Earth Resource Extraction Model Regulations for Municipalities & Local Commissions

Southwest Conservation District
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Servicing Fairfield and New Haven Counties

EARTH RESOURCE EXTRACTION MODEL REGULATIONS FOR EARTH EXTRACTION OPERATIONS

SUPPLEMENTAL EROSION AND SEDIMENT CONTROL POCKET GUIDE

New Haven County Soil and Water Conservation District:
Developing Cooperative Management Strategies and Measures
To Protect Soil and Water Quality

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Introduction

Problem statement:

The meltwaters from glacial retreats created sorted and unsorted sand and gravel landforms of eskers and kame deltas. These land forms provide a finite but valued medium for use in highway safety and other land development. The utilization and extraction of these resources generally have taken place in close proximity to sensitive lowland areas or along waterways. This relationship has increased the risk of erosion an sedimentation to adjoining wetlands and watercourses as well as the contamination of ground waters from improperly stored fuels foe extraction equipment.

Earth Resource Extraction is an intensive land use activity where the withdrawal of natural resources such as sand, gravel, rock, soil or construction aggregate are excavated, stockpiled and removed off-site with no provisions for replenishment.

Disturbed land associated with earth resource extraction operations typically have extended periods of time where soils are disturbed without benefit of a vegetative cover.

Developers / mining operators who conduct earth resource extraction pose different problems above and beyond those of other development activities, such as the construction of utilities, roads and buildings, because they involve a different array of potentially negative impacts to the environment and the community.

Environmental impacts can include the degradation of aquifers, interruption of hydrologic regimes and the siltation of surface waterbodies, tributaries, wetlands and aquatic habitats.

The **community impacts** are more an issue of nuisance in the form of noise, dust control, traffic, diminished aesthetics, conflicts with adjacent lands plus the ultimate land use form. These problems stem from inadequate erosion and sediment measures, introduction of hazardous materials from fueling and maintenance along with deficient site planning in general.

Introduction

The purpose of this field guide is to provide land developers, excavation operators and municipal officials with a set of (1) supplemental model regulations, (2) supportive measures, (3) reference materials. The intent is to focus regulatory control so that the special needs and problems related to earth resource extraction are identified and addressed regardless of whether the extraction is a result of a mining operation or related to other land development activities, suchas subdivisions. The regulations are the result of a joint effort of site owners / operators, town officials and cooperating agencies to balance the economic and safety need to prevent the degradation of both surface and ground waters.

This supplement to the CT Guidelines for E/S Control links and standardizes all earth resource extraction regardless of the source (ie., private single family development over 1/2 acre in size, subdivisions that perform extraction and mining operations). It is intended to guide developers and site operators toward voluntary compliance and help municipal officials adopt and enforce the new model regulations.

The incorporation of these model regulations will enhance on-site and perimeter measures of E / S plans for any earth resource extraction operation. This can be accomplished by adopting and implementing the following items for the proposed site.

* requiring a separate earth extraction permit for all proposed land development / mining operations with intent to remove from the site earth materials in excess of 100 cubic yards or results in the disturbance of greater than 1/2 acre of land.

* selecting measures that meet specific site requirements.

* designate areas of proposed sites **Earth Resource Zones (ERZ)** on soils mapping and grading plans.

* enable long term renovation of water by impeding flow, promote settling and detachment.

Model Regulation

Site Size

Earth resource extraction operation shall encompass no more than five (5) acres of active extractive activity (exclusive of buildings, equipment, access roads, sedimentation basins, etc.) at one time. Operations which would encompass more than five (5) acres shall be issued a permit upon submission and approval of a comprehensive phased restoration plan.

Model Regulation

Horizontal Setbacks and Buffers

Earth resource extraction activities shall be set back from all property boundaries a distance equal to that required by the existing planning zone requirements. Grading in this area shall also conform to that required by the existing zone. The portion of land between the property line and this setback shall be maintained in this zone for visual screening, as well as for dust and noise control purposes.

Model Regulation

Debris Removal

All waste products generated on the site shall be processed on or offsite. Prior to removal, the applicant will supply the Commission with a letter stating where the debris and stumps are intended to be deposited. Large process residues such as boulders and cobbles not incorporated into the improvement of the site may be buried and located so as to not impair the suitability of the site for future permitted uses. The location shall appear on approved plans and have the approval of the Commission.

The composting and recycling of stumps generated by construction activities is encouraged. Consider chipping, slash and stumps from clearing operations and stockpiling for future use as a temporary soil protection or landscape mulch.

Model Regulations

Hazardous Materials Management

The use, storage and handling of hazardous materials (fuels, solvents, lubricants, etc.) shall be managed to prevent contamination of ground and surface waters. Materials shall be limited to the types and volumes necessary for routine operation only and may be prohibited in areas of important surface waterbodies and groundwater aquifers.

Model Regulations

Vertical Separation from Seasonal High Watertable

No earth resource extraction operation shall remove earth materials closer than two (2) feet above the seasonal high watertable. This separation shall not apply where development of a waterbody or creation of a wetland area is a goal documented within a wetland creation plan, and developed by a practicing Civil Engineer registered to practice in the state of Connecticut with the soil scientist or hydrologist being adjunct team members.

Model Regulation

CONSTRUCTION ENTRANCE

All construction entrances shall be paved for the first twenty five (25) feet from any public road. Originating from the road, a construction entrance pad as detailed in the CT Guidelines shall be established with a minimum distance of seventy five (75) feet.

Model Regulations

Operating Hours

Operating hours for all earth resource extraction operations shall be restricted to weekdays, between the hours of 7:00 AM and 6:00 PM. This shall exclude routine maintenance activities not directly related to the extraction process. Operating hours may be adjusted according to site specific conditions, local regulatory input and residential concerns where applicable.

Model Regulation

Site Preparation and Topsoiling

Within sixty (60) days of completion of a five (5) acres or less of extraction, the surface shall be prepared to provide a suitable growth medium for final site stabilization. Grade area as needed to permit conventional equipment for seed-bed preparation. Existing surfaces are to be scarified to ensure comingling between topsoil and subsoil. The site will be stabilized in accordance with the CT Guidelines for Soil and Erosion Control. If the volume of stockpiled soil is not sufficient to provide complete coverage, exposed subsoil shall be sufficiently fertilized and seeded with suitable grass mixtures to ensure adequate vegetative cover.

Model Regulations

Final Slopes

Within thirty (30) days of completion of an excavation, the final slopes of that area shall be created and maintained in accordance with the Land Grading measure of the CT Guidelines. However, slope limitations provided therein may be exceeded, if slope stabilization structures are designed by an engineer.

Model Regulation

Completion of Operation

Within thirty (30) days after expiration of a permit for earth resource extraction, if no application for permit renewal has been received by the Town, a request for permit renewal has been denied, or the permit has been revoked, then the operation shall be deemed completed and the standards for site restoration shall apply.

Model Regulations

Permit Renewal

Town Permits required for earth resource extraction may be issued for up to five (5) years with one renewal of five (5) years.

The municipality may revoke or suspend any permit, at any time, issued under the provisions of this regulation or violation of any permit conditions or provisions upon service of notice and default time to cure. Town Permits for earth resource extraction may be renewed only after an application is filed with the municipality. Such application shall contain that information required in these regulations and shall show the nature and extent of earth resource extraction and restoration work which has been completed.

Model Regulation

Performance Bonds

A performance bond may be required as part of a permit for earth resource extraction approval. The bond shall be assigned to the municipality to guarantee that the earth resource extraction operation is conducted according to the permit, any imposed conditions, and these regulations, including assurance for: proper site operation and restoration, safety and environmental controls, protection against property damage and correction of violations. Upon failure to comply with permit or any of its requirements which results in a violation, the permittee shall be notified of default by certified notice. If the permittee does not notify the municipality of the intent to cure the default within ten (10) working days, the bond may be forfeited to the municipality and utilized by the municipality for restoration.

The amount of the bond shall be based on an amount set by the designated municipal agency and be determined by the area to be subjected to resource extraction, specific site conditions and potential impacts. The bond shall be in the form of an irrevocable letter of credit issued by the proper financial institution with a ninety (90) day notice of expiration, or restricted bank account. The bond shall grant the municipality the right of access to perform all necessary corrective or restorative actions on the site in the event of forfeiture. The bond shall not be released until machinery and equipment associated with the excavation operation has been removed within a reasonable time and sufficient time has elapsed to assure that all operation and restoration requirements have been met.

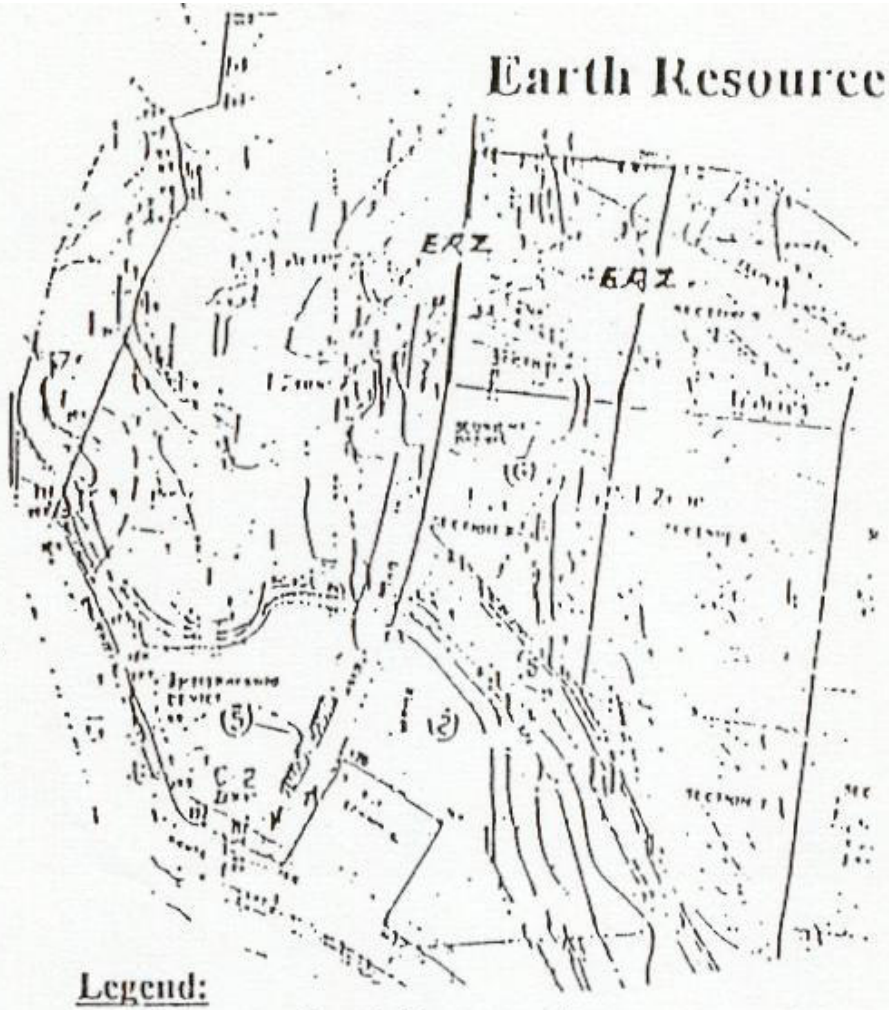
EARTH RESOURCE EXTRACTION OPERATIONS
(E.R.E.O.)

Earth resource extraction operations, typically include kinds of development; (1) commercial extraction operations, (2) subdivision development and (3) single family lot development. It concerns the removal, stockpiling and transport of any extracted earth material from topsoil to rock.

It limits the exposure of disturbed ground in the extraction zone to 5 acres, but covers areas smaller than 1/2 acre if the extraction exceeds 100 cubic yards. These activities will require the submission of an E / S plan for certification and use the CT Guidelines as the basis for the development of that plan. As some towns already have a special permit requirement for commercial mining operations, those regulations must be considered and modified as needed to include these regulations.

The following figures show examples of how **Earth Resource Zones (ERZ)** can be delineated. (Refer to advisory measures)

Earth Resource Extraction Operations



Legend:

ERZ = Earth Resource Zone (page 21)

Extraction Operation Requirements

Enhance municipal planning efforts and on-site operation and perimeter measures of E / S Control Plans for earth resource extraction operation and application process.

* Special permit of proposed mining operations.

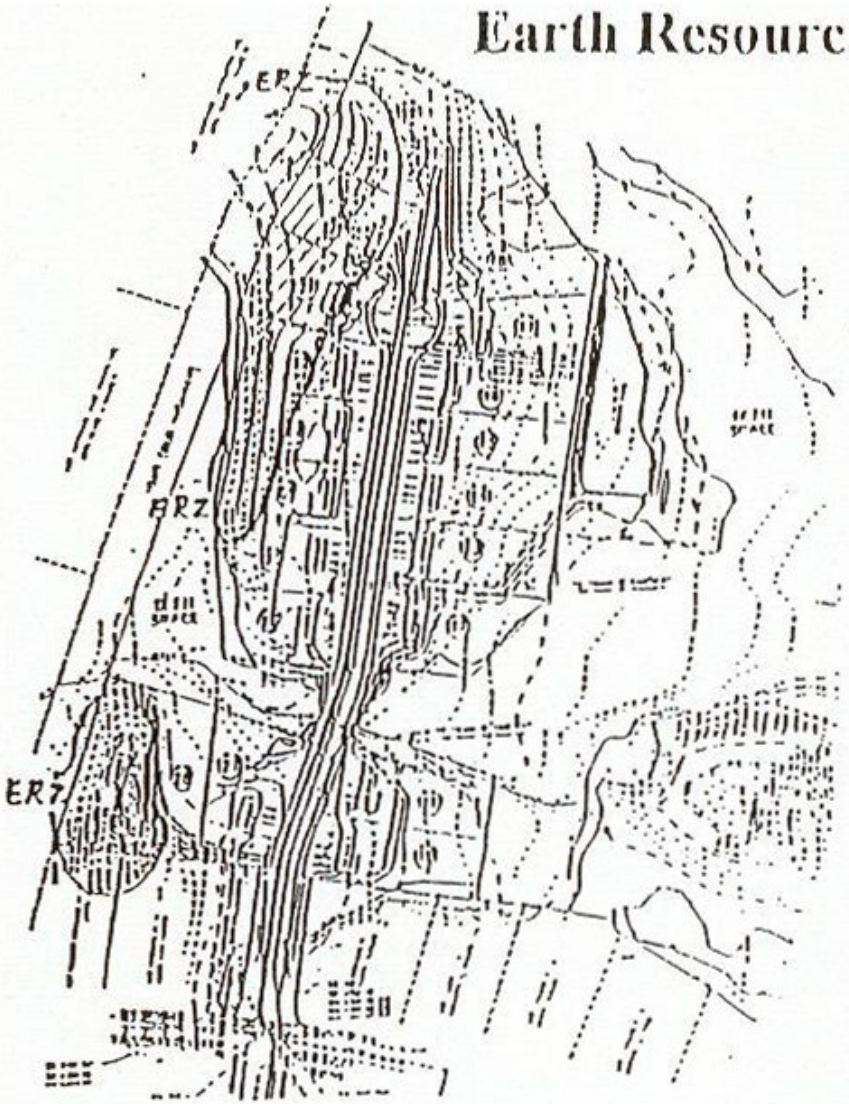
* Adoption and compliance with model regulations and implementation of measures

* Selecting measures that meet specific site requirements.

* Designate areas of proposed sites Earth Resource Zones (ERZ) on soils mapping and grading plans. See site plan.

* Enable long term renovation of water by impeding flow and promote settling of solids.

Earth Resource Extraction Operations



Subdivision Developers Operations

Enhance municipal planning efforts and on-site operation and perimeter measures of E / S Control Plans for earth resource extraction operation and application process.

* Certification of proposed mining operations.

* Adoption and compliance with model regulations and implementation of measures

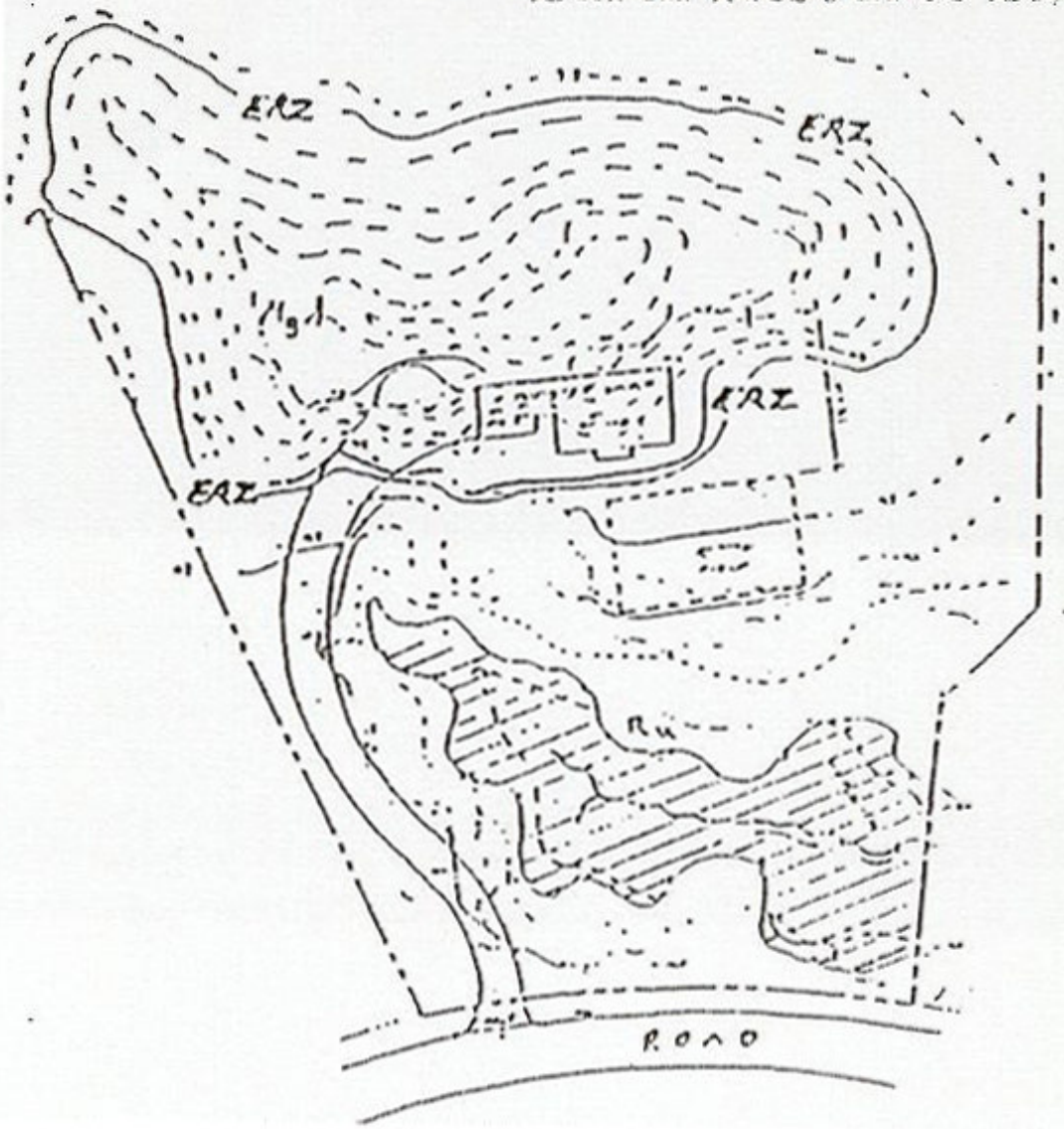
* Selecting measures that meet specific site requirements.

* Designate areas of proposed sites Earth Resource Zones (ERZ) on soils mapping and grading plans. See site plan.

* Enable long term renovation of water by impeding flow and promote settling of solids.

Earth Resource Extraction Operations

Single Family Dwelling



1) Earth Resource Extraction of 100 cubic yards or more on sites 1/2 acre in size and limited to 5 acres.

Requirements:

* Certification of proposed mining operations.
* Adoption and compliance with all model regulations and implementation of measures.
* Selecting measures that meet specific site requirements.
* Designate areas of proposed sites Earth Resource Zones (ERZ) on soils mapping and grading plans. See site plan.
* E / S Control Plan

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2) Earth Resource Extraction of less than 100 cubic yards on a site up to 1/2 acre in size.

Requirements:

* Certification of proposed mining operations.
* Compliance with model regulations on pages 3 thru 11and implementation of measures.
* Selecting measures that meet specific site requirements.
* Designate areas of proposed sites Earth Resource Zones (ERZ) on soils mapping and grading plans. See site plan.
* E / S Control Plan

Advisory Measures for Construction Entrances

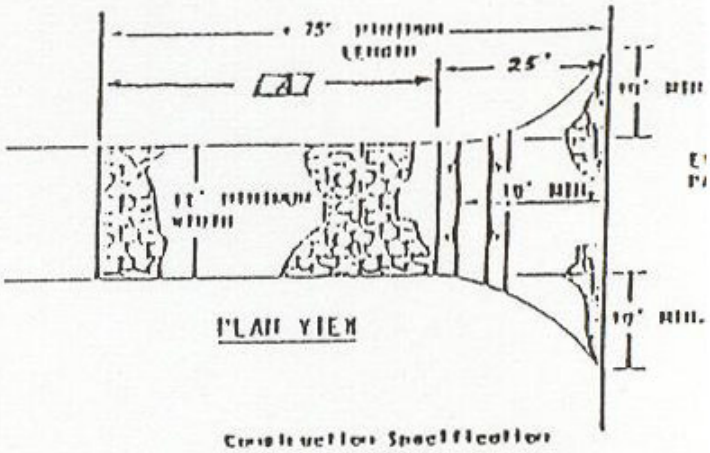
Installation Cont.

- Geotextile fabric filter cloth shall be placed over the existing ground prior to placing stone.

- Stone is to be crushed aggregate 12" to 3" or a reclaimed or recycled concrete equivalent which is 6" minimum in depth and extends over the entire length and width of the entrance.

- Construction entrance is to be located every point where construction traffic enters or leaves the site. Vehicles leaving the site must travel the entire length of the entrance.

Optiopnal - Pipe installed in the construction entrance shall be protected by a mountable berm with 5:1 slopes and a minimum of 6" of cover over the pipe.

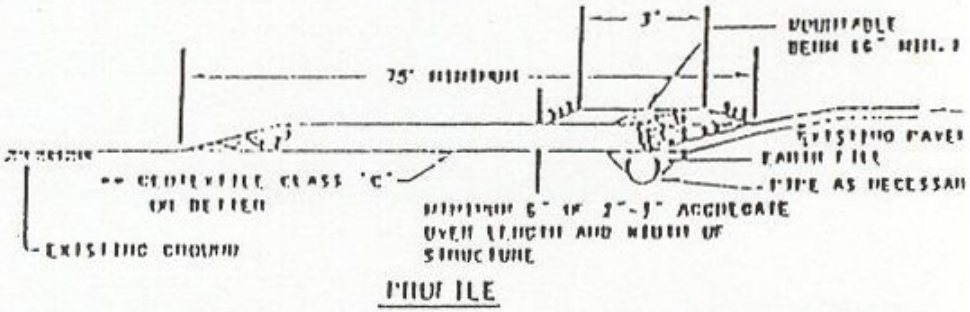


Maintenance

- Inspection should be conducted weekly or following a rain event of 1/2" or more.

- Sediment in roadway or storm drains should be removed when necessary.

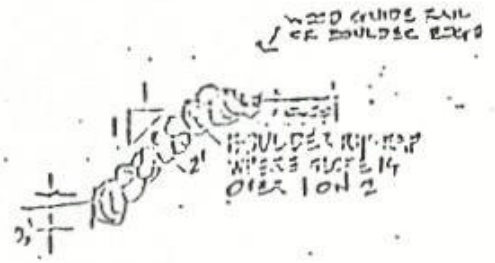
- Maintain function of stone by adding, washing or reworking entrance.



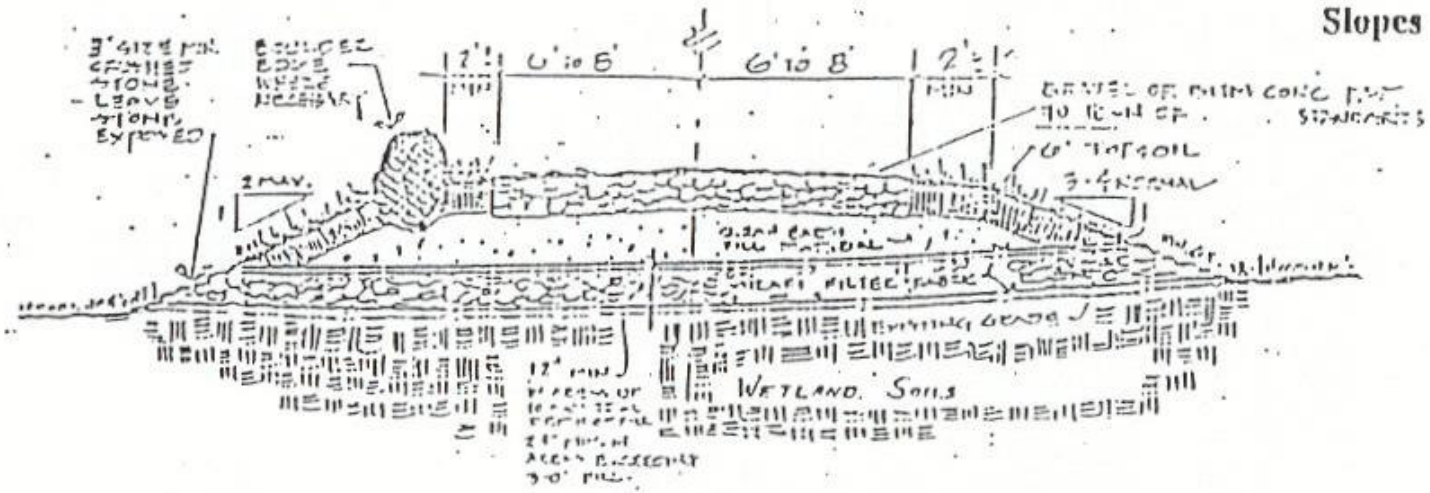
Advisory Measures / Construction Entrance

Application

- Reduces the disturbance of and the hydrologic impact on wetland soils



Slopes > 2:1



Polypropylene / Stone Envelope
(Typical Drive Section)
For distance A loc page 17

Hazardous Materials Management

Advisory Measures / Recommendations:

Petroleum Products: Disposal of, storage, use and handling

- Shelter for storage - providing cover and wind protection
- Tanks and containers systems to be kept off of ground
- Impervious containment system around perimeter of storage area capable of holding 110 - 125 % of largest container
- Identify and label all products
- All waste products disposed of in proper receptacles or recycled
- Line storage area with double layer of plastic sheeting to prevent ground contamination

Vehicle / Fuel Staging and Wash areas to be located away from senitve areas such as, surface waters, watercources, wetlands etc.

Isolate, store and cover construction materials, topsoil and chemicals to prevent exposure and reduce potential for transport of pollutants off site.

Spill response plan should be developed to manage hazardous materials, oils, fuels, etc.

For More Information

 # Useful numbers

Connecticut Council on Soil and Water Conservation (203) 424-7234

DEP Permitting, Enforcement and Remediation Division (203) 424-3850

DEP Wetlands Management Unit (203) 424-3019

DOT Environmental Planning (203) 594-2932

The Soil & Water Conservation Districts / County Offices:

Fairfield County SWCD (203) 743-5453

Litchfield County SWCD (860) 567-8288

New Haven CountySWCD (203) 269-7509

Tolland County SWCD (860) 875-3881

Hartford County SWCD (860) 688-7725

Middlesex County SWCD (203) 345-3219

New London County SWCD (203) 887-3604

Windham County SWCD (860) 774-0224

Definitions:

earth resource extraction - means a grading activity that results in the withdrawal of natural resources such as sand, gravel, rock, soil or construction aggregate which are excavated, stockpiled and removed off-site.

Earth Resouce Zone (**ERZ**) - is a delineated area of a proposed site where earth resource extraction is proposed to exceed 100 cubic yards.

engineer - means a professional engineer licensed to practice in Connecticut.

site - means the earth resource extraction scene and its associated structures as designated by the plan and the narrative for this land use.

Acknowledgements

The site owners / operators, town officials within the Naugatuck River Watershed and New Haven County Soil and Water Conservation District jointly developed these model regulations in an effort to better manage these finite resources and minimize any potential threats to our environment. Their expertise and dedication to this project is greatly appreciated.

Guidelines for Gravel Pits

The sand and gravel industry produces raw materials for the building of our factories, highways, homes, schools, airports, and other facilities. As population increases, the demand for this low-cost commodity near expanding cities accelerates. Fortunately, some communities have had foresight and have been able to work out effective and reasonable plans for gravel removal. Others have not been as farsighted, as a drive through the countryside will indicate.

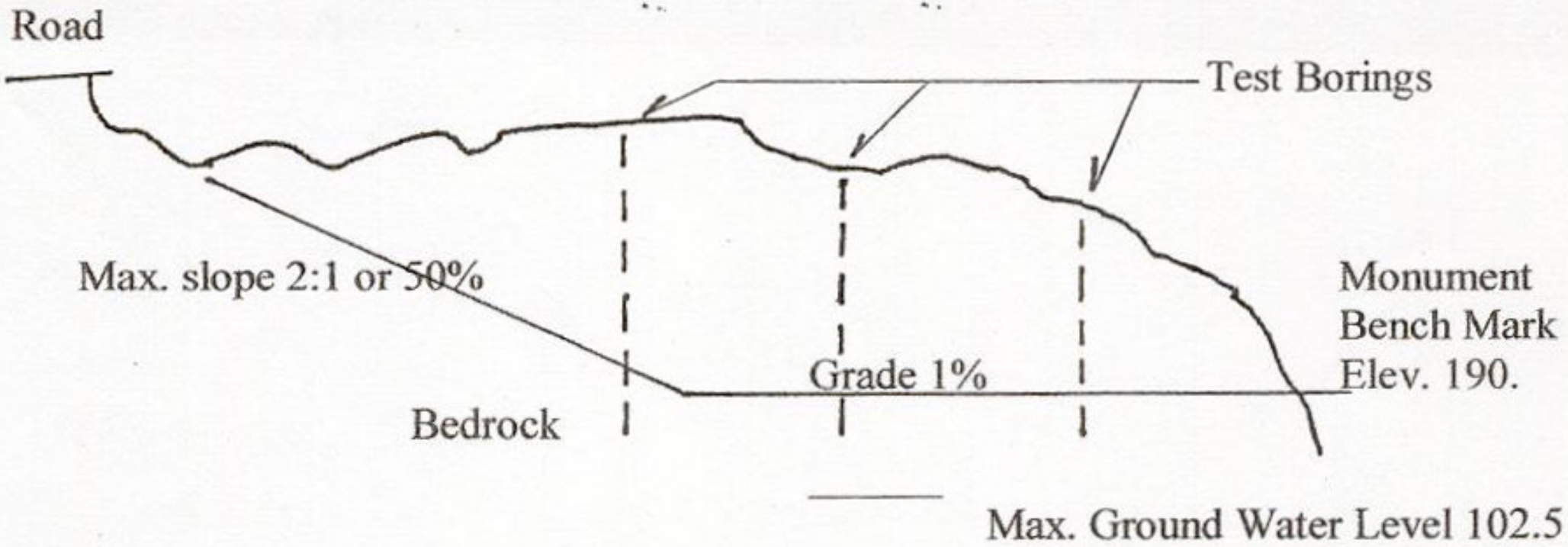
This is written to provide "general guidelines" for gravel operations in any community. Variations and exceptions from these may be in order depending on specific circumstances and community needs and goals.

Gravel operation permits are normally granted sometime after the holding of a public hearing. It should be a standard procedure to require the following information concerning the site with the application for a permit:

1. Existing topography based on a current survey showing five foot contour intervals. Elevations should be related to USGS data.

2. A log of soil borings taken to the depth of the proposed excavation. The number of borings taken will vary with the size and geological make-up of the site.

3. A topographical map showing final grades, drainage facilities, etc., after excavation.



Sample Profile – Gravel Pit
Scale 1" = 200' Hor.
1" = 20' Vert.

In addition to the above a municipality would need to draw up operation and restoration standards and provide for enforcement of the established rules.

(k) Any temporary shelters or buildings erected on the premises for use by personnel or storage of equipment shall be screened from public view as much as possible. These structures shall be removed from the premises within 30 days after they are no longer needed.

(l) The Selectmen or their agents shall be free to inspect the premises at any time.

(m) In the cases noted, it seems adequate that no excavation shall be allowed closer than 100 feet from a natural stream.

Restoration Standards

a. No slope shall be left with a slope steeper than 2:1 (50%)

b. All debris, stumps, boulders, etc., shall be removed from the site and disposed of in an approved location, or in the case of inorganic material, buried and covered with a minimum of two (2) feet of soil.

c. Following excavation and as soon as possible thereafter, ground levels and grades shall be established as shown on the completed topographical plan.

d. Retained subsoil and topsoil shall be respread over the disturbed area to a minimum depth of four (4) inches. This soil shall be treated with three (3) tons of lime per acre and 1,000 pounds of 10-10-10 fertilizer per acre and seeded with a grass of legume mixture prescribed by the Conservation District. Trees or shrubs of prescribed species will be planted in order to provide screening, natural beauty, and to reduce erosion. The planted area shall be protected from erosion during the establishment period using good conservation practices.

e. Upon completion of the operation, the land shall be left so that natural storm drainage leaves the property at the original natural storm drainage points and so that the area of drainage to any one point is not increased.

f. Within six months after termination of gravel operations, all equipment, buildings, structures, and unsightly evidence of operations shall be removed from the premises.

It is suggested that a gravel permit be issued for an initial three (3) year period. A renewal permit would be necessary after each three (3) year period. A performance bond of some amount ($1000 to $3000) shall be required for each acre on which the permit has been granted. This would be released only after the land has been restored as outlined under that section.