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November 13, 2020

Duxbury Board of Health
Town Hall
878 Tremont Street
Duxbury, MA 02332

Subject: **0 East Street – Septic System & Drainage Design**

Dear Board Members:

This is to advise that we have reviewed the following documents related to a septic system design for a proposed dwelling on Parcel 045-045-000 (0 East Street):

- New Construction Sewage Disposal System Design plan (1 sheet), dated November 11, 2020, prepared by South Shore Survey Consultants (SSSC)
- MA 0.5-1.5 FAST Units plan set (4 sheets), revised April 19, 2011, prepared by Bio-Microbics, Inc.
- Drainage report/calculations, dated November 11, 2020, prepared by SSSC
- Nitrogen Aggregation Plan, 0 East Street, dated April 13, 2020, prepared by Grady Consulting, LLC

The purpose of our review has been to evaluate conformance with 310 CMR 15 – The State Environmental Code (Title 5) and the Town of Duxbury Supplementary Rules & Regulations to the State Environmental Code (R&R).

The 11,478 square foot (s.f.) parcel is located off the north side of East Street about 350 feet west of Brick Hill Lane. The property is undeveloped woodland and it is all upland. The site is within the Residential Compatibility (RC) zoning district and the Aquifer Protection Overlay District (APOD).

The proposal calls for a two bedroom dwelling served by a two bedroom FAST denitrifying septic system. In order to meet the 660 GPD per 40,000 s.f. of land area sewage flow equivalency¹ requirement an 1,845.5 s.f. portion of a parcel of Land off North Street is proposed to be used as credit land and restricted in perpetuity to remain undeveloped. As a result of the development of 0 East Street the woods would be removed and replaced with areas of grass and impervious surfaces (dwelling and driveway). The proposed dwelling would be served by municipal water.

¹ As specified in the Bio-Microbics, Inc. Certification for General Use, revised March 20, 2015

No variances have been requested for this system, however, it is a raised system requiring Board approval under Section 1.15(1) of the R&R. R&R Section 1.15(1)(a) requires submission of pre- and post-development drainage calculations to document no increase in post development peak flow runoff for the 2-, 10-, and 25-year storm events. To mitigate the increase in post development runoff due to the proposed grass and impervious surfaces, the runoff from the roof of the dwelling would be discharged to a subsurface infiltration system consisting of Cultec R-330XLD plastic chambers surrounded by crushed stone. A crushed stone trench is also proposed along the rear property line to intercept and infiltrate overland flow.

Comments:

1. The land proposed to be used for credit land is not eligible to be used as credit land for the subject property because it is not within the same Zone II and would not provide any protection to the public wells within the Zone II of the subject property. The Guidelines for Title 5 Aggregation of Flows and Nitrogen Loading 310 CMR 15.216¹ states that “In Zone IIs and IWPA’s, qualified credit land (*see Section 6*) must be located in the same Nitrogen Sensitive Area as the facility itself so that nitrogen loading to the recharge area of the well will be controlled.” Please see the attached Aquifer Protection Overlay Districts Zoning Map and the Duxbury Zone II’s map² which clearly show that the Zone II boundaries around the credit land and the facility land do not overlap.
2. The drainage calculations require revision. The height of the stone is modeled as three feet in the HydroCAD calculations and the detail on the plan shows it to be 30.5 inches. Additionally, the volume of the subsurface infiltration system is modeled incorrectly as the chambers are not “embedded” in the crushed stone. The actual total storage volume of the system, as detailed on the New Construction Sewage Disposal System Design plan, is 169 cubic feet, not 237 cubic feet as modeled.
3. The drainage analysis assumes that all runoff from the front portion of the proposed site would flow to the rear of the site. However, runoff from the front portion of the site will flow to East Street which will increase post-development runoff to the street as the existing lot slopes entirely away from the street.
4. The New Construction Sewage Disposal System Design plan shows only the proposed dwelling and driveway. If walks or other improvements are proposed they should be shown on the plan and included in the drainage analysis.
5. Construction Note 2 on the New Construction Sewage Disposal System Design plan should specify that magnetic tape is required over all septic components, not just the leaching facility.
6. The certification number of the soil evaluator should be listed on the plan in accordance with Septic System Application Checklist, Item 19.

¹ Copy attached with quoted section highlighted. Also, see highlighted portion of Section 6.

² Map source is MassGIS

7. The notes on the New Construction Sewage Disposal System Design plan should be revised to state that the property is within a Zone II of a public well.
8. The "40 Mil. Liner Detail" references "note 16 specifications" but there is no note 16.
9. The submittal does contain the required deed restriction for the two bedroom design and the documents required in the conditions of approval of the Bio-Microbics, Inc. Certification for General Use, revised March 20, 2015.

Please give us a call should you have any question.



Very truly yours,

AMORY ENGINEERS, P.C.

By:

A handwritten signature in blue ink that reads "Patrick G. Brennan".

Patrick G. Brennan, P.E.

PGB
enc.
cc: South Shore Survey Consultants, Inc.

**GUIDELINES FOR TITLE 5
AGGREGATION OF FLOWS AND NITROGEN LOADING
310 CMR 15.216**

Summary Page

Title 5 of the State Environmental Code, 310 CMR 15.000, imposes a nitrogen loading limitation of 440 gallons per day (gpd) per acre design flow for systems serving new construction in nitrogen sensitive areas and for new residential construction where the use of both on-site systems and on-site drinking water supply wells are proposed. Under the provision for “Aggregate Determinations of Flows and Nitrogen Loadings,” 310 CMR 15.216, the nitrogen loading limitation may be calculated in the aggregate through a Community Aggregation Plan, or a site-specific, Facility Aggregation Plan.

This document provides guidance to the Department, Boards of Health and applicants for calculating the nitrogen loading limitation in the aggregate. Aggregation highlights are:

- The equivalency of the 440 gpd per acre standard noted in 310 CMR 15.214 must be met.
- For design flows of 2000 gpd or greater, the local approving authority or DEP may require a site-specific mass balance analysis for the area of impact. The mass balance analysis must demonstrate that the groundwater quality standard of 10 mg/l total nitrogen and 10 mg/l nitrate-nitrogen will be met at the downgradient credit land property boundary, or at the nearest downgradient sensitive receptor.
- Both the facility and the credit land must be restricted in perpetuity through either an appropriate conservation restriction or a nitrogen loading restriction and easement.
- For a facility located in a Zone II, the Board of Health or the Department may require an assessment using a DEP Nitrogen Loading Assessment for projects that could potentially result in impacts at the public supply well.

A Community Aggregation Plan establishes a local nitrogen loading management program over a region-wide area such as a Zone II. Once the plan is approved by DEP, the local approving authority (Board of Health) has sole jurisdiction for approving site-specific facility aggregation plans according to the DEP-approved Community Plan.

A Facility Aggregation Plan addresses nitrogen loading on a facility-specific basis and uses nonfacility credit land. The plan must be approved by the Approving Authority. Nitrogen loading deed restrictions, in perpetuity, are required for both the facility land and credit land.

AGGREGATION OF FLOWS AND NITROGEN LOADING GUIDANCE

310 CMR 15.216

INTRODUCTION

Under Title 5, a system serving new construction¹ is subject to a nitrogen loading limitation of 440 gallons of design flow per day per acre in either Nitrogen Sensitive Areas² or areas where the use of both on-site subsurface sewage disposal and an on-site drinking water supply well is proposed.

Section 310 CMR 15.216 of Title 5 offers relief from this nitrogen loading limitation by allowing the use of other land, in addition to the facility land, to achieve a net nitrogen load of 440 gpd per acre in the aggregate. Under Section 15.216, there are two circumstances in which nitrogen loading may be calculated in the aggregate:

- (1) Where there is a DEP approved Community or Regional Aggregation Plan protecting surface and groundwater supplies from pollutant and nitrogen loading, or
- (2) Where the project proponent has an approved Facility Aggregation Plan including a conservation restriction or nitrogen loading restriction and easement on both the facility and the nonfacility credit land.

1. APPROVING AUTHORITY

The approving authority for a nitrogen aggregation plan is Approving Authority as defined by 310 CMR 15,000 Title 5. The two step approval applies to Community or Regional Aggregation Plans where the local Board of Health must approve the plan prior to submittal to the Department for approval.

Approval for a nitrogen aggregation plan should not be confused with the approval for the Title 5 on-site septic system. The approval for design and installation of a Title 5 system remains with the local Board of Health, with a few exceptions, e.g., state and federal facilities, large systems, etc., where DEP is the approving authority for the system as well.

¹ Title 5 defines New Construction as: The construction of a new building for which an occupancy permit is required or an increase in the design flow to any system above the existing approved capacity. New construction shall not include replacement or repair of an existing building totally or partially destroyed or demolished if there is no increase in flow or no increase in flow above the existing approved capacity to any system.

² Title 5 defines Nitrogen Sensitive Area as: An area of land and/or natural resource area so designated by the Department in accordance with 310 CMR 15.215.

2. AREAS SUBJECT TO NITROGEN AGGREGATION

Areas subject to nitrogen aggregation are the same areas subject to the nitrogen loading limitation of 440 gallons of design flow per day per acre:

(1) Nitrogen Sensitive Areas (310 CMR 15.215)

- a) Zone IIs³
- b) Interim Wellhead Protection Areas (IWPAs)⁴, and
- c) Nitrogen sensitive embayments
(DEP has not yet designated any nitrogen sensitive embayments.
The Department will address, at a later date, nitrogen aggregation
in sensitive embayments.)

(2) areas of residential new construction, as defined in Title 5, where both on-site systems and on-site drinking water supply wells are proposed (310 CMR 15.214(2)). These areas are the so-called private well areas.

DEP recognizes that in the case of an IWPA when the Zone II is subsequently delineated and approved by DEP, facility and/or credit land may be determined to lie outside of the nitrogen sensitive area. If that is the case, at that point in time, the facility would no longer be subject to the Title 5 nitrogen loading limitation. However, any deed restrictions on subject lands would remain until released with the approval of the holders of the restriction (*see Section 8 below*).

In order to avoid nitrogen loading limitations imposed on a site within an IWPA, but not actually within the undefined Zone II, the applicant may choose to delineate the Zone II to demonstrate that the proposed facility lies outside of the Zone II and, therefore, is not subject to the nitrogen limitations in 310 CMR 15.214. Persons seeking DEP Zone II approval must follow the procedures set forth in the Department's Drinking Water Program, "Guidelines and Policies for Public Water Systems."

3. A COMMUNITY/REGIONAL AGGREGATION PLAN

A Community/Regional Plan may include nitrogen sensitive areas or private well areas, or both. The goal is to have the flexibility of nitrogen aggregation for more than a single facility, while ensuring protection of sensitive receptors, i.e., public water supply wells, private wells, drinking water reservoirs and tributaries to drinking water reservoirs, from excessive nutrients through local planning and regulatory controls. With the need for local regulatory control as part of the plan, the applicant for a Community/Regional Plan would, typically, be a municipality.

³ Title 5 defines Zone II as: That area of an aquifer which contributes water to a well under the most severe pumping and recharge conditions that can realistically be anticipated, as defined in Massachusetts drinking water regulations, 310 CMR 22.02.

⁴ Title 5 defines Interim Wellhead Protection Area (IWPA) as: An interim well-head protection area, as defined in Massachusetts drinking water regulations, 310 CMR 22.02. Generally, this is a 1/2-mile radius for sources whose approved pumping rate is 100,000 [gallons per day] or greater. For smaller sources, the radius in feet is determined by multiplying the approved pumping rate in gallons per minute by 32, and adding 400.

The Plan must be reviewed and approved by DEP. The following conditions must be met:

- (1) the local approving authority has approved the plan;
- (2) the Plan contains a nitrate management plan for the area to protect surface and groundwater supplies from nitrogen loading, along with a mechanism for implementation, such as land use regulations, site review procedures and a process for enforcement, etc.;
- (3) for areas that include a Zone II, the Plan also must include a nitrate loading analysis demonstrating less than 5 milligrams per liter (mg/l) at the public water supply well, assuming full buildout;
- (4) other conditions as the Department deems necessary such as monitoring and reporting requirements, use and/or loading restrictions, and updating the approved plan.

Once the plan is approved by the Board of Health and then DEP, the Board of Health has jurisdiction for approving site-specific facility aggregation according to the approved Community Plan. Applications may be submitted to the Board of Health as prescribed in the Community Plan.

4. A FACILITY AGGREGATION PLAN

Where there is no DEP approved Community Plan, the applicant may choose to submit a Facility Aggregation Plan according to this guidance. (Facility Plan requirements under a DEP approved Community Plan would be essentially the same as noted here, but there may be additional requirements in DEP's approval of a Community Plan.) Under the Facility Aggregation Plan, the applicant proposes to meet the 440 gpd per acre equivalency standard by establishing nitrogen credit on nonfacility land with the consent of the owner of such land. Where the proposed design flow of the facility is 2000 gpd or greater, the Approving Authority may require a site-specific mass balance analysis to demonstrate that the groundwater quality standard (10 mg/l nitrate-nitrogen and 10 mg/l total nitrogen) at the credit land property boundary or nearest sensitive receptor will be met (*see Section 5*). The applicant must demonstrate how it will comply with the nitrogen standard(s) and include proposed restriction documents limiting use of both the facility land and nonfacility credit land. The restrictions must be either a conservation restriction or a nitrogen loading restriction and easement. Such plans must be approved by the Approving Authority.

5. NITROGEN STANDARDS

(1) The 440 gpd per acre Equivalency Standard

The 440 gpd per acre equivalency standard allows the nitrogen loading 440 gpd per acre limitation to be calculated in the aggregate over facility land and nonfacility credit land, together. The design flow discharge of 440 gpd per acre is merely prorated across the facility land and nonfacility credit land, resulting in a net rate of 440 gpd or less per acre, although not on every individual acre. In Zone IIs and IWPAAs, qualified credit land (*see Section 6*) must be located in the same Nitrogen Sensitive Area as the facility itself so that nitrogen loading to the recharge area of the well will be controlled.

Example 1: Four 4-bedroom homes with on-site septic systems are proposed to be built on 1 acre⁵ in a Zone II where quarter-acre residential zoning is permitted.

440 gpd Rule: 1 home @ 4 bedrooms (110 gpd/bedroom) must have 1 acre,
so 4 homes @ 4 bedrooms each would require 4 acres.

Applicant proposes 4 homes on just 1 acre. To meet 440 gpd per acre equivalency, applicant must set aside the land area difference of 3 acres (440 gpd/acre requirement minus the proposed residential acreage) for nitrogen credit land.

Residential Subdivisions

The 440 gpd per acre equivalency standard also applies to residential subdivisions. The 440 gpd per acre limitation must be met over the entire area, minus the roads. The road areas are excluded from credit since imperviousness of the paved roads prevents recharge to the groundwater.

Example 2: A developer has 42 buildable acres in a Zone II. The usual subdivision in this town could support 36 one-acre lots with 4-bedroom homes (6 acres for roads) and meet the 440 gpd rule. However, the developer proposes to aggregate with a cluster subdivision allowed under local zoning as follows:

440 gpd Rule: 1 home @ 4 bedrooms (110 gpd/bedroom) must have 1 acre,
so 36 homes @ 4 bedrooms each would require 36 acres.

Applicant proposes 36 homes (each on 1/2 acre lots) on a total of 18 acres. To meet 440 gpd per acre equivalency, applicant must set aside the land area difference of 18 acres (36 - 18) for nitrogen credit land. Note that the 6 acres for roads does not qualify for nitrogen credit.

DEP recommends that a nitrogen aggregation subdivision plan be submitted to the Board of Health during the design phase and prior to Planning Board subdivision approval, as the lot layout configuration might need further revisions to address nitrogen aggregation. While Title 5 system design septic plans typically are not part of a nitrogen aggregation plan submittal, the restriction documents, in addition to placing restrictions on the credit land, must also limit the facility lots in a residential subdivision to a specified number of bedrooms, which should be noted on the subdivision plans.

Private Well Areas

While DEP considers the 440 gpd per acre equivalency standard adequate for protecting a public well from nitrogen discharged at a particular facility, it does not address potential impacts to downgradient sensitive receptors, such as private wells. When siting Title 5 systems and private wells in the same area, the location, depth and construction of private wells and the hydraulic interactions between septic system discharges and private wells should be taken into account.

⁵ Title 5 defines "acre" as a unit of land measure equal to 40,000 square feet, which is considered a building acre in accordance with standard real estate practices.

(2) The Groundwater Quality Standard: 10 mg/l total nitrogen, and 10 mg/l nitrate-nitrogen

Since a design flow of 2000 gpd or greater, but less than 10,000 gpd⁶, may pose greater risks to public health and the environment, the Board of Health or DEP may require proponents of projects of this size to also meet the groundwater quality standard of 10 mg/l total nitrogen and 10 mg/l nitrate-nitrogen. The applicant must demonstrate, through a site-specific mass balance analysis, that the proposed discharge will meet the standard of 10 mg/l total nitrogen and 10 mg/l nitrate-nitrogen at the facility's downgradient credit land property boundary or nearest sensitive receptor to ensure protection of public health and the environment. Sensitive receptors are public water supply wells, private wells, drinking water reservoirs and tributaries to drinking water reservoirs. (For more detail on mass balance analysis, see Section 7 below.)

Where this method of mass balance analysis is required, the nonfacility credit land must be adjacent to and downgradient of the impacted area of discharge. The proponent's site-specific mass balance analysis, considering the nitrogen load from the discharge and fertilizer, must demonstrate that the 10 mg/l nitrogen standard will be met over the extended area of impact at the property boundary of the nonfacility credit land or the nearest downgradient sensitive receptor.

Facility plans approved under this standard must include monitoring requirements to assure compliance with the 10 mg/l total nitrogen and 10 mg/l nitrate-nitrogen standard. If post-construction monitoring reveals failure to meet the standard, a system upgrade will be required. This requirement to upgrade when the standard is not met also must be a condition of the DEP approval.

(3) The DEP Nitrogen Loading Assessment Standard: 5 mg/l nitrate-nitrogen

Where a facility is located in a Zone II, certain circumstances may warrant the use of a DEP Nitrogen Loading Evaluation to assess potential regional, cumulative, off-site impacts at the public water supply well over the long term. The evaluation is a predictive tool to assess nitrogen loading in order to determine if development impacts would pose a threat to water quality based on current zoning. The Approving Authority, at its discretion, may require Zone II modeling analysis where risk indicators such as large volume discharge flow, dense development, or high levels of nitrate-nitrogen in the public supply well are present. Where the nitrate-nitrogen level in the public well is already at 5 mg/l or greater, the Approving Authority shall require the applicant to perform the Zone II modeling assessment using a DEP approved Nitrogen Loading Assessment.

When used, the DEP Nitrogen Loading Assessment must address the Zone II (the individual Zone II in a multi-well Zone II), assuming full buildout conditions. If the assessment results demonstrate that the 5 mg/l nitrate-nitrogen planning threshold at the well will be exceeded, the well is considered at risk under current land use zoning and the Approving Authority may deny the application. The results of the assessment must be presented to the local Board of Health and the Planning Board. The applicant must also submit to DEP, when applicable, for approval as part of an application to DEP, the analysis results along with any written comments on the modeled analysis by the Board of Health and the Planning Board (*See DEP Nitrogen Loading Assessment Guidance or contact MassDEP Water Resources Water Supply Program for further guidance*).

⁶ Proposed discharges of 10,000 gpd or greater are not approved under Title 5, but, instead, are permitted under the Groundwater Discharge Permit Program, 314 CMR 5.00.

6. CREDIT LAND QUALIFICATIONS

Credit land is land that is set-aside under a nitrogen loading restriction to compensate for septic system density greater than 440 gpd per acre where required. Credit land may be a whole parcel, a defined portion of a parcel or several parcels. Both facility and nonfacility land are factored into the calculation for the overall land area in meeting the 440 gpd per acre equivalency limitation. The following criteria apply to nitrogen credit nonfacility land:

If the facility is in a Nitrogen Sensitive Area, nonfacility credit land must be:

- located in the same Nitrogen Sensitive Area as the facility, and, if the mass balance analysis is required to determine that the groundwater quality standard is met, the credit land must also be located adjacent to and downgradient from the facility's impacted area of discharge.

If the facility is in a private well area, nonfacility credit land must be:

- within the subdivision site for a residential subdivision (simplifies credit as adjacent to the individual facility lots in the subdivision);
- adjacent to the facility land for a facility where the design flow is less than 2000 gpd; and,
- adjacent and downgradient of the impacted area of the discharge for a facility where the design flow is 2000 gpd or greater.

(See Figure 1. Nitrogen Standard and Credit Land Determination Flow Chart)

Regardless of whether the facility is in a nitrogen sensitive area or private well area, the designated nonfacility credit land:

- must be restricted to prohibit man-made sources of nitrogen, including, but not limited to, sewage discharge, nitrogen-based fertilizer or the raising and grazing of livestock;
- must be restricted to prohibit artificially rendered imperviousness (i.e., paved streets, paved parking lots, buildings, structures, etc.);
- not within a Velocity Zone or Regulatory Floodway identified by FEMA, and
- not under surface water (land covered with water, including, but not limited to rivers, ponds, oceans, streams and lakes);
- not already being used as nitrogen credit land.

Generally, land within a Zone I may be used for credit land to meet the 440 gpd per acre equivalency standard, unless the water quality in the public water supply well is 5 mg/l nitrate-nitrogen or greater. Where the well exceeds 5 mg/l nitrate-nitrogen, the Zone I may not be used as credit land. Moreover, the condition of such an elevated nitrate level in the well constitutes cause for the Approving Authority to deny a nitrogen aggregation application.

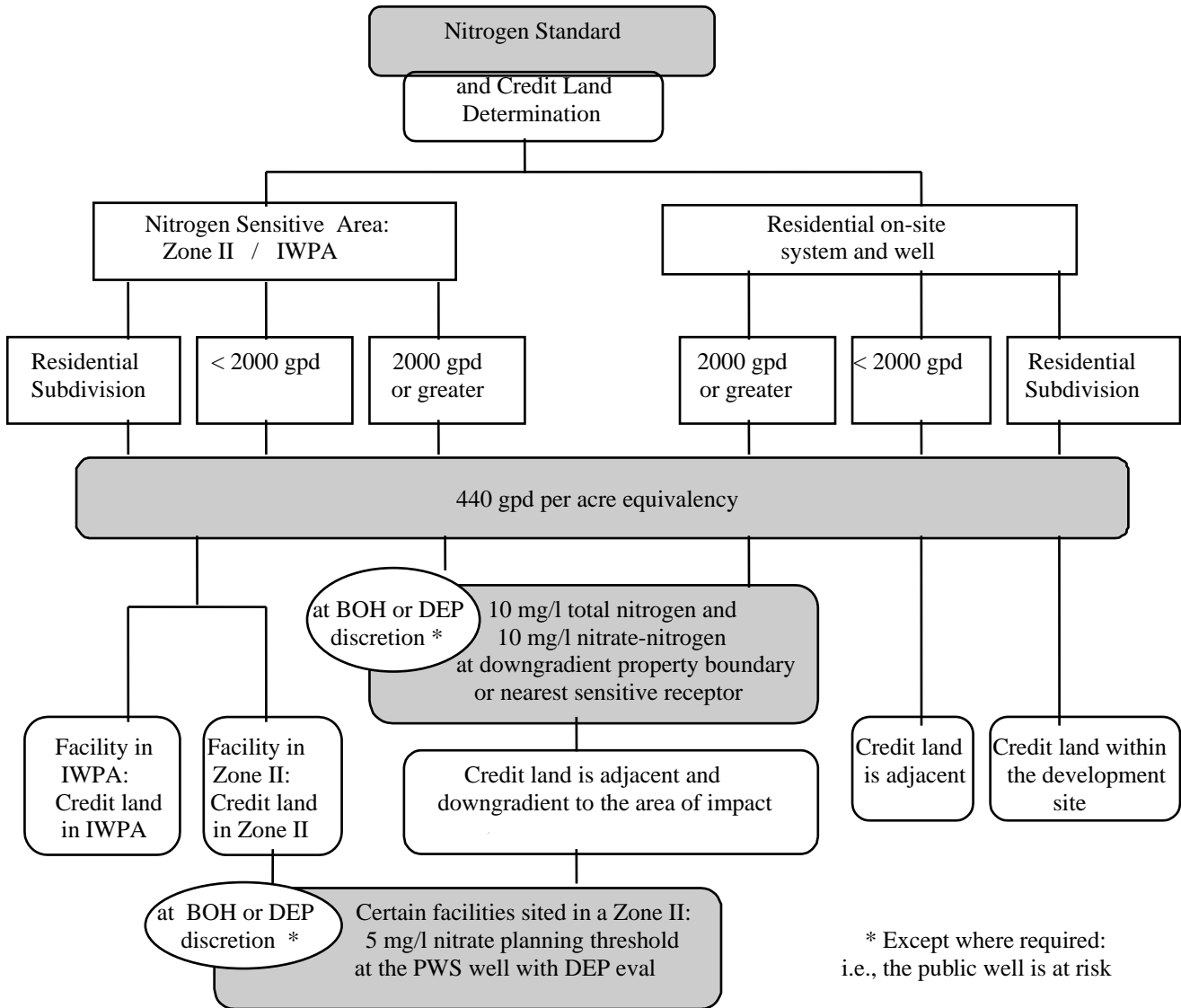
A nitrogen loading restriction⁷ on both the nonfacility credit land and the facility land is required. These restrictions must run in perpetuity to the benefit of the municipality acting by and through the

⁷ Restriction document templates are attached to this guidance document. Additionally, this guidance and templates are available from the DEP web site at www.state.ma.us/dep.

Board of Health. Generally, in the case of the 440 gpd equivalency standard, the facility land must be restricted to a specified number of bedrooms or sewage design flow, while the designated area of the nonfacility credit land is required to be restricted from all man-made nitrogen sources as described above. In the case of the groundwater quality standard, restrictions will apply to the impacted area of the discharge on both facility and nonfacility credit land and such limitations must be explicit in the deed restriction document.

The applicant must submit to the Approving Authority, unexecuted restriction documents with its nitrogen aggregation facility plan. Upon approval, the applicant must execute and record the restriction documents within 30 days of plan approval. Copies of the recorded restrictions must be delivered to the Approving Authority. More detailed guidance on nitrogen loading restrictions is provided in Section 8, below.

Figure 1. Nitrogen Standard and Credit Land Determination Flow Chart



7. SITE-SPECIFIC MASS BALANCE ANALYSIS

Where the proposed discharge from a facility is 2000 gpd or greater, but less than 10,000 gpd, and may impact sensitive receptors, the Approving Authority may require a site-specific mass balance analysis to ensure adequate protection of public health, safety or the environment. In this event, the applicant must demonstrate that, in addition to meeting the 440 gpd per acre equivalency standard, the groundwater compliance standard of 10 mg/l total nitrogen and 10 mg/l nitrate-nitrogen will be met at the downgradient credit land property boundary or the nearest downgradient sensitive receptor.

To demonstrate that a proposed facility's discharge meets the 10 mg/l standards, the applicant must complete a hydrogeologic report with the following components:

- A) Hydrogeologic Assessment
- B) Mounding Analysis
- C) Nitrogen Analysis
- D) Groundwater Monitoring Program

A) Hydrogeologic Assessment

The applicant must assess and describe the hydrogeologic conditions present at the proposed system site. A pre-application proposal letter outlining the scope of work should be submitted for comment to the approving authorities, to confirm study protocols and objectives. A pre-application conference may also be advisable. The hydrogeologic assessment must include:

- a soil evaluation in accordance with Title 5 requirements
- determination of seasonal high groundwater
- determination of aquifer parameters sufficient for the calculation of mounding potential
- development of a groundwater flow map
- determination of groundwater flow direction
- determination and identification of all downgradient sensitive receptors within the area of impact of the proposed discharge

B) Mounding Analysis

The applicant must conduct a mounding analysis for the proposed discharge and demonstrate that the appropriate thickness of unsaturated material required by Title 5 (310 CMR 15.240) separates the bottom of the soil absorption system (SAS) and the mounded, seasonal high water table. Mounding calculations must be conducted to stabilization at the proposed design flows and be reflected on the water table map.

The DEP methodology used to assess mounding potential may be relatively simple analytical calculations (e.g., Hantush or Finnemore). The purpose of the mounding analysis is to determine the extent of mounding perpendicular to the direction of groundwater flow. All raw data and calculations used as part of the analysis must be included in the hydrogeologic report.

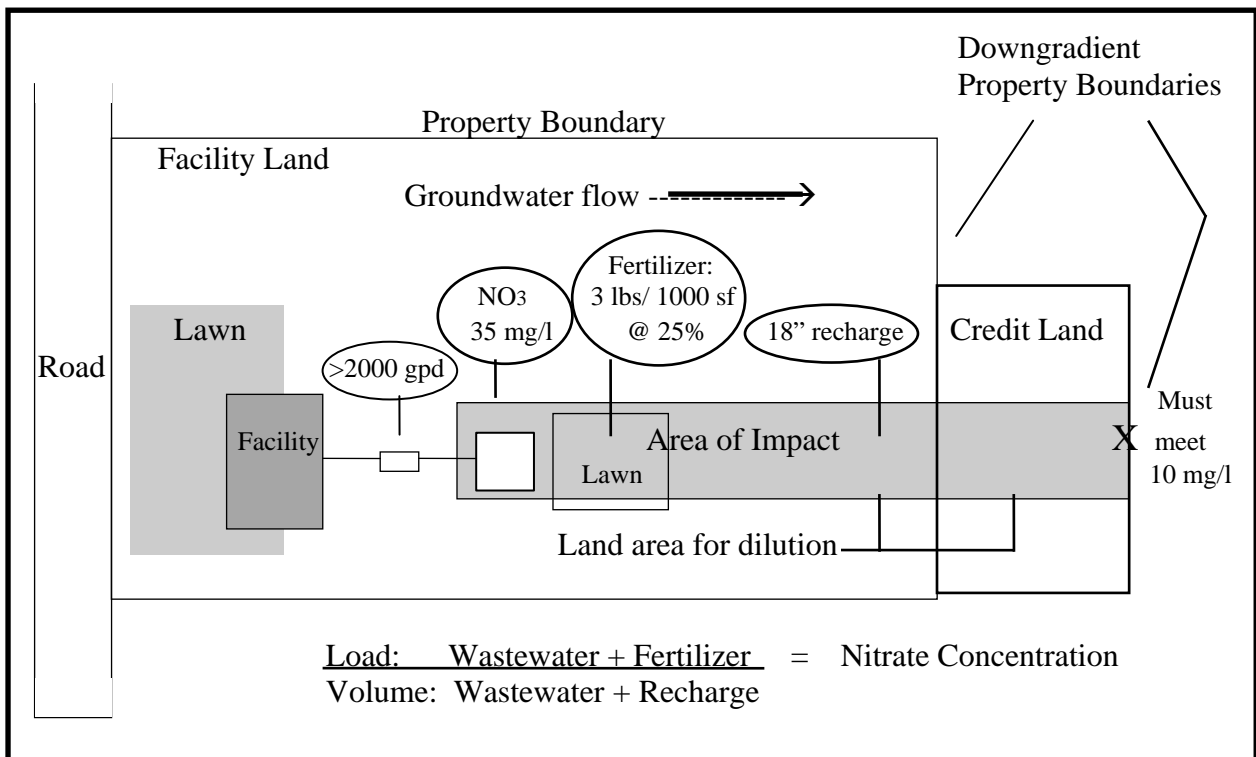
C) Nitrogen Analysis

The applicant must evaluate by mass balance analysis the amount of effluent and fertilizer dilution that is anticipated at the credit land's downgradient property boundary or sensitive receptors, assuming total mixing of the effluent plume and groundwater recharge due to precipitation. A discharge will be considered to be protective of sensitive receptors when the recharge in the land area within the discharge's Area of Impact (AOI) is sufficient to allow for dilution of total nitrogen and nitrate-nitrogen concentration (NO₃) to 10 mg/l at the credit land's downgradient property boundary or nearest downgradient sensitive receptor. (*See Figure 2*).

If the available land area downgradient of the discharge will be insufficient to dilute the groundwater nitrogen concentrations below 10 mg/l at the property boundary or sensitive receptor, the applicant must employ one or more of the following options:

- decrease the volume of proposed discharge
- decrease the nitrogen concentration in the effluent by increasing treatment
- relocate and/or reorient the SAS to maximize recharge to the Area of Impact
- obtain more land, that is, qualified credit land adjacent and downgradient to the Area of Impact

Figure 2. Conceptual illustration of mass balance analysis



To calculate the nitrogen impact, the project proponent must evaluate the downgradient total nitrogen and nitrate dilution as follows:

- Step 1. Determine the Area of Impact (AOI) downgradient of the discharge by flownet analysis. The AOI will extend from the upgradient edge of the SAS to the downgradient credit land boundary. The lateral extent of the AOI must be established by the groundwater divides developed beneath the SAS at design flow.
- The AOI subject to recharge must be exclusive of impervious surfaces, such as buildings, pavement and rock outcrops.
 - Where groundwater mounding is not significant, the lateral extent of the AOI will be the lateral extent of the leach bed or disposal area.

- Step 2. Determine the nitrogen load for the AOI from the system and lawn fertilizer.
- Step 3. Determine the volume of water applied to the AOI from the discharge and recharge.
- Step 4. Calculate the average daily NO₃ concentration (mg/l) at the downgradient extent of the AOI assuming total mixing of the wastewater plume and the overlying recharge using the equation:

$$C_n = (L_{ww} + L_{fert}) / (V_{ww} + V_r)$$

where the concentration of nitrate (C_n) is equal to the sum of the wastewater load (L_{ww}) and the fertilizer load (L_{fert}), divided by the sum of the wastewater volume (V_{ww}) and the volume of recharge (V_r).

- Step 5. Compare the calculated NO₃ concentration to the 10 mg/l standard.

For DEP purposes, the mass balance approach assumes only the wastewater discharge and fertilizer as the significant nitrogen sources from facility land. The following assumptions apply to the mass balance analysis and are used in the examples in Figures 3 and 4:

- one gallon of wastewater discharge @ 35 mg/l nitrate contains 132 mg of nitrate
- on average, 1000 sf of lawn receives 933 mg of nitrate per day in fertilizer
- 18 in per yr of recharge over one acre of land = 5062 liters per day
- one gallon = 3.78 liters

The 35 mg/l nitrate assumes total conversion of nitrogen species in the effluent discharged from the SAS of conventional septic systems. These assumptions will apply in most cases. However, the applicant may use other assumptions, subject to DEP approval, to better address site specific conditions. For instance, in cases where Innovative /Alternative (I/A) technologies providing enhanced nitrogen removal are proposed, the nitrate concentration in the effluent would change, thereby changing the nitrogen load. (Concentration x Flow = Load)

Examples of nitrate-nitrogen concentrations from approved General Use, enhanced nitrogen removal I/A technologies:

		nitrate	@ one gallon of wastewater:
General Use	RSF	25 mg/l	95 mg of NO ₃
General Use	RUCK	19 mg/l	72 mg of NO ₃

With enhanced nitrogen removal technologies, lower nitrate values may substitute for the assumed 35 mg/l nitrate concentration from conventional septic systems.

Figure 3. The 10 mg/l standard is met.

The proposed project will have:

- 3,000 gpd design flow
- 20,000 sf lawn in area of impact
- groundwater mound expanding the area of influence
- 8 acres of land in area of impact

To calculate the loading:

• Wastewater:	3,000 gpd x 132 mg	396,000 mg
• Lawn fertilizer:	20 x 933 mg/day	+ <u>18,660</u> mg
	Total	414,660 mg

To calculate the volume of wastewater discharge and recharge:

- Determine size of area of impact after mounding

• Wastewater:	3,000 gpd x 3.78 liters	11,340 liters
• Natural surface	8 acres @ 18"/yr (5062 liters/day)	+ <u>40,496</u> liters
	Total	51,836 liters

Result: Load: 414,660 mg = 8.0 mg/liter
 Volume: 51,836 liters

Having 8 acres in the area of impact downgradient of the discharge and within the credit land, maintains an overall NO₃ concentration below 10 mg/l and allows the project to proceed.

Figure 4. The 10 mg/l standard is not met.

The proposed project will have:

- 3,000 gpd design flow
- 20,000 sf lawn in area of impact
- groundwater mound expanding the area of influence
- 5.5 acres of land in area of impact

To calculate the loading:

• Wastewater:	3,000 gpd x 132 mg	396,000 mg
• Lawn fertilizer:	20 x 933 mg/day	+ <u>18,660</u> mg
	Total	414,660 mg

To calculate the volume of wastewater discharge and recharge:

- Determine size of area of impact after mounding

• Wastewater:	3,000 gallons x 3.78 liters	11,340 liters
• Natural surface	5.5 acres @ 18"/yr (5062 liters/day)	+ <u>27,871</u> liters
	Total	39,181 liters

Result: Load: 414,660 mg = 10.6 mg/liter
 Volume: 39,181 liters

Having 5.5 acres in the area of impact downgradient of the discharge is not sufficient to dilute the volume of nitrate effluent to 10 mg/l. The project would not be allowed to proceed unless modified.

D) Groundwater Monitoring Program

The Approving Authority may require owners of a system that has design flows of 2000 gpd or greater to monitor groundwater quality at any on-site or credit land sensitive receptors, downgradient property boundaries, or both. The frequency of the monitoring and the parameters tested will be based upon the type of receptor, its sensitivity and its proximity to the discharge.

Monitoring wells must be constructed in accordance with the DEP's Standard References for Monitoring Wells. Downgradient sensitive receptors and site specific hydrogeologic conditions will dictate well depth and well screen placement. Wells should be installed at a depth that will intersect the nitrate-nitrogen plume and be screened from the water table to the completion depth.

Monitoring will typically be required to be conducted semi-annually or quarterly, depending on the conditions. The monitoring well(s) must be sampled for the following parameters:

- groundwater elevation (NGVD datum)
- pH
- specific conductance
- alkalinity
- nitrate-nitrogen
- nitrite-nitrogen
- total nitrogen (nitrite-nitrogen, nitrate-nitrogen and total kjeldahl nitrogen)

The applicant must submit the proposed monitoring plan with the facility aggregation plan application package. The water quality results obtained from the monitoring will be submitted to the Approving Authority at a frequency specified in the approval. Failure to meet the standard will result in a system upgrade requirement.

8. LAND USE RESTRICTIONS ON FACILITY AND NONFACILITY CREDIT LANDS

Deeded land use restrictions on the facility and nonfacility credit land which run in perpetuity are a required component of a facility aggregation plan. A deed restriction granted by a land owner to a governmental entity limits the use of the restricted land in perpetuity pursuant to M.G.L. c. 184, §26. The restriction may be stated in the form of a restriction, easement, covenant or condition, and may restrict only a few activities, such as the nitrogen loading restriction, or many activities, such as a conservation restriction.

A conservation restriction authorized by M.G.L., c.184, §31-32 that specifically restricts nitrogen loading, or a nitrogen loading restriction and easement running to both the benefited land and the municipality acting by and through the local Board of Health, authorized by M.G.L. c.184, §26, are the most appropriate restrictions for the establishment of credit land in perpetuity. The applicant also must restrict the facility land to the appropriate number of bedrooms or design flow by a separate deed restriction.

The template for these instruments is provided in the attachments as follows:

Attachment 1 the model "Grant of Title 5 Nitrogen Loading Restriction and Easement" for restricting the applicant's facility land to the appropriate

- Attachment 2 number of bedrooms or design flow.
the model “Grant of Title 5 Nitrogen Loading Restriction and Easement,”
where the applicant seeks nitrogen credit land from a third party owner/nonfacility
land.
- Attachment 3 the model “Grant of Title 5 Nitrogen Loading Restriction and Easement,”
where the applicant owns both the facility and the credit land.
- Attachment 4 the EOEA model Conservation Restriction
(as modified for nitrogen as described below).

All restrictions shall be recorded and/or registered with the appropriate Registry of Deeds or Registry District of the Land Court within 30 days of approval by DEP or the expiration of the 60 day DEP constructive approval period pursuant to 310 CMR 15.216.

The applicant’s submittal to DEP must include the proposed, unexecuted restriction documents as reviewed and approved by the Board of Health as part of the application.

A. Nitrogen Loading Restriction and Easement

A Title 5 Nitrogen Loading Restriction and Easement limits activities that generate nitrogen. Restrictions on facility land must limit development to the applicable number of bedrooms or applicable design flow. Restrictions on credit land must limit, at a minimum, activities which would render the property ineligible for credit land (see Section 6 above). For example, a credit land restriction must prohibit the use of nitrogen-based fertilizers on credit land. See Attachments 2 through 4 for model credit land restrictions.

1. Holder: With the exception of state or federal facilities, a nitrogen loading restriction and easement on credit land must be granted to the local approving authority and, in cases where the applicant is seeking nitrogen credit land from a third party, the restriction also must run to the benefit of the facility land.

2. Duration: Because the nitrogen loading restriction and easement runs to the benefit of governmental entities, the restriction will run in perpetuity, unless released by approval of the local approving authority in the event that the septic system(s) are abandoned in accordance with 310 CMR 15.354 or the land is no longer located within a nitrogen sensitive area pursuant to 310 CMR 15.215, e.g., in the case of a Zone II or IWPA.

B. Conservation Restriction

A conservation restriction prohibiting uses and activities that result in nitrogen loading is also an appropriate means of ensuring the continued maintenance of nitrogen loading limitations. A conservation restriction is governed by M.G.L. c.184, §31-33 and may be a restriction, easement, covenant or condition. The source reference for this section on Massachusetts conservation restrictions is The Massachusetts Conservation Restriction Handbook (1992), published by the Division of Conservation Services, Executive Office of Environmental Affairs, 100 Cambridge Street, Boston, MA 02202, 617-727-9800. A conservation restriction must be approved by the Secretary of Environmental Affairs. It is advisable to have a draft of the restriction reviewed by EOEA prior to formal submission to the local approving authority.

1. Statutory Definition: A conservation restriction is a restriction maintaining land or water areas predominantly in their natural, scenic, or open condition; or in agricultural, farming or forest use; or allowing public recreational use. A conservation restriction may also prohibit any or all of the following: (1) construction or placing of buildings, roads, signs, billboards or other advertising, utilities or other structures on or above the ground; (2) dumping or placing of soil or other substance or material as landfill, or dumping or placing of trash, waste or unsightly or offensive materials; (3) removal or destruction of trees, shrubs or other vegetation; (4) excavation, dredging or removal of loam, peat, gravel, soil, rock or other mineral substance in such a manner as to affect the surface; (5) surface use except for agricultural, farming, forest or outdoor recreational purposes or purposes permitting the land or water area to remain predominantly in its natural condition; (6) activities detrimental to drainage, flood control, water conservation, erosion control or soil conservation; or (7) other acts or uses detrimental to such retention of land or water areas.

For purposes of nitrogen aggregation, a conservation restriction on nonfacility credit land must include a prohibition on nitrogen loading. For example:

Activities which have a detrimental effect on nitrogen loading on the property, including but not limited to the use of man-made sources of nitrogen such as wastewater discharges, nitrogen based fertilizers, the raising and grazing of livestock, the introduction of artificially rendered impervious surfaces, and the creation or introduction of land under water. A change in the condition of the property which results in the property or a portion thereof being within a Velocity Zone or a Regulatory Floodway will render the Property or a portion thereof ineligible for nitrogen credit pursuant to 310 CMR 15.216.

2. Holder. A conservation restriction must be granted to either a governmental body or a qualified charitable corporation or trust. The Secretary of Environmental Affairs (EOEA) determines if a particular charitable organization or trust is a suitable holder of a conservation restriction.

3. Municipal and State approving authority: A conservation restriction on either facility land or credit land requires approval by both the municipal government and the Secretary of Energy and Environmental Affairs to become effective. If the restriction is to be held by a governmental body, it must be accepted by that governmental body and subsequently approved by the Secretary of Energy and Environmental Affairs. Restrictions to be held by charitable corporations or trusts must be; (i) approved by the mayor/city manager and the city council for land located in a city, and for land located in a town, by the board of selectmen or the town meeting; and (ii) subsequently approved by the Secretary of Energy and Environmental Affairs.

4. Duration: A conservation restriction approved by the Secretary of Energy and Environmental Affairs or held

by a governmental body is perpetual, and may be released, in whole or in part, *only*:

- (1) after public hearing by the governmental body holding the restriction, or if held by a charitable corporation or trust, after public hearing and approval by the mayor/city manager, the city council of the city, or the selectmen of the town; and
- (2) upon a two-thirds vote of the city council or town meeting and both branches of the Legislature determining that the restriction is to be released for the public good. (This step is

considered mandatory by the EOEEA for compliance with Article 97 of the Massachusetts Constitution although not specifically addressed in M.G.L. c.184, § 32.);

- (3) in compliance with the Massachusetts Environmental Policy Act, M.G.L. c. 30, §§ 61 - 62H (MEPA) and regulations, 301 CMR 11.00; and
- (4) upon a determination by the Secretary of Energy and Environmental Affairs that continuance of the restriction no longer serves the public interest.

5. Facility or credit land owned or previously restricted by governmental bodies. When the proposed credit land is subject to Article 97 of the Massachusetts Constitution, (e.g., conservation land or park land owned by a governmental body), the grant of nitrogen loading and restriction easement by the governmental body will likely be considered a disposition that requires authorization by a two thirds vote of the city council or town meeting and both branches of the legislature. When facility land or credit land is to be obtained by amending an existing conservation restriction to include prohibitions on nitrogen loading, the amended conservation restriction must be approved by the Secretary of Energy and Environmental Affairs. According to The Massachusetts Conservation Restriction Handbook (1992), it is the policy of the Secretary to approve amendments to conservation restrictions provided that they strengthen the original restriction or have a neutral effect on the original restriction.

9. REQUIREMENTS FOR THE AGGREGATION PLAN REPORT

An applicant must include the following at a minimum in the application to the Approving Authority.

A Facility Aggregation Plan report must include:

- Completed BRP WP 58a application, including fee payment where DEP is the Approving Authority.
- Board of Health letter approving both the aggregation plan and (unexecuted) restriction documents (for DEP submittal only).
- A locus map (USGS 1:24,000 scale topographic series sheet) indicating the location of the proposed facility and credit land, the location of all public water supply well(s) with the corresponding nitrogen sensitive area(s), and the location of all public water supplies within a one-half mile radius of the proposed discharge.
- A description of the proposed facility, site characteristics, the proposed subsurface disposal system, the relevant nitrogen sensitive area, sensitive receptors within one-half mile radius of the proposed discharge, loading calculation and aggregation proposal details. If the Board of Health requires an impact assessment at the downgradient credit land property boundary or nearest sensitive receptor, the report also must include a discussion of the raw data, the hydrogeologic assessment, analysis findings, conclusions, and a groundwater monitoring plan.
- A site map (appropriately scaled) showing the nitrogen sensitive area with the location/ identification of the public water supply, the facility property boundaries with existing and proposed improvements, credit land, sensitive receptors, and relevant topographic features, such as bedrock outcrops, streams, ponds, etc.). If the Board of Health requires an impact assessment

at the downgradient credit land property boundary or nearest sensitive receptor, the site map also must show topographic and groundwater contours for the delineated area of impact, locations for proposed monitoring wells and other relevant features, such as boring and test pit locations.

- Calculations to meet the 440 gpd per acre equivalency standard; and, if applicable, site-specific mass balance analysis to meet the 10 mg/l nitrogen standard at the downgradient credit land property boundary or nearest downgradient sensitive receptor.
- Results from the DEP Nitrogen Loading Assessment analysis and discussion, if applicable.
- Planning Board comments, if any.
- Copies of current deeds for both facility and credit land and any plans cited in those deeds.
- Copies of the (unexecuted) conservation restriction(s) and/or nitrogen loading restriction(s) for both facility and credit land.
- A draft of a recordable Plan of Record, if applicable.

Upon approval, the applicant must execute and record the restriction documents within 30 days and deliver recorded copies to the Approving Authority.

ATTACHMENT 1

Upon recording, mail to:
Bureau of Resource Protection, Wastewater Management
Department of Environmental Protection
[applicable Regional Office address]

GRANT OF TITLE 5 NITROGEN LOADING RESTRICTION AND EASEMENT ON FACILITY LAND
(restriction of bedrooms or design flow on Grantor's facility land)
310 CMR 15.216

This GRANT OF TITLE 5 Nitrogen Loading Restriction AND EASEMENT on Facility Land made as of this ____ day of _____, 19 __, by _____, of _____, _____ County, Massachusetts ("Grantor").

WITNESSETH

WHEREAS, Grantor being the owner(s) in fee simple of that [those] certain parcel(s) of [vacant] land located in _____, _____ County, Massachusetts, with the buildings and improvements thereon, pursuant to a deed from _____ to Grantor, dated _____, and recorded with _____ County Registry of Deeds in Book _____, Page _____ [source of title other than by deed] and/or pursuant to Certificate of Title No. _____ issued by the Land Registration Office of the _____ County Registry District, said parcel(s) of land being more particularly bounded and described in Exhibit A, attached hereto and made a part hereof, and being shown on a plan entitled, " _____", dated _____, prepared by _____, recorded with _____ County Registry of Deeds as Plan No. _____, in Plan Book _____ and/or registered as Land Court Plan No. _____, on file with the Land Registration Office of _____ County Registry District ("Property"); and

WHEREAS, Grantor desires to restrict the number of bedrooms as defined pursuant to 310 CMR 15.002 and/or the wastewater discharge design flow in any improvements located on the Property through the use of this Nitrogen Loading Restriction and Easement on Facility Land; and

WHEREAS, the Facility Land has the benefit of a Nitrogen Loading Restriction and Easement over approximately _____ acres, being more particularly bounded and described in Grant of Title 5 Nitrogen Loading Restriction and Easement on Nitrogen Credit Land, recorded with the _____ County Registry of Deeds at Book _____, Page _____ [or in file with the Land Registration Office of the _____ County Registry District][or to be recorded/filed for registration herewith]; and

WHEREAS, the Nitrogen Loading Facility Aggregation Plan has been approved by the _____ Board of Health [insert appropriate town/city] [and, if required, the Massachusetts Department of Environmental Protection ("MassDEP" or "Department")] in accordance with the Department's "Guidelines for Title 5 Aggregation of Plans and Nitrogen Loading;" said approval being based upon the agreement by Grantor to incur certain obligations regarding the number of bedrooms, as defined in 310 CMR 15.002, and/or the wastewater discharge design flow in any improvements located on the Property and maintenance of the Facility Land Restriction and Easement to ensure protection of the nitrogen loading limitation of 440 gpd/acre discharge standard pursuant to 310 CMR 15.214 in nitrogen-sensitive areas or in areas serving new construction where the residential use of both on-site systems and drinking water supply wells are proposed; and to grant to the municipality acting by and through the _____ Board of Health [insert appropriate town/city] a perpetual easement to ensure maintenance of the Property including, but not limited to, removal of any prohibited uses and in connection herewith a perpetual easement to pass and repass over the Property for purposes of inspecting the Property to ensure compliance with and fulfillment of the terms of the Facility Land Restriction/Easement as hereafter set forth;

NOW, THEREFORE, pursuant to the provisions of 310 CMR 15.216, Grantor does hereby GRANT to the Town/City of _____, a Massachusetts municipal corporation situated in _____ County, having an address at _____, Massachusetts, acting by and through its Board of Health ("Local Approving Authority") for nominal, non-monetary consideration, with QUITCLAIM COVENANTS, a TITLE 5 NITROGEN LOADING RESTRICTION AND EASEMENT ON FACILITY LAND ("Facility Land Restriction/Easement") in, on, upon, through, over and under the Property, the terms and conditions of which are as follows:

PURPOSE:

The purpose of this restriction and easement is to protect and preserve the quality and quantity of ground water resources in the area of the public and private wells in the Town/City of _____, Massachusetts in order to ensure a safe and healthy public and private water supply for the present and future inhabitants of the area. It shall also be for the specific purpose of limiting the introduction of nitrogen and other pollutants into, and maintaining the natural uptake of pollutants and the recharge of the ground water which takes place on the Property for the said water supply.

OBLIGATIONS AND EASEMENT:

1. Prohibitions. Grantor agrees to restrict the number of bedrooms, as defined pursuant to 310 CMR 15.002, in any improvements on the Property to ____ [insert number of bedrooms, or, in cases where the design flow for the facility is not determined by the number of bedrooms, insert the applicable wastewater discharge design flow limitation in 310 CMR 15.214].

2. Easements. In creating this Facility Land Restriction and Easement, Grantor hereby grants to the Local Approving Authority, its agents, contractors, subcontractors and employees a perpetual EASEMENT to enter upon and the right to bring equipment onto the Property to do any and all acts deemed necessary to maintain the Property in a manner which ensures protection of the nitrogen loading limitation of 440 gpd/acre discharge standard pursuant to 310 CMR 15.214 together with a right to pass and repass by foot and by vehicle over the Property for said purposes, and for purposes of inspecting the Property to ensure compliance with and fulfillment of the terms of this Facility Land Restriction/Easement.

3. Severability. If any court or other tribunal determines that any provision of this instrument is invalid or unenforceable, such provision shall be deemed to have been modified automatically to conform to the requirements for validity and enforceability as determined by such court or tribunal. In the event the provision invalidated is of such a nature that it cannot be so modified, the provision shall be deemed deleted from this instrument as though it had never been included herein. In either case, the remaining provisions of this instrument shall remain in full force and effect.

4. Enforcement. Grantor expressly acknowledges that a violation of the terms of this instrument could result in the following:

(i) upon determination by a court of competent jurisdiction, in the issuance of criminal and civil penalties, and/or equitable remedies, including, but not limited to, injunctive relief, such injunctive relief could include the issuance of an order to modify or remove any improvements constructed upon the Property in violation of the terms of this Facility Land Restriction/Easement; and

(ii) in the assessment of penalties and enforcement action by the Local Approving Authority and DEP to enforce the terms of this Facility Land Restriction/Easement, pursuant to Title 5; M.G.L. c.111, §§ 17, 31, 122, 124, 125, 125A, 127A through 127O, and 129; and M.G.L. c.83, §11.

5. Provisions to Run with the Land. This Facility Land Restriction/Easement sets forth the rights, liabilities, agreements and obligations upon and subject to which the Property or any portion thereof, shall be left unimproved or according to which said Property may be improved, held, used, occupied, leased, sold, hypothecated, encumbered, or conveyed. The rights, liabilities, agreements and obligations herein set forth shall run with the Property, as applicable thereto, and any portion thereof and shall inure to the benefit of and be binding upon Grantor and all parties claiming by, through or under the Local Approving Authority or Grantor. The rights hereby granted to the Local Approving Authority and its successors and assigns constitute their perpetual right to enforce this Facility Land Restriction/Easement. Grantor hereby covenants for himself/herself/itself and his/her/its executors, administrators, heirs, successors and assigns, to stand seized and hold title to the Property, as applicable thereto, and any portion thereof, subject to this Facility Land Restriction/Easement, provided, however, that a violation of this Facility Land Restriction/Easement shall not result in a forfeiture or reversion of Grantor's title to the Property, as applicable thereto.

6. Concurrence Presumed. It being agreed that Grantor and all parties claiming by, through or under Grantor shall be deemed to be in accord with the provisions herein set forth and to agree for and among themselves and any party claiming by, through or under them, and their respective agents, contractors, sub-contractors and employees, that the Facility Land Restriction/Easement herein established shall be adhered to and not violated and that their respective interests in the Property and the Facility Land Restriction and Easement, as applicable thereto, shall be subject to the provisions herein set forth.

7. Incorporation into Deeds, Mortgages, leases and Instruments of Transfer. Grantor hereby agrees to incorporate this Facility Land Restriction/Easement, in full or by reference, into all deeds, easements, mortgages, leases, licenses, occupancy agreements or any other instrument of transfer by which an interest in and/or a right to use the Property, or any portion thereof, is conveyed.

8. Recordation. Grantor shall record and/or register this Facility Land Restriction/Easement with the appropriate Registry of Deeds and/or Land Registration Office within 30 days of the latter of: receipt from the Local Approving Authority of the approved Facility Land Restriction/Easement or the expiration of the 60-day DEP constructive approval period pursuant to 310 CMR 15.216. Grantor shall file with the Local Approving Authority and the DEP a certified Registry copy of this Facility Land Restriction/Easement as recorded and/or registered within 30 days of its date of recordation and/or registration.

9. Amendment and Release. This Facility Land Restriction/Easement may be amended or released only upon approval by the Local Approving Authority. Release of this Facility Land Restriction/Easement shall be granted by the Local Approving Authority in the event the Property is connected to a municipal sewer system and the septic system serving the Property is abandoned in accordance with 310 CMR 15.354 or the Property is no longer located within a nitrogen sensitive area pursuant to 310 CMR 15.215. Any such amendment or release shall be recorded and/or registered with the appropriate Registry of Deeds and/or Land Registration Office and a certified Registry copy of said amendment or release shall be filed with the Local Approving Authority and the DEP within 30 days of its date of recordation and/or registration.

10. Term. This Facility Land Restriction/Easement shall run in perpetuity and is intended to conform to M.G.L. c.184, §26, as amended.

11. Rights Reserved. This Facility Land Restriction/Easement is granted to the Local Approving Authority in connection with the approval of a Nitrogen Loading Facility Aggregation Plan pursuant to 310 CMR 15.216 and the Department's "Guidelines for Title 5 Aggregation of Flows and Nitrogen Loading." It is expressly agreed that acceptance of the Facility Land Restriction/Easement by the Local Approving Authority or constructive approval of the Nitrogen Loading Facility Aggregation Plan by DEP shall not operate to bar, diminish, or in any way affect any legal or equitable right of the Local Approving Authority or DEP to issue any future order with respect to the Property or in any way affect any other claim, action, suit, cause of action, or demand which the Local Approving Authority of DEP may have with respect thereto. Nor shall acceptance of the Facility Land Restriction/Easement serve to impose any obligations, liabilities, or any other duties upon the Local Approving Authority.

12. Effective Date. This Facility Land Restriction/Easement shall become effective upon its recordation and/or registration with the appropriate Registry of Deeds and/or Land Registration Office.

WITNESS the execution hereof under seal this ____ day of _____, 19 ____.

Grantor

COMMONWEALTH OF MASSACHUSETTS

_____, §§ _____, 19 ____

Then personally appeared the above-named _____ and acknowledged the foregoing instrument to be ____ free act and deed before me.

Notary Public:
My commission expires:

The _____ [insert Local Approving Authority] hereby approves and accepts this Grant of Title 5 Nitrogen Loading Restriction and Easement on Facility Land.

Local Approving Authority

Date: _____

ATTACHMENT 2

Upon recording, mail to:
Bureau of Resource Protection, Wastewater Management
Department of Environmental Protection
[applicable Regional Office address]

GRANT OF TITLE 5 NITROGEN LOADING RESTRICTION AND EASEMENT
ON NITROGEN CREDIT LAND

(where Grantee seeks nitrogen credit land from third party Grantor)

310 CMR 15.216

This GRANT OF TITLE 5 Nitrogen Loading Restriction AND EASEMENT on Nitrogen Credit Land made as of this ____ day of _____, 19____, by _____, of _____ County, Massachusetts ("Grantor").

WITNESSETH

WHEREAS, Grantor being the owner(s) in fee simple of that [those] certain parcel(s) of [vacant] land located in _____, _____ County, Massachusetts, with the buildings and improvements thereon, pursuant to a deed from _____ to Grantor, dated _____, and recorded with _____ County Registry of Deeds in Book _____, Page _____ [source of title other than by deed] and/or pursuant to Certificate of Title No. _____ issued by the Land Registration Office of the _____ County Registry District, said parcel(s) of land being more particularly bounded and described in Exhibit A, attached hereto and made a part hereof, and being shown on a plan entitled, " _____", dated _____, prepared by _____, recorded with _____ County Registry of Deeds as Plan No. _____, in Plan Book _____ and/or registered as Land Court Plan No. _____, on file with the Land Registration Office of _____ County Registry District ("Property"); and

WHEREAS, _____, of _____, _____ County, Massachusetts, ("Grantee of the Benefited Property") being the owner(s) in fee simple of that [those] certain parcel(s) of [vacant] land located in _____, _____ County, Massachusetts, with the buildings and improvements thereon, pursuant to a deed from _____ to Grantee of the Benefited Property, dated _____, and recorded with _____ County Registry of Deeds in Book _____, Page _____ [source of title other than deed] and/or pursuant to Certificate of Title No. _____ issued by the Land Registration Office of the _____ County Registry District, said parcel(s) of land being more particularly bounded and described in Exhibit B, attached hereto and made a part hereof, and being shown on a plan entitled, " _____", dated _____, prepared by _____, recorded with _____ County Registry of deeds as Plan No. _____, in Plan Book _____ and/or registered as Land Court Plan No. _____, on file with the Land Registration Office of _____ County Registry District ("Benefited Property"); and

WHEREAS, the Benefited Property has the benefit of a Nitrogen Loading Restriction and Easement, being more particularly bounded and described in, a Grant of Title 5 Nitrogen Loading Restriction and Easement on Facility Land, recorded with the _____ County Registry of Deeds at Book _____, Page _____ [or on file with the Land Registration Office of _____ County Registry District] [or to be recorded/filed for registration herewith] ("Facility Land Restriction and Easement"); and

WHEREAS, the Nitrogen Loading Facility Aggregation Plan has been approved by the _____ Board of Health [insert appropriate town/city] [and, if required, the Massachusetts Department of Environmental Protection ("MassDEP" or "Department")] in accordance with the Department's "Guidelines for Title 5 Aggregation of Plans and Nitrogen Loading;" said approval being based upon the agreement by Grantor to incur certain obligations regarding the number of bedrooms, as defined in 310 CMR 15.002, and/or the wastewater discharge design flow in any improvements located on the Property and maintenance of the Facility Land Restriction and Easement to ensure protection of the nitrogen loading limitation of 440 gpd/acre discharge standard pursuant to 310 CMR 15.214 in nitrogen-sensitive areas or in areas serving new construction where the residential use of both on-site systems and drinking water supply wells are proposed; and to grant to the Grantee of the Benefited Property and to the municipality acting by and through the _____ Board of Health [insert appropriate town/city] a perpetual easement to ensure maintenance of the Property as nitrogen credit land including, but not limited to, removal of any prohibited uses and in connection herewith a perpetual easement to pass and repass over the Property for purposes of inspection to ensure compliance with and fulfillment of the terms of this Nitrogen Credit Land Restriction/Easement as hereafter set forth;

NOW, THEREFORE, pursuant to the provisions of 310 CMR 15.216, Grantor does hereby GRANT to the Grantee of the Benefited Property and to the Town/City of _____, a Massachusetts municipal corporation situated in _____ County, having an address at _____, Massachusetts, acting by and through its Board of Health ("Local Approving Authority") for nominal, non-monetary consideration, with QUITCLAIM COVENANTS, a TITLE 5 NITROGEN LOADING RESTRICTION AND EASEMENT on NITROGEN CREDIT LAND ("Nitrogen Credit Land Restriction/Easement") consisting of approximately _____ acres in, on, upon, through, over and under the Property, the terms and conditions of which are as follows:

PURPOSE:

The purpose of this restriction and easement is to protect and preserve the quality and quantity of ground water resources in the area of the public and private wells in the Town/City of _____, Massachusetts in order to ensure a safe and healthy public and private water supply for the present and future inhabitants of the area. It shall also be for the specific purpose of limiting the introduction of nitrogen and other pollutants into, and maintaining the natural uptake of pollutants and the recharge of the ground water which takes place on the Property for the said water supply and for the specific benefit of the above referenced Benefited Property.

OBLIGATIONS AND EASEMENT:

1. Prohibitions. Grantor agrees to maintain the Property as nitrogen credit land by prohibiting activities which have a detrimental effect on nitrogen loading on the Property, including but not limited to wastewater discharges, the use of nitrogen fertilizer, the introduction of artificial impervious surfaces, the raising, breeding or keeping of animals, livestock or poultry for commercial purposes, and the creation or introduction of land under water. A change in the condition of the Property which results in the Property or a portion thereof being within a Velocity Zone or a Regulatory Floodway will render the Property or said portion thereof ineligible for nitrogen credit pursuant to 310 CMR 15.216.

2. Easements. In creating this Nitrogen Credit Land Restriction and Easement, Grantor hereby grants to the Grantee of the Benefited Property and to the Local Approving Authority, its agents, contractors, subcontractors and employees a perpetual EASEMENT to enter upon and the right to bring equipment onto the Property to do any and all acts deemed necessary to maintain the Property as nitrogen credit land, together with a right to pass and repass by foot and by vehicle over Property for said purposes, and for purposes of inspecting the Property to ensure compliance with and fulfillment of the terms of this Nitrogen Credit Land Restriction/Easement.

3. Severability. If any court or other tribunal determines that any provision of this instrument is invalid or unenforceable, such provision shall be deemed to have been modified automatically to conform to the requirements for validity and enforceability as determined by such court or tribunal. In the event the provision invalidated is of such a nature that it cannot be so modified, the provision shall be deemed deleted from this instrument as though it had never been included herein. In either case, the remaining provisions of this instrument shall remain in full force and effect.

4. Enforcement. Grantor expressly acknowledges that a violation of the terms of this instrument could result in the following:

(i) upon determination by a court of competent jurisdiction, in the issuance of criminal and civil penalties, and/or equitable remedies, including, but not limited to, injunctive relief, such injunctive relief could include the issuance of an order to modify or remove any improvements constructed upon the Property in violation of the terms of this Nitrogen Credit Land Restriction/Easement; and

(ii) in the assessment of penalties and enforcement action by the Local Approving Authority and DEP to enforce the terms of this Nitrogen Credit Land Restriction/Easement, pursuant to Title 5; M.G.L. c.111, §§ 17, 31, 122, 124, 125, 125A, 127A through 127O, and 129; and M.G.L. c.83, §11.

5. Provisions to Run with the Land. This Nitrogen Credit Land Restriction/Easement sets forth the rights, liabilities, agreements and obligations upon and subject to which the Property or any portion thereof, shall be left unimproved or according to which said Property may be improved, held, used, occupied, leased, sold, hypothecated, encumbered, or conveyed. The rights, liabilities, agreements and obligations herein set forth shall run with the Property and the Benefited Property, as applicable thereto, and any portion thereof and shall inure to the benefit of and be binding upon Grantor, Grantee of the Benefited Property, and all parties claiming by, through or under the Local Approving Authority or Grantor. The rights hereby granted to the Grantee of the Benefited Property, the Local Approving Authority, and their respective

successors and assigns, constitute their perpetual right to enforce this Nitrogen Credit Land Restriction/Easement. Grantor hereby covenants for himself/herself/itself and his/her/its executors, administrators, heirs, successors and assigns, to stand seized and hold title to the Property, as applicable thereto, and any portion thereof, subject to this Nitrogen Credit Land Restriction/Easement, provided, however, that a violation of this Nitrogen Credit Land Restriction/Easement shall not result in a forfeiture or reversion of Grantor's title to the Property, as applicable thereto.

6. Concurrence Presumed. It being agreed that Grantor and all parties claiming by, through or under Grantor shall be deemed to be in accord with the provisions herein set forth and to agree for and among themselves and any party claiming by, through or under them, and their respective agents, contractors, sub-contractors and employees, that the Nitrogen Credit Land Restriction/Easement herein established shall be adhered to and not violated and that their respective interests in the Property and the Nitrogen Credit Land Restriction and Easement, as applicable thereto, shall be subject to the provisions herein set forth.

7. Incorporation into Deeds, Mortgages, leases and Instruments of Transfer. Grantor hereby agrees to incorporate this Nitrogen Credit Land Restriction/Easement, in full or by reference, into all deeds, easements, mortgages, leases, licenses, occupancy agreements or any other instrument of transfer by which an interest in and/or a right to use the Property, or any portion thereof, is conveyed.

8. Recordation. Grantor shall record and/or register this Nitrogen Credit Land Restriction/Easement with the appropriate Registry of Deeds and/or Land Registration Office within 30 days of the latter of: receipt from the Local Approving Authority of the approved Restriction/Easement or the expiration of the 60-day DEP constructive approval period pursuant to 310 CMR 15.216. Grantor shall file with the Local Approving Authority and the DEP a certified Registry copy of this Nitrogen Credit Land Restriction/Easement as recorded and/or registered within 30 days of its date of recordation and/or registration.

9. Amendment and Release. This Nitrogen Credit Land Restriction/Easement may be amended or released only upon approval by the Local Approving Authority. Release of this Nitrogen Credit Land Restriction/Easement shall be granted by the Local Approving Authority in the event the Benefited Property is connected to a municipal sewer system and the septic system serving the Benefited Property is abandoned in accordance with 310 CMR 15.354 or the Benefited Property is no longer located within a nitrogen sensitive area pursuant to 310 CMR 15.215. Any such amendment or release shall be recorded and/or registered with the appropriate Registry of Deeds and/or Land Registration Office and a certified Registry copy of said amendment or release shall be filed with the Local Approving Authority and the DEP within 30 days of its date of recordation and/or registration.

10. Term. This Nitrogen Credit Land Restriction/Easement shall run in perpetuity and is intended to conform to M.G.L. c.184, §26, as amended.

11. Rights Reserved. This Nitrogen Credit Land Restriction/Easement is granted to the Grantee of the Benefited Property and the Local Approving Authority in connection with the approval of a Nitrogen Loading Facility Aggregation Plan pursuant to 310 CMR 15.216 and the Department's "Guidelines for Title 5 Aggregation of Flows and Nitrogen Loading." It is expressly agreed that acceptance of the Nitrogen Credit Land Restriction/Easement by the Local Approving Authority [or constructive approval of the Nitrogen Loading Facility Aggregation Plan by the Department of Environmental Protection] shall not operate to bar, diminish, or in any way affect any legal or equitable right of the Local Approving Authority or DEP to issue any future order with respect to the Property and the Benefited Property, as applicable thereto, or in any way affect any other claim, action, suit, cause of action, or demand which the Local Approving Authority or DEP may have with respect thereto. Nor shall acceptance of Nitrogen Credit Land Restriction/Easement serve to impose any obligations, liabilities, or any other duties upon the Local Approving Authority.

12. Effective Date. This Nitrogen Credit Land Restriction/Easement shall become effective upon its recordation and/or registration with the appropriate Registry of Deeds and/or Land Registration Office.

WITNESS the execution hereof under seal this ____ day of _____, 19____.

Grantor

COMMONWEALTH OF MASSACHUSETTS

_____, §§

_____, 19 ____

Then personally appeared the above-named _____ and acknowledged the foregoing instrument to be _____ free act and deed before me.

Notary Public:
My commission expires:

The _____ [insert Local Approving Authority] hereby approves and accepts this Grant of Title 5 Nitrogen Loading Restriction and Easement on Nitrogen Credit Land.

Local Approving Authority

Date: _____

ATTACHMENT 3

Upon recording, mail to:
Bureau of Resource Protection, Wastewater Management
Department of Environmental Protection
[applicable Regional Office address]

GRANT OF TITLE 5 NITROGEN LOADING RESTRICTION AND EASEMENT
(Grantor owns and restricts both the facility land and the credit land)
310 CMR 15.216

This GRANT OF TITLE 5 Nitrogen Loading Restriction AND EASEMENT made as of this ____ day of _____, 19 ____, by _____, of _____, _____ County, Massachusetts ("Grantor").

WITNESSETH

WHEREAS, Grantor being the owner(s) in fee simple of that [those] certain parcel(s) of [vacant] land located in _____, _____ County, Massachusetts, with the buildings and improvements thereon, pursuant to a deed from _____ to Grantor, dated _____, and recorded with _____ County Registry of Deeds in Book _____, Page _____ [source of title other than by deed] and/or pursuant to Certificate of Title No. _____ issued by the Land Registration Office of the _____ County Registry District, said parcel(s) of land being more particularly bounded and described in Exhibit A, attached hereto and made a part hereof, and being shown on a plan entitled, " _____", dated _____, prepared by _____, recorded with _____ County Registry of Deeds as Plan No. _____, in Plan Book _____ and/or registered as Land Court Plan No. _____, on file with the Land Registration Office of _____ County Registry District ("Facility Land"); and

WHEREAS, Grantor being the owner(s) in fee simple of that [those] certain parcel(s) of [vacant] land located in _____, _____ County, Massachusetts, with the buildings and improvements thereon, pursuant to a deed from _____ to Grantor, dated _____, and recorded with _____ County Registry of Deeds in Book _____, Page _____ [source of title other than by deed] and/or pursuant to Certificate of Title No. _____ issued by the Land Registration Office of the _____ County Registry District, said parcel(s) of land being more particularly bounded and described in Exhibit A, attached hereto and made a part hereof, and being shown on a plan entitled, " _____", dated _____, prepared by _____, recorded with _____ County Registry of Deeds as Plan No. _____, in Plan Book _____ and/or registered as Land Court Plan No. _____, on file with the Land Registration Office of _____ County Registry District ("Credit Land"); and

WHEREAS, Grantor desires to restrict the number of bedrooms as defined pursuant to 310 CMR 15.002 and/or the wastewater discharge design flow in any improvements located on the Facility Land through the use of this Nitrogen Loading Restriction and Easement; and

WHEREAS, the Facility Land has the benefit, granted hereby, of the Restriction and Easement on the Credit Land consisting of approximately _____ acres as herein provided; and

WHEREAS, the Nitrogen Loading Facility Aggregation Plan has been approved by the _____ Board of Health [insert appropriate town/city] [and, if required, the Massachusetts Department of Environmental Protection ("MassDEP" or "Department")] in accordance with the Department's "Guidelines for Title 5 Aggregation of Plans and Nitrogen Loading;" said approval being based upon the agreement by Grantor to incur certain obligations regarding the number of bedrooms, as defined in 310 CMR 15.002, and/or the wastewater discharge design flow in any improvements located on the Facility Land and maintenance of the Restriction and Easement to ensure protection of the nitrogen loading limitation of 440 gpd/acre discharge standard pursuant to 310 CMR 15.214 in nitrogen-sensitive areas or in areas serving new construction where the residential use of both on-site systems and drinking water supply wells are proposed; and to grant to the municipality acting by and through the _____ Board of Health [insert appropriate town/city] a perpetual easement to ensure maintenance of the Facility Land and the Credit Land including, but not limited to, removal of any prohibited uses and in connection herewith a perpetual easement to pass and repass over the Facility Land and the Credit Land for purposes of inspection of the Facility Land and Credit Land to ensure compliance with and fulfillment of the terms of this Restriction/Easement as hereafter set forth;

NOW, THEREFORE, pursuant to the provisions of 310 CMR 15.216, Grantor does hereby GRANT to the Town/City of _____, a Massachusetts municipal corporation situated in _____ County, having an address at _____, Massachusetts, acting by and through its Board of Health ("Local Approving Authority") for nominal, non-monetary consideration, with QUITCLAIM COVENANTS, a TITLE 5 NITROGEN LOADING RESTRICTION AND EASEMENT ("Restriction/Easement") in, on, upon, through, over and under the Facility Land and the Credit Land, the terms and conditions of which are as follows:

PURPOSE:

The purpose of this restriction is to protect and preserve the quality and quantity of ground water resources in the area of the public and private wells in the Town/City of _____, Massachusetts in order to ensure a safe and healthy public and private water supply for the present and future inhabitants of the area. It shall also be for the specific purpose of limiting the introduction of nitrogen and other pollutants into, and maintaining the natural uptake of pollutants and the recharge of the ground water which takes place on the Facility Land and the Credit Land for the said water supply.

OBLIGATIONS AND EASEMENT:

1. Prohibitions. Grantor agrees to restrict the number of bedrooms, as defined pursuant to 310 CMR 15.002, in any improvements on the Facility Land to _____ [insert number of bedrooms, or in cases where the design flow for the facility is not determined by the number of bedrooms, insert the applicable wastewater discharge design flow limitation in 310 CMR 15.214]. Grantor further agrees to maintain the Credit Land as nitrogen credit land by prohibiting activities which have a detrimental effect on nitrogen loading on the Credit Land, including but not limited to wastewater discharges, the use of nitrogen fertilizer, the introduction of artificial impervious surfaces, the raising, breeding or keeping of animals, livestock or poultry for commercial purposes, and the creation or introduction of land under water. A change in the condition of the Credit Land which results in the Credit Land or a portion thereof being within a Velocity Zone or Regulatory Floodway will render the Credit Land or said portion thereof ineligible for nitrogen credit pursuant to 310 CMR 15.216.

2. Easements. In creating this Restriction and Easement, Grantor hereby grants to the Local Approving Authority its agents, contractors, subcontractors and employees a perpetual EASEMENT to enter upon and the right to bring equipment onto the Facility Land and Credit Land to do any and all acts deemed necessary to maintain the Facility Land and Credit Land in a manner which ensures protection of the nitrogen loading limitation of 440 gpd/acre discharge standard pursuant to 310 CMR 15.214 together with a right to pass and repass by foot and by vehicle over the Facility Land and Credit Land for said purposes, and for purposes of inspecting the Facility Land and Credit Land to ensure compliance with and fulfillment of the terms of this Restriction/Easement.

3. Severability. If any court or other tribunal determines that any provision of this instrument is invalid or unenforceable, such provision shall be deemed to have been modified automatically to conform to the requirements for validity and enforceability as determined by such court or tribunal. In the event the provision invalidated is of such a nature that it cannot be so modified, the provision shall be deemed deleted from this instrument as though it had never been included herein. In either case, the remaining provisions of this instrument shall remain in full force and effect.

4. Enforcement. Grantor expressly acknowledges that a violation of the terms of this instrument could result in the following:

(i) upon determination by a court of competent jurisdiction, in the issuance of criminal and civil penalties, and/or equitable remedies, including, but not limited to, injunctive relief, such injunctive relief could include the issuance of an order to modify or remove any improvements constructed upon the Facility Land or Credit Land in violation of the terms of this Restriction/Easement; and

(ii) in the assessment of penalties and enforcement action by the Local Approving Authority and DEP to enforce the terms of this Restriction/Easement, pursuant to Title 5; M.G.L. c.111, §§ 17, 31, 122, 124, 125, 125A, 127A through 127O, and 129; and M.G.L. c.83, §11.

5. Provisions to Run with the Land. This Restriction/Easement sets forth the rights, liabilities, agreements and obligations upon and subject to which the Facility Land and Credit Land or any portion thereof, shall be left unimproved or according to which said Facility Land and Credit Land may be improved, held, used, occupied, leased, sold, hypothecated, encumbered, or conveyed. The rights, liabilities, agreements and obligations herein set forth shall run with the Facility

Land and Credit Land, as applicable thereto, and any portion thereof and shall inure to the benefit of and be binding upon Grantor and all parties claiming by, through or under the Local Approving Authority or Grantor. The rights hereby granted to the Local Approving Authority and its successors and assigns constitute their perpetual right to enforce this Restriction/Easement. Grantor hereby covenants for himself/herself/itself and his/her/its executors, administrators, heirs, successors and assigns, to stand seized and hold title to the Facility Land and Credit Land, as applicable thereto, and any portion thereof, subject to this Restriction/Easement, provided, however, that a violation of this Restriction/Easement shall not result in a forfeiture or reversion of Grantor's title to the Facility Land or Credit Land, as applicable thereto.

6. Concurrence Presumed. It being agreed that Grantor and all parties claiming by, through or under Grantor shall be deemed to be in accord with the provisions herein set forth and to agree for and among themselves and any party claiming by, through or under them, and their respective agents, contractors, sub-contractors and employees, that the Restriction/Easement herein established shall be adhered to and not violated and that their respective interests in the Facility Land and the Credit Land and the Restriction/Easement, as applicable thereto, shall be subject to the provisions herein set forth.

7. Incorporation into Deeds, Mortgages, leases and Instruments of Transfer. Grantor hereby agrees to incorporate this Restriction/Easement, in full or by reference, into all deeds, easements, mortgages, leases, licenses, occupancy agreements or any other instrument of transfer by which an interest in and/or a right to use the Facility Land or Credit Land, or any portion thereof, is conveyed.

8. Recordation. Grantor shall record and/or register this Restriction/Easement with the appropriate Registry of Deeds and/or Land Registration Office within 30 days of the latter of: receipt from the Local Approving Authority of the approved Restriction/Easement or the expiration of the 60-day DEP constructive approval period pursuant to 310 CMR 15.216. Grantor shall file with the Local Approving Authority and the DEP a certified Registry copy of this Restriction/Easement as recorded and/or registered within 30 days of its date of recordation and/or registration.

9. Amendment and Release. This Restriction/Easement may be amended or released only upon approval by the Local Approving Authority. Release of this Restriction/Easement shall be granted by the Local Approving Authority in the event the Facility Land is connected to a municipal sewer system and the septic system serving the Facility Land is abandoned in accordance with 310 CMR 15.354 or the Facility Land is no longer located within a nitrogen sensitive area pursuant to 310 CMR 15.215. Any such amendment or release shall be recorded and/or registered with the appropriate Registry of Deeds and/or Land Registration Office and a certified Registry copy of said amendment or release shall be filed with the Local Approving Authority and the DEP within 30 days of its date of recordation and/or registration.

10. Term. This Restriction/Easement shall run in perpetuity and is intended to conform to M.G.L. c.184, §26, as amended.

11. Rights Reserved. This Restriction/Easement is granted to the Local Approving Authority in connection with the approval of a Nitrogen Loading Facility Aggregation Plan pursuant to 310 CMR 15.216 and the Department's "Guidelines for Title 5 Aggregation of Flows and Nitrogen Loading." It is expressly agreed that acceptance of the Restriction/Easement by the Local Approving Authority or constructive approval of the Nitrogen Loading Facility Aggregation Plan by DEP shall not operate to bar, diminish, or in any way affect any legal or equitable right of the Local Approving Authority or DEP to issue any future order with respect to the Facility Land or Credit Land or in any way affect any other claim, action, suit, cause of action, or demand which the Local Approving Authority of DEP may have with respect thereto. Nor shall acceptance of the Restriction/Easement serve to impose any obligations, liabilities, or any other duties upon the Local Approving Authority.

12. Effective Date. This Restriction/Easement shall become effective upon its recordation and/or registration with the appropriate Registry of Deeds and/or Land Registration Office.

WITNESS the execution hereof under seal this ____ day of _____, 19____.

Grantor

COMMONWEALTH OF MASSACHUSETTS

_____, §§

_____, 19__

Then personally appeared the above-named _____ and acknowledged the foregoing instrument to be _____ free act and deed before me.

Notary Public:
My commission expires:

The _____ [insert Local Approving Authority] hereby approves and accepts this Grant of Title 5 Nitrogen Loading Restriction and Easement.

Local Approving Authority

Date: _____

ATTACHMENT 4

CONSERVATION RESTRICTION
TO
[GRANTEE]

Upon recording, mail to:
Bureau of Resource Protection, Wastewater Management
Department of Environmental Protection
[applicable Regional Office address]

I. Grantor Clause:

We, [JOHN LANDOWNER and MARY LANDOWNER], husband and wife having an address at _____ ("Grantor(s)"), acting pursuant to Sections 31, 32 and 33 of Chapter 184 of the General Laws, grant, with quitclaim covenants, to [GRANTEE, a governmental body or a Massachusetts non-profit corporation], and its successors and permitted assigns ("Grantee") in perpetuity and exclusively for conservation purposes, the following described Conservation Restriction on a parcel of land located in the City/Town of _____, Massachusetts, constituting approximately _____ acres, said parcel being described in Exhibit A attached (the "Premises").

II. Purposes:

The Premises, comprised of approximately _____ acres of land (and/or water) contain unusual, unique or outstanding qualities the protection of which in their predominately natural or open condition will be of benefit to the public. These qualities include:

[Insert here a description of such qualities whether cultural (for example, an historic battleground or a colonial millsite); scientific (for example, the importance to water supply protection, a geological feature comprised of sedimentary rock containing the footprints of dinosaurs or habitat for endangered or threatened animal or plant species); aesthetic (for example, a vista of a scenic range of hills or seashore); economic (for example, farming, agriculture, or water resources); and recreational values.]

Furthermore, Grantor desires to maintain the Premises as Nitrogen Credit Land pursuant to 310 CMR 15.216 to ensure protection of the nitrogen loading limitation of 440 gpd/acre discharge standard in nitrogen sensitive areas or in areas serving new construction where the residential use of both on-site systems and drinking water supply wells are proposed.

III. Prohibited Acts and Uses, Exceptions Thereto, and Permitted Uses:

- A. Prohibited Acts and Uses. Subject to the exceptions set forth in paragraph B below, the following acts and uses are prohibited on the Premises:
1. Constructing or placing of any building, tennis court, landing strip, mobile home, swimming pool, fences, asphalt or concrete pavement, sign, billboard or other advertising display, antenna, utility pole, tower, conduit, line or other temporary or permanent structure or facility on or above the Premises;
 2. Mining, excavating, dredging or removing from the Premises of soil, loam, peat, gravel, sand, rock or other mineral resource or natural deposit;
 3. Placing, filling, storing or dumping on the Premises of soil, refuse, trash, vehicle bodies or parts, rubbish, debris, junk, waste or other substance or material whatsoever or the installation of underground storage tanks;
 4. Cutting, removing or otherwise destroying trees, grasses or other vegetation;
 5. The subdivision of the Premises;

6. Activities detrimental to drainage, flood control, water conservation, erosion control or soil conservation;
7. Activities which have a detrimental effect on nitrogen loading on the Premises, including but not limited to the introduction of man-made sources of nitrogen such as wastewater discharges and nitrogen based fertilizers, the raising, breeding or keeping of animals, livestock or poultry for commercial or agricultural purposes, the introduction of artificially rendered impervious surfaces, and the creation of land under water. A change in the condition of the Premises which results in the Premises or a portion thereof being within a Velocity Zone or a Regulatory Floodway will render the Premises or said portion of the Premises ineligible for nitrogen credit pursuant to 310 CMR 15.216.
8. Any other use of the Premises or activity which would materially impair significant conservation interests unless necessary for the protection of the conservation interests that are the subject of this Conservation Restriction.

B. Exceptions to Otherwise Prohibited Acts and Uses [If Any]. The following acts and uses otherwise prohibited in subparagraph A are permitted but only if such acts or uses do not materially impair significant conservation interests.

1. [Use of off-road and similar vehicles, including snowmobiles.]
2. [Excavation and removal from the Premises of soil, gravel or other mineral resource or natural deposit as may be incidental to the maintenance or removal of underground tanks, the installation, maintenance or removal of utilities, and other underground structures or to the maintenance of good drainage, soil conservation practices or to other permissible use of the Premises.]
3. [The maintenance of piles of limbs, brush, leaves and similar biodegradable material provided such piles are not conspicuous or otherwise interfere with the conservation objectives of this Conservation Restriction.]
4. [The placing of fences that do not interfere with the conservation purposes of this restriction.]
5. [Digging or drilling of water wells.]
6. [Selective cutting of trees for fire protection, unpaved trail and road maintenance, tick control, or otherwise to preserve the present condition of the Premises, including vistas.]
7. [Woodland operations carried on in accordance with sound forest management practices (including but not limited to the selective cutting and planting of trees).]
8. [Erection of signs by the Grantor or Grantee identifying the Grantee as holder of the restriction and to educate the public about the conservation values protected and any limitations relating to public access.]

C. Permitted Acts and Uses. All acts and uses not prohibited by subparagraphs A and B are permissible.

IV. Legal Remedies of the Grantee(s):

A. Legal and Injunctive Relief

The rights hereby granted shall include the right to enforce this Conservation Restriction by appropriate legal proceedings and to obtain injunctive and other equitable relief against any violations, including, without limitation, relief requiring restoration of the Premises to its condition prior to the time of the

injury complained of (it being agreed that the Grantee(s) may have no adequate remedy at law), and shall be in addition to, and not in limitation of, any other rights and remedies available to the Grantee(s).

B. Reimbursement of Costs of Enforcement

The Grantor(s), and thereafter the successors and assigns of the Grantor(s) covenant and agree to reimburse the Grantee(s) for all reasonable costs and expenses (including without limitation counsel fees) incurred in enforcing this Conservation Restriction or in remedying or abating any violation thereof.

C. Grantee(s) Disclaimer of Liability

By its acceptance of this Conservation Restriction, the Grantee(s) do(es) not undertake any liability or obligation relating to the condition of the Premises.

D. Severability Clause

If any provision of this Conservation Restriction shall to any extent be held invalid, the remainder shall not be affected.

E. Non-Waiver

Any election by the Grantee as to the manner and timing of its right to enforce this Conservation Restriction or otherwise exercise its rights hereunder shall not be deemed or construed to be a waiver of such rights.

V. Access:

The Conservation Restriction hereby conveyed does not grant to the Grantee, to the general public, or to any other person any right to enter upon the Premises except there is granted to the Grantee and its representatives the right to enter upon and the right to bring equipment onto the Premises at reasonable times and in a reasonable manner to do any and all acts deemed necessary to maintain the Property in a manner which ensures protection of the nitrogen loading limitation of 440 gpd/acre discharge standard pursuant to 310 CMR 15.214 together with a right to pass and re-pass on foot and by vehicle over the Premises for said purposes and for purposes of inspecting the Premises to determine compliance with and fulfillment of the terms of this Conservation Restriction.

VI. Extinguishment:

A. Grantee's Receipt of Property Right

The Grantor(s) and the Grantee agree that the donation of this Conservation Restriction gives rise for purposes of this paragraph to a real property right, immediately vested in the Grantee, with a fair market value that is at least equal to the proportionate value that this Conservation Restriction determined at the time of the gift bears to the value of the unrestricted Premises at that time.

B. Value of Grantee's Property Right

Such proportionate value of the Grantee's property right shall remain constant.

C. Right of Grantee to Recover Proportional Value at Disposition

If any occurrence ever gives rise to extinguishment or other release of the Conservation Restriction under applicable law, then the Grantee, on a subsequent sale, exchange or involuntary conversion of the Premises, shall be entitled to a portion of the proceeds equal to such proportionate value, subject, however, to any applicable law which expressly provides for a different disposition of proceeds.

D. Grantor/Grantee Cooperation Regarding Public Action

Whenever all or any part of the Premises or any interest therein is taken by public authority under power of eminent domain or other act of public authority, then the Grantor(s) and the Grantee shall cooperate in recovering the full value of all direct and consequential damages resulting from such action.

E. Allocation of Expenses upon Disposition

All related expenses incurred by the Grantor(s) and the Grantee shall first be paid out of any recovered proceeds, and the remaining proceeds shall be distributed between the Grantor(s) and Grantee in shares equal to such proportionate value.

F. Continuing Trust of Grantee's Share of Proceeds of Conservation Restriction Disposition

The Grantee shall use its share of the proceeds in a manner consistent with the conservation purposes of this grant.

VII. Assignability:

A. Running of the Burden

The burdens of this Conservation Restriction shall run with the Premises in perpetuity, and shall be enforceable against the Grantor(s) and the successors and assigns of the Grantor(s) holding any interest in the Premises.

B. Execution of Instruments

The Grantee is authorized to record or file any notices or instruments appropriate to assuring the perpetual enforceability of this Conservation Restriction; the Grantor(s) on behalf of themselves and their successors and assigns appoint the Grantee their attorney-in-fact to execute, acknowledge and deliver any such instruments on their behalf. Without limiting the foregoing, the Grantor(s) and their successors and assigns agree themselves to execute any such instruments upon request.

C. Running of the Benefit

The benefits of this Conservation Restriction shall be in gross and shall not be assignable by the Grantee, except in the following instances and from time to time:

(i) as a condition of any assignment, the Grantee requires that the purpose of this Conservation Restriction continue to be carried out, and

(ii) the assignee, at the time of assignment, qualifies under Section 170(h) of the Internal Revenue Code of 1986, as amended, and applicable regulations thereunder, and under Section 32 of Chapter 184 of the General Laws as an eligible donee to receive this Conservation Restriction directly.

VIII. Subsequent Transfers:

The Grantor(s) agree to incorporate by reference the terms of this Conservation Restriction in any deed or other legal instrument by which they divest themselves of any interest in all or a portion of the Premises.

IX. Estoppel Certificates:

Upon request by the Grantor(s), the Grantee shall within twenty (20) days execute and deliver to the Grantor(s) any document, including an estoppel certificate, which certifies the Grantor(s) compliance with any obligation of the Grantor(s) contained in this Conservation Restriction.

X. Effective Date:

This Conservation Restriction shall be effective when the Grantor(s) and the Grantee have executed it, the administrative approvals required by Section 32 of Chapter 184 of the General Laws have been obtained, and it has been recorded, or if registered land, it has been registered.

XI. Recordation:

The Grantor(s) shall record this instrument in timely fashion in the _____ County Registry of Deeds.

Executed under seal this ____ day of _____, 19__ .

COMMONWEALTH OF MASSACHUSETTS

_____, ss.

_____, 19__

Then personally appeared the above-named [JOHN LANDOWNER and MARY LANDOWNER] and acknowledged the foregoing instrument to be [their] free act and deed, before me.

Notary Public
My commission expires:

ACCEPTANCE OF GRANT

The above Conservation Restriction is accepted this ___ day of _____, 19__.

[GRANTEE]

By: _____

COMMONWEALTH OF MASSACHUSETTS

_____, ss.

_____, 19__

Then personally appeared the above-named [GRANTEE] and acknowledged the foregoing to be its free act and deed, before me.

Notary Public
My Commission Expires:

APPROVAL BY [SELECTMEN]

We, the undersigned, [being a majority of the] [Selectmen] of the [City/Town] of _____, Massachusetts, hereby certify that at a meeting duly held on _____, 19__ the [Selectmen] voted to approve the foregoing Conservation Restriction to [GRANTEE] pursuant to M.G.L. c. 184, § 32.

[Selectmen]

COMMONWEALTH OF MASSACHUSETTS

_____, ss.

_____, 19____

Then personally appeared the above-named _____ and acknowledged the foregoing to be his or her free act and deed, before me.

Notary Public
My Commission Expires:

APPROVAL BY SECRETARY OF ENVIRONMENTAL AFFAIRS
COMMONWEALTH OF MASSACHUSETTS

The undersigned, Secretary of the Executive Office of Environmental Affairs of the Commonwealth of Massachusetts, hereby certifies that the foregoing Conservation Restriction to [GRANTEE] has been approved in the public interest pursuant to M.G.L. c. 184, § 32.

Date: _____, 19__

Secretary of Environmental Affairs

COMMONWEALTH OF MASSACHUSETTS

_____, ss.

_____, 19_____

Then personally appeared the above-named _____ and acknowledged the foregoing to be his or her free act and deed, before me.

Notary Public
My Commission Expires:

ZONING MAP

March 2009



DATA SOURCES

The Aquifer Protection Overlay District layer was based upon the Town's Aquifer Protection Districts Map dated December 4, 2002 and prepared by Woodard & Curren, who provided the digital ArcView shapefiles to the Town.

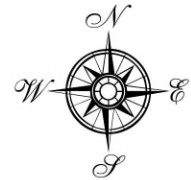
The parcel data layer is developed by Applied Geographics, Inc.

LOCUS MAP

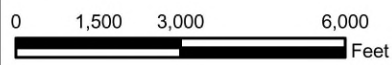
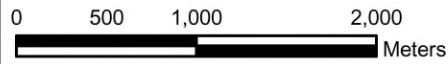


Credit Land





Facility Land



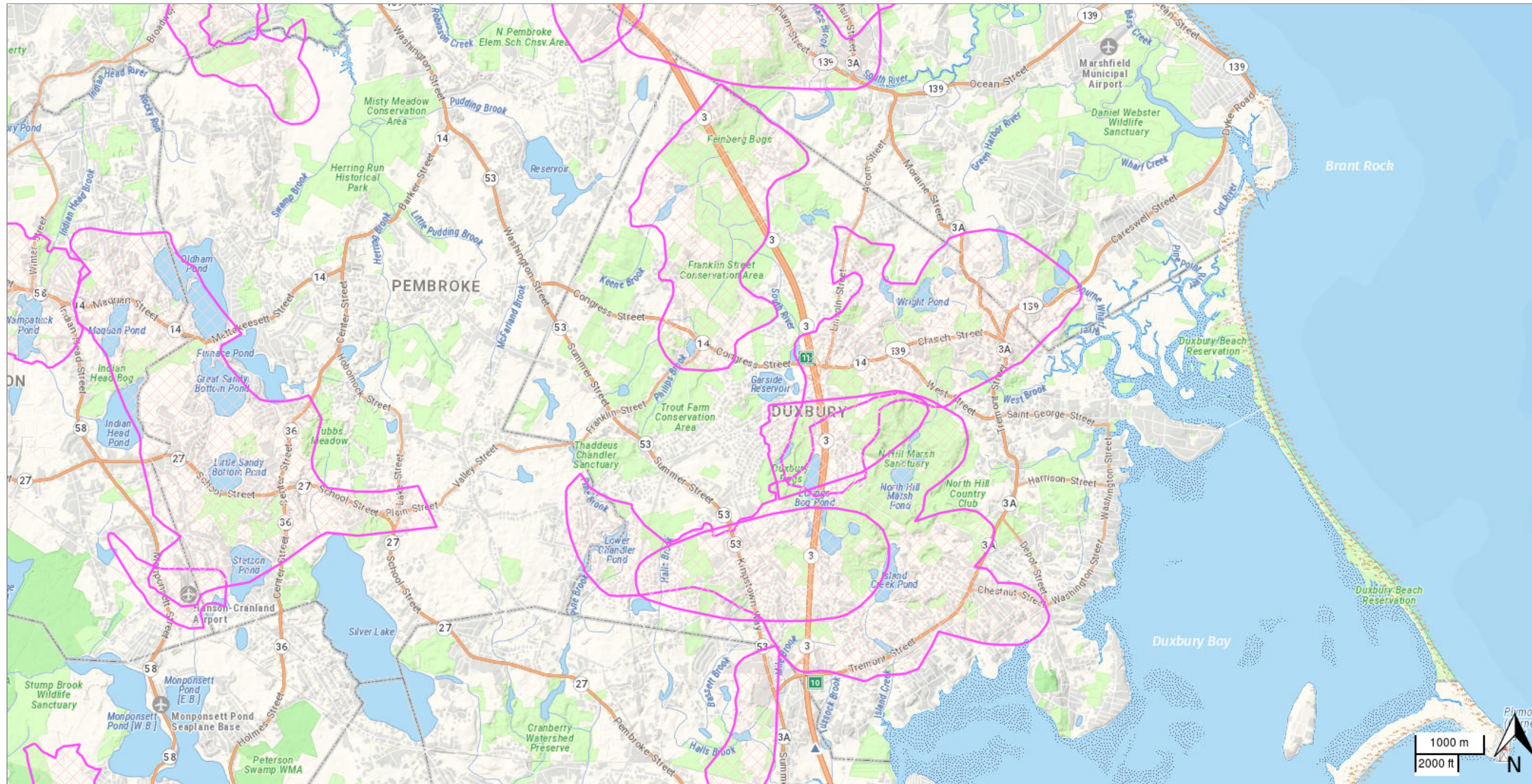
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LEGEND

-  APOD - Aquifer Protection Overlay District (* Also see 2002 Aquifer Protection Districts map)
-  Commonwealth of Massachusetts
-  Roads
-  Parcels

Duxbury Zone II's



Zone II's
 Detailed Features
 MassGIS Statewide Basemap
 MassGIS Topographic Features Basemap

