

**TOWN OF NEW HAMPTON, NH**

**EARTH EXCAVATION AND RECLAMATION**

**REGULATIONS**



**Adopted  
July 21, 1992  
New Hampton Planning Board**

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Section 1.0 - General Provisions

1.01 Title

These regulations shall hereafter be known, cited, and referred to as the Earth Excavation and Reclamation Regulations of the Town of New Hampton, NH.

1.02 Purpose

The purpose of these regulations is to enable the Town of New Hampton, NH to cope with the recognized safety hazards which open excavations create; to safeguard the public health and welfare; to preserve the Town's natural assets of soil, water, forests, and wildlife; to maintain aesthetic features of the Town's environment; to prevent land and water pollution; and to promote soil stabilization.

1.03 Authority

Pursuant to the authority given to the Planning Board by New Hampshire RSA 155-E:1(III)(a), and in accordance with the provisions of RSA 155-E, the New Hampton Planning Board hereby adopts the following regulations governing earth excavation in the Town of New Hampton, NH on July 21, 1992.

1.04 Jurisdiction

These regulations shall apply to all earth excavations as defined by RSA 155-E within the Town of New Hampton.

1.05 Provisions

In addition to these regulations, the provisions of RSA 155-E are hereby adopted by the Town of New Hampton for the regulation of earth excavation.

1.06 Definitions

Applicable definitions found in the Town of New Hampton's Zoning Ordinance, Subdivision Regulations, Site Plan Review Regulations and in RSA 155-E are incorporated herein by reference. In addition, the following definitions are adopted:

Applicant - the owner of the excavation site at the time of application, or said owner's written designee.

Application - a complete submission of information and plans as required by section 2.0 (Application Procedure) of this regulation.

Excavation Pit Agreement - an agreement between the excavation site owner and the contractor describing the terms and procedures for material excavation.

Financial Guarantee - a type of security, acceptable in amount to the Planning Board, and in a form acceptable to the Board of Selectmen.

## Section 2.0 - Application Procedures

### 2.01 General Procedure

Whenever any new or the expansion of an existing earth excavation for commercial purposes is proposed, before any land clearing is begun or the removal of sand, gravel, soil or construction aggregate (except as grandfathered under RSA 155-E:2 I(b)), the land owner or person designated by the owner shall submit an application for and receive an excavation permit from the New Hampton Planning Board or its duly authorized agent. The applicant shall use the application form supplied by the Planning Board. A copy of the completed application must also be sent to the New Hampton Conservation Commission by the applicant at the time of its submission to the Planning Board.

### 2.02 Application

The application shall be made on the form as found in Appendix A and will include the following:

- (a) The names and addresses of all abutters to the site as defined by RSA 672:3.
- (b) An excavation plan showing the excavation site and the scheme for removal of excavated materials consisting of the information required in section 2.05 of these regulations.
- (c) A reclamation plan consisting of the information required in section 2.06 of these regulations, and describing the process of site grading and revegetation following completion of the excavation project.
- (d) The appropriate fees as outlined under section 2.04 of these regulations.

- (e) A financial guarantee of sufficient size to cover the cost of reclaiming the site as outlined in section 2.07 of these regulations.
- (f) Copies of relevant documents and other permit approvals necessary for the excavation project. Permit approvals may include, but are not limited to, the following:
  - (1) Written permission from WSPCD under RSA 485-A:17;
  - (2) Wetland Board approval as required by RSA 482-A;
  - (3) US Army Corps of Engineer's approval;
  - (4) Any applicable air quality permits or requirements;
  - (5) Any other permit or approval required for such excavation by any federal, state, or local body.
- (g) Such other information as the Planning Board may reasonably require during the review of an application.

2.03 Review of Application

The Planning Board may contract with an engineering firm or other applicable firm to review the application and/or conduct a traffic study. The cost of the review or study, as authorized by RSA 155-E:11,I, shall be at the applicant's expense.

2.04 Fee Schedule

Application Review Fee - \$100.00 application fee, or \$25 per acre of excavation area, whichever is greater, plus mailing and notification expense, to be submitted with the completed application;

Inspection Fee - an inspection fee will be charged to the applicant at the time of the inspection. Such fee shall be the actual cost charged by the Selectmen or their designated agent. Applicant will be notified of the amount of this cost before it is incurred;

Engineering Review Fee and/or Traffic Study Fee - an engineering review fee and/or a traffic study fee, as noted under section 2.03 of these regulations, as determined by the New Hampton Planning Board;

Permit Renewal Fee - \$50.00;

2.05 Excavation Plan

An excavation plan shall consist of all the applicable information as required in section 3.2.5 of the Site Plan Review Regulations, including the following:

1. Proposed topography at the completion of excavation (prior to reclamation);
2. Distances between the limits of the proposed excavation and the closest property lines;
3. Existing setbacks and visual barriers which will be retained, as per RSA 155-E:4-a (I), (II), (II-a), and (III);
4. Aquifer limits/location as identified by the U.S. Geological Survey and/or the Department of Environmental Services Water Resources Division;
5. An estimate of the project duration and phasing;
6. Notations on the plan as to the excavation site acreage and volumes of material to be removed;
7. The location and design of site access roads leading to and from public highways;
8. The elevation of the seasonal high groundwater table within or next to the proposed excavation;
9. Topsoil storage sites during the excavation phase;
10. Any easements encumbering the excavation site;
11. A description of the proposed equipment, including but not limited to, trucks (loaded weight) and crushers, including any water supply and disposal. In addition, a description of machine shops and any other structures must be provided to the New Hampton Planning Board with the excavation plan;
12. If any of the waste material is planned to be stockpiled or stored on the site, then the location of same shall be indicated on the excavation plan;
13. An estimate of the maximum number of trips per day in and out of the excavation site.

2.06 Reclamation Plan

Excavation site reclamation plans shall be prepared and submitted by all new and existing excavation site owners who are subject to the provisions of RSA 155-E and these regulations. The owners of existing excavation operations must perform reclamation in compliance with

RSA 155-E:5 and 155-E:5a. Owners of existing excavation operations shall submit a reclamation plan and appropriate financial guarantee to the New Hampton Planning Board for its approval, within six (6) months of their registration under RSA 155-E:2, or within one year of the effective date of these regulations, whichever is earlier. The Excavation/Reclamation Application Form shall be used for this submission.

The reclamation plan shall meet, at a minimum, the requirements set forth in RSA 155-E:5, 155-E:5a and the current revision of the United States Department of Agriculture, Soil Conservation Service Technical Note PM-NH-24 "Vegetating New Hampshire Sand and Gravel Pits" (See appendix B). In addition, the character of the restored landscape shall blend with the surrounding natural features.

The reclamation plan shall be drawn at the same scale and shall use the same base survey information as that utilized in the preparation of the excavation plan. The reclamation plan shall also contain the following information:

1. Reclaimed topography and surface drainage at the completion of the reclamation phase;
2. The phasing of the site reclamation showing designated areas and completion dates;
3. Soil conditioning specifications;
4. Seeding and mulching specifications;
5. Plant materials to be used in the reclamation, their quantities and sizes;
6. Sections showing existing, excavated and reclaimed topography configurations.

#### 2.07 Financial Guarantee

##### 1. Financial Guarantee

Before final approval of an excavation operation, the owner shall file a financial guarantee in an amount determined by the New Hampton Planning Board to be sufficient to cover the costs of the reclamation of the site and all, or any part, of the cleaning of the site upon completion of the work. The cleaning of the site shall include, but is not limited to, the removal of stumps, large boulders, general cleanup, and any other miscellaneous debris.

2. Financial Guarantee Amount

The amount of the financial guarantee shall be set by the New Hampton Planning Board at the time of the final approval. All financial guarantees are to be made payable to the Town of New Hampton, NH, posted with the Board of Selectmen, and be in the amount of 100 percent of the estimated costs of the reclamation as outlined under section 2.07 (3) of these regulations.

3. Extent of Financial Guarantee

The amount of the financial guarantee shall be based on the amount of land currently under excavation. In the case of completed or abandoned excavations, the amount of the financial guarantee shall be based on the amount of disturbed or unreclaimed land. As an excavation site is reclaimed, the amount of the bond may be adjusted (increased or decreased) to reflect the amount of work which has been completed on the site. In no case will the amount of the bond be reduced to less than 10 percent of the original bond amount, as outlined under section 2.07 (5) of these regulations.

4. Review of Financial Guarantee

The amount of the financial guarantee shall be reviewed by the New Hampton Planning Board on an annual basis upon application for a permit renewal. The applicant shall be responsible for any additional increase in the amount of the financial guarantee before receiving a permit renewal.

5. Financial Guarantee Release

The financial guarantee shall not be released until after the New Hampton Planning Board, or its designee, has made a site inspection and certified the completion of the required reclamation in accordance with the reclamation plan. Upon acceptance of the site by the Planning Board, the Board of Selectmen shall be authorized to release up to 90 percent of the financial guarantee. The Board of Selectmen shall retain 10 percent of the total value of the financial guarantee for a period of 36 months to insure the stabilization of the vegetation.

Section 3.0 Excavation Permits

3.01 Permit Issuance

Upon its affirmative vote of approval, the Planning Board shall issue an excavation permit to the applicant, and notify the Board of Selectmen and the Zoning Board of Adjustment of the approval.

3.02 Posting of Permits

Permits shall be posted on the excavation site within view upon entering the property and within a clear, weather-protective covering.

3.03 Expiration Date

All permits shall expire after one year on the anniversary date of the previous permit. The applicant is responsible for submitting the renewal application prior to the expiration date of the permit.

3.04 Permit Renewal

The applicant may renew the excavation permit and continue excavation operations by making application to the Planning Board in the manner set forth in section 2.0 of these regulations. The excavation permit application need only supply that information which has changed from the previous application submission. The fee for a permit renewal shall be \$50, unless it is determined by the Planning Board that substantial changes have been made to the excavation which shall require additional review from the Planning Board.

3.05 Permit Amendments

If adherence to the permit conditions (including the excavation/reclamation plans) cannot be maintained, the owner shall apply to the Planning Board for a permit amendment. An application shall be completed and submitted to the Planning Board for review and approval in the manner provided for in section 2.0 of these regulations. The fee for a permit amendment shall consist of the application review fee, unless it is determined by the Planning Board that substantial changes have been made to the excavation which shall require additional review by the Planning Board.

3.06 Transfer of Permits

Pursuant to RSA 155-E:8, no permit issued under the authority of these Regulations shall be assignable or transferable without the prior written consent of the New Hampton Planning Board.

Section 4.0 Operational Standards

4.01 The following operational standards must be adhered to during the operation of any excavation subject to RSA 155-E:4a and these regulations:

1. Removal operations shall not be conducted closer than 50 feet to a public street, nor between the hours of 8:00 PM and 6:30 AM.

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2. All equipment for sorting, washing, crushing, drying, processing and treating, or other operating machinery, shall not be used closer than 100 feet from any public street or from any adjoining lot line.
3. Lateral support shall be maintained for all adjacent properties as determined by a registered professional engineer.
4. Excavation site access roads, leading to and from the excavation site, shall intersect existing streets and roads at locations that have been duly approved by state and/or local officials and in a manner that will not endanger the safety of highway users and local residents. The provisions for access under the Subdivision Regulations for the Town of New Hampton shall be adhered to by the applicant and shall be shown on the excavation plan. Access over class VI roads, bridges or ways shall be defined in writing and made a part of said plan.
5. Topsoil - Prior to the excavation of earth at a new excavation area, all topsoil material shall be stripped and stored for possible use in reclaiming the site upon the completion of excavation at that site. The removal of topsoil should be undertaken in a phased manner to minimize erosion potential.
6. Timber removal - The applicable New Hampshire statutes and regulations pertaining to forest practice and timber harvesting shall apply to the removal of vegetative cover at excavation sites.
7. Visual barriers shall be those specified at section 4.8 (a-c) in New Hampton's Site Plan Review Regulations.
8. Slopes - The Planning Board may, at its discretion, specify excavation slopes that will provide a slope to minimize erosion from reclamation work or heavy rain and snow load. A slope of 3:1 will generally be considered acceptable, except for a long slope where a bench may be required. For shorter slopes, when the soil is suitable, a 2:1 slope may be deemed acceptable. Refer to the Site Plan Review Regulations section 4.5 (b &c) for recommended processes.
9. Rate of reclamation - All excavations must be reclaimed so as to comply with RSA 155-E:5, 155-E:5a and these regulations by the end of one (1) year following the cessation of excavation operations.

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10. Debris - Debris resulting from the excavation shall be buried or removed.
11. Waste material - The excavation site shall be kept free of all discarded waste material (i.e. machine parts, cables, cans, etc.). In addition, no solid and/or hazardous waste, septage, dredge spoils, or organic waste and debris shall be disposed of on the excavation site unless specifically authorized and/or permitted by the appropriate federal, state or local authority(s).
12. Set back - If the proposed site is close to surface water, such as a stream, river or pond, particular attention shall be paid to the set back of the excavation from the water as described in RSA 155-E:4-a,II-a.
13. All excavation operators shall report the amount of material removed to the Selectmen. These reports shall be submitted semi-annually at the end of July and December. The Selectmen shall determine whether an onsite inspection is necessary.

### 4.02 Depth of Excavation

1. The depth of excavation shall be a minimum of eight (8) feet above the seasonal high water table existing at the location in question before commencement of excavation. The subsurface information described above shall be derived from test pits and verified by the Planning Board or its designee.
2. The Planning Board shall grant an exception for excavations which propose to dig within eight feet above the seasonal high water table, provided the following conditions are met:
  - (a) The applicant demonstrates that the proposed excavation will not adversely affect water quality by directly contributing pollution, or by increasing the long-term susceptibility of groundwater or surface water to potential pollutants; and
  - (b) The applicant provides a plan which depicts the proposed depth of excavation and its relation to the seasonal high water table; and
  - (c) The applicant provides an enforceable restriction (e.g. covenant or easement) prohibiting any future on-site subsurface sewage disposal or any other use which could contaminate groundwater; and

- (d) Where an exception is sought for excavation that will create temporary or permanent standing water, the applicant will provide adequate safety measures (e.g. grading perimeter slopes, fencing, etc.) as may be required by the Planning Board.
3. Written notice of such exception shall be filed with the Division of Water Supply and Pollution Control, Department of Environmental Services, Concord, NH by the New Hampton Planning Board.

Section 5.0 Exemptions

5.01 Highway Excavations

An excavation performed exclusively for the lawful construction, reconstruction, or maintenance of a class I, II, III, IV, or V highway by a unit of government having jurisdiction for the highway or an agent of the unit of government having jurisdiction for the highway or an agent of the unit of government which has a contract for the construction, reconstruction, or maintenance of the highway, shall be exempt from the permit provisions of these regulations, provided that:

1. A copy of the pit agreement executed by the owner, the agent, and the governmental unit shall be filed with the Planning Board prior to the start of excavation; and such excavation shall not be exempt from any land use regulations of the municipality. In addition, a plan must be filed with the Planning Board which identifies and limits the exemption granted to only that portion of the pit that is necessary for the public highway project. Failure to file a copy of the pit agreement or the above referenced plan with the municipality or to comply with the terms of the agreement constitutes a violation enforceable under the provisions of Section 6.05 of these regulations.
2. The New Hampshire Department of Transportation or its agent may apply to the Appeals Board created under RSA 21-L to be exempted from the provisions of local land use regulations. The appeals process includes a formal public hearing in the affected municipality as set forth in RSA 155-E:2, (IV)(c).

Section 6.0 Administration

6.01 Enforcement

The Planning Board or its duly authorized agent is responsible for the enforcement of these regulations as provided by RSA 155-E:10. The excavation permit of any individual, corporation, or company who has violated

any provision of their permit, these regulations, or RSA 155-E, or made material misstatements in the permit application upon which his permit was granted, may be suspended or revoked. Such suspension or revocation shall be subject to a motion for a rehearing thereon and appeal in accordance with Section 6.03 of these regulations.

6.02 Inspections

1. Annual inspections of all permitted operations shall be conducted by the Planning Board or their authorized agent and the cost of said inspections shall be borne by the operator of the excavation.
2. Prior to the issuance of a renewal permit, an inspection of the site shall be conducted and all conditions and restrictions from previous approvals must be found to be in compliance.

6.03 Appeals

Any person aggrieved by the official decision of the Planning Board may appeal for a rehearing on such decision as provided by RSA 155-E:9.

6.04 Waivers

The Planning Board, upon application and following a hearing, may grant a waiver in writing to the standards contained in these regulations for good cause shown except as prohibited by RSA 155-E. The written decision shall state specifically what standards, if any, are being relaxed and include reasonable alternative conditions.

6.05 Penalties and Remedies

Fines, penalties and remedies for violations of these Regulations shall be those set out in RSA 676:15 and 676-17.

6.06 Other Regulations

Where these regulations are in conflict with other local, state, or federal ordinances and/or regulations, the more stringent shall apply.

6.07 Adoption

These regulations shall be effective upon their approval by the Planning Board at a Public Hearing and filing of same with the Board of Selectmen and the Town Clerk.

6.08 Severability

The invalidity or unenforceability of any provision of these regulations shall not render invalid or unenforceable any other portion of these regulations.

Appendix A  
Excavation/Reclamation Application Form

TOWN OF NEW HAMPTON, NH

EXCAVATION/RECLAMATION APPLICATION FORM

Pursuant to RSA 155-E, the following application must be submitted to the Planning Board to obtain an excavation permit. Prior to issuance of a permit, the Planning Board shall determine that the provisions of RSA 155-E, these regulations, and any other applicable regulations or ordinances are met.

Applicants qualifying under the exemption provisions of RSA 155-E:2 and filing the reclamation plan pursuant to RSA 155-E:5 are to utilize this form, noting the intent of this application.

1. Submit completed application, together with fees and additional required information to:

Chairman of the Planning Board  
Town of New Hampton  
New Hampton, NH 03256

2. Intent of Application:

Excavation Permit \_\_\_\_\_

Reclamation Plan Submission \_\_\_\_\_

Permit Renewal \_\_\_\_\_

3. Date of Submission: \_\_\_\_\_

4. Name of Property Owner: \_\_\_\_\_

Address (mailing) \_\_\_\_\_

5. Name of Applicant: \_\_\_\_\_

Address (mailing) \_\_\_\_\_

6. Location of proposed/existing excavation (municipality, nearest roads, other locational information, tax map and lot number): \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

7. Tax map and lot number, name and address of all abutters (see definition). Names must be current, based on Town records, five days prior to the submission of the application. (List below or attach separate sheet, and show clearly on plan): \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

8. Copies of all local, state and federal permits required and obtained. Permits include, but are not limited to, the following:

Special exception from New Hampton ZBA  
WSPCD (RSA 485-A:17)  
Wetlands Board (RSA 482-A)  
State Highway Department (Access Permit, RSA 249:13-18)  
State Pit Agreement (per NHDOT Standard Specifications for Road and Bridge Construction, Section 106)  
Army Corp of Engineers Dredge and Fill Permit

9. Excavation Plan (5 copies):

The Excavation Plan shall contain the information outlined in Section 3.2.5 of the Town of New Hampton's Site Plan Review Regulation, and the following:

Existing topography  
Limits of excavation  
Excavation depths (excavated topography)  
Total area of excavation in acres  
Access road(s) and intersection with town or state highways  
Vegetation buffer  
Distances from excavation limits to property lines  
Schedule of excavation volumes; phasing of excavation (areas and dates)  
Test pit groundwater elevations  
Topsoil storage area  
Drainage improvements (if necessary)  
Photographs of existing conditions  
A list of proposed equipment to be used  
Location of any gravel to be stockpiled  
An estimate of the number of trips per day from the site

10. Reclamation Plan (5 copies):

The Reclamation Plan shall contain the information outlined in Section 3.2.5 of the Town of New Hampton's Site Plan Review Regulation, and the following:

Reclaimed topography  
Phasing of reclamation (areas and dates)  
Soil conditioning specifications  
Seeding (and mulching if needed) specifications  
Plant materials/quantities/sizes  
Sections showing existing, excavated and reclaimed topography

11. Hauling Information:

- a. Routes to be utilized
- b. Frequency of truck traffic over routes
- c. Size and weight of trucks used

12. Application Fees:

Application Review Fee:	\$100.00 or \$25.00 per acre (whichever is greater)
Permit Renewal Fee:	\$50.00

13. Financial Guarantee:

A financial guarantee shall be required prior to the issuance of an excavation permit. The amount shall be determined by the Planning Board with input from outside experts as deemed necessary by the Planning Board. The financial guarantee will generally be \$3000 per acre.

14. Permit:

An excavation permit will be valid for a period of one (1) year. An application for permit renewal must be submitted to the Planning Board by the owner if excavation is to be continued beyond the termination date. The renewal application must identify and adjust all information contained in the original application that is no longer effective for the renewal period.

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This is to certify that the information contained in this application is complete and true to the best of my knowledge.

Submitted by:

OWNER

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

APPLICANT

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

NOTE: The application must be signed by the current owner of the property.

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Appendix B

Soil Conservation Service  
Technical Note PM-NH-24

"VEGETATING NEW HAMPSHIRE  
SAND AND GRAVEL PITS"



United States  
Department of  
Agriculture



Soil  
Conservation  
Service

Technical Note

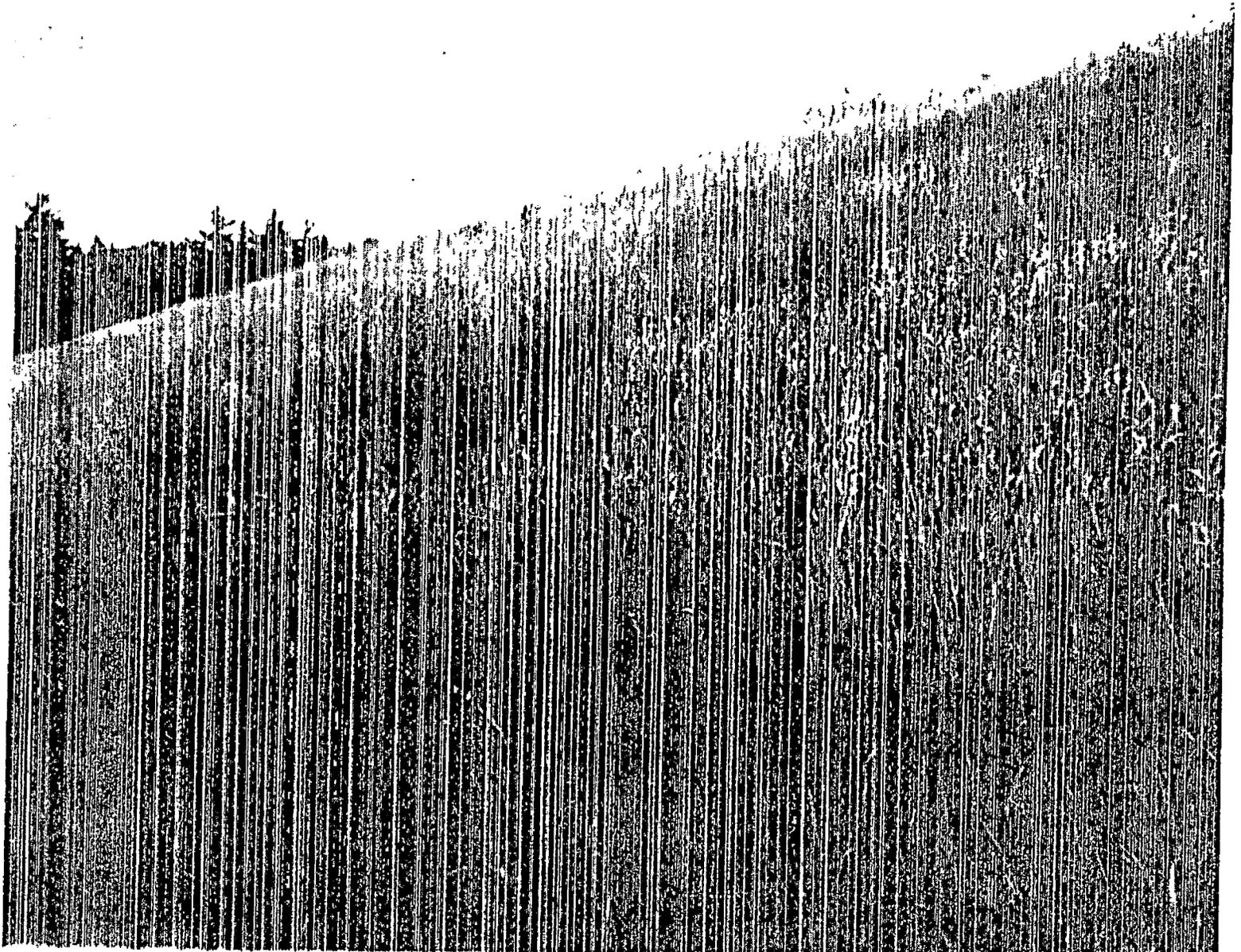
PM-NH-24

Rev. April 1991

# Vegetating

## New Hampshire

### Sand and Gravel Pits



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## FOREWORD

Plant materials are the basic tools used in environmentally and economically efficient erosion control. Plants, in addition to shaping our environment, protect our soil, water, and air resources from degradation. The value of plants cannot be exaggerated.

Industrial activity, resource mining, inappropriate farming techniques, waste disposal, and increased runoff from hard surfaces all combine with a growing population to threaten long-term resource stability. Intelligent use of plants and plant-related systems will contribute to our future well-being.

The USDA Soil Conservation Service (SCS) administers a Plant Materials Program in order to: (1) identify and make available superior plants for protecting soil and water resources; (2) determine improved techniques for using plants and plant systems; (3) provide for commercial increase of superior plants, and (4) promote the use of plant materials to meet the objectives and priorities of the National Conservation Program.

Plant Materials Centers and Plant Materials Specialists operate within each region of the country to carry out the plant materials program. Plant Materials Specialists provide direct assistance to SCS personnel and conservation districts in each state seeking vegetative solutions to site specific problems.

This report is a result of the SCS Plant Materials Program in New Hampshire. It provides current vegetative recommendations to help solve the persistent and difficult problem of vegetating sand and gravel pits.

David L. Mussulman  
State Conservationist

## INTRODUCTION

Soil erosion, aesthetics, and adverse impacts on water quality are concerns associated with the operation, maintenance, and closure of sand and gravel pits. A good vegetative cover of grasses and legumes can alleviate these concerns. Vegetative cover will retard surface runoff and prevent erosion, reducing the sedimentation of nearby streams, waterways, and waterbodies. Vegetative cover will enhance the aesthetics of sand and gravel pits while providing nesting and escape cover for wildlife.

These vegetative recommendations are based on an evaluation of numerous test plantings made at sand and gravel pits throughout New England and New York. The Soil Conservation Service coordinated the planting and conducted follow-up evaluations during the period 1975-1990. Plantings and evaluations will continue in the years ahead to gain additional insight and knowledge. SCS will provide updated recommendations when and if further study warrants them.

Sand and gravel pits are difficult sites to permanently vegetate. The difficulty is due to droughty conditions, low soil organic matter, low soil fertility, and lack of topsoil. These characteristics make it difficult to establish and maintain a permanent grass or legume cover.

A 4-inch cap of topsoil will usually be sufficient for establishing selected vegetation that is otherwise compatible with the site condition. Thus, the stockpiling of and reuse of topsoil on critical areas of a site improve vegetative establishment.

## SITE PREPARATION

- (1) Cut and fill slopes should not exceed 2:1 (2 horizontal feet for 1 vertical foot) to provide stability. Flatter slopes (3:1) are preferred to facilitate seeding efforts.
- (2) Avoid long slopes to help prevent erosion and to allow access for seeding, mulching, and maintenance. Control slope length by installing one terrace (10 feet wide and sloped into the cut slope) for every 40 vertical feet.
- (3) Construct diversions at tops of slopes to divert runoff water away from the slope banks to a stable outlet.
- (4) Construct rock lined chutes or equivalent to conduct concentrated flow of water to stable outlets.
- (5) Remove large stones, boulders, and other debris that will hinder the seeding process and the establishment of vegetation.
- (6) Spread a minimum depth of 4 inches of topsoil over the site, if available.
- (7) Obtain soil samples by collecting 6 to 8 small samples (1 or 2 handfuls) of soil material from the upper 4 inches of the area to be seeded. Mix the small samples to obtain one composite sample.
- (8) Use part of the sample for a soil test to determine lime and fertilizer needs. Run the balance of the sample(s) through a sieve analysis to determine the percent by weight passing a No. 200 sieve.\* Those passing are called "fines."

## SEEDING PROCEDURES

### (1) SPECIES AND VARIETY SELECTION

Select one of the grass/legume mixes based on the percent weight passing a No. 200 sieve as outlined above. Mix 2 is recommended if suppression of woody growth is desired and there are more than 15 percent fines. The standard conservation mixes available from local seed suppliers are not recommended on droughty sites. These mixes usually provide a green cover very quickly, but the plant species begin to die in 2-4 years on sterile and droughty sites.

\* Sources of assistance for determining sieve analysis may be obtained at your local Soil Conservation Service field office.

Where percent by weight passing a No. 200 sieve is less than 15, select from mix 1.

Mix 1 (warm season grasses)

<u>Species</u>	<u>Varieties (select one)<sup>a/</sup></u>	<u>Mix Options for Various Situations<sup>b/</sup></u>		
		<u>Lbs Per Acre (PLS)</u>		
		(1)	(2)	(3)
Switchgrass	Trailblazer, Pathfinder	6	2	6
Coastal panicgrass	Atlantic		5	
Big bluestem	Niagara, Kaw	4	2	4
Little bluestem	Aldous, Camper, Blaze	2		
Sand lovegrass	Bend, NE-27	4	6	5
		<u>16</u>	<u>15</u>	<u>15</u>

Options in Mix 1

- (1) This combination most closely represents the naturally occurring vegetation where warm season grasses are native in the northeast.
- (2) This combination has the fastest establishment and cover.
- (3) This combination is the simplest and may be easier to obtain. Options 2 or 1 are preferred by the authors.

Where percent by weight passing a No. 200 sieve is between 15 and 20, use mix 1 or 2.

Mix 2 (legumes and cool season grass)

<u>Species</u>	<u>Varieties (select one)<sup>a/</sup></u>	<u>Lbs Per Acre<sup>c/</sup></u>
Flatpea <sup>c/</sup>	Lathco	10.0
Perennial pea <sup>c/</sup>	Lancer	2.0
Crownvetch <sup>c/</sup>	Penngift, Chamung	10.0
Tall fescue	Ky-31, Rebel, Ken-Hi	10.0

<sup>a/</sup>Varieties are listed in preferential order.

<sup>b/</sup>Warm season grass seed is sold and planted on the basis of pure live seeds (PLS). An adjustment is made to the bulk pounds of seed to compensate for inert material and dead seed.

<sup>c/</sup>These legumes must be inoculated at time of seeding. If seeding by hand, use a sticking agent, such as cola or milk to stick inoculant to seed. If seeding with hydroseeder, use 4 times the recommended rate of inoculant.

Where percent by weight passing a No. 200 sieve is above 20, use mix 1, 2, or 3.

Mix 3 (cool season grasses and legumes)

<u>Species</u>	<u>Varieties (select one)<sup>a/</sup></u>	<u>Lbs Per Acre<sup>b/</sup></u>
Tall fescue	Ky-31	20.0
Redtop	Streeker, Common	2.0
Birdsfoot trefoil <sup>c/</sup>	Viking, Empire	8.0

(2) LIME AND FERTILIZER DETERMINATION

(a) Mix 1 - In lieu of a soil test, lime at the rate of 1 ton/acre (50 lbs/1,000 sq ft). Fertilize with 500 lbs/acre (11 lbs/1,000 sq ft) of 10-20-20 or equivalent. Incorporate lime, fertilizer, and seed using rakes if seeding is done by hand. It is strongly recommended to use a bulldozer to "track" the site after seeding. Tracking will incorporate the lime, fertilizer, and seed to promote seed germination.

(b) Mixes 2 and 3 - In lieu of a soil test, lime at the rate of 2 tons/acre (90 lbs/1,000 sq ft). Fertilize with 500 lbs/acre (11 lbs/1,000 sq ft) of 10-20-20 or equivalent.

The seed needs to be incorporated to ensure success and to shorten establishment time. This is especially true of mixes 1 and 2, and is most critical for the large seeded legumes in mix 2. On the flatter slopes, use a bulldozer to "track in" the seed.

(3) MULCH DETERMINATION (for hydro and hand seeding)

(a) Mulching for Mix 1 - Weed free mulch. Clean straw is recommended. Mulch at the maximum rate of 500-700 lbs/acre. Higher mulching rates and mulch with weed seed content will inhibit seeding success significantly. If the erosion hazard is low and the seed is incorporated, mulching is not necessary for seeding success. Do not apply mulch prior to tracking with a bulldozer.

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<sup>a/</sup>Varieties are listed in preferential order.

<sup>b/</sup>Legume and cool season grass seed is sold and planted on a bulk basis, the weight is not compensated for dead seed and inert material.

<sup>c/</sup>These legumes must be inoculated at time of seeding. If seeding by hand, use a sticking agent, such as cola or milk to stick inoculant to seed. If seeding with hydroseeder, use 4 times the recommended rate of inoculant.

(b) Mulching for Mixes 2 and 3 - Mulch with weed free hay or straw and mulch at the rate of 2-3 tons/acre for mix 2 and 1-2 tons/acre for mix 3. The higher mulching rate is recommended where seed incorporation is difficult. This is especially critical for mix 2.

(4) SEEDING METHODS

*ALTERNATIVE 1-* Large areas and/or steep slopes

Apply lime, seed, and fertilizer with a hydroseeder and, depending on the consistency of the soil material, steepness of slope, and seed mixture used:

- (a) press the seed into the soil by tracking with a bulldozer, or
- (b) cover the seed by walking back and forth over steep loose sandy slopes, or
- (c) apply mulch and a tackifier to hold the mulch in place.

*ALTERNATIVE 2-* Flat to gently sloping areas (3:1 slopes maximum)

Apply lime, seed, and fertilizer using farm type spreaders, and track the site with a bulldozer or apply mulch according to the circumstances.

*ALTERNATIVE 3-* Small areas

Apply lime, seed, and fertilizer by hand and rake.

(5) SEEDING DATES

Primary seeding dates begin as soon as the snow melts in the spring and ends May 15. The importance of early seeding cannot be overemphasized. This is especially true for mix 1. Depending on weather conditions, substantial failure can be expected if seeding is done later.

Late summer and early fall seedings are not recommended for mixes 1 and 2. If late season seedings of mixes 1 and 2 are necessary, they should be done after October 20 to prevent fall germination and subsequent winterkill.

Mix 3 can also be seeded from August 15 to September 1 with conventional seeding.

(6) RESPONSE OF SEEDING

The plant species in mixes 1 and 2 germinate and grow slowly. Complete cover may not occur for 2-4 years. However, a well established stand will endure for years.

Follow-up seeding may be needed to establish vegetation on the more difficult parts of some sites. The need to do follow-up seeding can be determined the year after the initial planting.

#### MAINTENANCE

Substantial stand vigor can be achieved if the site is top-dressed with fertilizer one year after planting. If topdressing mix 1, fertilize between June 15 and July 15. The timing of this topdressing is important. Mixes 2 and 3 should be topdressed in the early spring. Topdress mixes 1 and 3 with a balanced fertilizer, applying 50 lbs of nitrogen/acre. For example, apply 250 lbs of 20-20-20/acre. Topdress mix 2 with 500 lbs of 0-20-20/acre in April, May, or June.

If mowing is desired to suppress woody growth, mow mix 1 about mid-July leaving a stubble height of 6-8 inches. It is not necessary to mow mix 2. A good cover of flatpea will prevent invasion of woody species. Mix 3 can be mowed at any time.

## ASSISTANCE FROM THE SOIL CONSERVATION SERVICE

SCS personnel are available to help evaluate specific sites and to assist fitting the above recommendations to the site(s). Plantings of some of the species identified in mixes 1 and 2 are located in Belknap, Carroll, Merrimack, and Rockingham Counties. If interested in seeing these plantings, contact the appropriate SCS field office.

### SCS FIELD OFFICE ADDRESSES

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Belknap County Conservation  
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Conservation District  
Chappell Professional Center  
Route 13 South  
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Soil Conservation Service and  
Carroll County Conservation  
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44 Main Street  
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Conway, NH 03818  
Phone: 447-2771

Soil Conservation Service and  
Merrimack County Conservation  
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525 Clinton Street  
Bow, NH 03301  
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Soil Conservation Service and  
Cheshire County Conservation  
District  
196 Main Street, Room 212  
Keene, NH 03431  
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Soil Conservation Service and  
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