

RSA 155-E:  
THE LAW GOVERNING EARTH  
EXCAVATIONS

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*A HANDBOOK FOR NEW HAMPSHIRE  
MUNICIPALITIES*



SOUTHWEST REGION PLANNING COMMISSION  
1999

# P R E F A C E

This handbook has been prepared to assist towns in understanding and applying the state statutes that govern earth excavations. It has been developed as a service for all member towns of the Commission. Included herein are: an explanation of the law, with the major amendments of 1989 and subsequent revisions; recommended procedures for Planning Boards to follow in enforcing the law; a model excavation regulation with several supporting documents; a review of relevant court cases since 1989; and a brief discussion of the Excavation Tax and Excavation Activity Tax, effective as of April 1, 1998.

The excavation regulation presented in this document is intended as a model for towns wishing to adopt their own regulations. It has been kept as simple as possible, given the differences in local needs. Towns may choose to adopt a simple regulation such as the one presented here, or include additional items and requirements. These possibilities are discussed in more detail in the document.

Any towns wishing assistance in adopting excavation regulations, or which simply have questions regarding RSA 155-E, may contact the Southwest Region Planning Commission at:

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**SECTION I:**

RSA 155-E

# SECTION I

## **RSA 155-E: THE LAW GOVERNING EXCAVATION OF EARTH MATERIALS**

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Chapter 155-E of the New Hampshire Revised Statutes Annotated was originally enacted August 24, 1979. This law grants municipalities the authority to regulate earth excavations within their borders. The law was substantially amended, effective as of August 4, 1989; there have been several amendments to the law since 1989, none of them, however, altering the substance and/or intent of the law - rather more in the way of "housekeeping" issues. There have, as well, been several NH Supreme Court cases involving excavation issues; these are briefly summarized at the end of this section, with a note as to any possible effect on the intent/administration of RSA 155-E.

This law has rather significant ramifications for both Planning Boards and gravel pit owners/operators alike. Summarized below is an explanation of the major changes to the law and recommended procedures for Planning Boards and land owners in complying with the requirements of the law.

Planning Boards and the public need to be aware that the New Hampshire Legislature has directly invested Planning Boards with the authority/responsibility to regulate RSA 155-E; this has, in fact, been the case since the original law was enacted in 1979. This can only change if the municipality votes to have either the Selectmen or the Board of Adjustment serve as regulators. But one thing is certain: the municipality shall regulate the excavation of all earth materials to be used for construction aggregate.

## A. SUMMARY OF AMENDMENTS

### 1. OPERATIONAL AND RECLAMATION STANDARDS:

The text of RSA 155-E moves right from "Definitions" to the paragraph titled "Permit Required." It is important to note that the actual emphasis of the law focuses less on the acquiring of permits than it does on compliance with certain standards for operating and reclaiming a pit, and the enforcement of these standards. These standards were not part of the original 1979 legislation, but added in 1989. In 1991 these standards were further defined as "Minimum" and "Express" standards; this means that operations not requiring a permit are subject only to compliance with the standards as set forth in RSA 155-E (express), and those operations that do require a permit are subject to these outlined standards - as a minimum. More stringent standards may be applied, should the regulator determine that they would be necessary and consistent with the intent of the regulations.

The 1991 revisions also make clear that if highway excavations and excavations connected with stationary manufacturing and processing plants (both exempt from permits) do not comply with the express operational and reclamation standards, they shall lose their non-permit status and be required to obtain a permit before continuing operations.

The operational standards address such issues as setbacks from abutters, maintenance of vegetation, drainage, storage of fuels, etc. The 1991 revisions include provisions for setbacks from ponds, rivers, streams and wetlands. The reclamation standards require that within 12 months of the completion of an excavation operation, the area must be reclaimed, with attention paid to reseeding, disposal of debris, grading of slopes, and drainage. This requirement has gained in importance since the 1998 passage of an excavation and excavation activity tax, which is discussed in some detail in Section II.

## **2. PROHIBITED PROJECTS**

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In addition to the requirements just described for operating and reclaiming a site, the law also specifies conditions under which no operation would be permitted; for example:

- a. *When the excavation would be unduly hazardous or injurious to the public welfare.*
- b. *Where it would substantially damage a known aquifer.*
- c. *Where the project would violate the operational standards, or could not comply with the reclamation standards.*
- d. *Where existing visual barriers would be removed.*

In addition, no excavation is allowed unless permitted by the zoning ordinance, however, the law makes an exception if the zoning does not permit some opportunity for this activity.

## **3. GRANDFATHERED EXCAVATIONS:**

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The new law distinguishes between existing operations and all others, the distinction being that the existing, or grandfathered, operations are not required to obtain a permit. In the 1991 revisions, the definition of "existing excavation" was further refined to apply only to those operations lawfully operating as of August 24, 1979 from which earth material of sufficient weight or volume to be commercially useful has been removed during the 2-year period before August 24, 1979. (The law does not define what "sufficient" or "commercially useful" is - that will be left to the Planning Boards to work out with the owners/operators.)

## **4. PERMIT EXEMPTIONS:**

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The law allows certain exemptions from the requirement for a permit; important, however, is that these operations that are exempt from a permit must nevertheless comply with the express operational and reclamation standards as outlined in RSA 155-E.

The following operations are exempted from the permit requirement but are subject to the express operational and reclamation standards:

- ♦ *"grandfathered" excavations;*
- ♦ *excavations exclusively for highway construction; and*
- ♦ *excavations connected with stationary manufacturing plants.*

❖ **Grandfathered Excavations:**

What exactly does it mean to be "grandfathered"? RSA 155-E defines an existing excavation as one from which "earth materials of sufficient weight or volume to be commercially useful has been removed during the two-year period before August 24, 1979. So, if an excavation were lawfully (that means in compliance with the existing zoning laws of the time) in business at any time between August 24, 1977 and August 24, 1979, it would be exempt from a permit.

The associated questions of what constitutes sufficient weight or volume to be commercially useful, and what is, in fact, commercially useful, are not defined in the law and must therefore be determined by the Board on a case-by-case basis. There are procedures the Board can establish to help make this determination: asking to see any receipts that might exist for the specified time period; or testimony from abutters or business associates. It would also be helpful to include a definition in the local regulation of what constitutes "commercial use" for the purposes of that regulation.

Grandfathered operations are not allowed to expand without a permit. Expansion is defined as being beyond the limits of the town (in which case a permit would be needed from the bordering town), and the area which on or before August 24, 1979 has been appraised and inventoried for property tax purposes as part of the same tract as the excavation site. The burden of proof is on the land owner to demonstrate to the Planning Board that the area in question was intended to be excavated.



In order for a grandfathered pit to retain its status, the owner must have filed an Excavation Report with the Planning Board no later than August 4, 1991 - two years from the effective date of the amended law. The Report should have described the operation in terms of the land area, how much material has been removed, how much is left to be removed, etc. Failure to submit this Report means that the owner loses his or her grandfathered status and the Planning Board can then require the owner to file for a permit in order to continue work. The ramification for the pit owner of needing a permit is that the Planning Board would then be able to not only apply more stringent operational and reclamation standards, but also attach additional conditions to the permit, such as hours of operation, number of trips per day, etc.

Now, 10 years following the date by which this Report should have been filed with the Board, a frequently-expressed concern is, what happens if this report was never filed. The simple answer is that the excavation is not grandfathered. According to the law, if the report was never filed, the excavation did not acquire grandfathered status; in addition, one of the criteria by which a Board can determine whether to judge an excavation as abandoned or not is whether this Report was filed. The reality is that this requirement has not been met by many operations throughout the state. From a practical standpoint, however, the Board should weigh the benefits to the town of stopping an operation that would conceivably be permitted to operate again after a public hearing. At the very least, the Board is certainly acting in the best interests of the town by requiring all pit owners/operators to meet with the Board and determine what their status is, and what reasonable measures should be taken.

An associated issue is whether the Planning Board was responsible for notifying operators of the Excavation Report requirement. According to the law, the Report should have been filed “. . . within one year after receiving written notification . . . from the regulator and in no case later than 2 years following August 4, 1989.” Some operators have felt that the first part of the sentence obligated the Planning Board, and boards claim that the second part clearly puts the onus on the excavators. This question is largely moot, since so much time has now elapsed. But, while the language is not as precise as it could have been, it does seem to imply that regardless of whether the landowners were ever notified, they were nevertheless responsible for filing the Report.

❖ **Highway Construction:**

Any excavation that is exclusively performed for road construction (state or local) does not require a permit. A copy of the pit agreement between the owner and the governmental unit must be filed with the Board or the operation shall be deemed to be in violation of RSA 155-E. The express standards for operation and reclamation must be followed, and the excavation cannot operate in violation of local zoning, unless an exemption has been granted prior to operation.

❖ **Stationary Manufacturing Plants:**

Stationary manufacturing plants are treated in some ways differently under the law than other excavation operations. First of all, the pertinent dates for the commencement of operations differ: “. . . no permit is required for excavation from a site which on August 4, 1989 was contiguous to or on land contiguous to a stationary manufacturing and processing plant that was in operation as of August 24, 1979 and used earth obtained from this contiguous site.”

No further permits are required for excavation from a site “which on August 4, 1989 was contiguous to or on land contiguous to a stationary manufacturing and processing plant for which local or state permits have been granted since August 24, 1979 and which used earth obtained from this site.” The ongoing operation of such an excavation shall continue to be regulated by such permits, and any extensions or renewals shall be permitted only by the original permitting authority or authorities.

The other important distinction is that the definition of “contiguous land” is not the same as for other operations. Sites of stationary manufacturing plants may cross town boundaries, roads or other easements. For other operations, contiguous land area must be contained within the same town boundaries, and specifically excludes roads and other easements.

The following operations are exempted from the permit requirement and are not subject to regulation:

- ♦ *excavations that are incidental to building, driveway, or parking lot construction;*
- ♦ *excavations that are incidental to agricultural or silvicultural activities; and*
- ♦ *granite excavations for the purpose of producing dimension stone.*

❖ **Incidental to Construction:**

By definition, in order for an activity to be “incidental”, it must be subordinate and accessory to the principal use. How to make that determination can be based on a variety of factors, such as the land area involved in the use, the extent of activity that takes place, or the length of time the incidental use would be carried out.

An example of the kind of dilemma that can be faced by the Planning Board is this: Someone owns a piece of property that is virtually all steep slopes with usable earth materials. The landowner wants to develop the property but can't do anything with it until the slopes are graded - which means taking out the earth materials first. The landowner claims that he really doesn't intend to excavate, but until he does, he can't make good use of his property, therefore this excavation would be incidental to the planned principal use, and not subject to a permit. The issue for the Planning Board is that the scale of such an operation - even if it is an “indirect” result of another project - will have the same potential impacts as if it were intended. So what does the Planning Board do?

First of all, in order for any such excavation to be granted the exemption, the landowner must have all applicable state and local permits in hand PRIOR TO excavation - for example, a building permit or a Site Specific permit from DES. And, even assuming that the “incidental” test can be met, the Planning Board still has the ability to decide that the level of intensity and potential for safety concerns is great enough to warrant strict compliance with the standards of RSA 155-E, regardless of the issuance of a permit.

❖ **Incidental to Agriculture:**

This refers to such activities as normal landscaping or minor topographical adjustments. Of course, what is "minor" can be a troublesome question. It might be helpful for the Board to develop criteria that define what is considered incidental and what is not - for example, the number of truck trips per day or cubic yards per site that would render the activity no longer "incidental".

❖ **Production of Dimension Stone:**

Excavations for the purpose of dimension stone are exempt, if such excavation requires a mining permit under RSA 12-E. Granite that is crushed for aggregate is, however, subject to local regulation.

## **5. ABANDONED EXCAVATIONS**

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The law also contains provisions for dealing with abandoned excavations. Once again, how the statute defines "abandoned" can have serious ramifications for landowners. The statute says that any non-reclaimed area shall be deemed abandoned if:

- ◆ *no material of sufficient weight or volume to be commercially useful has been removed during any two-year period either before, on, or after August 4, 1989;*
- ◆ *the site is still active but has not complied with the requirements for incremental reclamation;*
- ◆ *the owner has not posted a bond; or*
- ◆ *the owner has neither received a permit nor filed a report with the Planning Board.*

The Planning Board is allowed to call for complete reclamation of any site it has determined to be abandoned, based on the criteria spelled out in the statute. These provisions give the Planning Board a great deal of leverage in dealing with the reclamation issue; this was one of the strongest aspects of the 1989 amendments. On the other hand, it may not always be reasonable or practical to enforce either incremental or full reclamation in every instance.

The Board does have the option of waiving the requirement for reclamation, for good cause shown. This would make sense, for example, when materials were still present on the site but there had been no demand for them; or when a site contains more than one type of material, and therefore needs to have more than one active area.

In the event an operation should be declared abandoned, the Planning Board has the authority to require that the owner either file a reclamation timetable and post a bond, or complete reclamation within an agreed-upon reasonable time period. The advantage of this provision to the Planning Board is clear, in that the Board now has a vehicle for ensuring that such sites are cleaned up. Problems can, however, arise in situations where, due to a slow economy, the owner has not moved any material for several years, yet does not consider that the site is depleted or the operation ended. In such cases, it is important for the owner to be aware that the lack of activity could jeopardize the operation, unless an understanding is reached with the Planning Board.

## **6. PERFORMANCE GUARANTEE**

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The 1989 law, like the original, allows the Planning Board to obtain a performance bond or some other surety for any operation for which a permit is granted. The primary difference as of 1989 is that, while a bond cannot be required of those operations exempted from a permit, reclamation can be required.

The primary purpose for the posting of a bond is to guarantee to the town that the excavation site will be reclaimed when the site is depleted or when a determination is made that all activity has ceased. However, the law also allows the Board to call for a bond to ensure compliance with the permit itself - for example, if special conditions were attached to a permit and the implementation of these conditions required additional expenditures on the part of the excavator. RSA 155-E makes several references to the posting of a bond:

- (1) The section on Abandoned Excavations (E:2,II) states that an operation deemed abandoned can regain its active status if the operator submits a reclamation timetable and posts a bond sufficient to secure the reclamation of the entire site.
- (2) The section on Operational Standards (E:4-a) states that prior to the removal of topsoil or other overburden material from any land area that has not yet been excavated, the excavator shall file a reclamation bond or other security as prescribed by the regulator, sufficient to secure the reclamation of the land area to be excavated.
- (3) And, regarding the Issuance of Permit (E:8), the law says that the regulator shall grant a permit after all other requirements have been met, including the posting of a bond or other such surety with the municipal treasurer in an amount, as it requires, reasonably sufficient to guarantee compliance with the permit.

In the case of any expansion, the Planning Board may require a bond for the new area. There does exist some confusion as to when an expansion would require a bond: does expansion mean enlarging the existing pit, or does it mean a new pit dug elsewhere on the site? Part of this confusion results from a seeming contradiction between the right of a grandfathered operation to expand without a permit, and the requirement that all expansions, as defined in the law, require bonding. The overall impression created by the legislation is that bonding is tied to a permit, and if a permit is not needed, then a bond is not needed either. There will always be cases that are not cut-and-dry; this is simply one more area where the Board will have to make a judgment call.

For small operations, the bonding requirement is obviously one of importance. The problem faced by many Boards is how to apply the law uniformly to all excavations without at the same time unduly burdening the smaller operations. It is possible for the Board to waive a bond, but this should be dealt with very carefully. One option is to allow the bond to be phased in conjunction with a particular area; the bond would be released and turned over to cover the next section. Another option is to exempt operations under a certain size or activity per year from bonding. Bear in mind, however, that it is just as important for the Board to protect the interests of the town and all the residents as it is for the pit owner to stay in business.

## 7. ZONING REQUIREMENTS AND EXCEPTIONS:

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RSA 155-E now requires that a local zoning ordinance must address excavations in some manner, i.e., that opportunities for some of these resources must be allowed in at least some, but not necessarily all, areas in town. If this is not the case, excavation shall be considered to be a special exception use in an "non-residential area" of town, upon a finding by the zoning board of adjustment of the following four criteria (all four must be met). The excavation:

- ◆ *will not cause a diminution in area property values or unreasonably change the character of the neighborhood;*
- ◆ *will not unreasonably accelerate the deterioration of highways or create safety hazards in the use of the highways;*
- ◆ *will not create any nuisance or create health or safety hazards; and*
- ◆ *the excavation complies with any other special exception criteria set forth in the local zoning ordinance.*

A question that arises from this provision of the law is: what is meant by "non-residential area". The law does not clarify whether this means a zoning district or simply existing residential development. It seems reasonable to assume that the latter was intended, rather than a zoning district, since many commercial and industrial zoning districts allow some type of residential development. But, assumptions are not the ideal basis for regulatory policy; thus, it is important that the towns address this use in their zoning ordinances, so that these kinds of land use decisions are not made on an ad hoc basis, but rather through a public planning process.

Highway excavations performed by a governmental party may appeal a zoning provision that would prohibit the operation. The Department of Transportation may request a hearing from a special appeals board to determine if the use may be permitted in that district.

**8. PROTECTION OF WATER RESOURCES:**

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RSA 155-E allows towns to include in the regulations reasonable provisions for the protection of water resources - for example, restricting the depth of an excavation so that a water table would not be disturbed. The law, however, seems to imply that such provisions could only be required if the town had adopted a Water Resources and Management Protection Plan. In addition, if such provisions are included in the regulations, the Board must also allow an exception from this, if the applicant can prove that there would be no adverse effect on water quality.

**9. MASTER PLAN REVISIONS:**

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The enabling legislation for Master Plans (RSA 674:2) was amended in 1989, consistent with the amendments to RSA 155-E. Paragraph VIII-a calls for a "Construction Materials" section, which shall identify all known sources of sand and gravel deposits, the location, and the estimated extent of permitted excavations. Included in this section must also be the reports filed with the Planning Board by the grandfathered pit owners.

The towns that have completed the Construction Materials section for their Master Plans have generally relied on the county soil surveys that were conducted by the United States Department of Agriculture in 1984 - under the auspices of the Natural Resources Conservation Service (formerly Soil Conservation Service). This survey includes a Construction Materials table that lists the soil types for Roadfill, Topsoil, Sand, and Gravel. Aquifer information from the NH Department of Environmental Services and the United States Geologic Survey is also helpful in identifying both potential locations of materials as wells as known sites of excavations.

RSA 674:2,VIII was amended at the same time to include a recommendation that towns adopt a water resources management and protection plan. While this is not a legal requirement, having such a plan in place gives the town the legal basis for protecting water resources through the excavation regulations.



## B. RECOMMENDED PLANNING BOARD PROCEDURES

### 1. INVENTORY ALL KNOWN EXCAVATION OPERATIONS

The Planning should inventory all known excavation sites in town - whether active or inactive. As mentioned earlier, this step should be completed as part of the Master Plan section on Construction Materials. The inventory should include the date when each excavation began operation, so the Board can determine what action is required by the Board or the excavator, depending on the particular excavation. For the purpose of Planning Board regulation, it is helpful to categorize excavation operations according to requirements; the accompanying matrix illustrates this step.

Listed below are the categories of excavation operations the Board should be looking for, and the legal requirements that need to be met by the pit owners. This list is concerned primarily with the time frame; note, however, that all types of excavations are included in these categories, e.g., highway excavations, those in connection with stationary manufacturing and processing plants, etc.

#### a. Existing "Grandfathered" Excavations

- ◆ *should have filed a report with the Planning Board*
- ◆ *no permit required, except for expansion*
- ◆ *subject to express operational and reclamation standards*
- ◆ *must reclaim site upon completion of operation*

#### b. Operations begun since August 24, 1979

- ◆ *excavation permit required*
- ◆ *subject to minimum operational and reclamation standards*
- ◆ *subject to reclamation bond and plan*

**c. Abandoned for any two-year period between August 24, 1987 and Present**

- ◆ *subject to reclamation by landowner*

**d. Abandoned prior to August 24, 1977**

- ◆ *not subject to regulation by the Town*

Once the Board knows what is required for each excavation type, it can either begin the process of reviewing applications for permits, or reviewing operations for compliance with the statute. For either task, there are certain things the Board would want to pay particular attention to.

## **2. NOTIFY ALL PIT OWNERS**

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Upon completion of the inventory, the Planning Board should then notify owners of the status of their operation and what that means in terms of compliance with RSA 155-E. While the law only requires an Excavation Report from grandfathered operators, the Planning Board is well-advised to inform all pit owners of the law and ask them to come before the Board and demonstrate that they are operating in compliance with RSA 155-E. Notification should be by certified mail, return receipt requested, and should contain the following information:

- ◆ A copy of that portion of the law which addresses each individual owner's particular situation.
- ◆ An explanation of that portion of the law, outlining what the owner needs to supply to the Planning Board.
- ◆ For the grandfathered pits, the letter should explain that failure to file the excavation report with the Planning Board results in forfeiture of the grandfathered status, and that a permit is required before the operation can proceed.
- ◆ The letter should also explain how expansion is defined under the law, and what implications that has for grandfathered and non-grandfathered pits.

In the case of the grandfathered operations, the question has arisen concerning the responsibility of the Planning Board to notify the pit owners in time for them to have filed their excavation reports by the August 4, 1991 deadline. (This question has also been addressed in Part A, 4. of this Section.) While this has been the topic of considerable debate between pit owners claiming no knowledge of their new responsibilities and the local Planning Boards, the law does not specify that the Planning Board is required to notify; it says that "[t]he owners . . . shall file a report . . . within one year after receiving written notice of this requirement . . . and in no case later than 2 years following August 4, 1989." It seems clear from this language that, whether the Planning Board ever notified the excavators or not, the ultimate responsibility for complying with the law falls back on the pit owners and operators.

Many Planning Boards, in fact, have never sent out notice to the excavators in their town, and the deadline has long since passed. Or notice was sent out and the excavators never responded. In either case, those excavators who did not file their report are now operating illegally and should have a permit to continue operations.

Whether or not pit owners wish to make the argument that they should be exempt from this requirement because of lack of action on the part of the Planning Board, the Planning Board does not have the option of granting permission for any operation that did not file an excavation report to continue without a permit. As this requirement is part of the state statute and not a provision of a local regulation, a Board choosing to disregard or alter this requirement (by, for example, extending the deadline date) is taking the chance that this decision would be challenged in court. One possible solutions would be for the Board to grant permits to all such non-permitted operations for a certain period of time, with no special conditions attached, after which they would then be subject to the current laws and regulations.

### **3. EXCAVATION REGULATIONS**

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The Planning Board should adopt regulations that are separate from the zoning ordinance and the statutes. Regulations governing earth excavations are adopted by the same process as subdivision or site plan review regulations. The advantage of having a specific excavation regulations is to give the Planning Board flexibility in making amendments it would not have if merely enforcing RSA 155-E. Not only that, but without regulations in place, the Board can only enforce violations of the law, it cannot review any applications for a permit that might come before them. This is the same principle that operates in subdivision or site plan review: the town votes to give the Board the authority to review and approve or deny such plans, but the Board can only carry this out if appropriate regulations are adopted that inform applicants of the procedure and the application submission items.

Planning Boards may include other items in their regulations beyond what is presented in the model regulation, which for the sake of clarity limits the operational and reclamation standards to only those that apply to all operations. The regulations may, however, impose more restrictive standards in certain cases than those outlined in the law by attaching additional conditions to a permit. It is important for the Boards to remember, however, that they may not impose such additional conditions on grandfathered operations.

The list of submission requirements for the excavation and reclamation plans could be expanded upon, if the Board felt it needed more information. The items included in the model are the least the Board should want to see before making a decision. Again, other items may be included in the regulation, or requested by the Board during the review process.

The Planning Board should address the various requirements of the law by establishing criteria by which certain activities will be judged. While, as mentioned above, the statutes do give the Boards more authority to regulate, the burden is also upon them to set up the guidelines for decision-making. These criteria need not necessarily be included in the regulation itself; they could exist as a policy of the Board to be applied when necessary for a particular case.

The Board should develop criteria for determining what constitutes a "substantially different and adverse impact" on the neighborhood- in the case of expansion of a non-conforming pit. While the relevant factors would certainly vary depending upon individual cases and neighborhoods, the Board should take into consideration such things as:

- ◆ *Will the excavation cause a diminution in property values or unreasonably change the character of the neighborhood?*
- ◆ *Will the excavation unreasonably accelerate the deterioration of highways or create safety hazards in the use of the highways?*
- ◆ *Will the excavation create a nuisance or any public health or safety hazards?*

The section of the law that addresses Prohibited Projects is another area where the Board might be more stringent, for example in increasing the distance from an excavation to a property line. Should the Board choose to do this, however, it is important to be able to justify the reasons for the stricter requirement. In the event of a legal challenge, the Board should be able to demonstrate that the additional requirements were not set arbitrarily.

Public health and safety hazards are also a concern for prohibited projects, as the law says that any project shall be prohibited if it creates such a hazard. Again, the criteria could vary widely depending upon the individual situation; nevertheless, there are certain factors the Board can pay attention to, for example:

- ◆ *erosion and sedimentation problems*
- ◆ *disturbance to groundwater*
- ◆ *physical danger resulting from the operation*
- ◆ *excessive noise, dust, fumes, or traffic*

The importance of reclamation cannot be overstated. Reclamation plans should show, at a minimum, the contour lines before and after excavation, location of wetlands and water bodies, line of sight of the area from the nearest public roadway, distances from relevant features, and access points. The final reclamation plan should address safety and erosion control, bearing in mind that a specific plan for the land may not be appropriate if a future use would not call for it.

One of the most important pieces of information for the Board to know is that sand and gravel pit reclamation no longer depends on the importing or stockpiling of topsoil. For many years now, the Natural Resources Conservation Service (formerly the Soil Conservation Service) has been experimenting with seed mixtures for revegetating depleted sand and gravel sites. The problem with gravel pits is that they typically consist of very coarse soils that are susceptible to drought, which makes them difficult to permanently vegetate without applying topsoil. The Conservation Service has been very successful in the use of warm season grasses that do not require topsoil or loam to grow. These grasses do very well in dry, sandy soils. Their roots extend up to five feet below ground, compared to the cool season grasses, which grow barely four inches below ground. Because of the extended root system, warm season grasses tolerate drought conditions very well.

The 1989 amendments to the law reflect this technology, by no longer requiring the stockpiling and use of topsoil for reclamation. This one change can make a difference of as much as \$7,000 an acre in reclamation costs for the landowner. Another significant change is that 1991 amendments to the law eliminated the requirement for a 2:1 slope for reclamation; the law now says that the slope shall be graded to whatever is necessary for slope stabilization. When reviewing plans for reclamation, the Board should always consult its county conservation service for more detailed information on seed mixtures, costs per acre, and appropriate techniques based on the particular site.

Another area of concern for Board members is the fueling and maintenance of any equipment used on the site, as gravel pits tend to be located over aquifers or some other groundwater supply. The New Hampshire Department of Environmental Services has published a fact sheet that offers best management practices for protecting groundwater from potential contamination from excavation activities.

Regulations could also include standards for quarrying, blasting and crushing operations. RSA 155-E gives Planning Boards the authority to regulate these activities, but no standards for this were included in the law.

The public hearing procedure included in the regulation should specify that it applies not only to those applicants filing for an excavation permit, but that it might also apply to those pit owners who need to come before the Board to demonstrate compliance with the law. In those cases, the Board has the option to waive whatever submission documents it chooses, so long as the owner is able to explain his operation to the Board's satisfaction. This should, however, take place at a duly-noticed public hearing, so that the public's right to know is not compromised.

One final point about the regulations has to do with the appeals process. Take note that RSA 155-E allows for an appeal to the Board on any decision made on an application for a permit. Such an appeal cannot be taken before the Superior Court until a request for a rehearing by the Board is requested. This is noteworthy because most Planning Board decisions do not require a rehearing request - the aggrieved petitions directly to the Superior Court. This is also the case when excavation is regulated by the local Zoning Board of Adjustment.

Above and beyond these specific concerns, the Board should ask to see whatever reasonable information it needs in order to make an informed decision. While it may not be necessary to see fully engineered plans, there should be drawings with enough detail to represent compliance with the operational standards and, where applicable, reclamation as well. It will not always be obvious what is important and what isn't, or what is meaningful information to ask for.

Remember that RSA 155-E is a powerful tool for Planning Boards, but it is important to bear in mind the need for flexibility in dealing with critical questions around such issues as waivers, bonding and reclamation plans. Above all, the value of discussion between the board and the applicant cannot be underestimated.

#### **4. ZONING REQUIREMENTS**

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Make sure that your zoning ordinance allows for excavations in some part of town; the rule of thumb here is "reasonable opportunity" for excavation. It is not acceptable to zone an area for excavation just to comply with the law if it is known that there is no gravel there. Furthermore, finding appropriate areas to allow excavation means that certain areas of town would be protected where excavation would be incompatible with the existing land uses, environmentally sensitive areas, and natural resources.

Towns have now been given the authority to regulate hazardous embankments as well (RSA 31:41(b)). The zoning ordinance should therefore address the removal, stabilization, or fencing of hazardous embankments for the protection of the public.

#### **5. MASTER PLAN REVISIONS**

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RSA 674:2,III(d) recommends that all towns adopt a water resources management and protection plan as part of the Master Plan. This plan essentially identifies surface and groundwater supplies and any aquifers in the town, along with sources of pollution. The purpose of the plan is to use this information to develop regulations and strategies designed to protect these identified water supplies. Once such a plan has been adopted, the information in it can be used in concert with the Excavation Regulations to protect identified aquifers and other water supplies, both below- and aboveground.

The Construction Materials section that is now included in the enabling legislation for a Master Plan identifies all known sources of sand and gravel deposits and the location and estimated extent of permitted excavations. This is basically an inventory of the town's gravel deposits. If your town does have a water plan, you will notice that the delineated aquifer areas are essentially the same as the areas of sand and gravel deposits that need to be identified for the construction materials section.

There is obvious potential for conflict in the zoning of appropriate districts for excavation; the task, then, of the Planning Board is to differentiate between areas suitable for excavating and those suitable for a water supply source. These should be mapped out in the Master Plan and used as the basis for corresponding zoning districts.



**SECTION II:**  
**MODEL EXCAVATION REGULATIONS**

# Section II Excavation Regulations

## Section I: Authority

Chapter 155-E of the New Hampshire Revised Statutes Annotated stipulates that, with some exceptions, all earth excavations in the State are subject to regulation from the local municipality in which the operation occurs. Pursuant to the authority vested in the Planning Board by the voters of the Town of \_\_\_\_\_ and RSA 155-E, the Planning Board adopts the following regulations to govern the excavation of earth materials in the Town of \_\_\_\_\_.

## Section II: Purpose and Scope

The goals of this regulation are to: provide for reasonable opportunities for excavation; minimize safety hazards which can be created by open excavations; ensure that the public health and welfare will be safeguarded; protect natural resources and the environment; and maintain the aesthetic features of the Town. For the purpose of achieving these goals, no earth materials in the Town shall be removed except in conformance with these regulations.

## Section III: Definitions

- A. **Abutter** means: (1) Any person whose property is located in New Hampshire and adjoins or is directly across the street or stream from the land under consideration. (2) For the purposes of receiving testimony only, and not for purposes of notification, the term "abutter" shall include any person who is able to demonstrate that his land will be directly affected by the proposal under consideration. (3) In the case of an abutting property being under a condominium or other collective form of ownership, the term "abutter" means the officers of the collective or association, as defined in RSA 356-B:3, XXIII. B. (4) For purposes of notification and receiving testimony, abutter means all affected towns and the regional planning commission(s) in the case of a development having regional impact, as determined by the Board.
- B. **Applicant** means the owner of the property to be excavated or the owner's agent, so designated in writing as part of the excavation application.
- C. **Board** means the Planning Board of \_\_\_\_\_.
- D. **Commercial Excavation** means excavation of earth intended for commerce, excluding excavation that is strictly conducted for the purpose of alteration, renovation, improvement or construction to the property on which the excavation takes place. Any material leaving the property for whatever reason is considered to be a commercial operation.
- E. **Contiguous** means land whose perimeter can be circumscribed without interruption in common ownership except for roads or other easements, in a single town, except in the case of stationary manufacturing plants, whose perimeter is not defined by town boundaries.

- F. Dimension Stone** means rock that is cut, shaped or selected for use in blocks, slabs, sheets, or other construction units of specified shapes or sizes and is used for external or interior parts of buildings, foundations, curbing, paving, flagging, bridges, revetments, or for other architectural or engineering purposes. Dimension stone includes quarry blocks from which sections of dimension stone are to be produced. Dimension stone does not include earth as defined below.
- G. Earth** means sand, gravel, rock, soil or construction aggregate produced by quarrying, crushing or any other mining activity or such other naturally- occurring unconsolidated materials that normally mask the bedrock.
- H. Excavation** means a land area which is used, or has been used, for the commercial taking of earth, including all slopes.
- I. Excavation Area** means the surface area within an excavation site where excavation has occurred or is eligible to occur under the provisions of RSA 155-E. This is also known as the pit area.
- J. Excavation Site** means any area of contiguous land in common ownership upon which excavation takes place.
- K. Existing Excavation** means any excavation which lawfully existed as of August 24, 1979, from which earth material of sufficient weight or volume to be commercially useful has been removed during the 2-year period before August 24, 1979.
- L. Expansion:**

  - (a) of existing excavations means excavation beyond the limits of the Town and the area which on 8/24/79 had been contiguous to and in common ownership with the excavation site and has been appraised and inventoried for tax purposes as part of the same tract as the excavation site.
  - (b) of stationary manufacturing plants means to any contiguous lands which were in common ownership with the site of the plant on 8/4/89.
- M. Reclamation** means the restoring of an excavation site to a standard at least equal to those outlined in Section X of these regulations.
- N. Stationary Manufacturing and/or Processing Plants** means facilities which are placed on a site for the purposes of sorting, washing, screening, crushing, classifying, drying or processing excavated earth materials.

**Section IV: Projects Requiring a Permit**

- A.** Those that commenced operations since August 24, 1979 without first obtaining a permit, unless specifically exempted by Section V below.
- B.** Any excavation proposing to begin operation after the effective date of these regulations.
- C.** Those that have lawfully operated prior to August 24, 1979 and wish to expand the excavation area.

- D. Those excavations from an area which on August 4, 1989 was contiguous to or was contiguous land in common ownership with stationary manufacturing and processing plants which were in operation as of August 24, 1979 and wish to expand.

**Section V: Projects Exempt From a Permit**

- A. The following projects do not require a permit, but are nevertheless subject to Sections IX, X and XI of these regulations. In the event of a question regarding compliance, the Board may require the owner/operator to come before the Board and submit such information as may be necessary to demonstrate compliance with said standards.

- 1) Existing Excavations, provided that:
  - a) at the time operation began it was in compliance with any local ordinances that may have been in effect;
  - b) the owner or operator of such an excavation area shall have filed an excavation report per RSA 155-E: I (d) with the Board no later than August 4, 1991. Any existing excavation that failed to file this report shall no longer be considered to be grandfathered and must obtain a permit from the Board before continuing excavation of the site.

- B. The following projects do not require a permit, but are nevertheless subject to Sections IX, X, and XI of these regulations. Compliance with these standards is mandatory in order to retain the non-permit status. Loss of such non-permit status can occur only after the Board has given written notice that the excavation is not in compliance and the owner has failed to bring it into compliance within 30 days of receipt of such notice.

- 1) Excavations from a site which on August 4, 1989 was contiguous to or was contiguous land in common ownership with stationary manufacturing and processing plants which were in operation as of August 24, 1979 and which use earth obtained from such excavation site.
- 2) Excavations from a site which on August 4, 1989 was contiguous to, or contiguous land in common ownership with stationary manufacturing and processing plants for which local or state permits have been granted since August 24, 1979 and before August 4, 1989, which used earth obtained from such site.
- 3) An excavation performed exclusively for the lawful construction, reconstruction, or maintenance of a Class I, II, III, IV, or V highway. A copy of the pit agreement executed between the pit owner and the governmental unit shall be filed with the Board; in addition, the provisions of Section VII of this regulation are to be complied with.

**C.** The following projects are exempt from a permit and are not subject to regulation by the Board:

- 1) Excavation that is exclusively incidental to the lawful construction or alteration of a building or structure, a parking lot or way including a driveway on a portion of the premises where removal occurs. This excavation cannot be started, however, until any required state and local permits have been issued.
- 2) Excavation that is incidental to agricultural or silvicultural activities, normal landscaping or minor topographical adjustment. In the event of questions, the Board shall determine what is incidental.
- 3) Excavation from a granite quarry for the purpose of producing dimension stone, if such excavation requires a permit under RSA 12-E (Mining and Reclamation).

A person owning land abutting a site which was taken by eminent domain or by any other governmental taking upon which construction is taking place may stockpile earth taken from the construction site and may remove the earth at a later date after written notification to the Board.

## **Section VI: Abandoned Excavations**

**A.** Any excavation, except for those associated with stationary manufacturing plants, for which the affected area has not been brought into complete compliance with the reclamation standards of this regulation shall be considered abandoned if:

- 1) No material of sufficient weight or volume to be commercially useful has been removed from the site during any 2-year period either before, on, or after August 4, 1989. The time period may be extended if, prior to the end of the time period, the Board approves a reclamation timetable, and a bond or other surety is posted in a form and amount prescribed by the Board sufficient to cover the costs of reclaiming the entire site.
- 2) The excavation is in use, but either has not been brought into compliance with the incremental reclamation standards of this regulation, or a bond has not been posted and a reclamation timetable has not been approved by the Board.
- 3) The owner or operator of the excavation has neither secured a permit pursuant to these regulations nor filed an excavation report with the Planning Board within the prescribed period.

**B.** In the event the Board determines that any abandoned excavation presents a hazard to the public health, safety or welfare, the owner may be required, following a public hearing, to comply with the timetable and bonding requirements outlined above, or to complete reclamation within a reasonable period of time. Should reclamation not be completed, the Board may request the Town to authorize reclamation at the Town's expense. The Town's costs shall constitute an assessment against the owner, and shall create a lien against the property. Such assessment and lien may be enforced and collected in the same manner as provided for real estate taxes.

- C. The provisions of Paragraph B above also apply to any excavation which ceased commercially-useful operation prior to August 24, 1977, but for which the affected area has not been brought into compliance with the reclamation standards, if the Board determines in writing that a danger to public health or safety exists.

**Section VII: Prohibited Projects**

- A. For excavations within 50 feet of the boundary of a disapproving abutter or within 10 feet of an approving abutter unless approval is requested by said abutter.
- B. Where existing visual barriers would be removed, except to provide access to the excavation.
- C. Where the issuance of the permit would be unduly hazardous or injurious to the public welfare. The Board shall give particular consideration to such factors as noise, traffic, dust, fumes, or danger from operation.
- D. Where the excavation would substantially damage a known aquifer, as designated by the United States Geological Survey.
- E. When the excavation cannot receive necessary approvals from state or federal agencies, such as Alteration of Terrain or Wetlands permits.
- F. Where the excavation is not permitted by zoning or other applicable ordinances, provided, however, that reasonable opportunities for excavation exist in town, as described in RSA 155-E: 4, III.
- G. Where the project cannot comply with the requirements of Sections IX, X, and XI of these regulations.

**Section VIII: Criteria For Non-conforming Expansions**

Expansion of existing excavations located in an area in which excavations are no longer permitted by local zoning that was in effect on August 4, 1989 may be restricted or modified with conditions by the Board, if after notice to the owner and a public hearing, the Board finds that the expansion will have a substantially different and adverse impact on the neighborhood. Impacts will vary depending upon the particular neighborhood, nevertheless, the following criteria will be taken into consideration:

- ◆ The excavation will not cause a diminution in area property values or unreasonably change the character of the neighborhood.
- ◆ The excavation will not create any nuisance or create health or safety hazards.
- ◆ The excavation will not unreasonably accelerate the deterioration of highways or create safety hazards in the use thereof.

**Section IX: Operational Standards**

- A.** For excavations not requiring a permit, the following standards apply. For those excavations requiring a permit, these standards are considered to be the minimum; more stringent standards such as are consistent with the purpose of these regulations may be applied, as deemed necessary by the Board.
1. No excavation shall be permitted closer than 150 feet to an existing dwelling or to a site for which a building permit has been issued at the time the excavation permit is granted.
  2. No excavation shall be permitted below road level within 50 feet of the right-of-way of any public highway as defined in RSA 229:1 unless such excavation is for the purpose of said highway.
  3. Vegetation shall be maintained or provided within the peripheral areas of Items 1 and 2 of this section.
  4. No fuels, lubricants or other toxic or polluting chemicals shall be stored on-site unless in compliance with State laws or rules pertaining to the storage of such materials.
  5. Where temporary slopes will exceed a 1:1 grade, a fence or other suitable barricade shall be erected to warn of danger and/or to limit access to the site.
  6. Appropriate drainage shall be provided to prevent the accumulation of freestanding water for prolonged periods.
  7. Excavation practices which result in continued siltation of surface waters or any degradation of water quality of any public or private water supplies are prohibited.
  8. No excavation shall be permitted within 75 feet of any great pond, navigable river, or any other standing body of water 10 acres or more in area, or within 25 feet of any other stream, river or brook which normally flows throughout the year, or any naturally-occurring standing body of water less than 10 acres, prime wetland as designated in accordance with RSA 482-A: 15,1 or any other wetland greater than 5 acres in area as defined by the Wetlands Board.

**Section X: Site Reclamation Standards**

- A.** For excavations not requiring a permit, the following standards apply. For excavations requiring a permit, these standards are considered to be the minimum; more stringent standards such as are consistent with the purpose of these regulations may be applied, as deemed necessary by the Board.
- B.** Within 12 months following the expiration date of a permit issued under these regulations, or the completion of any excavation, whichever occurs first, the excavated area shall be reclaimed in accordance with the following standards:

1. Areas visible from a public way, from which trees have been removed, shall be replanted with tree seedlings, set out in accordance with acceptable horticultural practices.
2. Except for exposed rock ledge, all disturbed areas shall be spread with topsoil or any other soil capable of maintaining vegetation, and shall be planted with seedlings or grass suitable to prevent erosion.
3. All earth and vegetative debris resulting from the excavation shall be removed or otherwise lawfully disposed of.
4. All slopes, except for exposed ledge, shall be graded to natural repose for the type of soil of which they are composed so as to control erosion or at a ratio of horizontal to vertical proposed by the owner and approved by the Board. Changes of slope shall not be abrupt, but shall blend with the surrounding terrain.
5. Any standing bodies of water created by the excavation that are judged to constitute a hazard to health and safety shall be eliminated.
6. The topography of the land shall be left so that water draining from the site leaves the property at the original, natural drainage points and in the natural proportions of flow.
7. For excavation projects requiring a permit from the Division of Water Supply and Pollution Control, the provisions of RSA 485-A: 17 shall supersede this regulation. Copies of all such permits shall be filed with the Board.

### **Section XI: Incremental Reclamation**

Except for excavation sites of operating stationary manufacturing plants, any excavated area of 5 contiguous acres or more which is depleted of commercial earth materials, excluding bedrock, or any excavation from which earth materials of sufficient weight or volume to be commercially useful have not been removed for a 2-year period, shall be reclaimed in accordance with Section X of these regulations within 12 months following such depletion or non-use, regardless of whether other excavation is occurring on adjacent land in contiguous ownership. A reclamation plan, including a reclamation timetable for the depleted areas within the reclamation site, shall be submitted to the Board for approval.

### **Section XII: Performance Guarantee**

- A. Prior to the granting of any permit, or to the removal of topsoil or other overburden material from a new area within an existing excavation site, the applicant shall submit to the Selectmen a bond with sufficient surety as determined by the Planning Board. The purposes of the bond are to guarantee reclamation of the area, compliance with the permit, and any inspections. Off-site improvements for potential damage of Town roads or facilities caused by the transportation of earth materials shall be discussed at this stage.



- B.** The surety may be in the form of a performance bond, property escrow, irrevocable letter of credit, or any other form approved by the Board. The surety may be phased to coincide with the phasing of work, in an amount sufficient to guarantee reclamation of the applicable section, to be released as sections are completed. Prior to a new section being opened, new securities shall be posted. The surety shall not be released until the Board is satisfied that all conditions of the site reclamation plan have been complied with.

### **Section XIII: Exceptions**

Due to the diverse nature of excavation operations which vary in scale and scope, and due to the varying conditions of the land to be excavated, the Board may, upon application and following a duly-noticed hearing, grant any exception in writing to the standards contained in Sections IX, X, XI, and XII for good cause shown. The written decision shall state specifically what requirements are being waived and include any reasonable alternatives.

### **Section XIV: Application Procedures**

Prior to the Board rendering a decision for an excavation permit, a public hearing shall be held, with due notification of all abutters and the public. The procedure for holding these public hearings is as follows:

**A. Filing of the Application**

1. Applications for excavation permits shall be filed with the Board at a regularly-scheduled meeting.
2. The application will be reviewed with the applicant at the meeting, and will be accepted by the Board only if it is found to meet all submission requirements for a completed application. Should the application not be accepted as complete, another meeting must be scheduled for submission.

**B. Board Action on Application**

1. Following a vote to accept the application as complete, the Board will schedule a public hearing to be held within 30 days.
2. Within 20 days of the close of the hearing on the application, or any continuation thereof, the Board shall make a decision. Notice of this decision shall be recorded in the minutes of the meeting and placed on file in the Town offices within 72 hours.
3. The applicant shall receive a written copy of the minutes along with the decision. In the event the application is disapproved, the reasons for the disapproval shall be given.

**C. Notices Required for Public Hearing**

1. All abutters will be notified by certified mail, not less than 10 days prior to the public hearing on the application. Names and addresses of abutters must be taken from town records not more than 30 days before the public hearing.
2. Public notice will appear in a newspaper of general circulation and in at least three public places not less than 10 days prior to the meeting.
3. The notice must include the location and general description of the proposal, as well as the date, time and place of the meeting.
4. The 10 days shall not include the day of publications nor the day of the meeting, but shall include any Saturdays, Sundays and legal holidays within said period.

**D. Fees**

1. A filing fee of \$\_\_\_ plus postage shall be paid upon submission of an application, to defray the costs of posting notice for the public hearing. Failure to pay such cost shall constitute grounds for the Board to not accept the application.
2. A permit fee of \$50 shall be paid upon the issuance of a permit, to defray the costs of permit compliance.
3. A fee payable to the Register of Deeds shall be paid upon approval, for the filing of the plan.
4. Additional reasonable fees shall be charged should the Board require the advice of an engineer or other expert to review plans or inspect the site to determine permit compliance.

**Section XV: Application Submission Items**

The applicant shall submit at least \_\_\_ copies of an Excavation and a Reclamation Plan; one copy shall be sent to the Conservation Commission. The plans shall be at a scale appropriate for the land area involved. The Board may, upon good cause shown, waive any of the items in Paragraphs A or B.

**A. Excavation Plan**

The excavation plan shall address specific actions to be taken on the site relative to fuel and chemical handling and storage, dust control, traffic, noise control and abatement, and comprehensive site safety of unauthorized persons. The plan shall show or be accompanied by the following items:

1. Name and address of the owner, the excavator (if different) and all abutters.
2. Name, address, and signature of the person preparing the plan; date, bar scale and north arrow.

3. Zoning district boundaries of the proposed area and within 200 feet of the boundary of the project.
4. Sketch and description of the location and boundaries of the proposed and any existing excavations; the area in square feet and acre.
5. The location of existing buildings, structures, septic systems and wells within 200 feet of the boundary.
6. Public streets, driveways, intersections, rights-of-way, and all easements within 200 feet; road network to be affected; intended transportation routes to be used.
7. Topography at contour intervals of five feet or less.
8. All surface drainage patterns including wetlands and standing water.
9. Sketch and description of existing and proposed access roads, including width and surface materials.
10. The breadth, depth and slope of the proposed excavation and the estimated duration of the project.
11. The elevation of the highest annual average ground water table within or next to the proposed excavation.
12. Test pits that extend to either the seasonal high water table, ledge, or a minimum of six feet below the maximum proposed excavation depth, including location and soils data; boring logs may be submitted separately.
13. Proposed fencing, buffers or other visual barriers, including height and materials.
14. All measures to control erosion, sedimentation, water pollution, air pollution, and any hazards to human safety.
15. Plans for stormwater management.
16. Plans for equipment maintenance.
17. Methods to prevent materials from the site from being tracked onto public roadways.
18. Copies of all necessary state and federal permits.

**B. Reclamation Plan**

The reclamation plan shall address the effects of the proposed excavation on soil, surface and groundwater, vegetation, overburden, topography, and fill material, and should address future land use consistent with the Master Plan. The plan shall show or be accompanied by the following items:

1. Name, address, and signature of the person preparing the plan; date, bar scale and north arrow.

2. All boundaries of the area proposed for reclamation and the land within 200 feet of the boundary of this site.
3. Final topography of the area proposed for reclamation, at contour intervals of five feet or less.
4. Final surface drainage pattern, including the location and physical characteristics of all artificial and/or modified drainage facilities.
5. Timetable as to fully-depleted sites within the excavation area.
6. Schedule of final reclamation activities including seeding mixtures, cover vegetation, fertilizer types, and application rates.

**C. Other Information**

The Board reserves the right, per RSA 155-E:3,VII to request any other information it deems necessary to make an informed decision, or to have plans reviewed by an outside agency. According to the authority vested in the Board by RSA 676:4,I(g), any reasonable expenses incurred for such information or reviews shall be charged to the applicant. Failure to pay such costs constitutes valid grounds for the Board to deny the application.

**Section XVI: Administration and Enforcement**

**A. Permits**

1. Permits shall be issued only to the owner or his agent and shall not be transferable without the prior written consent of the Board. A copy of the permit shall be prominently displayed at the site or the principal access to the site.
2. A permit shall be valid for \_\_\_ year(s) and the expiration date shall be specified. A permit is automatically withdrawn if no substantial work is done on the site for a period of \_\_\_ year(s) from the date of the issuance of the permit.
3. Failure to file for a permit shall be considered a violation and operators who fail to file will be issued a cease and desist order.
4. The Board may include in the permit any such reasonable conditions as are consistent with the purpose of these regulations.
5. The Board will establish a schedule by which all permitted sites are inspected on a regular basis.

**B. Amendments and Renewals**

Permit holders wishing to alter the size or location of the excavation, the rate of removal or the plan for reclamation shall apply for a renewal or amendment, following the same procedures as those required for the original excavation permit.

**C. Inspections**

The Board or its designee may make periodic inspections of all excavation sites to determine if the operations are in conformance with these regulations and the approved plans.

**D. Suspensions and Revocations**

The Board may suspend or revoke a permit if the Board determines that any provision of the permit has been violated, a material misstatement made in the application upon which a permit was granted, or any unsafe or hazardous conditions are determined by a site inspection to exist. Such suspension or revocation shall be subject to a motion for rehearing thereon and appeal in accordance with these regulations.

**E. Appeals**

Any person affected by the Board's decision to approve or disapprove an application or any amendment thereto or any suspension or revocation of a permit, may appeal to the Board for a rehearing on such decision or any matter determined thereby. The motion for rehearing shall be filed within ten (10) days of such decision and shall fully specify every ground upon which it is alleged that the decision or order complained of is unlawful or unreasonable. The Board shall either grant or deny the request for rehearing within (10) days, and if the request is granted, a rehearing shall be scheduled within thirty (30) days. Any person affected by the Board's decision on a motion or rehearing may appeal in accordance with RSA 677:4-15.

**F. Penalties**

Fines, penalties and remedies for violations of this regulation shall be the same as for violations of RSA 676:15 and 17. Whoever violates any provision of this regulation, a permit or a valid order issued hereunder shall be guilty of a misdemeanor.

**Section XVII: Separability**

The invalidity of any provision, sentence, paragraph, etc. of this regulation shall not affect the validity of any other provision, sentence, paragraph, etc.

**Section XVIII: Effective Date**

These regulations shall take effect upon adoption by the Board and as amended.

## EXCAVATION REQUIREMENTS

TYPE OF OPERATION	NO PERMIT REQUIRED	PERMIT REQUIRED	MUST COMPLY W/STAND- ARDS	MUST RECLAIM	MUST POST RECLA- MATION BOND	SHOULD HAVE FILED EXCAVA- TION REPORT
1. Existing as of August 24, 1979	✓	For Expansion	✓	✓	For Expansion	✓
2. Commenced Operations since August 24, 1979			✓	✓	✓	
3. Stationary Manufacturing and Processing Plants existing as of August 24, 1979	✓	In the event of non- compliance with standards	✓	✓		
4. In Connection with Highway Excavations	✓		✓	✓		
5. Non-conforming as of August 4, 1989	✓	For Expansion	✓	✓	For Expansion	
6. Abandoned for any 2-year period between August 24, 1987 and present				✓		
<hr/>						
7. Abandoned prior to August 24, 1977						
8. Incidental to Building and Agriculture						
9. Cutting of Dimension Stone						

**NOT SUBJECT TO REGULATION BY THE BOARD**

**SECTION III:**

NH COURT CASES RELATIVE TO  
EXCAVATION

# SECTION III

## NH COURT CASES RELATIVE TO EXCAVATION

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### 1. **Goffstown v. Thibeault (1987)**

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**The regulation of earth excavations is recognized as both an exercise of the police powers and of the general welfare powers of towns.**

The defendant was charged with removing earth without a permit, which was a violation of the zoning ordinance. The defendant claimed that the earth excavation regulations had not been enacted properly under the zoning ordinance, and therefore he was not in violation. The Supreme Court said that such regulations can be enacted under any one of three authorities: zoning, excavation, or hazardous pits. The Court also ruled that the town could terminate the excavation, even though it had been operating for many years (prior to passage of RSA 155-E) because it did not comply with the zoning ordinance and, therefore, was not a grandfathered non-conforming operation.

### 2. **Wolfboro v. Smith (1989)**

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**The property owner must prove that excavation activities were being conducted prior to passage of RSA 155-E in order to continue excavation without a permit.**

This case was brought to the Supreme Court on appeal from a Superior Court decision that denied a cease and desist issued by the Planning Board to the defendants for an excavation that was previously existing. The question before the Court was whether the grandfather clause of RSA 155-E entitled the defendants to extend an existing, legal excavation area to a new area. The Court held that the legislature intended that lateral expansion of an existing pit to land previously unexcavated will be considered a continuation of a previous excavation if the land had been appropriated for excavation prior to the effective date of RSA 155-E, by actions which objectively show the appropriation. Intent alone is not enough. Nevertheless, the Court found that the legislative intent was to limit excavation without a permit when the intensity of the excavation would have a substantially different impact on the neighborhood than the existing use. The Court therefore found against the defendants because they could not meet the burden of proof, as determined by this three-pronged test:



- (1) excavation activities were actively being pursued when the law became effective;
- (2) the area that is desired to be excavated was clearly intended to be excavated, as measured by objective manifestations and not by subjective intent; and
- (3) that the continued operations do not, and/or will not, have a substantially different and adverse impact on the neighborhood.

### **3. Town of Barrington v. Gadd (1990)**

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**Property owner must prove more than intent to qualify as grandfathered, and must demonstrate significant activity.**

The town claimed that the defendants had not met the test of being an "existing operation", since all that had occurred on their land before August 24, 1979 was that no more than about 800 yards of loam had been excavated from the digging of a pond, some of it stockpiled, some bartered away to other individuals.

The Court found that "the sporadic taking of insignificant quantities of materials, evidenced by the fact that friends and acquaintances occasionally came onto the property and, with their own equipment, hauled away small amounts of minerals, simply does not constitute an excavation operation. . . Just because the defendants wish they had an active mineral extraction operation in August of 1979 does not make it so."

Not only did the town prevail in court, but it was also awarded attorney's fees, both to get the injunction in Superior Court, and the fees for the court trial. This was possible because of the 1989 amendments to RSA 155-E, which say that fines and penalties for excavation law violations shall be the same as form violations under RSA 676:15 and 17: "In any legal action brought by a municipality to enforce . . . the municipality may recover its costs and reasonable attorney's fees actually expended in pursuing the legal action if it is found to be a prevailing party in the action."

### **4. Olson v. Town of Fitzwilliam (1994)**

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**Excavation regulations are valid despite lack of Construction Materials Section in the Master Plan.**

The Town denied Olson's request for a variance from a provision in the zoning ordinance that restricted excavations to 10,000 cubic yards per year. Olson challenged the decision, claiming that all zoning restrictions on excavations were illegal because the town didn't have a Construction Materials section in its Master Plan. The plaintiff's position was that this

section was required before the town could regulate excavations, arguing that the 1989 recodification of RSA 155-E reflected a legislative intent that this section be mandatory.

Relying on the minutes from the Legislative Study Committee, the Court showed that the intent of RSA 674:2, VIII-a was primarily to serve as an information-gathering mechanism, not as a mandatory prerequisite to earth excavation regulations; nor, was the intent to override local control, except in those instances where local zoning does not provide for excavation opportunity. Further, case law makes it clear that a master plan in New Hampshire is a guide, and may not be used to frustrate zoning regulations.

## **5. Town of Raymond v. S. S. Jay Realty (1994)**

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### **Imposition of fines and injunction against excavation upheld.**

The Town of Raymond requested an injunction and the imposition of fines against a landowner who was operating a pit in violation of the minimum operational standards of RSA 155-E:4-a. Neither a reclamation plan nor an Excavation Report to guarantee grandfathered status had been filed with the Planning Board, and several neighboring homes had lost well water due to the fact that excavation was taking place below the water table, using a water pump.

The landowner challenged - not the claim that he was operating in violation of the various sections of RSA 155-E, but rather the town's request for injunction and fines. His claim was that the town's sole remedy was a Cease & Desist Order under RSA 676:17-a. The Court, however, noted that RSA 155-E:10 states that fines, penalties, and remedies for violations of that chapter are the same as RSA 676:15 (injunctions) and 676:17 (fines and penalties).

## **6. Arthur Whitcomb, Inc. d/b/a Twin Mountain Sand & Gravel v. Town of Carrol, N.H. (1996)**

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### **RSA 155-E preempts local zoning, except as it applies to grandfathered operations.**

Note that this was a very controversial decision and has left more questions than answers. It is being included here because it bears acknowledging, but the hope is that clarification to this decision will be forthcoming. Briefly, the facts of the case are that since 1972 Whitcomb operated a stationary manufacturing plant in the town of Carroll. In 1988, Whitcomb began blasting activity on the site, which the town attempted to regulate, without much success. In 1993 Whitcomb applied to the ZBA for a special exception, and to the Planning Board for site plan approval and an

excavation permit.

Both boards granted all approvals, however they also imposed some restrictions, including a ban on the blasting. Whitcomb appealed to superior court, claiming an exemption under RSA 155-E:2, III(a), relative to stationary manufacturing plants. The town argued that Whitcomb was only exempt from the permit requirements, not from local land use ordinances and regulations. Whitcomb won in Superior Court, the town appealed to the Supreme Court and lost.

The Court found that Rsa 155-E constitutes a comprehensive, detailed, regulatory scheme and, as such, is preempted by the State. Thus, the towns' role is limited to administering the requirements of RSA 155-E; furthermore, they may not burden excavation operations with their own substantive requirements.

However, despite having determined that the legislature intended to preempt excavation, the court ruled that not all local regulation is prohibited: such matters as traffic and roads, landscaping, signs are permitted - in other words, those issues that would typically be a matter for site plan review.

And, regarding the blasting activity, the court ruled that blasting was a component of quarrying, which is exempt from a permit if it uses earth from the same site. Presumably if the earth came from off-site, blasting would be subject to local regulation.

## **7. Cormier v. Town of Danville ZBA (1996)**

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### **Gravel removal is not incompatible with the designation of a scenic road.**

The plaintiff proposed to open a gravel pit in a part of town in which excavation is permitted only by special exception. One of the criteria to be met was that there be no detriment to natural features or historical landmarks or structures. The only access to this pit would be over a road laid out in 1766, that was closed by vote of town meeting in 1954, and then in 1973 voted at town meeting to be a Scenic Road "to remain closed in an unimproved condition to protect its scenic and historic character . . ." The ZBA denied the special exception on the grounds that 7,500 trips per year by heavy gravel trucks was incompatible with the road's natural and historic character. The plaintiff appealed to superior court, which upheld the ZBA; an appeal of that decision to the Supreme Court found in favor of the plaintiff. The Supreme Court found that there was nothing in the record to support the ZBA's conclusion that the excavation would have an adverse impact on the road. Secondly, there was no evidence as to the historic significance of the road or any action by the town to otherwise preserve it.

**SECTION IV:**

**EXCAVATION AND EXCAVATION  
ACTIVITY TAX**

# SECTION IV

## **RSA 72-B: EXCAVATION TAX AND TAXATION OF EXCAVATION AREA**

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A law was passed, effective April 1, 1998, that affects the way landowners are taxed for their excavated earth material and the land on which the earth resources are located. In the enactment of the law, the legislature stated that RSA 155-E and RSA 72-B must be read in conjunction with each other. Chapter RSA 72-B is administered by the Department of Revenue Administration (DRA) and by the local assessing officials (or Selectmen).

It is important to note that the taxation of excavated earth materials and excavated land area does not fall within the purview of the Planning Board. Even though this handbook is intended as a guide primarily to the Planning Board, this issue is significant enough that it warrants some mention in this document. The approval of an excavation will affect the real estate taxation of the property. The assessing officials will need to rely upon the planning boards approvals and approved plans to adequately assess the real estate tax and excavation tax.

RSA 72-B represents an attempt by the Legislature to provide a uniform method for towns in New Hampshire to tax excavated earth and the excavation area. The history of gravel taxation in New Hampshire is one of inconsistency. Earth has been taxable in this state since 1870, but municipalities have not applied and/or interpreted the law in the same way. A legislative study committee was formed in 1995, the result being the passage of RSA 72-B.

The enactment of RSA 72-B has resulted in many indirect, if not unintentional, contributions to the preservation of New Hampshire's natural beauty.

The method of taxation of the excavated area has provided an incentive for the owners of abandoned or depleted sites to reclaim. And, there has been an increased awareness of the responsibility of the municipality to regulate the excavation of earth in a responsible manner to protect the environment.

## **OVERVIEW OF THE EXCAVATION TAX**

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The Excavation Tax is similar to a yield tax. The tax is levied by the town, and payable to the town, for earth materials that are removed from the ground at a rate of \$.02 per cubic yard. The earth is taxed if it is sold, bartered, given away, or is used for construction on another parcel that is not contiguous and in common ownership. Earth that is used exclusively by the owner of the land for forestry or farming purposes is exempt.

### **FILING REQUIREMENTS:**

The landowner must file a Notice of Intent to Excavate with the local assessing officials. If more than 1000 cubic yards will be excavated during the tax year, the owner must provide a \$100 administration fee with the Intent made payable to the State of N.H. The assessors shall either sign or decline to sign the Intent within 30 days of receipt. The assessing officials may decline to sign the Intent for non-compliance with RSA 155-E (Local regulation) or RSA 485-A:17 (Site Specific Terrain Alteration Permit).

It is important to note that "incidental" excavations (construction projects) that will result in the removal of more than 1000 cubic yards from the project site must file the form, \$100 fee, and pay tax on the earth removed. When approving subdivisions, developments, or commercial projects, the planning board should inquire as to whether the project will have excess earth leaving the site.

The Notice of Intent must be filed prior to the commencement of any excavation operation, and at the beginning of each tax year (April 1) for operations not yet completed or in progress. The DRA will issue to the landowner a Certificate to Excavate, which must be posted in a conspicuous place within the area of the excavation.

**BONDING REQUIREMENTS:**

If the excavator does not own land within the town, or is delinquent in property or timber taxes, they must file a bond for the excavation tax due from the project. Note that this bond is separate from the bond required under RSA 155-E for reclamation purposes.

**EXCAVATION REPORT:**

Anyone who has filed a Notice of Intent to Excavate must also file a Report of Excavated Material. The Report must include an estimate of the size of the excavation site as it existed at the end of the tax year, or a statement that the size of the excavated site has not changed since the prior tax year. The Report is to be filed at the completion of an operation, or no later than April 15<sup>th</sup> for any operation still in progress at the end of the tax year (March 31). Failure to file the Report or misreporting can result in the assessment of dooamage in the amount of twice what the excavation tax would have been had the information been truthfully filed.

**OVERVIEW OF THE TAXATION OF THE EXCAVATION AREA**

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Excavations (as defined in RSA 155-E: 1, II and RSA 155-E:1, VI) are to be assessed as real property pursuant to RSA 72:6 independent of any earth contained therein. In other words, the property tax assessment cannot contain the market value of the earth yet to be excavated.

The excavation of earth is a highly regulated commercial activity. The excavation, manufacturing, processing and selling of earth is allowed by zoning or a special exception and requires local and state permits. The assessment of the real estate is based upon the commercial/industrial use of the property and other factors affecting value.

**WHAT IS THE EXCAVATION AREA?**

This is an important question, as it will affect how much local property tax the landowner will pay in any given year.

The excavation area is defined by RSA 155-E:1, VI as being "the surface area within an excavation site where excavation has occurred or is eligible to occur under the provisions of this chapter."

This means that any area on the site that is either active, inactive, not yet excavated, or abandoned but has not been reclaimed, will be subject to taxation as an excavation area.

This part of the law obviously provides an incentive for landowners to reclaim any part of their excavation site that is depleted and not active. Once the excavated area has been reclaimed, the assessment will reflect the current zoning and highest and best use of the property as reclaimed land. If the property qualifies, the landowner may apply for Current Use Taxation.

The owner of the land is responsible for furnishing the assessors with the information needed to make the determination as to what constitutes the excavation area. It is neither the property owner nor the assessors that determine whether an area is reclaimed. Only the Regulator of RSA 155-E can make that determination.

#### **ISSUES FOR THE PLANNING BOARD:**

As noted above, reclamation and approvals are essential in the way the property tax will be assessed. When the assessors make a determination regarding an excavation area, the Regulator (usually the Planning Board) needs to provide the status of approved excavation and reclaimed areas for that particular site. The excavation plan and Reclamation Plan that was filed and approved by the Planning Board should be reviewed periodically to ensure compliance with the permit and other regulations.

The Notice of Intent to Excavate form includes questions which ask whether the operation is in compliance with RSA 155-E & RSA 485-A:17. The questions are intended to assist the municipality in the regulation of the excavations. If the questions are left blank, or are incomplete, it should raise a flag so that municipality can be aware of potential non-compliance with local and state regulations.



## APPENDICES

- ◆ EXCAVATION APPLICATION AND CHECKLIST
- ◆ "BEST MANAGEMENT PRACTICES" FACT SHEET;;NH  
DEPARTMENT OF ENVIRONMENTAL SERVICES
- ◆ "VEGETATING NEW HAMPSHIRE SAND AND GRAVEL PITS";  
USDA, 1991
- ◆ SEEDING FACT SHEET; USDA, 1994
- ◆ NOTICE OF INTENT TO EXCAVATE; NH DEPARTMENT OF  
REVENUE ADMINISTRATION

**APPENDIX # 1:**

**EXCAVATION APPLICATION AND CHECKLIST**

Application # \_\_\_\_\_  
Date of Filing \_\_\_\_\_

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APPLICATION FOR EARTH EXCAVATION  
TOWN OF \_\_\_\_\_, NEW HAMPSHIRE

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1. Name of owner/applicant: \_\_\_\_\_
  
2. Current mailing address/telephone number: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
  
3. Date of acceptance: \_\_\_\_\_
  
4. Location of proposed and/or existing excavation: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
  
5. Tax Map# \_\_\_\_\_ Lot # \_\_\_\_\_ Zoning District(s): \_\_\_\_\_
  
6. Type of Operation: \_\_\_\_\_
  
7. If existing, date of commencement: \_\_\_\_\_
  
8. Submission Items:
  - a. Abutters list
  - b. Excavation and/or Reclamation Plans
  - c. Local, state and/or federal permits
  - d. Fees

DO NOT WRITE BELOW THIS LINE

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PLANNING BOARD APPROVAL

PLANNING BOARD DENIAL

Conditions: \_\_\_\_\_

Reasons: \_\_\_\_\_

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Date of Approval: \_\_\_\_\_

Date of Denial: \_\_\_\_\_

# EXCAVATION REGULATIONS

## APPLICATION CHECKLIST

The following checklist is intended as a reference for the Board to use in determining whether an application meets all the requirements for submission as specified in the regulations (Section XIV). Item #3, a-n, and #4, a-f are those items the Board expects to see on the plan; items # 5-11 of this checklist are those projects the law defines as prohibited and that the Board, during the application review process, must determine to be in compliance with the law.

<b>REQUIRED</b>			<b>SUBMITTED</b>	
<u>Yes</u>	<u>No</u>		<u>Yes</u>	<u>No</u>
___	___	1. Signed and dated application form.	___	___
___	___	2. Copies of any required local, state or federal permits.	___	___
		3. Excavation Plan at a scale of 1" = 100' showing the following information:		
___	___	a. Name and address of owner, excavator, and all abutters.	___	___
___	___	b. Name, address and signature of person preparing the plan; date of plan, scale, and north arrow.	___	___
___	___	c. Sketch and description of the location and boundaries of proposed and any existing excavations in square feet and acres, and the municipalities involved.	___	___
___	___	d. Zoning district boundaries of excavation area and within 200 feet of the area boundary.	___	___
___	___	e. Lot lines, public streets, driveways, intersections, rights-of-way, and all easements within 200 feet of the excavation.	___	___
___	___	f. Location of existing dwellings, structures, septic systems and wells within 200 feet of the excavation.	___	___
___	___	g. Topography at contour intervals of five feet or less.	___	___
___	___	h. All surface drainage patterns including wetlands and standing water.	___	___
___	___	i. Sketch and description of existing and proposed access roads, including width and surface materials.	___	___
___	___	j. Breadth, depth and slope of the proposed excavation.	___	___
___	___	k. Elevation of the highest annual average ground water table within or next to the proposed excavation.	___	___

**REQUIRED**  
Yes   No

**SUBMITTED**  
Yes   No

<input type="checkbox"/>	<input type="checkbox"/>	l. Test pit data to within either the seasonal high water table or a minimum of six feet below the proposed excavation depth.	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	m. Fencing, buffers, or other visual barriers, including height and materials.	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	n. Measures to control erosion and sedimentation, water and air pollution, and any hazards to public safety.	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	o. Plans for stormwater management.	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	p. Plans for equipment maintenance.	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	q. Methods to prevent materials from the site from being tracked onto public roadways.	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	r. Copies of all necessary state and/or federal permits.	<input type="checkbox"/>	<input type="checkbox"/>
4. Reclamation Plan at a scale of 1" = 100' showing the following information:				
<input type="checkbox"/>	<input type="checkbox"/>	a. Name, address and signature of the person preparing the plan; date of plan, scale and north arrow.	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	b. All boundaries of the area proposed for reclamation, and the land within 200 feet of these boundaries.	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	c. Final topography at contour intervals of five feet or less.	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	d. Final surface drainage pattern.	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	e. Timetable as to fully-depleted sites within the project area.	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	f. Schedule of final reclamation activities, including seeding mixtures, cover vegetation, fertilizer types and application rates.	<input type="checkbox"/>	<input type="checkbox"/>

**COMMENTS:** \_\_\_\_\_

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## EXCAVATION AND RECLAMATION CHECKLISTS

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The following checklist is used by the Board to determine compliance with the provisions of RSA 155-E during application review and inspections of excavation sites, both for new operations as well as yearly inspections of existing operations. For existing, non-permitted operation, only items #1-10 apply, while new, permitted operations are subject to all items in the checklist. The items in the reclamation checklist apply to all operations at the time of reclamation.

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### OPERATING STANDARDS

- | <u>Yes</u> | <u>No</u> |  |
|------------|-----------|--|
| ___        | ___       | 1. The excavation is not closer than 50 feet to the boundary of a disapproving abutter.  |
| ___        | ___       | 2. The excavation is not closer than 150 feet to an existing dwelling or to a site for which a building permit has already been issued.  |
| ___        | ___       | 3. The excavation is not below road level within 50 feet of a public right-of-way.   |
| ___        | ___       | 4. Vegetation is maintained within the peripheral areas of items 2 and 3 above.  |
| ___        | ___       | 5. Fuels, lubricants, or other toxic or polluting materials are not stored on the site, unless in compliance with applicable state regulations.  |
| ___        | ___       | 6. If temporary slopes exceed a 1:1 grade, an appropriate barricade is provided.   |
| ___        | ___       | 7. The excavation does not cause the accumulation of freestanding water for prolonged periods.   |
| ___        | ___       | 8. The excavation does not result in continued siltation of surface water or degradation of water quality of any public or private water supplies.   |
| ___        | ___       | 9. The excavation is not within 75 feet of any great pond, navigable river, or any other standing body of water 10 acres or more in area.  |
| ___        | ___       | 10. The excavation is not within 25 feet of any stream, river, or brook that normally flows throughout the year, or any naturally-occurring standing body of water less than 10 acres, prime wetland, or any other wetland greater than 5 acres in area. |
| ___        | ___       | 11. The excavation is permitted by the zoning ordinance.   |
| ___        | ___       | 12. The excavation is not within 50 feet of the boundary of a disapproving abutter or 10 feet of the boundary of an approving abutter.   |
| ___        | ___       | 13. The excavation will not diminish area property values or unreasonably change the character of the neighborhood.  |
| ___        | ___       | 14. The excavation will not create any nuisance or health or safety hazards.   |

**Yes**   **No**

- \_\_\_\_\_   \_\_\_\_\_   15.   The excavation will not unreasonably accelerate the deterioration of highways or create any safety hazards in their use.
- \_\_\_\_\_   \_\_\_\_\_   16.   Existing visual barriers will not be removed, except to gain access to the site.
- \_\_\_\_\_   \_\_\_\_\_   17.   The excavation will not substantially damage a know aquifer.

### **RECLAMATION STANDARDS**

- \_\_\_\_\_   \_\_\_\_\_   1.   Except for exposed rock ledge, all areas which have been stripped of vegetation shall be spread with soil capable of sustaining vegetation, and shall be planted with seedlings or grass.
- \_\_\_\_\_   \_\_\_\_\_   2.   Areas visible from a public way from which trees have been removed shall be replanted with tree seedlings in accordance with acceptable horticultural practices.
- \_\_\_\_\_   \_\_\_\_\_   3.   Provision is made for the removal or disposal of all stumps and other vegetative debris.
- \_\_\_\_\_   \_\_\_\_\_   4.   Slopes, except for exposed rock ledge, will be graded to natural repose according to the soil type, or at a ratio of horizontal to vertical proposed by the owner and approved by the Board.
- \_\_\_\_\_   \_\_\_\_\_   5.   No standing bodies of water created by the excavation will be left if they create a public safety hazard.
- \_\_\_\_\_   \_\_\_\_\_   6.   The topography will be left so that water draining from the site leaves the property at the original, natural drainage points and in the natural proportions of flow.

**COMMENTS:** \_\_\_\_\_

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**APPENDIX # 2:**

"BEST MANAGEMENT PRACTICES" FACT  
SHEET,;NH DEPARTMENT OF  
ENVIRONMENTAL SERVICES

WD-DWGB-22-6

2008

## Best Management Practices for Fueling and Maintenance of Excavation and Earthmoving Equipment

Env-Wq 401, Best Management Practices for Groundwater Protection (formerly Env-Ws 421), apply to a variety of businesses and activities considered potential contamination sources under the Groundwater Protection Act, RSA 485-C. If you operate a *permanent* facility for fueling or maintenance of excavation or earthmoving equipment (or other vehicles), consult DES fact sheet WD-DWGB-22-4, Best Management Practices for Groundwater Protection. **If you fuel or maintain excavation or earthmoving equipment *in the field*, this fact sheet explains how to meet the requirements of the best management practices rules. The BMP rules apply to containers holding regulated substances as listed in 40 CFR 302, which include motor fuels, lubricants, hydraulic fluids, other petroleum products, degreasers, and other substances which are capable of contaminating drinking water.** The rules do not apply to containers smaller than five gallons, but it is prudent to follow the same practices outlined here.

### 1. Store fuels and fluids in sealed, clearly labeled containers.

Containers must be closed and sealed at all times, except to add or remove fluids.

### 2. Keep containers on a stable, impervious surface.

Containers must be stored in such a way that they will not easily tip over. Fueling, storage, and maintenance areas (areas where transfers of materials or work on equipment or vehicles might result in spills) must be level and located where there are concrete pads or at least 12 inches of compacted till or topsoil. This is to ensure that any spills will be absorbed by the soil near the surface *so that they can be cleaned up immediately*. Metal containers must be stored on pallets or otherwise prevented from coming in contact with moist earth.

### 3. Provide secondary containment.

- If any tank used for petroleum products (other than heating oil) has a capacity greater than 660 gallons or if the combined volume of petroleum products tanks on a site is greater than 1,320 gallons, the site must register with DES and meet the requirements of Env-Wm 1402 (for more information, call 271-3644).
- Regardless of size, any tank used to store petroleum products must comply with National Fire Protection Association standards 30 and 30A, which include requirements for secondary containment. To form a secondary containment basin, the area can be graded and bermed, lined with a continuous sheet of 10-mil high-density polyethylene (HDPE), and backfilled with at least 6 inches of sand. An alternative to the HDPE liner and sand is

a 12-inch layer of compacted silty or clayey fill material (providing an infiltration rate less than 10<sup>-4</sup> cm/sec). The secondary containment area must have a roof to keep it free of rain, snow, and ice or the water that collects must be periodically removed to ensure sufficient containment volume remains to contain a release from the largest tank. (If the water has a visible sheen, DES must be contacted at (603) 271-3644 before the water is disposed of.) The secondary containment area must be sized to contain the volume of the largest tank. It may be used to store a fuel tank and/or other containers.

Depending on the size of the containers, any or all of several standards may apply:

- NFPA standard 30, which applies to all tanks, specifies such things as sizes and fabrication standards for containers, limits on the amount of materials that can be stored in any one pile or rack, distances between piles or racks, property line setbacks, and accessibility.
- Any fuel (other than heating oil) container larger than 60 gallons must meet UL standard 142.
- Construction, installation, or use of a tank larger than 660 gallons for storage of petroleum products requires DES approval.

#### 4. Keep containers covered.

Containers must be covered with a roof, plastic sheeting, or waterproof tarpaulins to keep containers dry, except when materials are being added or removed.

#### 5. Keep storage areas secure.

Storage areas must be kept secure. Employ a locked gate at the entrance to the site, a fence and a locked gate around the storage area, and/or store regulated substances in a locked trailer or shed. Access to storage areas must be under lock whenever the site is unattended. If the site is inactive for a period, the storage area must be inspected weekly for leaks and security. To keep storage areas secure from collision damage, berms or boulders should be used and the storage area should be located away from the active portion of the site.

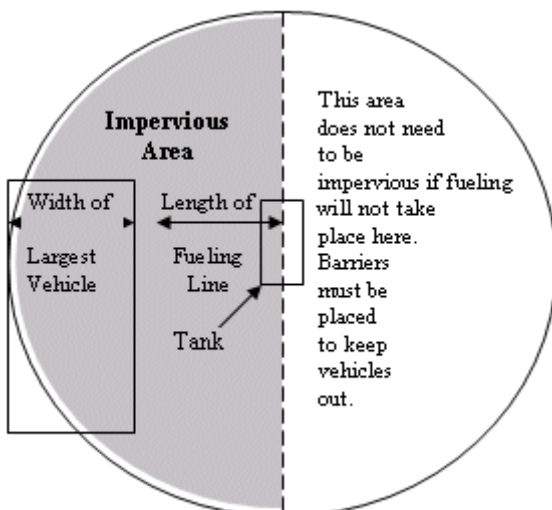
#### 6. Keep containers away from surface waters and public water supply wells.

Containers must be kept at least 50 feet from catch basins and surface waters, 75 feet from private wells, and outside the sanitary radius (varies from 150 to 400 feet) of a public well.

#### 7. Use drip pans under spigots, valves and pumps to catch leaks and spills.

#### 8. Prevent spills when fueling vehicles or transferring fluids from one container to another.

Use funnels and drip pans wherever possible. Perform fueling over impervious, level surfaces. If the facility is subject to Env-Wm 1402 (see item 3 above), the impervious surface must be concrete. If the site is not subject to Env-Wm 1402, the impervious surface can be HDPE and



sand or compacted soil as described above. The impervious surface must be large enough to fully contain the fueling operation. (This encompasses the area where the fueling hose is capable of reaching plus the width of the largest vehicle to be fueled – see illustration on this page). Note that while fuel tanks attached to vehicles are exempt from the storage requirements of the BMP rules, the fueling operation is not exempt.

### **9. Train employees to prevent, contain, and clean up spills.**

Train employees in all aspects of proper storage and handling of hazardous substances. Instruct employees to *immediately* clean up spills and contaminated soil. Post spill response information at all storage areas (poster available from DES).

### **10. Properly store and dispose of contaminated soil and materials.**

Store small quantities of contaminated soil and sorbent materials in covered containers. Do not mix sorbents contaminated with different regulated substances. This can create a hazardous waste that requires disposal by a licensed hauler. For proper disposal, contact the DES Solid Waste Compliance Section at (603) 271-2925.

### **11. Immediately report significant or uncontrolled spills.**

Small spills that are quickly cleaned up do not need to be reported. However, if *any* of the following occurs, the spill must be immediately reported to the N.H. Department of Environmental Services at (603) 271-3644:

- The spill is not contained immediately.
- The spill and contamination are not completely removed within 24 hours.
- There is impact or potential impact to groundwater or surface water.
- The spill is 25 gallons or more.

### **Waivers**

While the BMP rules are intended to apply to a variety of circumstances, DES recognizes that strict compliance may not fit every situation. Requests for specific waivers should be directed to DES at (603) 271-1168.

This fact sheet is a statement of DES's policy for interpreting Env-Wq 401, in terms of their applicability to fueling and maintenance of earthmoving and excavation equipment. Information contained in this fact sheet is current as of March 2008. Statutory or regulatory changes that may occur after this date may change this information. If there are any questions concerning the status of the information, please contact DES at (603) 271-2947.

**APPENDIX # 3:**

**"VEGETATING NEW HAMPSHIRE SAND AND  
GRAVEL PITS"; USDA, 1991**

Technical Note

PM-NH-21

Rev April 1991

Rev April 2000

# 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/NRCS 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 NRCS personnel and conservation districts in each state seeking vegetative solutions to site specific problems.

This report is a result of the NRCS 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.

**DAWN W GENES**  
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 NRCS 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. NRCS 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

- 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.
- 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.
- Construct diversions at tops of slopes to divert runoff water away from the slope banks to a stable outlet.
- Construct rock lined chutes or equivalent to conduct concentrated flow of water to stable outlets.
- Remove large stones, boulders, and other debris that will hinder the seeding process and the establishment of vegetation.
- Spread a minimum depth of 4 inches of topsoil over the site, if available.
- 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.
- 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. 22 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.

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\*

Sources of assistance for determining sieve analysis may be obtained at your local NRCS 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)</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
		15	15	15

**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
Crown vetch <sup>c/</sup>	Pengift, Chemung	10.0
Tall fescue	KY=31, Rebel, Ken-Hi	10.0

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<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)</u> <sup>a/</sup>	<u>Lbs Per Acre</u> <sup>b/</sup>
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 (2:1 slopes maximum)

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

#### (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 topdressed 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 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 NATURAL RESOURCES CONSERVATION SERVICE**

NRCS 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 NRCS field office.

### **NRCS FIELD OFFICE ADDRESSES**

Natural Resources Conservation Service and  
Carroll County Conservation District  
The Grindle Ctr, 73 Main Street (PO Box 533)  
Conway, NH 03818-0533  
Phone: 477-2771

Natural Resources Conservation Service and  
Cheshire County Conservation District  
Route #12 South, Box 315  
Walpole, NH 03608-9744  
Phone: 756-2988

Natural Resources Conservation Service and  
Coos County Conservation District  
RR 2, Box 235  
Lancaster, NH 03584-9612  
Phone: 788-4651

Natural Resources Conservation Service and  
Grafton County Conservation District  
RFD #2, PO Box 148B  
Woodsville, NH 03785-0229  
Phone: 747-2001

Natural Resources Conservation Service and  
Hillsborough County Conservation District  
Chappell Professional Center  
#468, Route, 13, South  
Milford, NH 03055-3442  
Phone: 673-2409

Natural Resources Conservation Service and  
Merrimack County Conservation District  
The Concord Center  
10 Ferry Street, Box 312  
Concord, NH 03301-5081  
Phone: 223-6023

Natural Resources Conservation Service  
Telly's Plaza  
243 Calef Highway  
Epping, NH 03042  
Phone: 679-1587

Natural Resources Conservation Service  
Federal Building  
2 Madbury Road  
Durham, NH 03824-1499  
Phone: 868-7581

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To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, Room 326W, Whitten Bldg., 14<sup>th</sup> and Independence Avenue, SW, Washington, D.C. 20250-9410 or call (202)720-5964 (voice or TDD). USDA is an equal employment opportunity employer.

**APPENDIX # 4:**

SEEDING FACT SHEET; USDA, 1994





## **Concerns Regarding the Use of Topsoil in Gravel Pit Reclamation**

### **TOPSOIL FACTS**

A one inch depth of topsoil spread over one acre equals 134 cubic yards.

A four inch depth of topsoil spread over an acre equals 536 cubic yards.

It takes 35.7 dump truck loads (15 cubic yards per load) to haul four acre inches of topsoil to a site.

A ten acre site (4 inch depth) requires 357 truck loads of topsoil.

Four inches of topsoil spread on a site that is one acre in size costs about \$8400.

536 yds <sup>3</sup> at \$12/yd <sup>3</sup>	=	\$6432
Trucking at \$3/yd <sup>3</sup>	=	\$1608
Spreading at \$0.75/yd <sup>3</sup>	=	\$ 402
Total cost per acre	=	\$ 8442

A ten acre site costs about \$84,000 to topsoil to a four inch depth.

Topsoil is not needed on most gravel pit surfaces in order to establish warm season grasses. It is needed where cobbles or clean gravel are exposed.

(over)

## **COMMUNITY CONCERNS**

Concerns for communities requiring a four inch topsoil layer as a condition for vegetating gravel pit surfaces may be:

1. What will the impact of this trucking have on community roads?
2. Will the community need to address safety, noise, and other management concerns due to traffic of trucks?
3. Is the community justified and reasonable in setting a condition that topsoil may need to be stripped from an area to topsoil a gravel pit surface?
4. What will happen to fields where topsoil is removed?
5. Is topsoil or a topsoil substitute necessary to establish a satisfactory vegetative cover on a gravel pit surface?

(In New Hampshire topsoil is naturally occurring earthen material located in the upper few inches of the earth's surface).

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To file a complaint, write the Secretary of Agriculture, U.S. Department of Agriculture, Washington, D.C., 20250, or call (202) 720-7327 (voice) or (202) 690-1538 (TDD). USDA is an equal opportunity employer.



## Evenly Distributing Lime and Fertilizer by Hand

**PURPOSE:**

To describe a way for evenly distributing lime or fertilizer or other materials.

**METHOD:**

Divide the area to be treated into 1,000 square foot segments commonly referred to as units.

Apply the predetermined unit rate of lime, fertilizer or other material to each unit area.

**LAYOUT UNIT AREAS ON THE LAND:**

Divide 1000 square feet by a desired length in feet to arrive at the width in feet. Example: where a desired length in one direction is 50 feet, divide 1000 ft.<sup>2</sup> by 50 ft. to obtain a width dimension of 20 ft. Where the length in one direction is 90 ft., divide 1000 ft.<sup>2</sup> by 90 ft. to arrive at a width of 11.1 ft.

Mark the corners with flags, stakes or other suitable material.

**DETERMINE THE AMOUNTS OF LIME, FERTILIZER OR OTHER MATERIAL TO BE APPLIED TO EACH UNIT AREA:**

Many recommendations are given as so many lbs. or tons per acre.

There are 43,560 square feet in an acre or 43.56 units (1000 ft.<sup>2</sup>) per acre. (43,560 /1000). **ALWAYS DIVIDE THE RECOMMENDED ACRE RATE BY 43.56 TO ARRIVE AT THE UNIT RATE.**

(over)

Example (1): Where the recommended rate is two tons (4,000 lbs.) of lime per acre, divide 4000 lbs. by 43.56 to arrive at 91.8 lbs. per unit area of 1000 ft<sup>2</sup>. Since lime can be purchased in 50 lb. bags, it is convenient to place two bags in each unit area for spreading. The actual rate per acre in this case will be 43.56 x 100 lbs. or 4,356 lbs.

Example (2): Where the recommended rate is 500 lbs. of fertilizer per acre, divide 500 lbs. by 43.56 to arrive at 11.5 lbs. of fertilizer per unit area (1000 ft.<sup>2</sup>).

### **APPLICATION OF MATERIALS:**

Weigh the recommended amount of material into a bucket or pail and plainly mark the inside of the pail at the surface of the material. Spread the material as uniformly as possible on a unit area. Refill the pail to the previously marked line on the inside wall of the pail and spread on the next unit. Continue until all units are covered.

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## **How To Purchase Grass Seed**

### **COOL SEASON GRASSES**

Typical cool season grass species used in critical area plantings in New Hampshire include red fescue, tall fescue, hard fescue, smooth broomgrass, reedtop, and reed canarygrass.

Always use varieties recommended by local Soil Conservation Service representatives when seeding critical areas. A variety is recognizable by an added word or words in its name such as Kentucky 31 tall fescue, Dura hard fescue, etc.

Purchase these seed by the pound from reliable seed sources. Agway and Blue Seal are local examples of seed sources.

Purchase during the year of application because seed loses its germination when stored over winter.

### **WARM SEASON GRASSES**

Typical warm season grass species used in New Hampshire include switchgrass, big bluestem, sand bluestem, little bluestem, and sand lovegrass.

As with cool season grasses always use currently recommended varieties by the Soil Conservation Service. Examples of variety names include Pathfinder switchgrass, Niagra big bluestem, NE-27 sand lovegrass, and Aldous little bluestem.

(over)

Warm season grasses are purchased differently than cool season grasses.

- (1) Usually purchased through the mail.
- (2) Purchase on a pure live seed (PLS) basis. (When you order 10 pounds of PLS seed, you will receive more than 10 pounds of material. The material you receive will include 10 pounds of live seed plus chaff or bits of plants, and dead seed. On the other hand, if you order 10 pounds of Aldous little bluestem, for example, you will receive 10 pounds of total material that includes less than 10 pounds of live seed).
- (3) Order certified seed where available because it is the only way of being certain of obtaining the ordered varieties.
- (4) Contact your local Soil Conservation Service Office for a list of venders.

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## Tracking Warm Season Grasses

**PURPOSE:** To incorporate lime, seed, and fertilizer, and to compress soil particles around the seed.

**METHOD:** Tracking

**DEFINITION:** The process of driving a bulldozer over applied lime, seed, and fertilizer.

**CRITERIA:** Bulldozer

- (a) 1.25 to 2.0 inch deep grousers are essential.
- (b) Track widths as available. Typically 12-22 inches. Wide track widths provide time efficiency.
- (c) Bulldozer size is important on slopes. Large bulldozers such as Cat 6, 7, or 8, and equivalents work better on steep loose soil materials than smaller bulldozers.
- (d) Keep blade raised at all times.

**OPERATION CONSIDERATIONS:**

- (a) Spread lime, seed, and fertilizer.
- (b) Track by driving a bulldozer up and backing down the slope to leave grouser tracks across the slope to reduce erosion and trap water.

(more)

- (c) Move bulldozer over one machine width when covered tracks meet. Do not double track because it is not necessary for seed germination and it is time consuming.
  
  - (d) Mulch is typically not needed where warm season grasses are used. Never apply mulch prior to tracking. Mulch would be pushed into the soil by the grousers and reduce germination of the seed due to drying of the soil and poor seed to soil contact.
- 

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**APPENDIX # 5:**

NOTICE OF INTENT TO EXCAVATE; NH  
DEPARTMENT OF REVENUE  
ADMINISTRATION