				2
VH	18	A8	3.18		1				5
VH	18	A8.01	3.00		1				5
VH	18	A8.02	2.95		1				4
VH	19	A16	1.44		1				1

Subdivision Candidates: Lagoon Pond Watershed									
martha's vineyard commission									
town	**map**	**lot**	**acres**	**built**	**vacant**	**ag**	**other**		**new DU**
VH	19	A19	5.44	1					9
VH	19	A20	6.47						11
VH	44	A1	4.60	1					8
VH	44	A1.01	3.00	1					5
VH	44	A1.02	3.13		1				5
VH	44	A1.03	3.13		1				5
VH	44	A2	23.90	1					45
VH	44	A3	1.33	1					1
VH	44	A4	20.00		1				38
VH	44	A5	12.71		1				23
VH	44	A5.01	2.50	1					3
VH	44	A7	1.75	1					2
VH	45	A1	33.60	1					64
VH	46	A2	4.74		1				8
VH	46	A2.01	2.10		1				3
VH	46	A4	4.40		1				7
Total, Tisbury:			***272.22***	***44***	***20***	***2***			***388***
WT	9	1.01	8.20			1	Chicama		1
WT	9	2.00	12.20			1	Chicama		2
Wt	9	4.00	8.90			1	Chicama		1
WT	16	118.00	25.90		1				7
WT	16	230.00	17.60	1					4
Total, West Tisbury:			***72.80***	***1***	***1***	***3***			***15***
OB	6	32	2.20		1				2
OB	6	44	1.50	1					1
OB	7	7	8.10	1					3
OB	7	15	1.86	1					1
OB	7	15.01	1.71	1					1
OB	7	15.02	1.83	1					1
OB	7	81	0.77		1				2
OB	7	96	0.77		1				2
OB	7	118	1.30		1				3
OB	7	119	0.64	1					1
OB	12	43	0.51	1					1
OB	12	59	0.52	1					1
OB	12	59.5	0.52	1					1
OB	12	64	1.05	1					3
OB	12	85	1.20	1					3
OB	12	88	0.59		1				1
OB	12	92	0.62	1					1
OB	12	93	1.08	1					3
OB	12	98	0.82	1					2
OB	12	101	0.51	1					1
OB	12	107	0.84	1					2
OB	12	107.02	0.59	1					1
OB	12	126	3.94		1				6
OB	12	127.06	0.72	1					1
OB	12	131.06	1.05	1					3
OB	13	17	1.80	1					1
OB	13	48	1.70	1					1
OB	15	2	4.30	1					2
OB	15	66	3.34	1					3
OB	15	68	1.53		1				1
OB	16	7	0.55	1					1

Subdivision Candidates: Lagoon Pond Watershed									
martha's vineyard commission									
town	map	lot	acres	built	vacant	ag	other		new DU
OB	16	11	0.69	1					1
OB	16	25	0.58	1					1
OB	16	38	1.69	1					2
OB	16	39	0.92	1					2
OB	16	40	0.55		1				1
OB	16	41	0.51	1					1
OB	16	48	0.66		1				1
OB	16	64	0.92	1					2
OB	16	66.01	0.52	1					1
OB	16	79	0.57		1				1
OB	16	85	0.57	1					1
OB	16	87	0.69	1					1
OB	16	97	0.57	1					1
OB	16	104	1.66		1				5
OB	16	177.09	0.75		1				2
OB	21	20	1.60		1		ob		2
OB	21	27	1.30		1		junk		1
OB	21	37	1.50		1		junk		1
OB	22	32	1.80		1				1
OB	22	33	1.75		1				1
OB	22	36	0.50	1					1
OB	22	48	1.96		1				7
OB	22	49	1.75		1				1
OB	22	57	1.00		1				3
OB	22	59	1.30		1				1
OB	22	73	0.66	1					1
OB	22	74	0.56	1					1
OB	25	5	7.60		1				4
OB	26	6	4.50		1				2
OB	27	17	12.10		1				7
OB	27	18.51	6.80	1					3
OB	28	1	34.80		1				22
OB	28	13	1.06		1				3
OB	29	166	3.40		1		OBRHC		1
OB	35	3	36.00	1					23
OB	36	10	10.00		1				2
OB	36	11	10.00		1		ob		5
OB	37	1.04	4.18	1					1
OB	38	1	20.40		1				12
OB	38	7	6.60	1					3
OB	38	8	8.70	1					4
OB	38	8.01	6.50		1				3
OB	39	1	3.20	1					1
OB	39	3	10.00		1				5
OB	40	1	3.49	1					1
OB	40	1.03	3.03	1					1
OB	40	2	6.60		1		ob		3
OB	40	3	6.30			1	Elisha Smith	61A	1
OB	40	4	21.50			1	Norton Farm	61A	6
OB	40	6	10.00		1				5
OB	40	7	26.40		1				16
OB	40	12	11.80			1	Norton Farm	61A	2
OB	41	5	6.30	1					1
OB	41	6	25.30	1					7
OB	50	1	4.25	1					1
OB	51	1	3.03		1				1

Subdivision Candidates: Lagoon Pond Watershed									
martha's vineyard commission									
town	**map**	**lot**	**acres**	**built**	**vacant**	**ag**	**other**		**new DU**
OB	51	1.02	3.43		1				1
OB	51	3	12.95		1				7
OB	52	1.1	5.08	1					1
OB	52	1.3	5.04	1					1
OB	52	6	3.30	1					1
OB	53	1	3.30	1					1
OB	53	1.01	3.30	1					1
OB	54	1	45.51		1		ob		29
OB	54	2	10.81		1		ob		6
Total, Oak Bluffs:			***482.55***	***53***	***40***	***3***			***294***
Total watershed:			**827.57**	**98**	**61**	**8**			**697**

Lagoon Pond Watershed Open Space Lots											
m v c	1999										
town	map	lot	acres	built	vacant	OS	AG.	owner	notes	zone	
Lagoon Pond Watershed Open Space Lots											
m v c	1999										
town	map	lot	acres	built	vacant	OS	AG.	owner	notes	zone	
WT	9	1.01	8.20		1	1	1	Chicama	61A		
WT	9	2.00	12.26		1	1	1	Chicama	61A		
WT	9	4.00	8.85	1		1	1	Chicama	61A		
WT	16	260.02	0.17		1	1					
WT	18	1.00	252.10		1	1		greenlands			
WT	27	1.00	17.80		1	1		State Forest			
OB	6	7.00	0.01		1	1		not buildable		R1	
OB	6	8.00	14.80	1		1	1	State Lobster Hatchery		R1	
OB	6	9.00	0.26		1	1		not buildable		R1	
OB	6	12.00	0.33		1	1		not buildable		R1	
OB	6	20.00	0.29		1	1		not buildable		R1	
OB	6	27.00	0.06		1	1		not buildable		R1	
OB	7	15.03	0.25		1	1		Oak Bluffs		R1	
OB	7	27.00	0.13		1	1		not buildable		R1	
OB	7	45.00	0.06		1	1		Oak Blufs		R1	
OB	7	53.00	0.05		1	1		not buildable		R1	
OB	12	62.00	0.06		1	1		not buildable		R1	
OB	12	63.01	0.06		1	1		not buildable		R1	
OB	12	123.00	0.12		1	1		Oak Bluffs		R1	
OB	12	123.01	0.17		1	1		Oak Bluffs		R1	
OB	13	6.00	0.03		1	1		not buildable		R1	
OB	13	11.00	0.09		1	1		not buildable		R1	
OB	13	19.00	0.23		1	1		Oak Bluffs		R1	
OB	13	23.00	0.23		1	1		Oak Bluffs		R1	
OB	13	28.00	0.08		1	1		not buildable		R1	
OB	13	36.00	1.40		1	1		Oak Bluffs		R1	
OB	13	50.00	0.42		1	1		not buildable		R1	
OB	13	50.01	0.64		1	1		not buildable		R1	
OB	15	1.00	2.70		1	1		Oak Bluffs		R3	
OB	15	30.01	0.40		1	1		not buildable		R3	
OB	15	64.00	0.92		1	1		Oak Bluffs		R1	
OB	15	65.00	0.92		1	1		Oak Bluffs		R1	
OB	15	80.00	0.11		1	1		not buildable		R1	
OB	15	87.00	1.20		1	1		not buildable		R1	
OB	16	6.00	0.11		1	1		not buildable		R1	
OB	16	24.00	0.11		1	1		not buildable		R1	
OB	16	30.00	0.11		1	1		not buildable		R1	
OB	16	33.00	0.11		1	1		not buildable		R1	
OB	16	34.00	0.12		1	1		Oak Bluffs		R1	
OB	16	49.00	0.35		1	1		Oak Bluffs		R1	
OB	16	58.00	0.35		1	1		Oak Bluffs		R1	
OB	16	76.00	0.11		1	1		not buildable		R1	
OB	21	20.00	1.60		1	1		Oak Bluffs		R1	

Lagoon Pond Watershed Open Space Lots											
m v c	1999										
town	map	lot	acres	built	vacant	OS	AG.	owner	notes	zone	
OB	22	3.00	3.58		1	1		Oak Bluffs		R3	
OB	22	4.00	2.80		1	1		Oak Bluffs		R3	
OB	22	5.00	6.80		1	1		Oak Bluffs		R3	
OB	22	42.00	0.45		1	1		Oak Bluffs		R1	
OB	22	44.00	0.23		1	1		Oak Bluffs		R1	
OB	22	54.00	1.00		1	1		not buildable		R1	
OB	22	62.00	0.23		1	1		Oak Bluffs		R1	
OB	22	63.00	0.69		1	1		Oak Bluffs		R1	
OB	22	64.00	0.69		1	1		Oak Bluffs		R1	
OB	23	3.00	0.09		1	1		not buildable		R3	
OB	25	1.00	0.08		1	1		not buildable		R3	
OB	25	6.00	2.60		1	1		not buildable		R3	
OB	25	7.00	14.00		1	1		Land Bank		R3	
OB	25	8.00	5.61		1	1		Land Bank		R3	
OB	27	18.52	4.87		1	1		private		R3	
OB	28	2.74	1.00		1	1		private		R3	
OB	28	2.75	9.30		1	1		private		R3	
OB	28	2.76	7.80		1	1		private		R3	
OB	34	52.46	1.09		1	1		not buildable		R3	
OB	34	52.47	2.74		1	1		not buildable		R3	
OB	34	52.49	8.85		1	1		not buildable		R3	
OB	34	52.50	2.12		1	1		not buildable		R3	
OB	34	52.88	7.78		1	1		not buildable		R3	
OB	36	8.04	1.10		1	1		road		R3	
OB	37	54.00	2.40		1	1	1	Norton Farm	61A	R3	
OB	38	11.00	7.00		1	1		not buildable		R3	
OB	40	3.00	6.30		1	1	1	Elisha Smith	61A	R3	
OB	40	4.00	21.50		1	1	1	Norton Farm	61A	R3	
OB	40	5.00	1.40		1	1	1	Elisha Smith	61A	R3	
OB	40	12.00	11.80		1	1	1	Norton Farm	61A	R3	
OB	41	6.00	25.30	1		1		private		R4	
OB	50	3.00	0.38		1	1		USA		R3	
OB	50	74.00	1.73		1	1		private		R3	
OB	50	75.00	1.17		1	1		private		R3	
OB	50	84.00	2.48		1	1		private		R3	
OB	51	1.00	3.03		1	1		private		R3	
OB	51	1.02	3.43		1	1		private		R3	
OB	51	1.29	18.89		1	1		private		R3	
OB	51	1.30	4.09		1	1		private		R3	
OB	51	1.31	7.75		1	1		private		R3	
OB	51	1.33	5.00		1	1		private		R3	
OB	51	9.00	9.29		1	1		private		R3	
OB	51	10.00	8.52		1	1		private		R3	
OB	52	1.00	10.43		1	1		private		R3	
OB	55	1.00	3.38		1	1		private		R3	
OB	55	2.00	23.70			1		MVRHS		R3	
OB	55	3.00	1.37		1	1		road		R3	

Lagoon Pond Watershed Open Space Lots											
m v c	1999										
town	map	lot	acres	built	vacant	OS	AG.	owner	notes	zone	
OB	55	4.00	23.70			1		MVRHS		R3	
OB	55	47.00	2.64		1	1		private		R3	
OB	55	48.00	2.89		1	1		private		R3	
VH	9	A41	10.62			1		Tisbury		R10	
VH	10	B2	0.16		1	1		not buildable		W	
VH	10	B4	4.70		1	1		Tisbury		W	
VH	11	A1	0.10		1	1		not buildable		R20	
VH	11	A3	0.02		1	1		not buildable		R20	
VH	11	A47	0.46		1	1		not buildable		R20	
VH	11	A49	0.23		1	1		not buildable		R20	
VH	12	D19.01	2.10		1	1		not buildable		R50	
VH	12	D28	1.01		1	1		not buildable		R10	
VH	12	K1	0.15		1	1		Tisbury		R10	
VH	13	A1	2.30		1	1		Land Bank		R50	
VH	13	A1.01	2.24		1	1		Land Bank		R50	
VH	13	A1.02	2.14		1	1		Land Bank		R50	
VH	13	D1	0.83		1	1		Land Bank		R50	
VH	13	D2	0.34		1	1		Tisbury		R50	
VH	13	D3	2.14		1	1		Tisbury		R50	
VH	13	D4	1.55		1	1		Tisbury		R50	
VH	14	B1.33	0.21		1	1		not buildable		R20	
VH	15	B4	8.83		1	1		Sheriff's Meadow		R20	
VH	16	A21.02	1.59		1	1		Sheriff's Meadow		R20	
VH	16	A23.01	1.31			1		not buildable		R50	
VH	16	A23.05	0.02		1	1		not buildable		R20	
VH	16	H1.03	1.06		1	1		not buildable		R20	
VH	16	L1	1.20			1		not buildable		R20	
VH	16	L2	0.11		1	1		not buildable		R20	
VH	16	N3.01	0.10		1	1		not buildable		R20	
VH	16	N6	0.39		1	1		not buildable		R20	
VH	17	A7	0.16		1	1		not buildable		R50	
VH	18	A2	0.01		1	1		not buildable		R20	
VH	46	A1	22.23		1	1		private		R20	
			691.75 acres total								

Potential Open Space Aquisitions: Lagoon Pond Watershed

town	map	lot	acres	built	vacant	ag	other	zone	new DU
OB	12	126	3.94		1			R1	6
OB	16	104	1.66		1			R1	5
OB	22	48	1.96		1			R1	7
OB	27	17	12.10		1			R3	7
OB	28	1	34.80		1			R3	22
OB	35	3	36.00	1				R3	23
OB	36	11	10.00		1		ob	R3	5
OB	38	1	20.40		1			R3	12
OB	39	3	10.00		1			R3	5
OB	40	4	21.50			1	Norton Farm (61A	R3	6
OB	40	6	10.00		1			R3	5
OB	40	7	26.40		1			R3	16
OB	41	6	25.30	1				R4	7
OB	51	3	12.95		1			R3	7
OB	54	1	45.51		1		ob	R3	29
OB	54	2	10.81		1		ob	R3	6
VH	9	A25	4.54	1				R10	5
VH	12	B15	1.94	1				R10	6
VH	12	B17	2.65	1				R10	9
VH	12	J1	1.59	1				R10	5
VH	14	A1	7.50	1				R20	13
VH	14	A2	3.38		1			R20	5
VH	14	A3	4.12					R20	7
VH	16	A21.01	4.61		1			R20	5
VH	17	A1	18.00			1		R50	9
VH	18	A8	3.18		1			R20	5
VH	18	A8.01	3.00		1			R20	5
VH	19	A19	5.44	1				R20	9
VH	19	A20	6.47					R20	11
VH	44	A1	4.60	1				R20	8
VH	44	A1.01	3.00	1				R20	5
VH	44	A1.02	3.13		1			R20	5
VH	44	A1.03	3.13		1			R20	5
VH	44	A2	23.90	1				R20	45
VH	44	A4	20.00		1			R20	38
VH	44	A5	12.71		1			R20	23
VH	45	A1	33.60	1				R20	64
VH	46	A2	4.74		1			R20	8
VH	46	A4	4.40		1			R20	7
WT	16	118.00	25.90		1				7
	Total acres:		**488.86**			**Total new dwelling units:**			**477**

Included are all lots, vacant or built, with the potential to be subdivided to produce five of more new dwelling units. The size of a qualifying lot differs according to the zoning district the lot is located in.

zoning key		
OB R1 = 10000 sq. ft.	VH R10 = 10000 sq. ft.	WT = 3 acre
OB R2 = 20000 sq. ft.	VH R20 = 20000 sq. ft.	
OB R3 = 60000 sq. ft.	VH R50 = 50000 sq. ft.	
OB R4 = 120000 sq. ft.		

filename: AQUIRLAG.WK4

LAGOON POND WATERSHED - WEST TISBURY

martha's vineyard commission — August 1999 - funded by DEP 604(b)

map	lot	acres	built	vacant	os	com	ag	other	lge.#	large	potential new d.u.
built to subdivide:											
16	230.00	17.60	1						1	17.6	4
total:		**17.60**	**1**						**1**	**17.6**	**4**
vacant to subdivide:											
16	118.00	25.90		1					1	25.9	7
total:		**25.90**		**1**					**1**	**25.9**	**7**
built:											
17	74.00	2.80	1								
17	24.00	0.82	1								
17	39.00	0.85	1								
17	111.00	1.46	1								
17	29.00	1.71	1								
17	30.00	0.82	1								
17	13.00	2.91	1								
17	11.00	2.50	1								
17	57.00	2.60	1								
17	14.00	0.95	1								
17	15.00	0.85	1								
17	25.00	0.88	1								
17	17.00	1.46	1								
17	58.01	1.49	1								
17	43.00	0.84	1								
17	21.00	0.82	1								
17	110.00	1.46	1								
18	5.00	2.92	1								
17	114.00	0.81	1								
17	112.00	0.07	1								
17	117.00	1.46	1								
17	35.00	0.89	1								
17	33.00	0.85	1								
17	41.00	0.88	1								
17	36.00	2.69	1								
17	37.00	0.88	1								
17	31.00	0.83	1								
17	38.00	1.63	1								
17	20.00	0.85	1								
17	22.00	0.85	1								
17	77.00	1.41	1								
17	23.00	0.82	1								
17	66.01	1.42	1								
17	79.00	3.00	1								
17	64.00	0.82	1								
17	65.00	2.07	1								
17	77.01	1.56	1								
17	71.00	2.00	1								
17	103.00	2.00	1								
17	72.01	1.48	1								
17	72.00	1.47	1								
17	75.00	2.60	1								
17	76.00	0.83	1								
17	78.00	1.90	1								
17	109.00	1.46	1								
17	19.00	0.88	1								
17	96.00	2.32	1								
17	60.00	2.40	1								
17	59.00	2.00	1								
17	63.00	2.20	1								
17	95.01	1.58	1								
17	97.02	1.50	1								
17	108.00	1.46	1								
17	99.00	2.50	1								
17	62.00	2.80	1								
17	101.00	2.50	1								
17	104.02	1.50	1								
17	106.00	2.50	1								
18	3.00	4.40	1								

LAGOON POND WATERSHED - WEST TISBURY

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map	lot	acres	built	vacant	os	com	ag	other	lge.#	large	potential new d.u.
15	15.00	2.50	1								
16	29.00	1.30	1								
16	24.00	1.10	1								
16	28.00	1.30	1								
9	3.00	3.50	1								
16	27.00	0.92	1								
16	119.00	1.60	1								
16	121.00	1.70	1								
16	75.00	0.63	1								
16	90.00	3.10	1								
16	83.00	0.51	1								
16	80.00	0.69	1								
16	25.00	1.40	1								
16	120.00	1.50	1								
16	72.00	0.23	1								
16	229.00	0.94	1								
16	201.00	0.51	1								
16	199.00	0.51	1								
16	192.00	0.46	1								
16	124.00	1.70	1								
16	232.00	0.88	1								
16	123.00	1.60	1								
16	122.00	1.60	1								
16	246.00	2.00	1								
16	260.01	2.20	1								
16	247.00	2.00	1								
16	77.00	1.30	1								
16	57.00	0.92	1								
16	30.00	0.92	1								
16	203.04	1.60	1								
17	3.34	2.50	1								
17	3.44	2.40	1								
17	3.43	2.48	1								
17	3.42	3.00	1								
17	3.39	2.60	1								
17	3.11	2.60	1								
17	3.09	2.40	1								
17	3.16	2.20	1								
17	3.14	2.20	1								
17	3.13	2.40	1								
17	3.12	0.81	1								
17	3.37	2.30	1								
17	3.06	2.30	1								
16	40.00	1.30	1								
17	3.05	2.20	1								
16	32.00	0.94	1								
16	31.00	0.92	1								
9	1.02	1.50	1								
17	2.25	1.50	1								
17	3.04	2.70	1								
17	2.22	1.27	1								
17	3.03	2.40	1								
17	3.02	0.86	1								
17	2.23	2.00	1								
17	3.07	0.12	1								
16	231.00	0.44	1								
16	203.06	1.60	1								
16	203.07	1.60	1								
17	131.00	1.46	1								
16	203.08	1.60	1								
17	8.00	0.83	1								
17	127.00	1.46	1								
17	140.00	1.46	1								
17	139.00	1.46	1								
17	126.00	1.46	1								
17	130.00	1.46	1								
17	119.00	2.90	1								
17	143.00	1.46	1								

LAGOON POND WATERSHED - WEST TISBURY

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map	lot	acres	built	vacant	os	com	ag	other	lge.#	large	potential new d.u.
17	123.00	1.46	1								
17	121.00	0.06	1								
17	144.00	1.46	1								
17	142.00	1.46	1								
17	145.00	1.46	1								
17	118.00	1.46	1								
17	3.46	2.00	1								
17	209.00	0.36	1								
16	228.00	0.94	1								
16	203.05	1.60	1								
17	210.00	0.36	1								
17	3.45	2.10	1								
17	9.00	2.00	1								
total:		**221.14**	**140**								
commercial / municipal:											
16	98.02	0.07				1					
16	104.00	0.92				1					
16	98.12	0.00				1					
16	98.14	0.00				1					
16	257.00	0.92				1					
16	98.00	0.93				1					
16	98.13	0.00				1					
16	224.00	0.92				1					
16	84.00	1.44				1					
16	81.02	0.38				1					
16	71.01	0.47				1					
16	82.00	0.53				1					
16	81.01	1.10				1					
16	71.00	2.10				1					
total:		**9.78**				**14**					
vacant:											
17	122.00	1.46		1							
16	125.24	1.81		1							
18	2.01	5.60		1							
17	133.00	2.90		1							
16	125.30	1.40		1							
16	97.01	1.85		1							
16	203.01	0.14		1							
16	226.00	1.90		1							
16	125.25	1.49		1							
17	215.00	2.00		1							
16	125.15	1.39		1							
16	125.17	1.38		1							
18	2.00	5.60		1							
17	129.00	1.46		1							
16	202.00	0.52		1							
16	195.00	0.46		1							
16	125.26	1.96		1							
16	194.00	0.46		1							
16	203.02	0.19		1							
16	125.23	1.51		1							
16	125.00	1.67		1							
16	193.00	0.46		1							
16	125.14	1.41		1							
17	67.00	2.10		1							
17	83.00	1.45		1							
16	125.18	1.83		1							
16	125.28	1.73		1							
16	125.27	1.47		1							
17	141.00	1.46		1							
16	125.19	1.80		1							
17	3.38	2.50		1							
17	3.17	2.50		1							
17	70.00	3.00		1							
17	213.00	1.46		1							
16	125.13	1.39		1							

LAGOON POND WATERSHED - WEST TISBURY

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map	lot	acres	built	vacant	os	com	ag	other	lge.#	large	potential new d.u.
17	28.00	0.92		1							
17	102.00	2.50		1							
17	3.01	2.10		1							
17	3.47	2.40		1							
16	191.00	0.46		1							
16	125.16	1.38		1							
16	26.00	0.96		1							
18	4.00	0.10		1							
16	125.29	1.58		1							
17	98.00	1.46		1							
16	125.31	1.75		1							
17	112.01	1.27		1							
17	116.00	3.04		1							
17	105.00	2.50		1							
total:		**84.13**		**49**							
vacant open space:											
16	260.02	0.17			1						
27	1.00	17.80			1			State Forest			
18	1.00	252.10			1			Greenlands			
total:		**270.07**			**3**						
protected farmland:											
9	2.00	12.26			1		1	vineyards			
9	1.01	8.20			1		1	vineyards			
9	4.00	8.85			1		1	vineyards			
total:		**29.31**			**3**		**3**				
unprotected farmland:											
16	103.00	4.72					1	nursery			
total		**4.72**					**1**				
EDGARTOWN											
23	2.10	44.06			1			State Forest			
total:		**44.06**			**0**						
		acres	built	vacant	os	com	ag		lge.#	large	potential new d.u.
GRANDTOTAL:		**706.71**	**141**	**50**	**6**	**14**	**4**		**2**	**43.5**	**11**
			Land Use		**Lots**			**Potential New D.U.**			
	built to subdivide:		17.6		1			4			
	built:		221.14		140						
	commercial:		9.78		14						
	vacant to subdivide:		25.9		1			7			
	vacant:		84.13		49						
	vacant open space:		270.07		3						
	farms:		34.03		6						
	Edgartown:		44.06		1						

LAGOON POND WATERSHED - TISBURY														August 1999 - funded by DEP 604(b)				
martha's vineyard commission																		
									lge.#	Large	lge.#	Large	lge.#	Large	potential new d.u.		
map	lot	acres	built	com	vacant	os	zone	other	R10	R10	R20	R20	R50	R50	R10	R20	R50
built to	subdivide:																
9	A23	3.39	1				R10		1	3.39					3		
9	A24	3.08	1				R10		1	3.08					3		
9	A25	4.54	1				R10		1	4.54					5		
12	G8	1.03	1				R10		1	1.03					3		
12	J1	1.59	1				R10		1	1.59					5		
12	B15	1.94	1				R10		1	1.94					6		
12	C18	0.80	1				R10		1	0.80					2		
12	B8	0.51	1				R10		1	0.51					1		
12	J2	0.68	1				R10		1	0.68					1		
12	D27	0.79	1				R10		1	0.79					2		
12	B17	2.65	1				R10		1	2.65					9		
12	D24	1.48	1				R10		1	1.48					4		
12	B13	0.72	1				R10		1	0.72					3		
12	B16	1.02	1				R10		1	1.02					3		
R10		***24.22***	***14***						***14***	***24.22***					***50***		
14	A1	7.50	1				R20				1	7.50				13	
44	A1	4.60	1				R20				1	4.60				8	
14	A15	1.94	1				R20				1	1.94				1	
45	A1	33.60	1				R20				1	33.60				64	
44	A1.01	3.00	1				R20				1	3.00				5	
44	A2	23.90	1				R20				1	23.90				45	
15	A3	3.72	1				R20				1	3.72				4	
44	A7	1.75	1				R20				1	1.75				2	
44	A3	1.33	1				R20				1	1.33				1	
14	B2	2.73	1				R20	2FAM			1	2.73				4	
14	B1.04	1.23	1				R20				1	1.23				1	
11	A30	2.26	1				R20				1	2.26				2	
14	A7	1.09	1				R20				1	1.09				1	
18	A5	1.68	1				R20				1	1.68				2	
19	A19	5.44	1				R20				1	5.44				9	
11	A29.01	1.22	1				R20				1	1.22				1	
14	A8	1.27	1				R20				1	1.27				1	
14	B1.02	1.08	1				R20				1	1.08				1	
16	N1	1.70	1				R20				1	1.70				1	
44	A5.01	2.50	1				R20				1	2.50				3	
14	B1.05	1.23	1				R20				1	1.23				1	
14	B1.06	1.23	1				R20				1	1.23				1	
14	B1	2.49	1				R20	2fam			1	2.49				3	
11	A29	1.61	1				R20				1	1.61				1	
14	A9	1.07	1				R20				1	1.07				1	
R20		***111.17***	***25***								***25***	***111.17***				***176***	
17	A2	2.20	1				R50						1	2.20			
17	A3	0.45	1				R50						1	0.45			
17	A8	0.75	1				R50						1	0.75			
17	A11.01	1.32	1				R50						1	1.32			
17	A6	1.26	1				R50						1	1.26			
17	A5	1.94	1				R50						1	1.94			
17	A4	2.24	1				R50						1	2.24			
13	D7	3.40	1				R50						1	3.40			2
16	A23	4.90	1				R50						1	4.90			3
13	B2	4.50	1				R50						1	4.50			3
R50		***22.96***	***10***										***10***	***22.96***			***8***
TOTAL:		158.35	49						14	24.22	25	111.17	10	22.96		176	8
built:																	
9	A29	0.1	1				R10										
9	A28	0.12	1				R10										
9	A38	0.51	1				R10										
9	A39	0.54	1				R10										
9	A32	0.29	1				R10										
9	A30	0.19	1				R10	2FAM									
9	A34	0.22	1				R10										
9	A37	0.48	1				R10										
9	A35	0.29	1				R10	2FAM									
9	A40	0.84	1				R10										
9	A33	0.22	1				R10										
9	A26	0.31	1				R10										
9	A36	0.31	1				R10										
12	B10.08	0.00	1				R10										

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									lge.#	Large	lge.#	Large	lge.#	Large	potential new d.u.		
map	lot	acres	built	com	vacant	os	zone	other	R10	R10	R20	R20	R50	R50	R10	R20	R50
12	C10.11	0.00	1				R10										
12	H3	0.18	1				R10										
12	F2	0.32	1				R10										
12	A2	0.40	1				R10										
12	A1	0.40	1				R10										
12	A4	0.19	1				R10										
12	D15	0.43	1				R10										
12	G4	0.22	1				R10										
12	G6	0.29	1				R10										
12	B10	1.55	1				R10	condo									
12	G5	0.22	1				R10										
12	D22	0.71	1				R10										
12	D13	0.86	1				R10										
12	D10.02	0.35	1				R10	2FAM									
12	B10.01	0.00	1				R10										
12	D1	0.48	1				R10										
12	D2	0.29	1				R10										
12	E9	0.41	1				R10										
12	E9.01	0.23	1				R10										
12	E5	0.25	1				R10										
12	D17	0.41	1				R10										
12	E6.11	0.27	1				R10										
12	D10	0.35	1				R10										
12	D15	0.25	1				R10										
12	D16	0.41	1				R10										
12	D10.01	0.35	1				R10										
12	D11	0.37	1				R10										
12	B10.07	0.00	1				R10										
12	B10.09	0.00	1				R10										
12	B10.15	0.00	1				R10										
12	B10.14	0.00	1				R10										
12	B1	1.03	1				R10										
12	B10.02	0.00	1				R10										
12	B10.19	0.00	1				R10										
12	A3	0.20	1				R10										
12	B10.16	0.00	1				R10										
12	B10.20	0.00	1				R10										
12	A4.01	0.10	1				R10										
12	C5	0.14	1				R10										
12	B10.22	0.00	1				R10										
12	B10.18	0.00	1				R10										
12	B10.21	0.00	1				R10										
12	B10.25	0.00	1				R10										
12	B10.05	0.00	1				R10										
12	B10.13	0.00	1				R10										
12	B10.10	0.00	1				R10										
12	E8	0.42	1				R10										
12	B10.04	0.00	1				R10										
12	B10.06	0.00	1				R10										
12	B10.12	0.00	1				R10										
12	B10.17	0.00	1				R10										
12	B10.23	0.00	1				R10										
12	D12	0.36	1				R10										
12	B12	1.07	1				R10										
12	D21	0.27	1				R10										
12	B10.24	0.00	1				R10										
12	D8	0.16	1				R10										
12	D23	0.43	1				R10										
12	E6	0.49	1				R10										
12	D20	0.74	1				R10										
12	C6.01	0.33	1				R10										
12	E10	0.28	1				R10										
12	C3	0.31	1				R10										
12	C16	0.23	1				R10										
12	F3	0.40	1				R10										
12	C12	0.14	1				R10										
12	D30	1.20	1				R10										
12	D26	0.22	1				R10										
12	E2	0.25	1				R10										
12	B3	0.42	1				R10										

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martha's vineyard commission																		
									lge.#	Large	lge.#	Large	lge.#	Large	potential new d.u.		
map	lot	acres	built	com	vacant	os	zone	other	R10	R10	R20	R20	R50	R50	R10	R20	R50
12	D6	0.17	1				R10										
12	B9	0.32	1				R10										
12	C10	0.17	1				R10										
12	D4	0.22	1				R10										
12	D6.01	0.26	1				R10	2FAM									
12	D7	0.18	1				R10										
12	B5	0.39	1				R10										
12	C17	0.43	1				R10										
12	C15	0.73	1				R10										
12	C11	0.90	1				R10										
12	C2	0.34	1				R10										
12	G1	0.48	1				R10										
12	C8	0.33	1				R10										
12	C4	0.28	1				R10										
12	C7	0.49	1				R10										
12	B7.01	0.28	1				R10										
12	B2	0.38	1				R10										
12	B7	0.28	1				R10										
12	G10	0.30	1				R10										
12	C14	0.17	1				R10										
12	C13	0.16	1				R10										
12	G3	0.25	1				R10										
12	B2	0.38	1				R10										
12	D3	0.22	1				R10										
12	G2	0.16	1				R10										
12	F4	0.20	1				R10										
12	C6	0.50	1				R10										
12	E5.01	0.24	1				R10										
12	J5	0.19	1				R10										
12	L4	0.27	1				R10										
12	H7	0.24	1				R10										
12	J3	0.24	1				R10										
12	G7	0.32	1				R10										
12	L1	0.19	1				R10										
12	J3.01	0.24	1				R10										
12	L2	0.31	1				R10										
12	H12	0.26	1				R10										
12	H8	0.23	1				R10										
12	H9	0.25	1				R10										
12	H11	0.25	1				R10										
12	D18	0.26	1				R10										
12	E6.01	0.38	1				R10										
12	C9	0.33	1				R10										
12	L3	0.31	1				R10										
12	H12.01	0.23	1				R10										
12	H2	0.18	1				R10										
12	D5	0.25	1				R10										
12	E4	0.27	1				R10										
12	E3	0.19	1				R10										
12	C1	0.28	1				R10										
12	E1	0.69	1				R10										
12	D25	0.25	1				R10										
12	B14	0.23	1				R10										
12	E4.01	0.31	1				R10										
12	B11	0.60	1				R10										
12	H1	0.24	1				R10										
12	E10.01	0.31	1				R10										
12	H4	0.21	1				R10										
12	H10.01	0.22	1				R10										
12	H5	0.21	1				R10										
12	H10	0.22	1				R10										
12	H3.01	0.12	1				R10										
12	B10.03	0.00	1				R10										
R10		***42.29***	***147***														
11	A42	0.55	1				R20										
11	A50	0.47	1				R20										
11	A56.01	0.39	1				R20										
11	A5	0.35	1				R20										
11	A57	0.24	1				R20										
11	A22	0.46	1				R20										

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									lge.#	Large	lge.#	Large	lge.#	Large	potential new d.u.		
map	lot	acres	built	com	vacant	os	zone	other	R10	R10	R20	R20	R50	R50	R10	R20	R50
11	A48	0.53	1				R20										
11	A51	0.31	1				R20										
11	A6	0.32	1				R20										
11	A39	0.54	1				R20										
11	A10	1.22	1				R20										
11	A26	0.33	1				R20										
11	A17	0.46	1				R20										
11	A21	0.45	1				R20										
11	A13	0.54	1				R20										
11	A23	0.62	1				R20										
11	A58	0.28	1				R20										
11	A27	1.05	1				R20										
11	A15	0.48	1				R20										
11	A45	0.69	1				R20										
11	A24	0.68	1				R20										
11	A41	0.76	1				R20										
11	A26.01	0.53	1				R20										
11	A44	0.39	1				R20										
11	A4	0.48	1				R20										
11	A40	0.54	1				R20										
11	A32	0.54	1				R20										
11	A36	0.52	1				R20										
11	A8	0.44	1				R20										
11	A56	0.43	1				R20										
11	A54	0.62	1				R20										
11	A33	0.61	1				R20										
11	A55	0.85	1				R20										
11	A53	0.57	1				R20										
11	A7	0.27	1				R20										
11	A11	0.68	1				R20										
11	A43	0.53	1				R20										
11	A25	0.61	1				R20										
11	A9	0.73	1				R20										
11	A35	0.70	1				R20										
11	A46	0.37	1				R20										
11	A52	1.02	1				R20										
11	A31	0.62	1				R20										
11	A18	0.37	1				R20										
11	A14	0.64	1				R20										
11	A37	0.53	1				R20										
11	A12	0.32	1				R20										
13	C2	0.68	1				R20										
13	C1	1.08	1				R20										
14	A18	0.92	1				R20										
14	A12	0.93	1				R20										
14	A10	1.01	1				R20										
14	B5	0.44	1				R20										
14	C2	1.02	1				R20										
14	A23	0.89	1				R20										
14	A11	1.14	1				R20										
14	A20	0.82	1				R20										
14	A5	0.88	1				R20										
14	B10	0.29	1				R20										
14	B1.22	0.69	1				R20										
14	A14	1.43	1				R20										
14	B1.21	0.47	1				R20										
14	B9	0.43	1				R20										
14	C3	1.05	1				R20										
14	A16	1.08	1				R20										
14	B7	0.71	1				R20										
14	A22	1.02	1				R20										
14	B6	0.46	1				R20										
14	A21	0.95	1				R20										
14	B4	0.98	1				R20										
14	A19	0.91	1				R20										
14	B8	0.45	1				R20										
14	B1.11	0.69	1				R20										
14	B11	0.29	1				R20										
14	A6	0.78	1				R20										
15	A7	0.41	1				R20										

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									lge.#	Large	lge.#	Large	lge.#	Large	potential new d.u.		
map	lot	acres	built	com	vacant	os	zone	other	R10	R10	R20	R20	R50	R50	R10	R20	R50
15	D1.02	0.23	1				R20										
15	A4	0.49	1				R20										
15	D1.05	0.19	1				R20										
15	E4	0.40	1				R20										
15	D1.01	0.36	1				R20										
15	L3	0.51	1				R20										
15	H7	0.48	1				R20										
15	H8	0.11	1				R20										
15	A11.02	0.23	1				R20										
15	C1	0.99	1				R20										
15	M2	0.55	1				R20										
15	M5	0.23	1				R20										
15	L2	0.51	1				R20										
15	M4	0.42	1				R20										
15	M1	0.53	1				R20										
15	K2	0.47	1				R20										
15	B10	1.34	1				R20										
15	A8	0.54	1				R20										
15	A9	0.66	1				R20										
15	J6	0.51	1				R20										
15	B16	0.42	1				R20										
15	D1.03	0.13	1				R20										
15	B17.04	0.73	1				R20										
15	K5	0.51	1				R20										
15	K1	0.47	1				R20										
15	B2.02	0.28	1				R20										
15	E1	0.53	1				R20										
15	A8.01	0.46	1				R20										
15	B13	0.53	1				R20										
15	B14	0.25	1				R20										
15	B15.01	0.77	1				R20										
15	J7	0.51	1				R20										
15	K4	0.55	1				R20										
15	LJ5	0.55	1				R20										
15	M3.01	0.42	1				R20										
15	A6	0.42	1				R20										
15	D1.04	0.19	1				R20										
15	M6	0.48	1				R20										
15	B2.06	0.24	1				R20										
15	A1	0.26	1				R20										
15	A10	0.61	1				R20										
15	B2.04	0.29	1				R20										
15	F1.01	0.64	1				R20										
15	B4.01	0.79	1				R20										
15	B3	0.54	1				R20										
15	K3	0.57	1				R20										
15	B2.07	0.24	1				R20										
15	B6	1.15	1				R20										
15	B2.01	0.28	1				R20										
15	H9	0.47	1				R20										
15	H2	0.30	1				R20										
15	J3	0.11	1				R20										
15	B2.08	0.24	1				R20										
15	B17	0.62	1				R20										
15	H4	0.49	1				R20										
15	H3	0.11	1				R20										
15	F1	0.86	1				R20										
15	J4	0.66	1				R20										
15	M7	0.43	1				R20										
15	J1	0.66	1				R20										
15	L4	0.29	1				R20										
15	M3	0.61	1				R20										
15	D1	0.22	1				R20										
15	G1	0.53	1				R20										
15	H5	0.48	1				R20										
15	E5	0.34	1				R20	2FAM									
15	M3.02	0.65	1				R20										
16	C2.14	0.68	1				R20										
16	D5.01	0.17	1				R20										
16	D5.02	0.17	1				R20										

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									lge.#	Large	lge.#	Large	lge.#	Large	potential new d.u.		
map	lot	acres	built	com	vacant	os	zone	other	R10	R10	R20	R20	R50	R50	R10	R20	R50
16	A21	1.21	1				R20										
16	B1	0.58	1				R20										
16	K6	0.12	1				R20										
16	E1	0.23	1				R20										
16	D3	0.23	1				R20										
16	C2	0.57	1				R20										
16	A9	0.34	1				R20										
16	C1	0.11	1				R20										
16	K1	0.19	1				R20										
16	A18	0.68	1				R20										
16	D5	0.23	1				R20										
16	E2	0.23	1				R20										
16	A10	0.55	1				R20										
16	A25	0.80	1				R20										
16	A17	0.52	1				R20										
16	N3	0.82	1				R20										
16	C2.02	0.72	1				R20										
16	C2.18	0.64	1				R20										
16	J1.03	0.69	1				R20										
16	E5.01	0.46	1				R20										
16	H1.01	0.67	1				R20										
16	A20	1.22	1				R20										
16	N2	0.96	1				R20										
16	A19	0.46	1				R20										
16	K5	0.32	1				R20										
16	E5	0.57	1				R20										
16	C2.01	0.59	1				R20										
16	D4	0.34	1				R20										
16	C2.13	0.96	1				R20										
16	F2.02	0.34	1				R20										
16	E3	0.11	1				R20										
16	N5	0.54	1				R20										
16	J1.21	0.46	1				R20										
16	C2.12	0.64	1				R20										
16	N4	1.10	1				R20										
16	F2	0.32	1				R20										
16	J1.01	0.46	1				R20										
16	K4	0.69	1				R20										
16	D1	0.46	1				R20										
16	J1.02	0.92	1				R20										
16	F1	0.37	1				R20										
16	E4	0.23	1				R20										
16	C2.03	0.45	1				R20										
16	D2	0.23	1				R20										
16	C2.11	0.64	1				R20										
16	K2	0.48	1				R20										
16	A6	0.52	1				R20										
16	H1.02	0.33	1				R20										
16	G1	0.86	1				R20										
18	A4	0.90	1				R20										
18	A7	15.06	1				R20	camp									
18	A3	0.14	1				R20										
19	A31	0.51	1				R20										
19	A29	0.51	1				R20										
19	A32	0.51	1				R20										
19	A28	0.51	1				R20										
19	A30	0.51	1				R20										
46	A3	0.86	1				R20										
46	A3.01	0.96	1				R20										
R20		***127.81***	***205***														
12	D19.02	2.03	1				R50										
12	D19	1.95	1				R50										
12	D19.04	1.63	1				R50										
13	D6.02	0.98	1				R50										
13	B3.01	1.50	1				R50										
13	B4.21	1.18	1				R50										
13	D11	2.29	1				R50										
13	B1	1.21	1				R50										
13	B3	1.97	1				R50										
13	D14	1.32	1				R50										

LAGOON POND WATERSHED - TISBURY														August 1999 - funded by DEP 604(b)				
martha's vineyard commission																		
									lge.#	Large	lge.#	Large	lge.#	Large	potential new d.u.		
map	lot	acres	built	com	vacant	os	zone	other	R10	R10	R20	R20	R50	R50	R10	R20	R50
13	D15	1.60	1				R50										
13	A2	2.07	1				R50										
13	A3	1.15	1				R50										
13	D9	1.18	1				R50										
13	B4.01	1.40	1				R50										
13	D7.01	1.15	1				R50										
13	B1.12	1.23	1				R50										
13	D6	1.38	1				R50										
13	A3.01	0.92	1				R50										
13	B4.02	1.86	1				R50										
13	B3.11	1.10	1				R50										
13	D8	2.25	1				R50										
16	A1.01	0.63	1				R50										
16	A12	1.21	1				R50										
16	A7	0.46	1				R50										
16	A1	0.63	1				R50	2FAM									
16	A13	0.85	1				R50										
16	A8	0.35	1				R50										
16	A5	0.47	1				R50										
R50		***37.95***	***29***														
9	B26	0.54	1				W										
9	B19.02	0.00	1				W										
9	B25.04	0.00	1				W										
9	B24	0.16	1				W										
9	B28	0.27	1				W										
9	B25.06	0.00	1				W										
9	B19.14	0.00	1				W										
9	B26.07	0.00	1				W										
9	B25.03	0.00	1				W										
9	B25.05	0.00	1				W										
9	B19.01	0.00	1				W										
9	B25.10	0.00	1				W										
9	B27	0.45	1				W	2 FAM									
9	B25.01	0.00	1				W										
10	B5	0.23	1				W										
W		***1.65***	***15***														
TOTAL		209.70	396														
commercial / municipal:																	
9	A31	0.22		1			R10										
12	B4	0.84		1			R10										
14	A3	4.12		1			R20				1	4.12				7	
15	B7	0.46		1			R20										
15	B17.02	1.39		1			R20										
19	A19.02	0.69		1			R20										
19	A19.03	0.36		1			R20										
19	A20	6.47		1			R20				1	6.47				11	
9	B19.05	0.00		1			W										
9	B19.09	0.00		1			W										
9	B19.13	0.00		1			W										
9	B19.11	0.00		1			W										
9	B19.03	0.00		1			W										
9	C14	0.33		1			W										
9	B30	0.40		1			W										
9	B34	0.51		1			W										
9	B25.09	0.00		1			W										
9	C16	0.76		1			W										
9	B19.16	0.00		1			W										
9	B19.12	0.00		1			W										
9	C15	0.29		1			W										
9	B19.21	0.00		1			W										
9	B19.10	0.00		1			W										
9	B29	0.26		1			W										
9	C13	1.13		1			W										
9	B19.20	0.00		1			W										
9	B19.07	0.00		1			W										
9	B19.18	0.00		1			W										
9	B19.08	0.00		1			W										
9	B31.02	0.27		1			W										
9	B32	0.39		1			W										

LAGOON POND WATERSHED - TISBURY														August 1999 - funded by DEP 604(b)				
martha's vineyard commission																		
									lge.#	Large	lge.#	Large	lge.#	Large	potential new d.u.		
map	lot	acres	built	com	vacant	os	zone	other	R10	R10	R20	R20	R50	R50	R10	R20	R50
9	B19.24	0.00		1			W										
9	B19.04	0.00		1			W										
9	B19.06	0.00		1			W										
9	B19.25	0.00		1			W										
9	B19.26	0.00		1			W										
9	B19.22	0.00		1			W										
9	B31	0.26		1			W										
9	B33	1.10		1			W										
9	B19.17	0.00		1			W										
9	C12	0.47		1			W										
9	B25.02	0.00		1			W										
9	B19.23	0.00		1			W										
9	B19.15	0.00		1			W										
10	B1	1.48		1			W										
TOTAL:		**22.20**		**45**							**2**	**10.59**				**18**	
vacant to subdivide:																	
9	A2	4.74			1		R20				1	4.74				8	
12	A16	1.44			1		R20				1	1.44				1	
13	A8	3.18			1		R20				1	3.18				5	
14	A6	1.76			1		R20				1	1.76				2	
16	M1.02	1.53			1		R20				1	1.53				1	
16	A21.01	4.61			1		R20				1	4.61				5	
16	A5	12.71			1		R20				1	12.71				23	
16	A2	3.38			1		R20				1	3.38				5	
16	A8.02	2.95			1		R20				1	2.95				4	
16	A4	4.40			1		R20				1	4.40				7	
16	A4	20.00			1		R20				1	20.00				38	
16	A8.01	3.00			1		R20				1	3.00				5	
19	A1.02	3.13			1		R20				1	3.13				5	
19	A1.03	3.13			1		R20				1	3.13				5	
46	A22	1.94			1		R20				1	1.94				1	
46	A23.03	3.10			1		R20				1	3.10				3	
46	A2.01	2.10			1		R20				1	2.10				3	
R20		***77.10***			***17***						***17***	***77.10***				***121***	
18	A10	0.84			1		R50						1	0.84			1
46	A23.02	2.80			1		R50						1	2.80			1
18	A9	2.04			1		R50						1	2.04			1
18	A23.04	4.20			1		R50						1	4.20			3
R50		***9.88***			***4***								***4***	***9.88***			***6***
TOTAL:		**86.98**			**21**						**17**	**77.10**	**4**	**9.88**		**121**	**6**
vacant:																	
9	E7	0.27			1		R10										
12	G2.01	0.19			1		R10										
12	J4	0.20			1		R10										
13	A33.01	0.15			1		R10										
15	D29	0.55			1		R10										
15	A27	0.13			1		R10										
15	F1	0.21			1		R10										
15	H6	0.23			1		R10										
44	D9	0.35			1		R10										
R10		***2.28***			***9***												
11	A8	0.62			1		R20										
11	A1.01	0.10			1		R20										
11	E1.01	0.47			1		R20										
11	B10.01	0.23			1		R20										
11	C1	0.92			1		R20										
11	A2	0.09			1		R20										
11	A38	0.05			1		R20										
12	B11	0.11			1		R20										
12	B2	0.39			1		R20										
13	B1	0.34			1		R20										
13	A1	0.01			1		R20										
13	C2.17	0.25			1		R20										
13	B1.01	0.47			1		R20										
14	E2	0.40			1		R20										
14	A5	0.51			1		R20										
14	H1	0.33			1		R20										
14	A24	0.57			1		R20										

LAGOON POND WATERSHED - TISBURY														August 1999 - funded by DEP 604(b)				
martha's vineyard commission																		
									lge.#	Large	lge.#	Large	lge.#	Large	potential new d.u.		
map	lot	acres	built	com	vacant	os	zone	other	R10	R10	R20	R20	R50	R50	R10	R20	R50
14	B17.03	0.51			1		R20										
14	B1.01	0.78			1		R20										
14	A4	1.00			1		R20										
14	B1.32	0.46			1		R20										
14	B1.31	0.46			1		R20										
15	A24.02	0.24			1		R20										
15	B15.02	0.49			1		R20										
15	J2	0.21			1		R20										
15	A26.02	0.06			1		R20										
15	B8	0.29			1		R20										
15	A17	0.98			1		R20										
15	A11	0.24			1		R20										
15	J1	0.11			1		R20										
15	A24.01	0.58			1		R20										
15	F1.02	0.20			1		R20										
15	B3	0.97			1		R20										
15	A9.01	0.25			1		R20										
15	B5	0.19			1		R20										
15	H6	0.11			1		R20										
15	H1	0.29			1		R20										
15	A16	0.41			1		R20										
15	B9	0.08			1		R20										
16	M1	0.97			1		R20										
16	F2.01	0.34			1		R20										
16	J1	0.46			1		R20										
16	A56.02	0.02			1		R20										
16	A4.01	1.00			1		R20										
16	K7	0.23			1		R20										
16	A16	0.50			1		R20										
16	G2	0.48			1		R20										
16	A9	0.51			1		R20										
16	K3	0.23			1		R20										
17	A13	0.96			1		R20										
17	A11.03	0.48			1		R20										
17	A19	0.41			1		R20										
18	C2.15	0.27			1		R20										
44	A2	0.08			1		R20										
46	G2.01	0.48			1		R20										
R20		***22.19***			***55***												
13	B1.01	1.00			1		R50										
13	B4	1.49			1		R50										
14	B1.11	1.00			1		R50										
15	D5	1.13			1		R50										
16	B4.03	0.48			1		R50										
16	D13	1.24			1		R50										
16	B4.26	0.50			1		R50										
17	A12.01	0.15			1		R50										
18	B4.22	1.19			1		R50										
44	A4	1.69			1		R50										
44	D10	0.56			1		R50										
R50		***10.43***			***11***												
9	B19	4.10					W	condo									
W		***4.10***															
TOTAL:		39.00			75												
9	A41	10.62				1	R10										
12	D28	1.01			1	1	R10										
12	K1	0.15			1	1	R10										
R10		***11.78***				***3***											
11	A1	0.10			1	1	R20										
11	A47	0.46			1	1	R20										
11	A3	0.02			1	1	R20										
11	A49	0.23			1	1	R20										
14	B1.33	0.21			1	1	R20										
15	B4	8.83			1	1	R20										
16	L2	0.11			1	1	R20										
16	A23.05	0.02			1	1	R20										
16	N3.01	0.10			1	1	R20										
16	H1.03	1.06			1	1	R20										

LAGOON POND WATERSHED - TISBURY														August 1999 - funded by DEP 604(b)				
martha's vineyard commission																		
									lge.#	Large	lge.#	Large	lge.#	Large	potential new d.u.		
map	lot	acres	built	com	vacant	os	zone	other	R10	R10	R20	R20	R50	R50	R10	R20	R50
16	A21.02	1.59			1	1	R20										
16	N6	0.39			1	1	R20										
16	L1	1.20				1	R20										
18	A2	0.01			1	1	R20										
46	A1	22.23			1	1	R20										
R20		***36.56***				***15***											
12	D19.01	2.10			1	1	R50										
13	A1.02	2.14			1	1	R50										
13	A1.01	2.24			1	1	R50										
13	A1	2.30			1	1	R50										
13	D3	2.14			1	1	R50										
13	D1	0.83			1	1	R50										
13	D4	1.55			1	1	R50										
13	D2	0.34			1	1	R50										
16	A23.01	1.31				1	R50										
17	A7	0.16			1	1	R50										
R50		***15.11***				***10***											
10	B2	0.16			1	1	W										
10	B4	4.70			1	1	W										
W		***4.86***				***2***											
TOTAL:		**68.31**				**30**											
agriculture:																	
18	A1	18.00				1	R50	FARM					1	18.00			
44	A11	6.06				1	R50	FARM					1	6.06			
TOTAL:		**24.06**				**2**							**2**	**24.06**			
										subdividable					potential new d.u.		
		acres	built	com	vacant	os			R10	R10	R20	R20	R50	R50	R10	R20	R50
GRAND TOTAL:		608.60	445	45	96	32			14	24.22	44	198.86	16	56.90	50	315	14
				Acres	Lots	Potential New D.U.											
	built to subdivide:			158.4	49		184										
	built:			209.7	396												
	commercial:			22.2	45		20										
	vacant to subdivide:			86.98	21		127										
	vacant:			39	75												
	vacant open space:			68.31	30												
	agriculture:			24.06	2												

LAGOON POND WATERSHED - OAK BLUFFS															August 1999 - funded by DEP 604(b)		
martha's vineyard commission																	
								Large	.#	Large	.#	Large	.#	potential new d.u.		
map	lot	acres	built	vacant	os	ag	zone	R1	R1	R3	R3	R4	R4	R1	R3	R4
builit to subdivide:																
6	44.00	1.50	1				R1	1.50	1					1		
7	7.00	8.10	1				R1	3.10	1					3		
7	15.00	1.86	1				R1	1.86	1					1		
7	15.01	1.71	1				R1	1.71	1					1		
7	15.02	1.83	1				R1	1.83	1					1		
7	119.00	0.64	1				R1	0.64	1					1		
12	43.00	0.51	1				R1	0.51	1					1		
12	59.00	0.52	1				R1	0.52	1					1		
12	59.50	0.52	1				R1	0.52	1					1		
12	64.00	1.05	1				R1	1.05	1					3		
12	85.00	1.20	1				R1	1.20	1					3		
12	92.00	0.62	1				R1	0.62	1					1		
12	93.00	1.08	1				R1	1.08	1					3		
12	98.00	0.82	1				R1	0.82	1					2		
12	101.00	0.51	1				R1	0.51	1					1		
12	107.00	0.84	1				R1	0.84	1					2		
12	107.02	0.59	1				R1	0.59	1					1		
12	127.06	0.72	1				R1	0.72	1					1		
12	131.06	1.05	1				R1	1.05	1					3		
13	17.00	1.80	1				R1	1.80	1					1		
13	48.00	1.70	1				R1	1.70	1					1		
15	66.00	3.34	1				R1	3.34	1					3		
16	7.00	0.55	1				R1	0.55	1					1		
16	11.00	0.69	1				R1	0.69	1					1		
16	25.00	0.58	1				R1	0.58	1					1		
16	38.00	1.69	1				R1	1.69	1					2		
16	39.00	0.92	1				R1	0.92	1					2		
16	41.00	0.51	1				R1	0.51	1					1		
16	64.00	0.92	1				R1	0.92	1					2		
16	66.01	0.52	1				R1	0.52	1					1		
16	85.00	0.57	1				R1	0.57	1					1		
16	87.00	0.69	1				R1	0.69	1					1		
16	97.00	0.57	1				R1	0.57	1					1		
22	36.00	0.50	1				R1	0.50	1					1		
22	73.00	0.66	1				R1	0.66	1					1		
22	74.00	0.56	1				R1	0.56	1					1		
R1		***42.44***	***36***					***37.44***	***36***					***53***		
38	7.00	6.60	1				R3			6.60	1				3	
38	8.00	8.70	1				R3			8.70	1				4	
50	1.00	4.25	1				R3			4.25	1				1	
52	1.30	5.04	1				R3			5.40	1				1	
35	3.00	36.00	1				R3			36.00	1				23	
15	2.00	4.30	1				R3			4.30	1				2	
40	1.03	3.03	1				R3			3.03	1				1	
37	1.04	4.18	1				R3			4.18	1				1	
52	1.10	5.08	1				R3			5.08	1				1	
40	1.00	3.49	1				R3			3.49	1				1	
53	1.00	3.30	1				R3			3.30	1				1	
52	6.00	3.30	1				R3			3.30	1				1	
53	1.01	3.30	1				R3			3.30	1				1	
27	18.51	6.80	1				R3			6.80	1				3	
39	1.00	3.20	1				R3			3.20	1				1	
R3		***100.57***	***15***							***100.93***	***15***				***45***	
41	6.00	25.30	1				R4					25.30	1			7
41	5.00	6.30	1				R4					6.30	1			1
R4		***31.60***	***2***									***31.60***	***2***			***8***
TOTAL:		**174.61**	**53**					**37.44**	**36**	**100.93**	**15**	**31.60**	**2**	**53**	**45**	**8**
built:																
5	20.00	0.04	1													
6	43.00	0.28	1													
6	45.00	0.30	1													
7	1.00	9.80	1													
hospital:		***10.42***	***4***													
5	17.00	0.12	1				R1									

LAGOON POND WATERSHED - OAK BLUFFS

martha's vineyard commission

August 1999 - funded by DEP 604(b)

map	lot	acres	built	vacant	os	ag	zone	Large R1	# R1	Large R3	# R3	Large R4	# R4	potential new d.u. R1	R3	R4
5	20.00	0.70	1				R1									
6	1.00	0.37	1				R1									
6	2.00	0.49	1				R1									
6	3.00	0.31	1				R1									
6	4.00	0.30	1				R1									
6	5.00	0.56	1				R1									
6	6.00	0.61	1				R1									
6	8.00	14.80	1				R1									
6	10.00	0.47	1				R1									
6	13.00	0.36	1				R1									
6	35.00	0.17	1				R1									
6	37.00	0.99	1				R1									
6	42.00	0.18	1				R1									
6	46.00	1.44	1				R1									
6	46.01	0.47	1				R1									
6	47.00	0.12	1				R1									
7	2.00	0.56	1				R1									
7	3.00	0.70	1				R1									
7	4.00	0.54	1				R1									
7	5.00	0.72	1				R1									
7	6.00	0.19	1				R1									
7	8.00	0.53	1				R1									
7	9.00	1.00	1				R1									
7	10.00	0.63	1				R1									
7	11.00	0.26	1				R1									
7	12.00	0.44	1				R1									
7	13.00	0.26	1				R1									
7	14.00	0.52	1				R1									
7	15.04	0.25	1				R1									
7	16.00	0.41	1				R1									
7	17.00	0.29	1				R1									
7	18.00	0.23	1				R1									
7	19.00	0.23	1				R1									
7	20.00	0.23	1				R1									
7	22.00	0.17	1				R1									
7	23.00	0.13	1				R1									
7	24.00	0.23	1				R1									
7	25.00	0.23	1				R1									
7	25.01	0.11	1				R1									
7	26.00	0.29	1				R1									
7	28.00	0.38	1				R1									
7	29.00	0.17	1				R1									
7	30.00	0.40	1				R1									
7	31.00	0.23	1				R1									
7	32.00	0.23	1				R1									
7	33.00	0.25	1				R1									
7	34.00	0.23	1				R1									
7	35.00	0.17	1				R1									
7	36.00	0.23	1				R1									
7	39.00	0.29	1				R1									
7	41.00	0.31	1				R1									
7	44.00	0.17	1				R1									
7	46.00	0.14	1				R1									
7	47.00	0.25	1				R1									
7	48.00	0.22	1				R1									
7	49.00	0.36	1				R1									
7	50.00	0.12	1				R1									
7	51.00	0.23	1				R1									
7	52.00	0.05	1				R1									
7	54.00	0.16	1				R1									
7	55.00	0.12	1				R1									
7	55.01	0.10	1				R1									
7	55.02	0.14	1				R1									
7	58.00	0.20	1				R1									
7	59.00	0.23	1				R1									
7	60.00	0.21	1				R1									

LAGOON POND WATERSHED - OAK BLUFFS																
martha's vineyard commission												August 1999 - funded by DEP 604(b)				
								Large	.#	Large	.#	Large	.#	potential new d.u.		
map	lot	acres	built	vacant	os	ag	zone	R1	R1	R3	R3	R4	R4	R1	R3	R4
12	15.00	0.25	1				R1									
12	15.01	0.32	1				R1									
12	15.02	0.25	1				R1									
12	16.00	0.31	1				R1									
12	16.01	0.31	1				R1									
12	17.00	0.25	1				R1									
12	18.00	0.25	1				R1									
12	19.00	0.25	1				R1									
12	19.01	0.25	1				R1									
12	20.00	0.25	1				R1									
12	22.00	0.25	1				R1									
12	23.00	0.12	1				R1									
12	24.00	0.32	1				R1									
12	26.00	0.19	1				R1									
12	27.00	0.15	1				R1									
12	28.00	0.26	1				R1									
12	29.00	0.34	1				R1									
12	30.00	0.23	1				R1									
12	31.00	0.23	1				R1									
12	31.01	0.23	1				R1									
12	33.00	0.13	1				R1									
12	34.00	0.22	1				R1									
12	35.00	0.13	1				R1									
12	37.00	0.19	1				R1									
12	38.00	0.32	1				R1									
12	42.00	0.12	1				R1									
12	44.00	0.44	1				R1									
12	45.00	0.23	1				R1									
12	46.00	0.38	1				R1									
12	47.00	0.19	1				R1									
12	48.00	0.19	1				R1									
12	49.01	0.19	1				R1									
12	50.00	0.47	1				R1									
12	51.00	0.23	1				R1									
12	51.01	0.23	1				R1									
12	51.02	0.18	1				R1									
12	52.00	0.23	1				R1									
12	53.00	0.23	1				R1									
12	53.01	0.29	1				R1									
12	55.00	0.23	1				R1									
12	56.00	0.23	1				R1									
12	56.10	0.50	1				R1									
12	57.00	0.23	1				R1									
12	58.00	0.34	1				R1									
12	59.00	0.25	1				R1									
12	59.07	0.40	1				R1									
12	59.08	0.40	1				R1									
12	59.09	0.40	1				R1									
12	61.00	0.23	1				R1									
12	65.00	0.32	1				R1									
12	68.00	0.27	1				R1									
12	69.00	0.34	1				R1									
12	70.00	0.30	1				R1									
12	75.00	0.19	1				R1									
12	76.00	0.27	1				R1									
12	78.00	0.27	1				R1									
12	79.00	0.27	1				R1									
12	80.01	0.23	1				R1									
12	81.00	0.27	1				R1									
12	82.00	0.30	1				R1									
12	84.00	0.27	1				R1									
12	86.00	0.45	1				R1									
12	86.01	0.70	1				R1									
12	87.00	0.39	1				R1									
12	89.00	0.39	1				R1									
12	91.00	0.40	1				R1									

LAGOON POND WATERSHED - OAK BLUFFS

martha's vineyard commission

August 1999 - funded by DEP 604(b)

map	lot	acres	built	vacant	os	ag	zone	Large R1	.# R1	Large R3	.# R3	Large R4	.# R4	potential new d.u. R1	R3	R4
12	94.00	0.35	1				R1									
12	94.02	0.39	1				R1									
12	95.00	0.46	1				R1									
12	96.00	0.35	1				R1									
12	97.00	0.34	1				R1									
12	99.00	0.44	1				R1									
12	100.00	0.17	1				R1									
12	105.00	0.11	1				R1									
12	106.00	0.23	1				R1									
12	107.01	0.50	1				R1									
12	107.08	0.34	1				R1									
12	110.00	0.23	1				R1									
12	111.00	0.11	1				R1									
12	112.00	0.23	1				R1									
12	117.00	0.25	1				R1									
12	118.00	0.23	1				R1									
12	118.00	0.23	1				R1									
12	119.00	0.23	1				R1									
12	120.00	0.23	1				R1									
12	120.01	0.23	1				R1									
12	121.00	0.23	1				R1									
12	122.00	0.23	1				R1									
12	124.00	0.68	1				R1									
12	126.01	0.29	1				R1									
12	126.03	0.30	1				R1									
12	127.00	0.32	1				R1									
12	127.04	0.73	1				R1									
12	127.08	0.23	1				R1									
12	127.09	0.25	1				R1									
12	127.12	0.29	1				R1									
12	127.13	0.29	1				R1									
12	127.14	0.30	1				R1									
12	127.15	0.60	1				R1									
12	127.17	0.55	1				R1									
12	127.19	0.31	1				R1									
12	128.00	0.23	1				R1									
12	128.03	0.23	1				R1									
12	128.04	0.26	1				R1									
12	129.02	0.24	1				R1									
12	129.03	0.23	1				R1									
12	129.04	0.24	1				R1									
12	129.05	0.26	1				R1									
12	129.07	0.23	1				R1									
12	129.09	0.24	1				R1									
12	129.10	0.23	1				R1									
12	129.11	0.23	1				R1									
12	129.12	0.23	1				R1									
12	129.13	0.23	1				R1									
12	129.15	0.23	1				R1									
12	129.16	0.23	1				R1									
12	129.17	0.26	1				R1									
12	129.18	0.23	1				R1									
12	129.21	0.23	1				R1									
12	131.00	0.45	1				R1									
12	131.02	0.28	1				R1									
12	131.04	0.28	1				R1									
12	131.07	0.27	1				R1									
12	131.08	0.36	1				R1									
12	132.00	0.14	1				R1									
12	133.00	0.40	1				R1									
12	133.03	0.54	1				R1									
12	134.00	5.20	1				R1									
12	136.00	0.39	1				R1									
12	173.00	0.23	1				R1									
13	1.00	0.23	1				R1									
13	2.00	0.76	1				R1									

LAGOON POND WATERSHED - OAK BLUFFS

martha's vineyard commission

August 1999 - funded by DEP 604(b)

map	lot	acres	built	vacant	os	ag	zone	Large R1	.# R1	Large R3	.# R3	Large R4	.# R4	potential new d.u. R1	R3	R4
15	78.00	0.62	1				R1									
15	78.01	0.25	1				R1									
15	78.02	0.25	1				R1									
15	79.00	1.03	1				R1									
15	81.00	0.11	1				R1									
15	81.01	0.34	1				R1									
15	81.02	0.23	1				R1									
15	82.00	0.28	1				R1									
15	86.00	0.24	1				R1									
15	88.01	0.23	1				R1									
15	88.02	0.22	1				R1									
15	88.03	0.21	1				R1									
15	89.00	0.23	1				R1									
15	89.01	0.27	1				R1									
15	90.00	0.46	1				R1									
15	91.00	0.42	1				R1									
15	92.00	0.50	1				R1									
15	93.00	0.12	1				R1									
15	94.03	0.23	1				R1									
15	95.00	0.12	1				R1									
15	96.00	0.23	1				R1									
15	96.01	0.46	1				R1									
15	97.00	1.10	1				R1									
15	97.01	0.52	1				R1									
15	98.00	0.35	1				R1									
15	99.00	0.35	1				R1									
16	80.0A	0.23	1				R1									
16	80.0B	0.23	1				R1									
16	80.0C	0.23	1				R1									
16	80.0D	0.23	1				R1									
16	3.00	0.11	1				R1									
16	5.00	0.11	1				R1									
16	8.00	0.24	1				R1									
16	8.01	0.28	1				R1									
16	8.02	0.29	1				R1									
16	9.00	0.22	1				R1									
16	9.01	0.22	1				R1									
16	9.02	0.22	1				R1									
16	9.03	0.31	1				R1									
16	11.01	0.26	1				R1									
16	15.00	0.11	1				R1									
16	16.00	0.34	1				R1									
16	17.00	0.23	1				R1									
16	17.01	0.23	1				R1									
16	17.02	0.23	1				R1									
16	20.00	0.12	1				R1									
16	21.00	0.23	1				R1									
16	22.00	0.11	1				R1									
16	26.00	0.23	1				R1									
16	28.00	0.23	1				R1									
16	30.01	0.11	1				R1									
16	36.00	0.23	1				R1									
16	36.01	0.23	1				R1									
16	36.03	0.23	1				R1									
16	39.01	0.23	1				R1									
16	40.01	0.23	1				R1									
16	41.01	0.36	1				R1									
16	41.02	0.23	1				R1									
16	42.00	0.38	1				R1									
16	42.01	0.26	1				R1									
16	43.00	0.25	1				R1									
16	45.00	0.41	1				R1									
16	46.00	0.23	1				R1									
16	46.01	0.11	1				R1									
16	46.02	0.23	1				R1									
16	47.00	0.46	1				R1									

LAGOON POND WATERSHED - OAK BLUFFS																
martha's vineyard commission													August 1999 - funded by DEP 604(b)			
								Large	.#	Large	.#	Large	.#	potential new d.u.		
map	lot	acres	built	vacant	os	ag	zone	R1	R1	R3	R3	R4	R4	R1	R3	R4
16	48.01	0.11	1				R1									
16	48.02	0.23	1				R1									
16	61.00	0.11	1				R1									
16	62.00	0.23	1				R1									
16	63.00	0.23	1				R1									
16	66.00	0.23	1				R1									
16	70.00	0.11	1				R1									
16	71.00	0.35	1				R1									
16	73.00	0.46	1				R1									
16	73.01	0.11	1				R1									
16	74.00	0.23	1				R1									
16	75.00	0.25	1				R1									
16	75.01	0.11	1				R1									
16	77.00	0.11	1				R1									
16	78.00	0.23	1				R1									
16	78.01	0.23	1				R1									
16	78.02	0.11	1				R1									
16	80.00	0.23	1				R1									
16	80.01	0.23	1				R1									
16	81.01	0.11	1				R1									
16	82.00	0.11	1				R1									
16	83.00	0.11	1				R1									
16	86.00	0.23	1				R1									
16	86.01	0.23	1				R1									
16	88.00	0.23	1				R1									
16	90.00	0.46	1				R1									
16	90.01	0.23	1				R1									
16	90.02	0.23	1				R1									
16	91.00	0.22	1				R1									
16	91.01	0.23	1				R1									
16	91.03	0.23	1				R1									
16	92.00	0.23	1				R1									
16	94.00	0.11	1				R1									
16	96.00	0.12	1				R1									
16	99.00	0.45	1				R1									
16	100.00	0.20	1				R1									
16	105.00	0.38	1				R1									
16	106.01	0.19	1				R1									
16	177.10	0.24	1				R1									
16	182.00	0.21	1				R1									
16	183.00	0.31	1				R1									
16	185.00	0.21	1				R1									
16	187.00	0.30	1				R1									
16	188.00	0.29	1				R1									
16	189.00	0.23	1				R1									
16	190.00	0.21	1				R1									
16	191.00	0.27	1				R1									
16	193.00	0.21	1				R1									
16	194.00	0.44	1				R1									
16	195.00	0.17	1				R1									
16	196.00	0.21	1				R1									
16	197.00	0.23	1				R1									
16	198.00	0.17	1				R1									
16	199.00	0.16	1				R1									
16	200.00	0.21	1				R1									
16	201.00	0.41	1				R1									
16	202.00	0.24	1				R1									
16	203.00	0.12	1				R1									
21	1.00	0.80	1				R1									
21	2.00	0.23	1				R1									
21	5.00	0.34	1				R1									
21	6.00	0.23	1				R1									
21	7.00	0.23	1				R1									
21	8.00	0.60	1				R1									
21	8.01	0.24	1				R1									
21	9.00	0.27	1				R1									

LAGOON POND WATERSHED - OAK BLUFFS

martha's vineyard commission

August 1999 - funded by DEP 604(b)

map	lot	acres	built	vacant	os	ag	zone	Large R1	# R1	Large R3	# R3	Large R4	# R4	potential new d.u. R1	R3	R4
21	10.00	0.46	1				R1									
21	10.01	0.11	1				R1									
21	10.02	0.14	1				R1									
21	14.00	0.46	1				R1									
21	15.00	0.23	1				R1									
21	16.00	0.44	1				R1									
21	17.00	0.80	1				R1									
21	18.01	0.23	1				R1									
21	18.02	0.23	1				R1									
21	18.03	0.23	1				R1									
21	21.00	0.24	1				R1									
21	26.00	0.34	1				R1									
21	31.01	0.12	1				R1									
21	41.01	0.23	1				R1									
21	42.00	0.23	1				R1									
21	44.00	0.23	1				R1									
21	47.00	0.23	1				R1									
21	48.00	0.23	1				R1									
21	49.00	0.23	1				R1									
21	50.00	0.12	1				R1									
21	53.00	0.23	1				R1									
21	53.01	0.24	1				R1									
21	53.02	0.11	1				R1									
21	53.04	0.11	1				R1									
21	54.00	0.23	1				R1									
21	55.00	0.23	1				R1									
21	56.00	0.23	1				R1									
21	58.00	0.29	1				R1									
21	59.00	0.23	1				R1									
21	60.00	0.46	1				R1									
21	60.01	0.23	1				R1									
21	60.02	0.11	1				R1									
21	60.03	0.27	1				R1									
21	60.04	0.21	1				R1									
21	61.00	0.23	1				R1									
21	63.00	0.23	1				R1									
21	63.01	0.46	1				R1									
21	63.02	0.23	1				R1									
21	64.00	0.18	1				R1									
21	65.00	0.12	1				R1									
21	66.00	0.23	1				R1									
21	67.00	0.23	1				R1									
21	67.01	0.23	1				R1									
21	69.00	0.34	1				R1									
21	70.01	0.22	1				R1									
21	70.02	0.22	1				R1									
21	71.00	0.26	1				R1									
21	72.00	0.50	1				R1									
21	73.00	0.23	1				R1									
21	73.01	0.11	1				R1									
21	74.00	0.23	1				R1									
21	75.00	0.25	1				R1									
21	76.00	0.23	1				R1									
21	77.00	0.96	1				R1									
21	86.00	2.20	1				R1									
21	102.00	0.28	1				R1									
21	103.00	0.34	1				R1									
21	104.00	0.23	1				R1									
21	122.00	0.23	1				R1									
21	123.00	0.23	1				R1									
22	22.04	0.23	1				R1									
22	23.00	0.23	1				R1									
22	23.01	0.25	1				R1									
22	23.02	0.25	1				R1									
22	23.03	0.23	1				R1									
22	23.04	0.23	1				R1									

LAGOON POND WATERSHED - OAK BLUFFS																
martha's vineyard commission													August 1999 - funded by DEP 604(b)			
								Large	.#	Large	.#	Large	.#	potential new d.u.		
map	lot	acres	built	vacant	os	ag	zone	R1	R1	R3	R3	R4	R4	R1	R3	R4
22	25.00	0.25	1				R1									
22	25.01	0.25	1				R1									
22	25.04	0.25	1				R1									
22	25.06	0.25	1				R1									
22	25.07	0.25	1				R1									
22	26.00	0.50	1				R1									
22	28.01	0.25	1				R1									
22	28.02	0.25	1				R1									
22	29.00	0.25	1				R1									
22	29.01	0.25	1				R1									
22	29.02	0.25	1				R1									
22	29.03	0.25	1				R1									
22	31.00	0.46	1				R1									
22	33.01	0.25	1				R1									
22	36.01	0.23	1				R1									
22	39.01	0.25	1				R1									
22	39.03	0.25	1				R1									
22	39.04	0.25	1				R1									
22	39.05	0.25	1				R1									
22	39.07	0.25	1				R1									
22	39.08	0.25	1				R1									
22	40.00	0.25	1				R1									
22	40.01	0.25	1				R1									
22	46.01	0.50	1				R1									
22	47.00	0.25	1				R1									
22	47.01	0.25	1				R1									
22	47.02	0.25	1				R1									
22	49.01	0.25	1				R1									
22	50.00	0.23	1				R1									
22	50.01	0.23	1				R1									
22	51.00	0.41	1				R1									
22	52.00	0.33	1				R1									
22	52.01	0.33	1				R1									
22	52.02	0.33	1				R1									
22	53.00	0.51	1				R1									
22	53.01	0.25	1				R1									
22	53.02	0.27	1				R1									
22	53.03	0.25	1				R1									
22	53.04	0.11	1				R1									
22	53.05	0.23	1				R1									
22	58.00	0.25	1				R1									
22	58.01	0.25	1				R1									
22	58.02	0.26	1				R1									
22	58.03	0.23	1				R1									
22	65.00	0.39	1				R1									
22	65.01	0.19	1				R1									
22	66.00	0.25	1				R1									
22	66.01	0.50	1				R1									
22	66.04	0.23	1				R1									
22	69.00	1.06	1				R1									
22	72.00	0.28	1				R1									
22	73.01	0.23	1				R1									
22	75.00	0.56	1				R1									
22	76.00	0.25	1				R1									
22	76.01	0.25	1				R1									
22	78.00	0.25	1				R1									
22	78.01	0.25	1				R1									
22	78.02	0.25	1				R1									
22	78.04	0.25	1				R1									
22	78.05	0.25	1				R1									
22	78.06	0.25	1				R1									
22	79.00	0.42	1				R1									
22	79.02	0.34	1				R1									
22	80.00	0.23	1				R1									
22	80.02	0.23	1				R1									
22	80.03	0.23	1				R1									

LAGOON POND WATERSHED - OAK BLUFFS

martha's vineyard commission

August 1999 - funded by DEP 604(b)

map	lot	acres	built	vacant	os	ag	zone	Large R1	# R1	Large R3	# R3	Large R4	# R4	potential new d.u. R1	R3	R4
22	80.04	0.23	1				R1									
22	80.05	0.23	1				R1									
22	82.00	0.25	1				R1									
22	83.00	0.23	1				R1									
22	83.01	0.23	1				R1									
22	84.00	0.11	1				R1									
22	88.00	0.14	1				R1									
22	88.01	0.11	1				R1									
22	89.00	0.23	1				R1									
22	90.00	0.13	1				R1									
22	91.00	0.13	1				R1									
22	92.00	0.23	1				R1									
22	92.03	0.23	1				R1									
22	93.00	0.24	1				R1									
22	93.01	0.24	1				R1									
22	94.00	0.21	1				R1									
22	94.01	0.23	1				R1									
22	94.02	0.24	1				R1									
22	95.00	0.39	1				R1									
22	96.00	0.43	1				R1									
22	97.00	0.23	1				R1									
22	99.01	0.11	1				R1									
22	100.00	0.12	1				R1									
22	100.02	0.12	1				R1									
22	103.00	0.58	1				R1									
22	104.00	0.68	1				R1									
22	106.00	0.22	1				R1									
22	107.01	0.23	1				R1									
22	107.20	0.22	1				R1									
22	108.00	0.12	1				R1									
22	110.00	0.35	1				R1									
22	110.01	0.23	1				R1									
22	110.03	0.17	1				R1									
22	111.00	0.21	1				R1									
22	111.01	0.23	1				R1									
22	112.00	0.91	1				R1									
22	112.02	0.23	1				R1									
22	113.01	0.46	1				R1									
22	113.02	0.34	1				R1									
22	113.03	0.23	1				R1									
22	113.04	0.34	1				R1									
22	113.05	0.23	1				R1									
22	117.00	0.25	1				R1									
28	8.00	0.13	1				R1									
28	9.01	0.28	1				R1									
28	11.00	0.23	1				R1									
R1		***205.13***	***641***													
16	178.00	0.78	1				R2									
16	179.00	0.78	1				R2									
16	180.00	0.78	1				R2									
R2		***2.34***	***3***													
15	3.00	0.90	1				R3									
15	4.00	1.50	1				R3									
15	5.00	1.70	1				R3									
15	6.00	0.59	1				R3									
15	7.00	0.66	1				R3									
15	9.00	0.91	1				R3									
15	12.00	1.03	1				R3									
15	12.00	0.44	1				R3									
15	15.00	0.47	1				R3									
15	16.00	0.46	1				R3									
15	17.00	0.46	1				R3									
15	17.01	0.35	1				R3									
15	18.00	0.55	1				R3									
15	18.20	0.32	1				R3									
15	19.00	0.40	1				R3									

LAGOON POND WATERSHED - OAK BLUFFS

martha's vineyard commission

August 1999 - funded by DEP 604(b)

map	lot	acres	built	vacant	os	ag	zone	Large R1	.# R1	Large R3	.# R3	Large R4	.# R4	potential new d.u. R1	R3	R4
15	20.00	0.74	1				R3									
22	1.00	0.39	1				R3									
22	2.00	0.51	1				R3									
22	6.00	1.80	1				R3									
22	7.00	0.50	1				R3									
22	8.00	0.50	1				R3									
22	9.00	0.44	1				R3									
22	11.00	0.59	1				R3									
22	11.01	1.80	1				R3									
22	11.02	0.52	1				R3									
22	12.00	1.00	1				R3									
22	13.00	1.00	1				R3									
22	14.00	0.48	1				R3									
22	15.00	0.46	1				R3									
22	16.00	0.44	1				R3									
22	17.00	0.41	1				R3									
22	18.00	0.52	1				R3									
22	19.00	0.54	1				R3									
22	20.02	1.56	1				R3									
22	20.03	1.56	1				R3									
22	21.02	0.23	1				R3									
22	22.01	0.33	1				R3									
22	22.02	0.36	1				R3									
22	22.03	0.34	1				R3									
22	22.05	0.31	1				R3									
22	22.07	0.29	1				R3									
23	1.00	1.30	1				R3									
23	2.00	1.67	1				R3									
23	4.00	0.60	1				R3									
23	5.00	0.99	1				R3									
23	5.01	1.25	1				R3									
23	6.00	1.86	1				R3									
26	1.00	2.10	1				R3									
26	2.00	0.33	1				R3									
26	4.00	0.50	1				R3									
27	1.00	0.84	1				R3									
27	1.01	0.91	1				R3									
27	1.02	0.54	1				R3									
27	2.00	1.00	1				R3									
27	3.00	1.50	1				R3									
27	4.00	1.20	1				R3									
27	5.00	0.80	1				R3									
27	5.01	1.50	1				R3									
27	5.02	1.10	1				R3									
27	6.00	1.40	1				R3									
27	6.01	1.50	1				R3									
27	7.00	1.10	1				R3									
27	8.00	0.64	1				R3									
27	9.00	0.62	1				R3									
27	11.01	1.41	1				R3									
27	12.00	1.30	1				R3									
27	13.00	1.30	1				R3									
27	14.00	1.00	1				R3									
27	15.00	1.40	1				R3									
27	16.00	1.40	1				R3									
27	17.01	1.61	1				R3									
27	17.02	1.50	1				R3									
27	17.04	1.76	1				R3									
27	17.05	1.38	1				R3									
27	17.07	1.00	1				R3									
27	18.00	1.30	1				R3									
27	18.53	0.81	1				R3									
27	18.54	0.81	1				R3									
27	18.56	0.76	1				R3									
27	18.57	0.73	1				R3									
27	18.59	0.18	1				R3									

LAGOON POND WATERSHED - OAK BLUFFS																
martha's vineyard commission													August 1999 - funded by DEP 604(b)			
								Large	.#	Large	.#	Large	.#	potential new d.u.		
map	lot	acres	built	vacant	os	ag	zone	R1	R1	R3	R3	R4	R4	R1	R3	R4
27	18.62	0.74	1				R3									
27	18.63	1.10	1				R3									
27	18.64	1.26	1				R3									
27	18.65	1.21	1				R3									
27	18.66	0.99	1				R3									
27	18.67	1.00	1				R3									
27	18.68	1.04	1				R3									
27	18.71	1.13	1				R3									
27	18.73	1.09	1				R3									
27	18.75	1.23	1				R3									
27	18.76	1.02	1				R3									
27	18.77	0.94	1				R3									
27	18.79	1.59	1				R3									
27	18.81	0.75	1				R3									
28	2.01	0.88	1				R3									
28	2.02	0.91	1				R3									
28	2.04	0.93	1				R3									
28	2.05	0.84	1				R3									
28	2.06	0.83	1				R3									
28	2.07	0.94	1				R3									
28	2.08	0.94	1				R3									
28	2.10	1.14	1				R3									
28	2.12	1.12	1				R3									
28	2.13	1.11	1				R3									
28	2.14	1.26	1				R3									
28	2.16	1.29	1				R3									
28	2.19	0.96	1				R3									
28	2.20	0.68	1				R3									
28	2.23	0.96	1				R3									
28	2.28	0.97	1				R3									
28	2.29	0.94	1				R3									
28	2.30	1.03	1				R3									
28	2.31	0.78	1				R3									
28	2.32	0.78	1				R3									
28	2.33	0.83	1				R3									
28	2.36	0.86	1				R3									
28	2.37	0.84	1				R3									
28	2.38	0.81	1				R3									
28	2.40	0.93	1				R3									
28	2.41	0.92	1				R3									
28	2.42	0.92	1				R3									
28	2.45	0.94	1				R3									
28	2.46	0.96	1				R3									
28	2.47	0.95	1				R3									
28	2.48	0.92	1				R3									
28	2.50	0.97	1				R3									
28	2.52	0.96	1				R3									
28	2.53	0.93	1				R3									
28	2.54	0.90	1				R3									
28	2.57	0.87	1				R3									
28	2.59	1.28	1				R3									
28	2.60	1.00	1				R3									
28	2.61	0.98	1				R3									
28	2.62	0.79	1				R3									
28	2.63	0.78	1				R3									
28	2.66	0.97	1				R3									
28	2.67	0.96	1				R3									
28	2.69	0.55	1				R3									
28	2.70	0.84	1				R3									
28	3.01	0.23	1				R3									
28	3.02	0.23	1				R3									
28	3.03	0.25	1				R3									
28	5.00	0.24	1				R3									
28	14.02	0.23	1				R3									
28	14.03	0.23	1				R3									
28	14.04	0.23	1				R3									

LAGOON POND WATERSHED - OAK BLUFFS																
martha's vineyard commission													August 1999 - funded by DEP 604(b)			
								Large	.#	Large	.#	Large	.#	potential new d.u.		
map	lot	acres	built	vacant	os	ag	zone	R1	R1	R3	R3	R4	R4	R1	R3	R4
34	52.09	0.79	1				R3									
34	52.12	0.66	1				R3									
34	52.15	0.87	1				R3									
34	52.17	0.83	1				R3									
34	52.18	0.80	1				R3									
34	52.19	0.88	1				R3									
34	52.20	1.14	1				R3									
34	52.21	0.74	1				R3									
34	52.24	0.81	1				R3									
34	52.25	0.77	1				R3									
34	52.26	0.78	1				R3									
34	52.28	0.87	1				R3									
34	52.31	8.00	1				R3									
34	52.41	0.97	1				R3									
34	52.44	0.78	1				R3									
34	52.51	0.80	1				R3									
34	52.52	0.82	1				R3									
34	52.53	0.82	1				R3									
34	52.55	0.80	1				R3									
34	52.56	0.87	1				R3									
34	52.59	0.79	1				R3									
34	52.60	0.87	1				R3									
34	52.61	0.78	1				R3									
34	52.63	0.78	1				R3									
34	52.79	0.49	1				R3									
34	52.81	0.79	1				R3									
34	52.82	0.77	1				R3									
34	52.84	0.82	1				R3									
34	52.85	1.05	1				R3									
35	3.15	1.26	1				R3									
35	3.19	1.22	1				R3									
35	3.23	1.34	1				R3									
35	3.24	1.25	1				R3									
35	3.26	1.20	1				R3									
35	3.27	1.20	1				R3									
35	3.28	1.20	1				R3									
35	3.30	1.20	1				R3									
35	3.31	1.20	1				R3									
36	1.00	1.00	1				R3									
36	3.00	0.79	1				R3									
36	4.00	0.52	1				R3									
36	5.00	1.40	1				R3									
36	5.01	0.09	1				R3									
36	5.02	1.80	1				R3									
36	5.03	1.40	1				R3									
36	6.00	0.42	1				R3									
36	6.01	0.10	1				R3									
36	7.00	1.85	1				R3									
36	7.01	1.67	1				R3									
36	7.02	1.46	1				R3									
36	7.05	1.63	1				R3									
36	7.06	1.64	1				R3									
36	7.09	1.38	1				R3									
36	7.10	1.85	1				R3									
36	7.11	1.38	1				R3									
36	7.12	1.40	1				R3									
36	7.13	1.38	1				R3									
36	7.14	1.90	1				R3									
36	7.15	2.58	1				R3									
36	7.16	1.70	1				R3									
36	7.19	1.65	1				R3									
36	7.21	1.59	1				R3									
36	7.22	1.57	1				R3									
36	7.23	1.38	1				R3									
36	7.24	1.70	1				R3									
36	8.00	1.60	1				R3									

LAGOON POND WATERSHED - OAK BLUFFS																
martha's vineyard commission													August 1999 - funded by DEP 604(b)			
								Large	.#	Large	.#	Large	.#	potential new d.u.		
map	lot	acres	built	vacant	os	ag	zone	R1	R1	R3	R3	R4	R4	R1	R3	R4
36	8.01	0.24	1				R3									
36	8.02	0.24	1				R3									
36	8.03	0.19	1				R3									
37	1.02	2.87	1				R3									
37	1.03	1.41	1				R3									
37	1.05	1.48	1				R3									
37	1.07	1.40	1				R3									
37	1.08	1.38	1				R3									
37	2.00	0.31	1				R3									
37	3.00	0.30	1				R3									
37	4.00	0.30	1				R3									
37	6.00	0.33	1				R3									
37	7.00	0.23	1				R3									
37	8.00	0.34	1				R3									
37	9.00	0.34	1				R3									
37	10.00	0.40	1				R3									
37	11.00	0.47	1				R3									
37	12.00	0.46	1				R3									
37	13.00	0.35	1				R3									
37	15.00	0.24	1				R3									
37	17.00	1.40	1				R3									
37	18.00	0.45	1				R3									
37	20.00	0.87	1				R3									
37	22.00	0.48	1				R3									
37	25.00	0.23	1				R3									
37	27.00	0.22	1				R3									
37	28.00	0.23	1				R3									
37	29.00	0.22	1				R3									
37	30.00	0.23	1				R3									
37	31.00	0.23	1				R3									
37	33.00	0.23	1				R3									
37	35.00	0.30	1				R3									
37	36.00	0.26	1				R3									
37	37.00	0.25	1				R3									
37	38.00	0.23	1				R3									
37	39.00	0.28	1				R3									
37	42.00	0.37	1				R3									
37	44.00	0.61	1				R3									
37	45.00	2.40	1				R3									
37	46.00	0.31	1				R3									
37	47.00	0.32	1				R3									
37	48.00	0.23	1				R3									
37	49.00	0.25	1				R3									
37	51.00	0.25	1				R3									
37	53.00	0.28	1				R3									
38	2.00	0.25	1				R3									
38	3.00	0.38	1				R3									
38	4.00	0.40	1				R3									
38	5.00	0.29	1				R3									
38	9.02	1.91	1				R3									
38	9.03	1.90	1				R3									
38	10.01	1.39	1				R3									
38	10.04	1.40	1				R3									
38	10.06	1.70	1				R3									
39	2.00	1.30	1				R3									
40	1.01	1.38	1				R3									
40	1.02	1.39	1				R3									
40	1.04	2.77	1				R3									
40	8.00	2.55	1				R3									
40	9.00	0.71	1				R3									
40	11.00	3.80	1				R3									
41	1.00	1.89	1				R3									
41	1.01	1.57	1				R3									
50	2.01	1.46	1				R3									
50	2.02	1.40	1				R3									
50	2.03	1.39	1				R3									

LAGOON POND WATERSHED - OAKS BLUFF																August 1999 - funded by DEP 604(b)
martha's vineyard commission																
								Large	.#	Large	.#	Large	.#	potential new d.u.		
map	lot	acres	built	vacant	os	ag	zone	R1	R1	R3	R3	R4	R4	R1	R3	R4
50	2.04	1.54	1				R3									
50	4.00	0.38	1				R3									
50	5.00	0.38	1				R3									
50	6.00	0.38	1				R3									
50	7.00	0.38	1				R3									
50	8.00	0.38	1				R3									
50	9.00	0.37	1				R3									
50	10.00	0.36	1				R3									
50	11.00	0.38	1				R3									
50	12.00	0.37	1				R3									
50	13.00	0.37	1				R3									
50	14.00	0.36	1				R3									
50	15.00	0.38	1				R3									
50	17.00	0.37	1				R3									
50	18.00	0.37	1				R3									
50	19.00	0.37	1				R3									
50	21.00	0.42	1				R3									
50	22.00	0.38	1				R3									
50	23.00	0.38	1				R3									
50	24.00	0.38	1				R3									
50	25.00	0.38	1				R3									
50	27.00	0.56	1				R3									
50	28.00	0.38	1				R3									
50	29.00	28.10	1				R3									
50	30.00	3.20	1				R3									
50	32.00	0.69	1				R3									
50	32.01	0.34	1				R3									
50	32.02	0.75	1				R3									
50	33.00	1.00	1				R3									
50	35.00	0.36	1				R3									
50	36.00	1.67	1				R3									
50	37.00	0.63	1				R3									
50	72.00	0.50	1				R3									
50	76.00	1.29	1				R3									
50	80.00	0.69	1				R3									
50	81.00	0.55	1				R3									
50	82.00	0.49	1				R3									
50	83.00	0.49	1				R3									
51	1.01	1.97	1				R3									
51	1.03	1.52	1				R3									
51	1.03	1.42	1				R3									
51	1.04	1.54	1				R3									
51	1.05	1.42	1				R3									
51	1.06	1.49	1				R3									
51	1.07	1.62	1				R3									
51	1.10	1.45	1				R3									
51	1.12	1.44	1				R3									
51	1.13	1.66	1				R3									
51	1.16	1.56	1				R3									
51	1.17	1.51	1				R3									
51	1.19	1.52	1				R3									
51	1.21	1.67	1				R3									
51	1.22	1.43	1				R3									
51	1.23	1.50	1				R3									
51	1.24	1.52	1				R3									
51	1.25	1.43	1				R3									
51	1.26	1.42	1				R3									
51	1.28	1.54	1				R3									
52	5.00	1.70	1				R3									
55	12.00	0.55	1				R3									
55	14.00	0.69	1				R3									
55	15.00	0.69	1				R3									
55	17.00	0.57	1				R3									
55	18.00	0.51	1				R3									
55	22.00	0.62	1				R3									
55	23.00	0.47	1				R3									

LAGOON POND WATERSHED - OAK BLUFFS																
martha's vineyard commission													August 1999 - funded by DEP 604(b)			
								Large	.#	Large	.#	Large	.#	potential new d.u.		
map	lot	acres	built	vacant	os	ag	zone	R1	R1	R3	R3	R4	R4	R1	R3	R4
55	24.00	0.49	1				R3									
55	26.00	0.53	1				R3									
55	27.00	0.53	1				R3									
55	28.00	0.60	1				R3									
55	29.00	0.66	1				R3									
55	30.00	0.46	1				R3									
55	31.00	0.46	1				R3									
55	32.00	0.05	1				R3									
55	33.00	0.46	1				R3									
55	34.00	0.46	1				R3									
55	35.00	0.46	1				R3									
55	36.00	0.46	1				R3									
55	39.00	0.59	1				R3									
55	40.00	0.67	1				R3									
55	42.00	0.58	1				R3									
55	43.00	0.67	1				R3									
55	44.00	0.66	1				R3									
R3		***364.41***	***362***													
41	3.00	0.36	1				R4									
41	4.00	0.80	1				R4									
41	7.01	5.54	1				R4									
R4		***6.70***	***3***													
TOTAL:		**589.00**	**1013**													
vacant to subdivide:																
6	32.00	2.20		1			R1	2.20	1					2		
7	81.00	0.77		1			R1	0.77	1					2		
7	96.00	0.77		1			R1	0.77	1					2		
7	118.00	1.30		1			R1	1.30	1					3		
12	88.00	0.59		1			R1	0.59	1					1		
12	126.00	3.94		1			R1	3.94	1					6		
15	68.00	1.53		1			R1	1.53	1					1		
16	40.00	0.55		1			R1	0.55	1					1		
16	48.00	0.66		1			R1	0.66	1					1		
16	79.00	0.57		1			R1	0.57	1					1		
16	104.00	1.66		1			R1	1.66	1					5		
16	177.09	0.75		1			R1	0.75	1					2		
21	27.00	1.30		1			R1	1.30	1					1		
21	37.00	1.50		1			R1	1.50	1					1		
22	32.00	1.80		1			R1	1.80	1					1		
22	33.00	1.75		1			R1	1.75	1					1		
22	48.00	1.96		1			R1	1.96	1					7		
22	49.00	1.75		1			R1	1.75	1					1		
22	57.00	1.00		1			R1	1.00	1					3		
22	59.00	1.30		1			R1	1.30	1					1		
28	13.00	1.06		1			R1	1.06	1					3		
R1		***28.71***		***21***				***26.96***	***21***					***46***		
25	5.00	7.60		1			R3			7.60	1				4	
26	6.00	4.50		1			R3			4.50	1				2	
27	17.00	12.10		1			R3			12.10	1				7	
28	1.00	34.80		1			R3			34.80	1				22	
29	166.00	3.40		1			R3			3.40	1				1	
36	11.00	10.00		1			R3			10.00	1				5	
38	1.00	20.40		1			R3			20.40	1				12	
38	8.01	6.50		1			R3			6.50	1				3	
39	3.00	10.00		1			R3			10.00	1				5	
40	2.00	6.60		1			R3			6.60	1				3	
40	7.00	26.40		1			R3			26.40	1				16	
51	1.00	3.03		1			R3			3.03	1				1	
51	1.02	3.43		1			R3			3.43	1				1	
51	3.00	12.95		1			R3			12.95	1				7	
54	1.00	45.51		1			R3			45.51	1				29	
54	2.00	10.81		1			R3			10.81	1				6	
R3		***218.03***		***16***						***218.03***	***16***				***124***	
36	10.00	10.00		1			R4					10.00	1			2
42	2.00	129.17		1			R4					129.17	1			40

LAGOON POND WATERSHED - OAK BLUFFS

martha's vineyard commission

August 1999 - funded by DEP 604(b)

map	lot	acres	built	vacant	os	ag	zone	Large R1	# R1	Large R3	# R3	Large R4	# R4	potential new d.u. R1	R3	R4
50	38.00	35.60		1			R4					35.60	1			10
R4		***174.77***		***3***								***174.77***	***3***			***52***
TOTAL:		**421.51**		**40**				**26.96**	**21**	**218.03**	**16**	**174.77**	**3**		**124**	**52**
vacant:																
6	48.00	0.04		1												
hospital:		***0.04***		***1***												
6	11.00	0.12		1			R1									
6	14.00	1.40		1			R1									
6	18.00	0.10		1			R1									
6	23.00	0.43		1			R1									
6	30.00	0.19		1			R1									
6	31.00	0.06		1			R1									
6	33.00	0.17		1			R1									
7	23.02	0.21		1			R1									
7	37.00	0.46		1			R1									
7	37.01	0.23		1			R1									
7	38.00	0.08		1			R1									
7	39.01	0.11		1			R1									
7	39.02	0.60		1			R1									
7	40.00	0.70		1			R1									
7	42.00	0.12		1			R1									
7	43.00	0.12		1			R1									
7	47.01	0.17		1			R1									
7	56.00	0.46		1			R1									
7	57.00	0.12		1			R1									
7	65.00	0.29		1			R1									
7	66.00	0.29		1			R1									
7	70.00	0.26		1			R1									
7	75.00	0.25		1			R1									
7	76.00	0.25		1			R1									
7	88.00	0.23		1			R1									
7	100.00	0.28		1			R1									
7	110.00	0.13		1			R1									
7	112.00	0.19		1			R1									
7	113.00	0.37		1			R1									
7	115.00	0.23		1			R1									
7	115.01	0.23		1			R1									
7	119.02	0.29		1			R1									
7	122.00	0.26		1			R1									
12	11.00	0.23		1			R1									
12	21.00	0.25		1			R1									
12	21.01	0.25		1			R1									
12	32.00	0.08		1			R1									
12	39.00	0.19		1			R1									
12	40.00	0.13		1			R1									
12	44.02	0.15		1			R1									
12	49.00	0.19		1			R1									
12	54.00	0.11		1			R1									
12	59.02	0.47		1			R1									
12	59.06	0.49		1			R1									
12	59.30	0.38		1			R1									
12	66.00	0.43		1			R1									
12	71.00	0.30		1			R1									
12	72.00	0.30		1			R1									
12	73.00	0.30		1			R1									
12	74.00	0.31		1			R1									
12	77.00	0.27		1			R1									
12	80.00	0.27		1			R1									
12	94.01	0.12		1			R1									
12	102.00	0.23		1			R1									
12	103.00	0.11		1			R1									
12	104.00	0.11		1			R1									
12	107.05	0.34		1			R1									
12	107.06	0.34		1			R1									
12	107.07	0.34		1			R1									

LAGOON POND WATERSHED - OAK BLUFFS

martha's vineyard commission

August 1999 - funded by DEP 604(b)

map	lot	acres	built	vacant	os	ag	zone	Large R1	.# R1	Large R3	.# R3	Large R4	.# R4	potential new d.u. R1	R3	R4
12	110.01	0.11		1			R1									
12	113.00	0.11		1			R1									
12	114.00	0.11		1			R1									
12	115.00	0.11		1			R1									
12	116.00	0.11		1			R1									
12	126.02	0.29		1			R1									
12	127.01	0.29		1			R1									
12	127.20	0.27		1			R1									
12	127.21	0.29		1			R1									
12	128.01	0.23		1			R1									
12	128.02	0.23		1			R1									
12	129.00	0.27		1			R1									
12	129.08	0.30		1			R1									
12	129.14	0.23		1			R1									
12	129.20	0.23		1			R1									
12	131.01	0.25		1			R1									
12	131.03	0.25		1			R1									
12	133.01	0.45		1			R1									
12	133.02	0.47		1			R1									
12	135.00	0.25		1			R1									
13	13.00	1.00		1			R1									
13	20.00	0.23		1			R1									
13	21.00	0.12		1			R1									
13	22.00	0.12		1			R1									
13	24.00	0.34		1			R1									
13	26.00	0.13		1			R1									
13	36.00	1.4		1			R1									
13	37.00	0.69		1			R1									
13	38.01	0.11		1			R1									
13	40.00	0.12		1			R1									
13	41.00	0.12		1			R1									
15	27.00	0.31		1			R1									
15	28.00	0.23		1			R1									
15	35.00	0.23		1			R1									
15	35.01	0.11		1			R1									
15	36.00	0.23		1			R1									
15	42.01	0.11		1			R1									
15	42.02	0.46		1			R1									
15	42.03	0.23		1			R1									
15	47.00	0.12		1			R1									
15	48.01	0.23		1			R1									
15	54.00	0.22		1			R1									
15	55.00	0.56		1			R1									
15	56.00	0.12		1			R1									
15	56.00	0.12		1			R1									
15	60.00	0.23		1			R1									
15	62.00	0.12		1			R1									
15	63.00	0.12		1			R1									
15	66.03	0.14		1			R1									
15	67.00	0.46		1			R1									
15	70.00	0.90		1			R1									
15	72.00	0.57		1			R1									
15	73.00	0.14		1			R1									
15	74.00	0.14		1			R1									
15	76.00	0.34		1			R1									
15	83.00	0.46		1			R1									
15	84.00	0.46		1			R1									
15	88.00	0.23		1			R1									
15	94.00	0.11		1			R1									
15	94.01	0.23		1			R1									
15	94.02	0.23		1			R1									
15	94.04	0.11		1			R1									
15	96.02	0.23		1			R1									
16	2.00	0.11		1			R1									
16	4.00	0.11		1			R1									

LAGOON POND WATERSHED - OAK BLUFFS																
martha's vineyard commission												August 1999 - funded by DEP 604(b)				
								Large	.#	Large	.#	Large	.#	potential new d.u.		
map	lot	acres	built	vacant	os	ag	zone	R1	R1	R3	R3	R4	R4	R1	R3	R4
16	9.04	0.23		1			R1									
16	9.05	0.23		1			R1									
16	9.06	0.23		1			R1									
16	10.00	0.48		1			R1									
16	10.01	0.25		1			R1									
16	12.00	0.12		1			R1									
16	13.00	0.12		1			R1									
16	14.00	0.11		1			R1									
16	18.00	0.23		1			R1									
16	19.00	0.23		1			R1									
16	23.00	0.11		1			R1									
16	27.00	0.11		1			R1									
16	29.00	0.23		1			R1									
16	31.00	0.11		1			R1									
16	32.00	0.11		1			R1									
16	35.00	0.69		1			R1									
16	36.02	0.23		1			R1									
16	37.00	0.92		1			R1									
16	44.00	0.12		1			R1									
16	48.03	0.23		1			R1									
16	50.00	0.46		1			R1									
16	52.00	0.23		1			R1									
16	53.00	0.23		1			R1									
16	54.00	0.23		1			R1									
16	55.00	0.23		1			R1									
16	56.00	0.80		1			R1									
16	57.00	0.11		1			R1									
16	59.00	0.23		1			R1									
16	60.00	0.11		1			R1									
16	65.00	0.23		1			R1									
16	67.00	0.23		1			R1									
16	68.00	0.23		1			R1									
16	69.00	0.11		1			R1									
16	72.00	0.35		1			R1									
16	76.01	0.23		1			R1									
16	81.00	0.11		1			R1									
16	84.00	0.11		1			R1									
16	89.00	0.12		1			R1									
16	91.02	0.23		1			R1									
16	93.00	0.45		1			R1									
16	93.01	0.11		1			R1									
16	95.00	0.11		1			R1									
16	98.00	0.11		1			R1									
16	101.00	0.34		1			R1									
16	102.00	0.34		1			R1									
16	103.00	0.12		1			R1									
16	106.00	0.28		1			R1									
16	184.00	0.30		1			R1									
16	186.00	0.21		1			R1									
16	192.00	0.32		1			R1									
21	2.01	0.34		1			R1									
21	3.00	0.46		1			R1									
21	4.00	0.34		1			R1									
21	13.00	0.25		1			R1									
21	19.00	0.71		1			R1									
21	22.00	0.43		1			R1									
21	22.01	0.11		1			R1									
21	22.02	0.23		1			R1									
21	23.00	0.84		1			R1									
21	36.00	0.11		1			R1									
21	36.01	0.23		1			R1									
21	38.00	0.35		1			R1									
21	38.01	0.28		1			R1									
21	39.00	0.34		1			R1									
21	40.00	0.23		1			R1									
21	41.00	0.23		1			R1									

LAGOON POND WATERSHED - OAK BLUFFS

martha's vineyard commission — August 1999 - funded by DEP 604(b)

map	lot	acres	built	vacant	os	ag	zone	Large R1	# R1	Large R3	# R3	Large R4	# R4	potential new d.u. R1	R3	R4
21	45.00	0.46		1			R1									
21	46.00	0.23		1			R1									
21	46.01	0.23		1			R1									
21	51.00	0.23		1			R1									
21	54.01	0.34		1			R1									
21	57.00	0.36		1			R1									
21	62.00	0.69		1			R1									
21	68.00	0.11		1			R1									
21	68.01	0.45		1			R1									
21	68.02	0.11		1			R1									
21	70.00	0.23		1			R1									
21	71.01	0.24		1			R1									
21	78.00	0.34		1			R1									
21	79.00	0.71		1			R1									
21	80.00	0.69		1			R1									
21	81.00	0.69		1			R1									
21	82.00	0.91		1			R1									
21	83.00	0.91		1			R1									
21	84.00	1.00		1			R1									
21	85.00	1.00		1			R1									
21	104.01	0.23		1			R1									
22	24.00	0.25		1			R1									
22	25.02	0.25		1			R1									
22	27.00	0.49		1			R1									
22	27.01	0.25		1			R1									
22	28.00	0.50		1			R1									
22	30.00	0.50		1			R1									
22	34.00	0.74		1			R1									
22	35.00	0.25		1			R1									
22	37.00	0.25		1			R1									
22	38.00	0.25		1			R1									
22	39.02	0.25		1			R1									
22	39.06	0.25		1			R1									
22	41.00	0.45		1			R1									
22	41.01	0.25		1			R1									
22	43.00	0.18		1			R1									
22	43.01	0.17		1			R1									
22	45.00	0.23		1			R1									
22	46.00	0.50		1			R1									
22	47.03	0.25		1			R1									
22	53.06	0.25		1			R1									
22	55.01	0.25		1			R1									
22	56.00	0.50		1			R1									
22	60.00	0.50		1			R1									
22	60.01	0.25		1			R1									
22	61.00	0.23		1			R1									
22	66.03	0.25		1			R1									
22	76.02	0.25		1			R1									
22	76.03	0.25		1			R1									
22	77.00	0.26		1			R1									
22	78.03	0.25		1			R1									
22	79.01	0.46		1			R1									
22	86.00	0.23		1			R1									
22	87.00	0.11		1			R1									
22	88.02	0.09		1			R1									
22	88.03	0.11		1			R1									
22	88.04	0.11		1			R1									
22	98.00	0.11		1			R1									
22	98.01	0.24		1			R1									
22	99.00	0.12		1			R1									
22	101.00	0.12		1			R1									
22	102.00	0.18		1			R1									
22	102.01	0.23		1			R1									
22	102.02	0.26		1			R1									
22	105.00	0.81		1			R1									
22	107.00	1.05		1			R1									

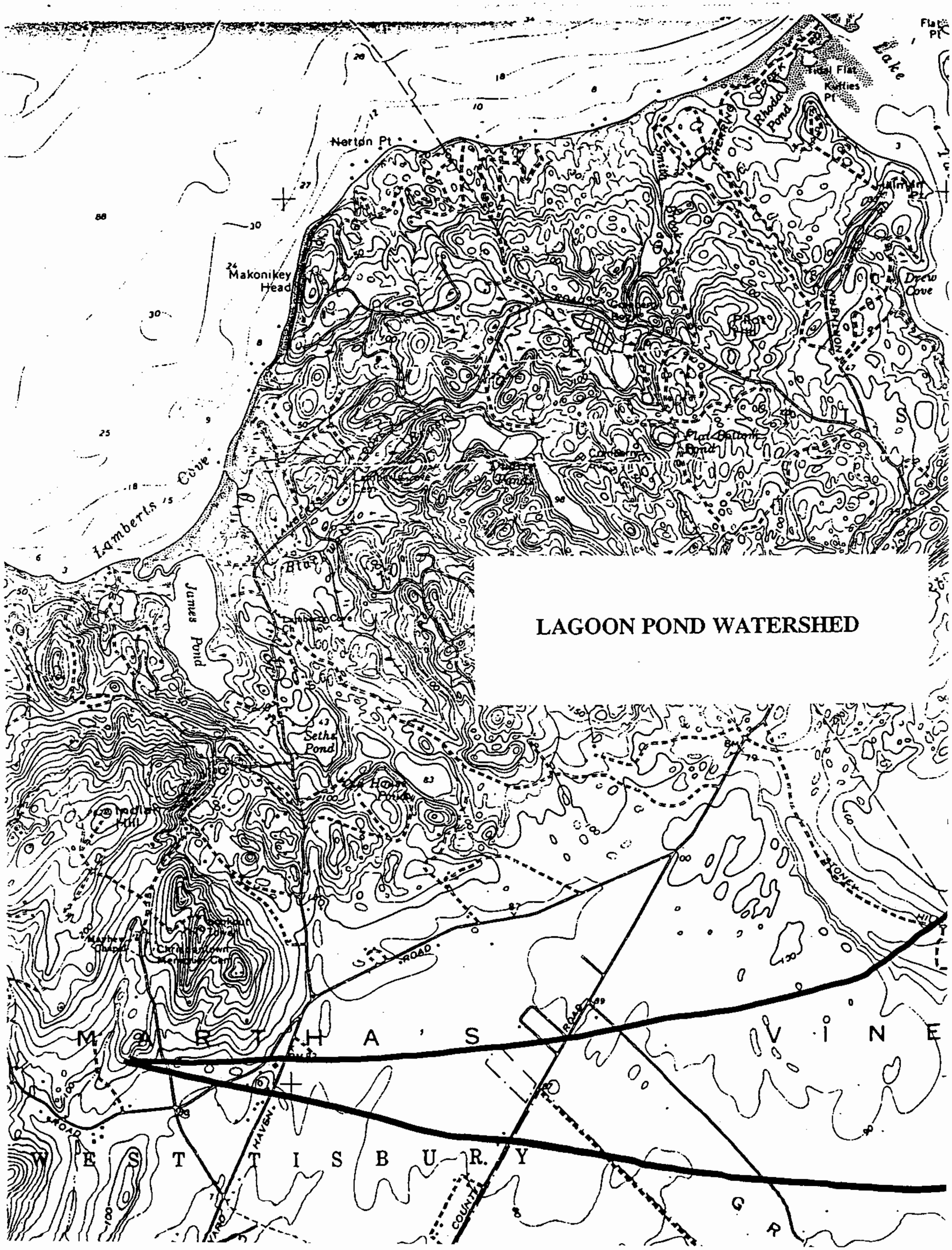
LAGOON POND WATERSHED - OAK BLUFFS

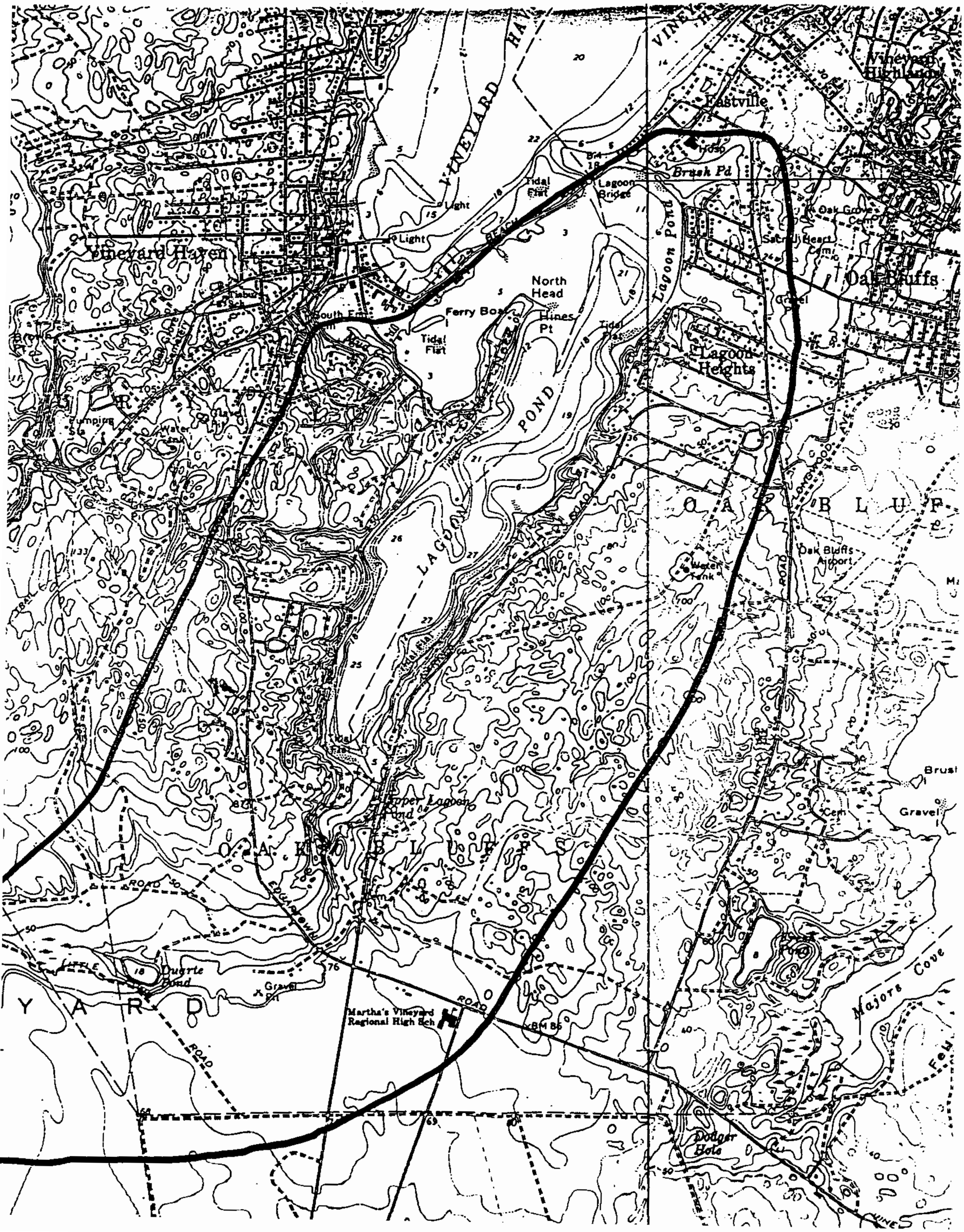
martha's vineyard commission

August 1999 - funded by DEP 604(b)

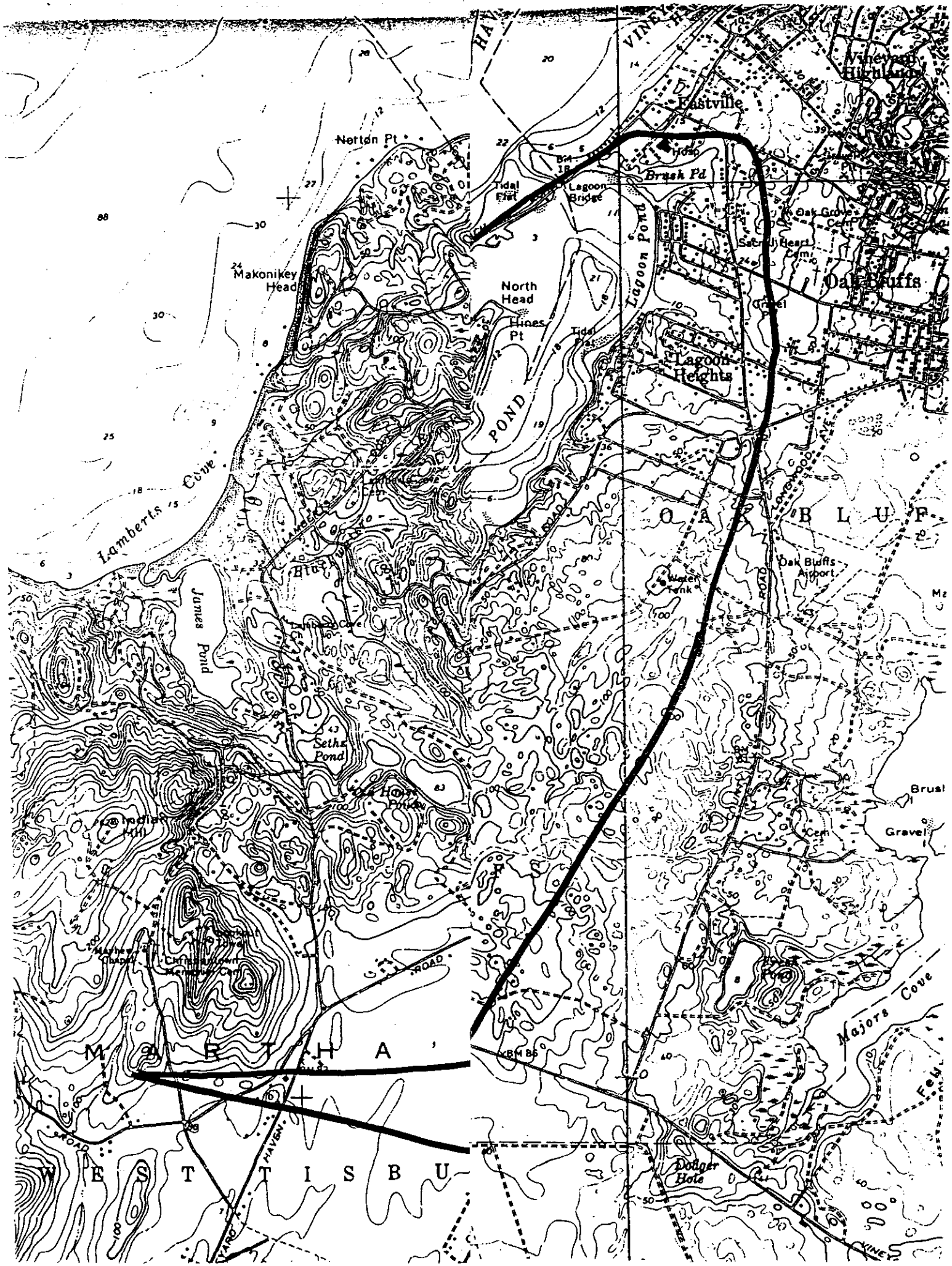
map	lot	acres	built	vacant	os	ag	zone	Large R1	# R1	Large R3	# R3	Large R4	# R4	potential new d.u. R1	R3	R4
21	20.00	1.60		1	1		R1									
22	42.00	0.45		1	1		R1									
22	44.00	0.23		1	1		R1									
22	54.00	1.00		1	1		R1									
22	62.00	0.23		1	1		R1									
22	63.00	0.69		1	1		R1									
22	64.00	0.69		1	1		R1									
R1		***14.38***		***40***	***40***											
15	1.00	2.70		1	1		R3									
15	30.01	0.40		1	1		R3									
22	3.00	3.58		1	1		R3									
22	4.00	2.80		1	1		R3									
22	5.00	6.80		1	1		R3									
23	3.00	0.09		1	1		R3									
25	1.00	0.08		1	1		R3									
25	6.00	2.60		1	1		R3									
25	7.00	14.00		1	1		R3									
25	8.00	5.61		1	1		R3									
27	18.52	4.87		1	1		R3									
28	2.74	1.00		1	1		R3									
28	2.75	9.30		1	1		R3									
28	2.76	7.80		1	1		R3									
34	52.46	1.09		1	1		R3									
34	52.47	2.74		1	1		R3									
34	52.49	8.85		1	1		R3									
34	52.50	2.12		1	1		R3									
34	52.88	7.78		1	1		R3									
36	8.04	1.10		1	1		R3									
38	11.00	7.00		1	1		R3									
50	3.00	0.38		1	1		R3									
50	74.00	1.73		1	1		R3									
50	75.00	1.17		1	1		R3									
50	84.00	2.48		1	1		R3									
51	1.29	18.89		1	1		R3									
51	1.30	4.09		1	1		R3									
51	1.31	7.75		1	1		R3									
51	1.33	5.00		1	1		R3									
51	9.00	9.29		1	1		R3									
51	10.00	8.52		1	1		R3									
52	1.00	10.43		1	1		R3									
55	1.00	3.38		1	1		R3									
55	2.00	23.70			1		R3									
55	3.00	1.37		1	1		R3									
55	4.00	23.70			1		R3									
55	47.00	2.64		1	1		R3									
55	48.00	2.89		1	1		R3									
R3		***219.72***		***36***	***38***											
41	2.00	84.10		1	1		R4									
R4		***84.10***		***1***	***1***											
TOTAL:		**318.20**		**77**	**79**											
protected farmland:																
37	54.00	2.40		1	1	1	R3									
40	5.00	1.40		1	1	1	R3									
40	4.00	21.50		1	1	1	R3									
40	12.00	11.80		1	1	1	R3									
40	3.00	6.30		1	1	1	R3									
TOTAL:		**43.40**		**5**	**5**	**5**										
unprotected farmland:																
28	10.00	0.25		1		1	R3									
40	6.00	10.00		1		1	R3			10.00	1				5	
TOTAL:		**10.25**		**2**		**2**				**10.00**	**1**				**5**	

LAGOON POND WATERSHED





Vineyard Haven
Vineyard Highlands
Eastville
Brush Pd
Lagoon Bridge
Tidal Flat
Light
VINEYARD
Oak Grove Cem
Sacred Heart Cem
Oak Bluffs
North Head
Hines Pt
Ferry Boat
Tidal Flat
Lagoon Pond
Lagoon Heights
Gravel
LAGOON POND
Pumping Sta
Water Tank
O A K B L U F
Water Tank
Oak Bluffs Airport
Upper Lagoon Pond
O A K B L U F F S
Duarte Pond
Gravel Pit
Y A R D
Martha's Vineyard Regional High Sch
BM 86
ROAD
Cem
Gravel
Majors Cove
Dodger Hole


Norton Pt
Makonikey Head
North Head
Hines Pt
Tidal Flat
Lagoon Pond
Lagoon Bridge
Brush Pd
Eastville
Vineyard Highlands
Oak Bluffs
Lagoon Heights
POND
Lambert's Cove
James Pond
Seths Pond
Indian Hill
Oak Bluffs Airport
Water Tank
Gravel Pit
Cem
Majors Cove
Dodger Hole
MARTHA
WESTTISBU
OAKBLUF
VINEYARD
HAVEN
LAMBERTS COVE ROAD
LONGWOOD
ROAD
HAVEN
ROAD