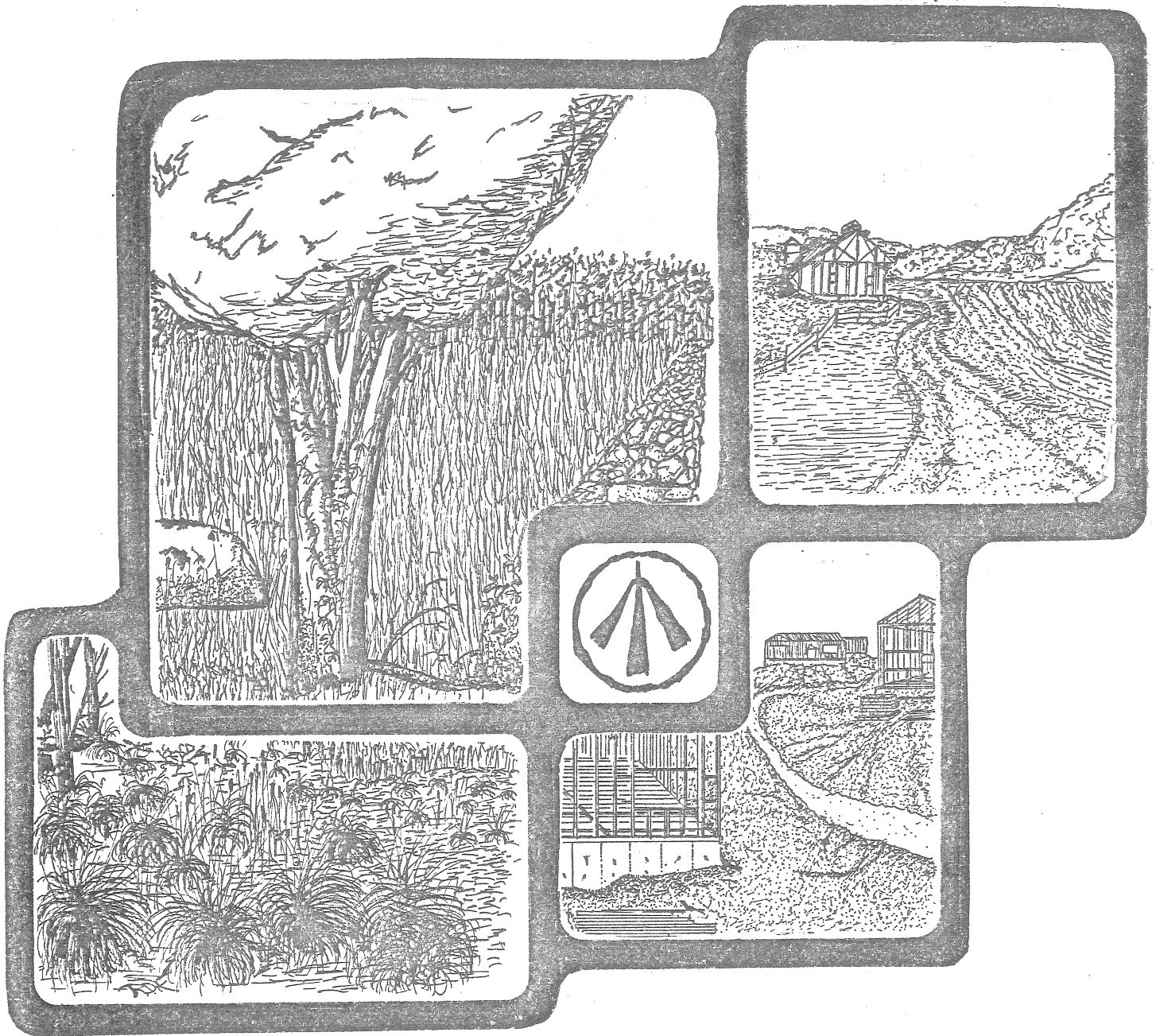


ENVIRONMENTAL REVIEW TEAM REPORT



STROBEL SAND & GRAVEL EXCAVATION
CORNWALL, CONNECTICUT

KING'S MARK
RESOURCE CONSERVATION & DEVELOPMENT AREA

KING'S MARK ENVIRONMENTAL REVIEW TEAM REPORT

ON

STROBEL SAND & GRAVEL EXCAVATION CORNWALL, CONNECTICUT



DECEMBER 1980

King's Mark Resource Conservation and Development Area

Environmental Review Team

P.O. Box 30

Warren, Connecticut 06754

ACKNOWLEDGMENTS

The King's Mark Environmental Review Team operates through the cooperative effort of a number of agencies and organizations including:

Federal Agencies

U.S.D.A. SOIL CONSERVATION SERVICE

State Agencies

DEPARTMENT OF ENVIRONMENTAL PROTECTION

DEPARTMENT OF HEALTH

DEPARTMENT OF TRANSPORTATION

UNIVERSITY OF CONNECTICUT COOPERATIVE EXTENSION SERVICE

Local Groups and Agencies

LITCHFIELD COUNTY SOIL AND WATER CONSERVATION DISTRICT

NEW HAVEN COUNTY SOIL AND WATER CONSERVATION DISTRICT

HARTFORD COUNTY SOIL AND WATER CONSERVATION DISTRICT

FAIRFIELD COUNTY SOIL AND WATER CONSERVATION DISTRICT

NORTHWESTERN CONNECTICUT REGIONAL PLANNING AGENCY

VALLEY REGIONAL PLANNING AGENCY

LITCHFIELD HILLS REGIONAL PLANNING AGENCY

CENTRAL NAUGATUCK VALLEY REGIONAL PLANNING AGENCY

HOUSATONIC VALLEY COUNCIL OF ELECTED OFFICIALS

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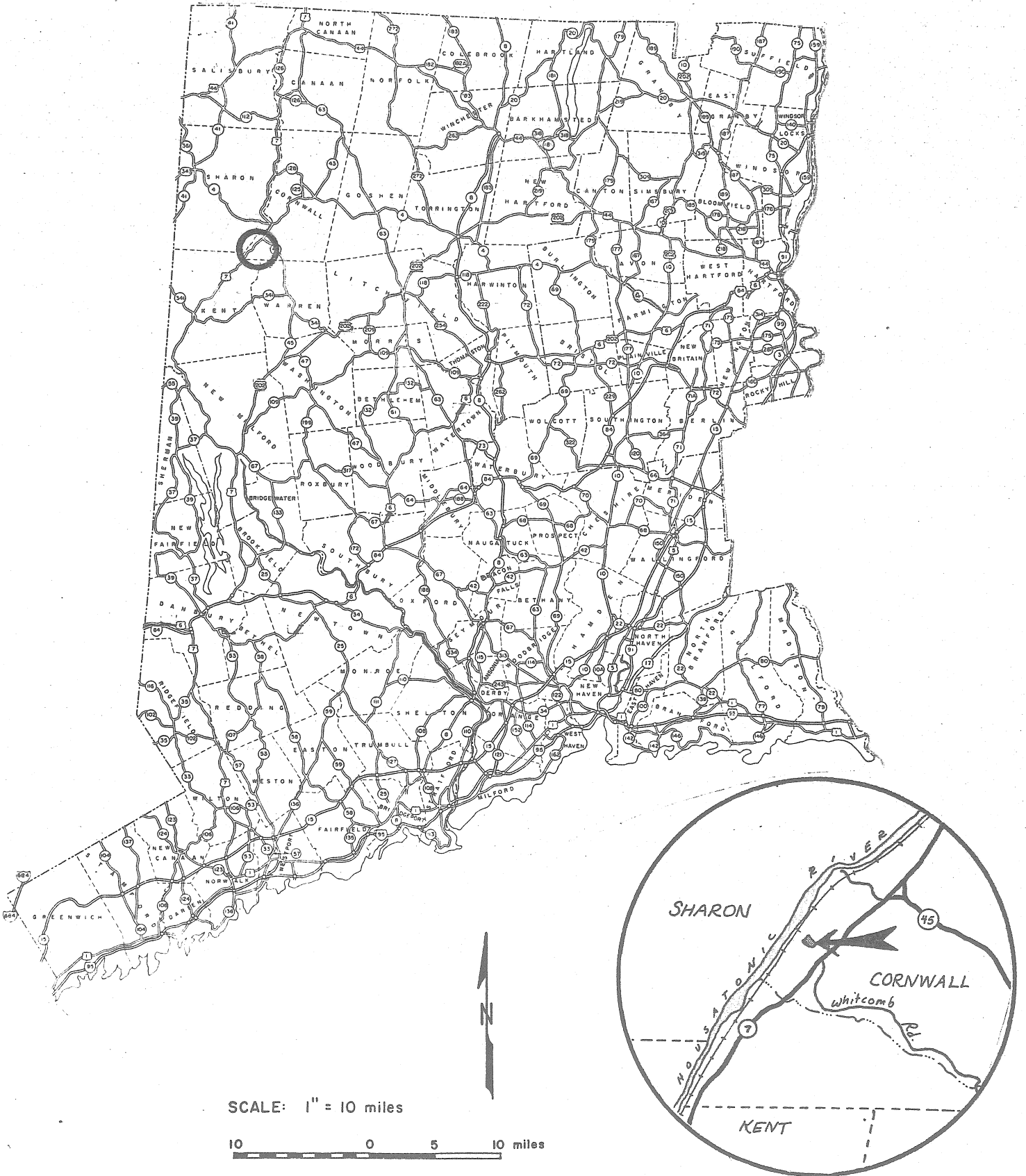
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LOCATION OF STUDY SITE

STROBEL SAND & GRAVEL EXCAVATION CORNWALL, CONNECTICUT



ENVIRONMENTAL REVIEW TEAM REPORT
ON
STROBEL SAND AND GRAVEL EXCAVATION
CORNWALL, CT.

I. INTRODUCTION

The Cornwall Planning and Zoning Commission is presently considering whether to allow, by special permit, a proposed sand and gravel operation. The proposed project calls for the removal of about 36,000 cubic yards of material from approximately three acres of land on the Strobel farm, Route 7, Cornwall Bridge. Figure 1 shows the moderate to steep relief of the proposed excavation site; and the site's relationship to Route 7 on the east, and the Housatonic River on the west. Figure 1 also shows a tributary of the Housatonic River which traverses the southern border of the subject site. Figure 2 of this report presents a xerox copy of the proposed grading plan for the site prepared by the applicant.

The time frame for the proposed project is undecided at this point. It is anticipated that the project would require 2,571 fourteen-yard truck loads. Under a two year project, this would result in 7 truck loads per day, 180 days per year. Under a 6 month project, 21 truck loads per day would be required.

The proposed sand and gravel operation would entail the construction of a new road on the Strobel farm with access via Route 7. The proposed location of the new road is shown on the "Site Plan Map" presented in the Appendix of this report.

The Cornwall Planning and Zoning Commission requested the assistance of the King's Mark ERT to help them in analyzing the proposed project. Specifically, the Team was asked to identify the natural resource base of the site, to comment on the suitability of the land for the proposed project, and to provide an objective evaluation of the potential project impact. Of major concern to the Planning and Zoning Commission is: 1) the impact that trucking the sand and gravel would have on nearby areas and Route 7, and 2) what precautions are necessary to minimize the amount of erosion and sedimentation with project implementation.

The ERT met and field reviewed the site on November 17, 1980. Team members for this review consisted of the following:

Arthur Cross.....	District Conservationist.....	U.S.D.A. Soil Conservation Service
Stephen Dunn.....	Transportation Planner.....	Northwestern Ct. Regional Planning Agency
Richard Lynn.....	ERT Coordinator.....	King's Mark Environmental Review Team
Lee Markscheffel....	Regional Planner.....	Northwestern Ct. Regional Planning Agency
Michael Zizka.....	Geohydrologist.....	Connecticut Department of Environmental Protection

FIGURE I.
TOPOGRAPHIC MAP

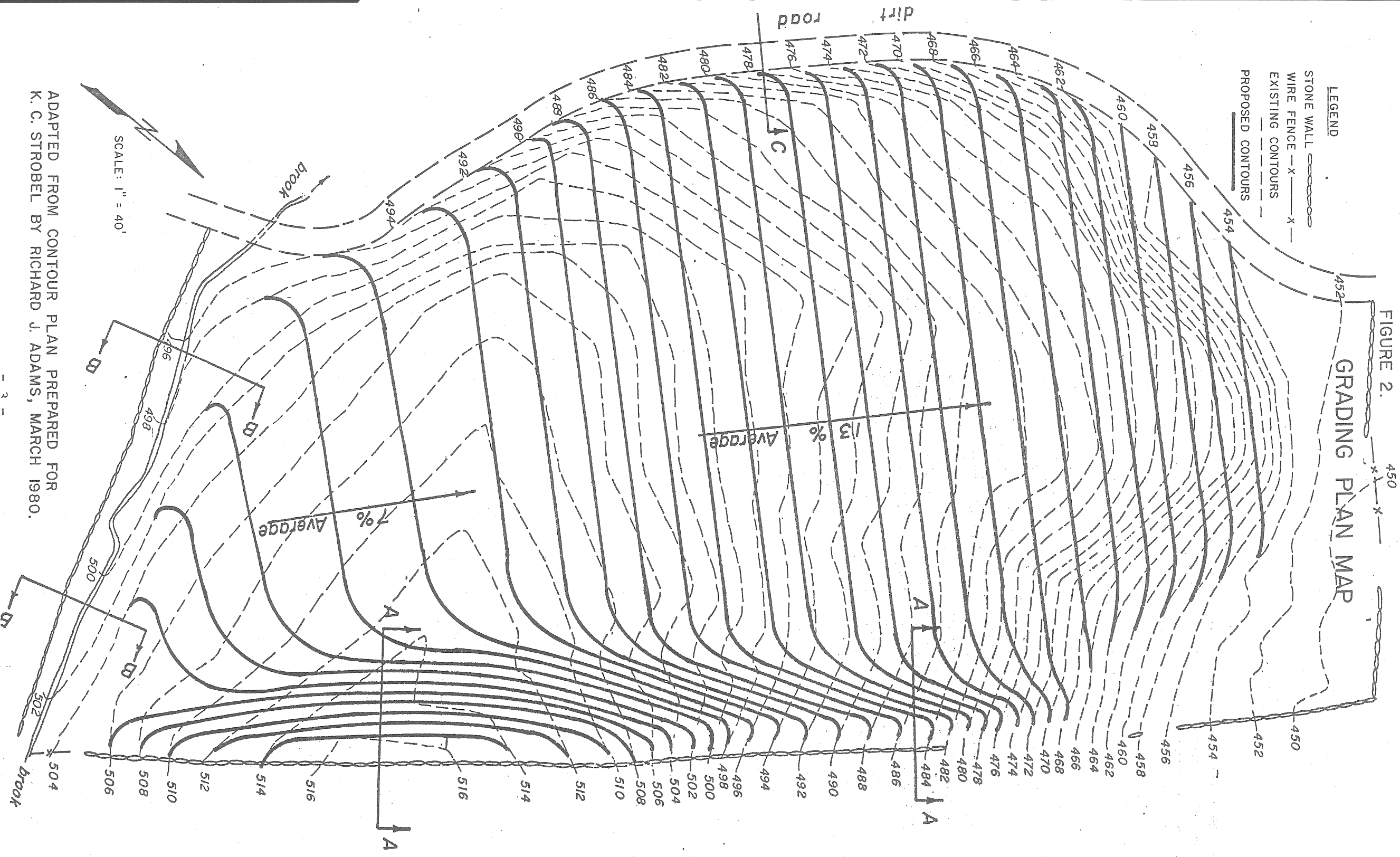


0 1/8 1/4 mile
0 500' 1000' 1500'

SCALE: 1" = 500'

FIGURE 2.
GRADING PLAN MAP

LEGEND
 STONE WALL ———— X ———— X ———— X
 WIRE FENCE — X ———— X —
 EXISTING CONTOURS - - - - -
 PROPOSED CONTOURS ————



ADAPTED FROM CONTOUR PLAN PREPARED FOR
 K. C. STROBEL BY RICHARD J. ADAMS, MARCH 1980.

Prior to the review day, each team member was provided with a summary of the proposed project, a checklist of concerns to address, a detailed soil survey map, a soil and water features chart, a grading plan map, and a site plan map. Following the field review, individual reports were prepared by each team member and forwarded to the ERT Coordinator for compilation and editing into this final report.

This report presents the team's findings and recommendations. It is important to understand that the ERT is not in competition with private consultants, and hence does not perform design work or provide detailed solutions to development problems. Nor does the team recommend what ultimate action should be taken on a proposed project. The ERT concept provides for the presentation of natural resources information and preliminary development considerations--all conclusions and final decisions rest with the town and landowner. It is hoped the information contained in this report will assist the Town of Cornwall, and the landowners of the Strobel Farm, in making environmentally sound decisions.

If any additional information is required, please contact Richard Lynn, (868-7342), Environmental Review Team Coordinator, King's Mark RC&D Area, Sackett Hill Road, Warren, Connecticut 06754.

* * * * *

II. HIGHLIGHTS

- . It is difficult to predict the overall volume of useable sand and gravel within the I-R Zoning District of Cornwall due to the poor grain-size sorting within the local stratified drift deposits. Rock particles of various sizes can be expected throughout this zone.
- . The Strobel property is traversed by one intermittent stream which flows westward to the Housatonic River. The drainage area of this stream is about 130 acres. Most surface runoff in the project area flows away from this stream. The proposed excavation should not drastically increase the siltation of the brook as long as proper precautions are followed. A comprehensive erosion and sedimentation control plan should be prepared for the proposed project.
- . The excavation as shown on the grading plan would involve the removal of no more than 20 feet of material from any point on the surface. It is likely that the water table will not be reached by the excavation. No deleterious effects of the project on groundwater are anticipated unless the water table is encountered or an accidental spillage of fuel oil occurs.
- . According to Soil Conservation Service criteria, the soils underlying the proposed excavation site have fair to good potential as a source of sand and gravel. Again, however, in places the sand and gravel may be poorly sorted (i.e. from excessive fines to large stones). The underlying soils are not limited by shallow depth to bedrock or a seasonally high water table, but are highly erodible. As a result, excavation of the soils in this area should include a plan for the effective control of erosion and sedimentation. Guidance for such a plan is presented in the text of this report.
- . The average daily traffic along Route 7 in the vicinity of the Strobel Farm in 1978 was 1900, 5% of which is truck traffic. The addition of 7 to 21 gravel trucks would increase daily traffic insignificantly and increase truck traffic 7 - 22%. From past accident experiences, it appears as though there are no serious unsafe conditions along this section of Route 7, however passing zones are at a minimum which could induce impatient drivers to undertake unsafe passing maneuvers.
- . The bridge spanning Millard Brook, one mile south of the project site, is weight restricted to 15 tons per single unit. Fully loaded gravel trucks would be in excess of these limits and therefore cannot legally use this bridge. This situation merits further consideration by the applicant and planning and zoning commission.
- . If a new access permit is necessary, the applicant may be required by ConnDOT to relocate the proposed access point some 175 feet to the north for safety reasons.
- . The proposed project is generally in accord with advisory state and regional plans.

- According to the grading plan submitted by the applicant, the finished grade along the northern edge of the site is at a slope of 50% (2:1). This is in conflict with section 252.2.2g of the Zoning Regulations which states "...no gradients in disturbed earth shall be steeper than a slope of 3:1 (horizontal-vertical). Also, the zoning regulations indicate "truck access to the site shall be arranged as to minimize danger to traffic and nuisance to surrounding properties". This regulation could be interpreted as providing a basis for requiring the relocation of the proposed/existing access point to a point more suitable.
- Although Cornwall's sand and gravel regulations are fairly comprehensive, a number of additional provisions could be added to insure maximum protection of the environment. These provisions center on the following: erosion and sediment control, dust and noise controls, limiting hours of operation, and processing controls.

III. GEOLOGY

The Strobel site is located in an area encompassed by the Ellsworth topographic quadrangle. Preliminary surficial and bedrock geologic maps of the quadrangle are open-filed at the Department of Environmental Protection's Natural Resources Center in Hartford.

Several large rock exposures are located on the banked area immediately south of the Strobel barn. The rock type is primarily garnet-bearing quartz-mica schist. Schists are rocks in which flaky or platy minerals have become aligned to form thin layers or surfaces along which the rock is most easily split. Many schists are structurally weak because of this mineral arrangement, but the rock type observed on the site seemed to be less likely to split easily than other schists. It was unclear at the time of the field review whether the rocks exposed were boulders or ledge; several items favor either conclusion. The preliminary bedrock map of the Ellsworth quadrangle treats the exposures as boulders because of their proximity to a series of marble outcrops near and northeast of the site. The knobby appearance of the schists also enhances a boulder theory. On the other hand, the fact that several schist exposures are very close together tends to support a finding of bedrock (ledge). Under either circumstance, the landowner should be aware that the rock may cause great difficulties in constructing the proposed access road. Blasting may be needed.

Bedrock on most of the site is overlain by unconsolidated rock particles and organic debris. This is the material described in surficial geologic maps. Most of this material had a glacial origin. Ice formerly flowed through Connecticut, accumulating rock debris from clay-sized grains to boulders as it eroded local soils and bedrock. In most highland areas, the debris was redeposited directly from the ice without substantial reworking by water. The resulting, texturally complex sediment is known as till. During glacial retreat, ice melted in the highlands and became restricted to valleys. Meltwater streams washed the accumulated rock particles from the stagnant portions of these ice "tongues", depositing the particles both near to and far from the ice. Where deposited near ice, the meltwater sediments, which are known as "stratified drift", principally consisted of medium to coarse sand and gravel. Where deposited further away, the sediments contained higher proportions of fine sand, silt, and occasionally clay. The decrease in grain size was a result of the decrease in the flow energy of the meltwater as it continued its journey from the ice. In addition, the manner of deposition resulted in a generally distinct stratification or layering in the sediments.

On the Strobel property, till covers only the banked area south of the barn. Stratified drift is the principal surficial geologic unit on the remainder of the site. The flat strip of land immediately bordering Housatonic River appears to be a low stream terrace, upon which the river has deposited several feet of sand and silt over stratified drift. Most of the stream sediments were deposited when the river flowed at a higher elevation than at present, but during exceptionally high flood levels the river may still be capable of overspreading and adding additional material to portions of the terrace.

The stratified drift in the Housatonic River valley in the vicinity of the Strobel property was deposited largely by meltwater streams flowing adjacent to stagnant ice. The sediments were built up as high terraces in the valley, standing about 80 feet above the present level of the river. The remnant ice was subject to variations in the rate of melting, leading to changes, often abrupt, in the size of the rock particles that were deposited. In addition, wet till occasionally slid from ice surfaces or from the nearby hillslopes and became incorporated in the stratified drift. Finally, the meltwater deposits locally slumped as the ice walls melted away, permitting further mixing of the sediment. For all these reasons, the grain-size sorting in the local stratified drift is poor in many areas, so that it is difficult to assess the overall volume of usable sand and gravel within the I-R Zoning District of Cornwall. In general, however, the textural characteristics of the material in the proposed gravel-removal site may be expected to be similar to those of the stratified drift in other parts of the District (the southern most section probably has better-sorted gravel). Figure 3 shows the surficial geology of the I-R District including the approximate boundaries of the stratified drift deposit.

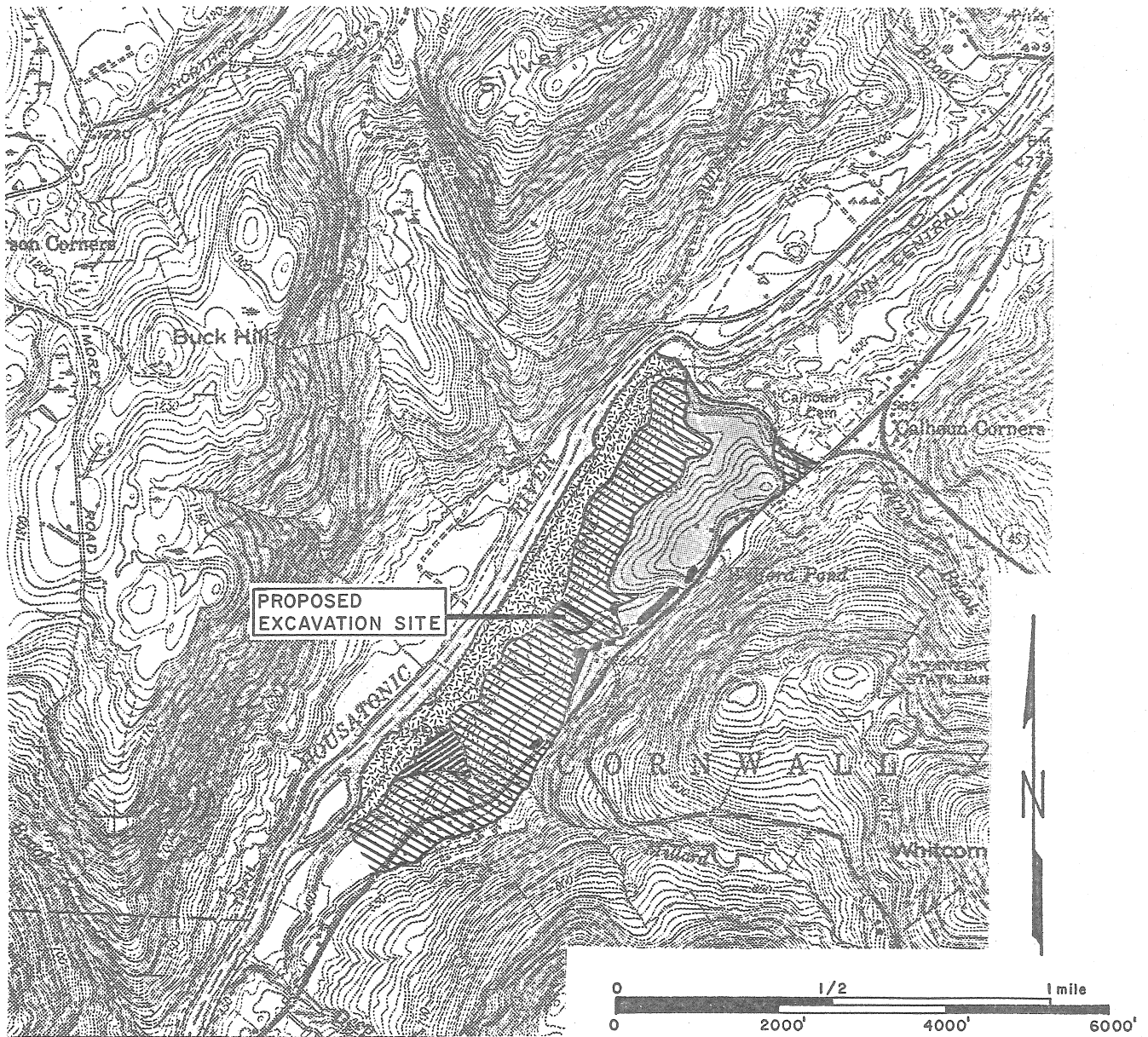
IV. HYDROLOGY

The Strobel property is traversed by one intermittent stream (shown as a perennial stream on the U.S.G.S. topographic quadrangle sheets). The stream-course winds around the southern fringe of the proposed gravel-removal site, carrying surface flows westward to Housatonic River. The overall drainage area of the stream is about 130 acres. The streamcourse passes under the present unimproved access road via a small culvert that appeared to be effectively filled. It may be advisable to clear and/or replace the culvert to improve its efficiency and to prevent ponding at the inlet.

With the existing topography, little runoff from the proposed gravel-removal site enters the brook; rather, most surface runoff moves by sheet flow toward the flat stream terrace which borders Housatonic River. The silty upper zone of the stratified drift allows more surface runoff to be generated during periods of rainfall than might otherwise be the case. Where the runoff has been channeled into shallow swales on the hillside, it has caused a significant amount of erosion. The grading activities under the proposed project are designed in part to alleviate the erosion problem. It should be noted that paths of erosion may still be formed after the project is completed, but they should be easier to control and remedy than they are on the steep slopes at the western edge of the proposed excavation area.

In light of the abrupt change from steep to flat slopes at the western edge of the site, it seems likely that most of the sediment produced by erosion of the hillside goes no further than the edge of the flat area. Probably the only sediment that affects Housatonic River is whatever silt or clay is occasionally washed into the streamcourse from the access road or the adjoining bank. The proposed excavation should not dramatically increase the siltation of the brook as long as proper precautions are followed. These precautions, which can be incorporated into a comprehensive erosion and sediment control plan, are outlined in the next section of this report.

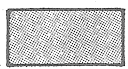
FIGURE 3.
SURFICIAL GEOLOGY OF THE I-R ZONING DISTRICT



EXPLANATION



Stratified drift. Well-sorted to poorly sorted sand and gravel with lesser amounts of silt (except in surface layers).



Till. Nonsorted mixture of rock particles of widely ranging size. Includes areas of small, scattered bedrock outcrops.



Bedrock outcrops. Includes only the more prominent exposures.



Stream terrace sediments (several feet of sand and silt with some gravel) over stratified drift.



Alluvial fan. Sand, gravel, and silt deposited by a stream at the base of a slope.

The depth to the water table in the proposed gravel-removal site is not known. The coarseness of the material, at least beneath the silty surface layer, suggests that the water table would be deep. The excavation as shown on the grading plan would involve the removal of no more than 20 feet of material from any point on the surface; in other words, no material that is presently 20 feet or more below the surface would be disturbed. It is likely that the water table will not be reached by the excavation.

No deleterious effects of the project on groundwater are anticipated unless the water table is encountered or an accidental spillage of fuel oil occurs. Even if groundwater is encountered, the excavation process itself should not pose any serious water quality threats. However, if the water table is at or close to the surface as a result of excavation, there would be an increased risk of groundwater contamination from other sources, such as the heavy application of fertilizer or the development of the site for industrial purposes.

V. SOILS

A soils map of the subject site is presented in the Appendix of this report. The Appendix also contains a "Soil and Water Features Chart" which summarizes the characteristics of the underlying soils at this site and their suitability as a source of sand and gravel.

As shown in the Soils Map, the proposed excavation site is underlain primarily by two soil types. Copake loam, with slopes of 8 - 15%, predominates on the eastern half of the property. These soils are well drained and typically have good suitability as a source of sand and gravel, although in some places they do contain poorly graded sand and gravel (i.e. from excessive fines to large stones). Terrace escarpments, which underline the western half of the site, typically have good to fair suitability as a source of sand and gravel. In places, these steeply sloping soils also contain poorly graded sand and gravel.

Neither the copake soils or the terrace escarpments soils are limited by depth to bedrock on a seasonal high water table. However both soils are highly erodible. In light of this, any excavation of the soils in this area should include plans for the effective control of erosion and sedimentation. The proximity of Housatonic River and an on-site tributary to this river underscores the importance of such planning.

With proper planning, the area can be self-contained with regards to erosion so that little or no soil particles will leave the site. The USDA Soil Conservation Service, assisting the Litchfield County Conservation District, is available to provide assistance in the formulation and review of erosion and sediment control plans.

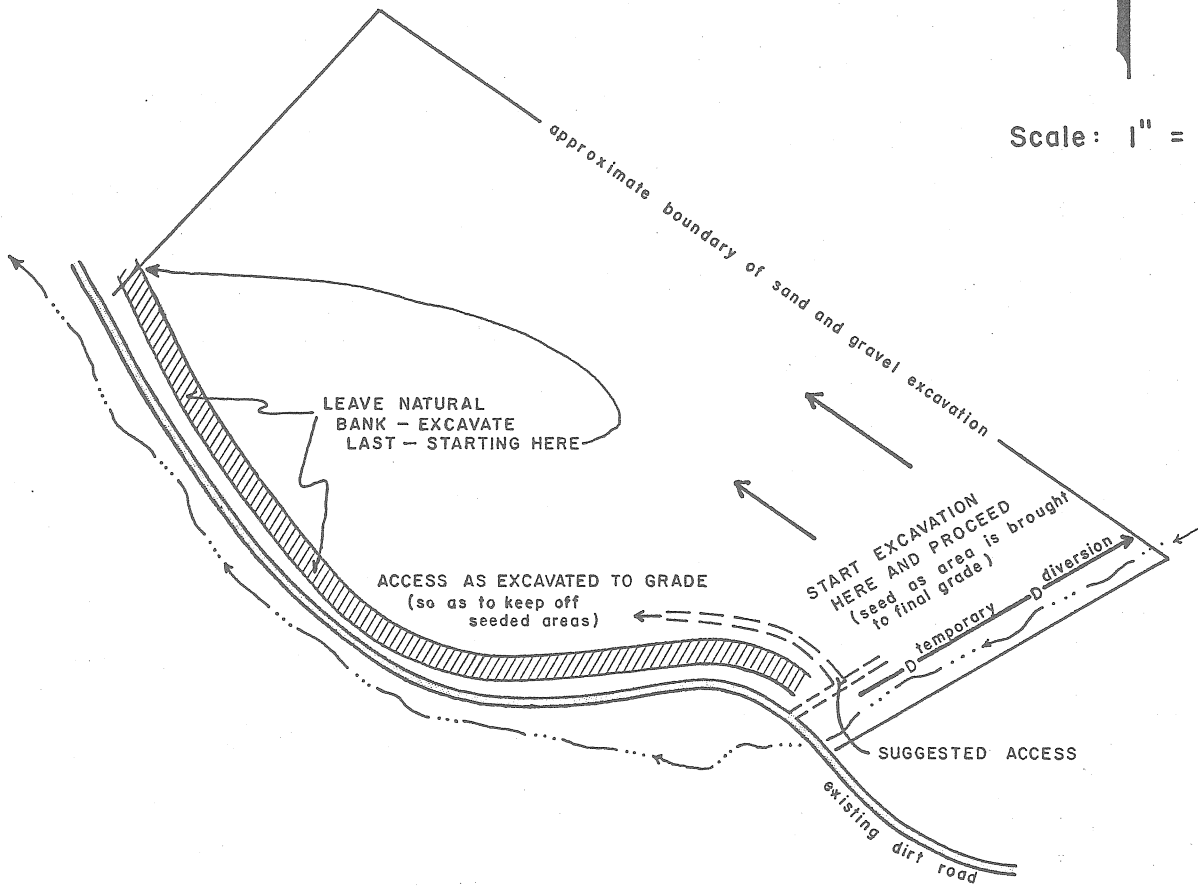
The following suggestions are offered for consideration in preparing an erosion and sediment control plan:

1. As surface disturbed areas are brought to finished grades, the areas should be re-established in grasses. Reclamation of the mined area should follow closely procedures discussed in the "Erosion and Sediment Control Handbook - Connecticut" (U.S.D.A. - S.C.S., 1976). The

FIGURE 4.
CONSERVATION PLAN MAP
(Sketch only)



Scale: 1" = 100' ±



PREPARED BY ART CROSS, DISTRICT
CONSERVATIONIST - U.S.D.A., S.C.S. 11/80

Appendix of this ERT report presents portions of the above Handbook with regards to permanent vegetative cover and mulching.

2. Sand and gravel areas are difficult to establish and maintain in grasses, shrubs, and trees due to the soils low water holding capacity and low natural fertility. In light of this difficulty, it is recommended that the top six (6) inches of soil be retained on the site and spread back on the area following final grading. This practice will assist in the revegetation of the disturbed land. The stockpiled soil should be stabilized temporarily with rye grasses prior to final spreading and seeding. If this amount of topsoil is not available on this site, 20 tons/acre of cow manure should be harrowed into the soil before planting.
3. With implementation of the project, consideration should be given to proceeding as shown in Figure 4. Under this plan possible impact to the on-site stream can be minimized. Haybale check dams should be installed below the culvert crossing to minimize the risk of sedimentation. Also, consideration should be directed towards assuring that the culvert underlying the access road can withstand the heavy truck traffic envisioned.

During the ERT's field review, it was questioned whether USDA Soil Conservation Service personnel would be available to ensure compliance with an erosion and sediment control plan through frequent monitoring of the project. It is not the policy of the SCS to provide such monitoring assistance; this is the responsibility of the town. The SCS is available however to assist in the preparation of erosion and sedimentation control plans, and will review and make comments on the adequacy of such plans for local zoning commissions.

Although the proposed project is not expected to significantly enhance the use of the property for pastureland, it will remove an existing erosion source. With project implementation, consideration should be given to fencing the steep northern portion of the site following final grading to remove a potential erosion problem area.

VI. TRANSPORTATION ASPECTS

A. Traffic and Road Conditions

The proposed project calls for 7 to 21 truck loads per day (or 1 to 3 trucks per hour during the daytime). ADT (average daily traffic) in 1978 for this section of Rt. 7 was 1900, 5% of which is truck traffic. The added 7 to 21 gravel trucks would increase daily traffic insignificantly and increase truck traffic 7 - 22%. Peak hour traffic is 247 vehicles including about 12 trucks. The added 1 to 3 trucks per hour would increase truck traffic during the peak hours 8 to 25%.

Route 7 both north and south of the site is a typical rural two lane arterial highway. The posted speed for two miles in each direction is 40 MPH, computed safe speed is over 40 and in most places in excess of 50 MPH. The road is reasonably level (no grades in excess of 3.5%) and a fully

loaded 20 yard gravel truck should accelerate to 40 MPH in about 2800 feet in a period of about two minutes. While a truck is accelerating a queue (line of vehicles) of up to 8 cars could form during the peak traffic hour. Fourteen yard trucks would accelerate in shorter time and distance.

Because of Route 7's narrow width (24 feet) and frequent curves, passing zones are at a minimum, with no passing zone southbound for 2.7 miles (below Kent Falls State Park) and none northbound for 0.8 miles (near Route 45 intersection). This could induce impatient drivers to undertake unsafe passing maneuvers. From 1969 to 1977 there were 42 accidents in the four mile stretch between the Kent town line and Cornwall Bridge. Of these, 30 were one car accidents which could not be even remotely attributable to "excessive" traffic. Of the remaining twelve, only one was caused by unsafe passing and two by improper turning. Many of these accidents were influenced by snow and ice. Therefore, from past accident experience, it appears as though there are no serious unsafe conditions along this section of Route 7.

B. Bridge Weight Limitations

There is, however, one serious consideration. About one mile south of the proposed gravel mine, State Bridge #2052 spans Millard Brook. This bridge is weight restricted to 15 tons per single unit and 27 tons for a semi-trailer. Fully loaded gravel trucks would be in excess of these limits and therefore cannot legally use this bridge. Southbound trucks will either have to adhere to the 15 ton limit or will be required to seek alternate routes such as Route 7 north to Route 45 to Warren and then either Route 341 west into Kent or 341 east to Route 202 in Woodville. It should be noted that the bridge over Sucker Brook on Route 45 in Warren is also weight restricted.

This situation is not perceived as significant enough for either the State to deny or revoke an access permit onto Route 7 or for the town to deny a mining permit. It is more a matter of enforcement of highway regulations by state and local police. However, it may be within the power of the Zoning Commission to limit weights or to require the operator to avoid this bridge as a condition of its permit and to revoke the permit if violations occur. If such a provision is made a condition of the permit, the town should make arrangements for monitoring adherence to the provision.

C. Access Road Requirements

At this writing, the owners had not yet applied to the Connecticut Dept. of Transportation (Conn DOT) for an access permit. However, preliminary discussions have been held. No definitive statements can be made until formal application and investigation, but a few general comments may be made.

Conn DOT requires an access permit whenever a new access is proposed on a state highway. Therefore, if a new access road is constructed as part of the proposed project, a Conn DOT permit would be required. If the existing driveway on the property were utilized, a permit may or may not be required. Conn DOT would require a permit if 1) the project is viewed as a significant change in land use, or 2) rebuilding of the existing access road could significantly impact the state right-of-way. The significance of this "permit vs no permit" issue becomes apparent below.

State Highway "Straight Line Diagrams" indicate that at the proposed point of access, southward sight distance is 350 feet and northward sight distance is 750 feet. These numbers would have to be confirmed in the field at the time of permit application. Where feasible, Conn DOT access regulations require minimum sight distances of 525 feet in each direction. If a new access permit is necessary for the Strobel project, the owners may be required to relocate their access point some 175 feet to the north. At the time of permit application, Conn DOT may also specify certain other conditions based on field review such as grade of approach, paving width and radius. Conn DOT also may specify some sort of "truck crossing" sign to warn approaching motorists.

D. Noise and Dust Impact

Sand and gravel operations raise concern with regards to noise and dust during periods of operation. It is impossible to conduct an earth excavation operation without causing dust. A strong southwest wind would most likely cause some dust to leave the site and settle on adjacent trees, roads, etc. The dust generated by the operation can be kept to a minimum however, by 1) limiting exposed areas to one or two acres at a time and 2) covering the loadbed of trucks carrying the excavated material (Note: State law requires such covering).

A more serious annoyance will be the noise generated by the machinery used to remove and load the gravel and the heavy trucks hauling it. The noise intensity from trucks or earth moving equipment varies considerably depending on the age of the machines, mechanical condition, and manner in which they are operated. Under the best of conditions these machines are noisy and can be heard at a considerable distance. A large bulldozer such as Caterpillar 988 or Michigan 125 produces a noise level of 90 to 100 decibels (dBA). The chart presented on the following page gives some indication as to how loud this is. There will be some attenuation of the noise since excavation will take place in the rear of the parcel however during periods when the wind is from the south and west, the level of noise reaching the Route 7 area could be irritating. It should be noted that sounds tend to travel farther in the morning and evening.

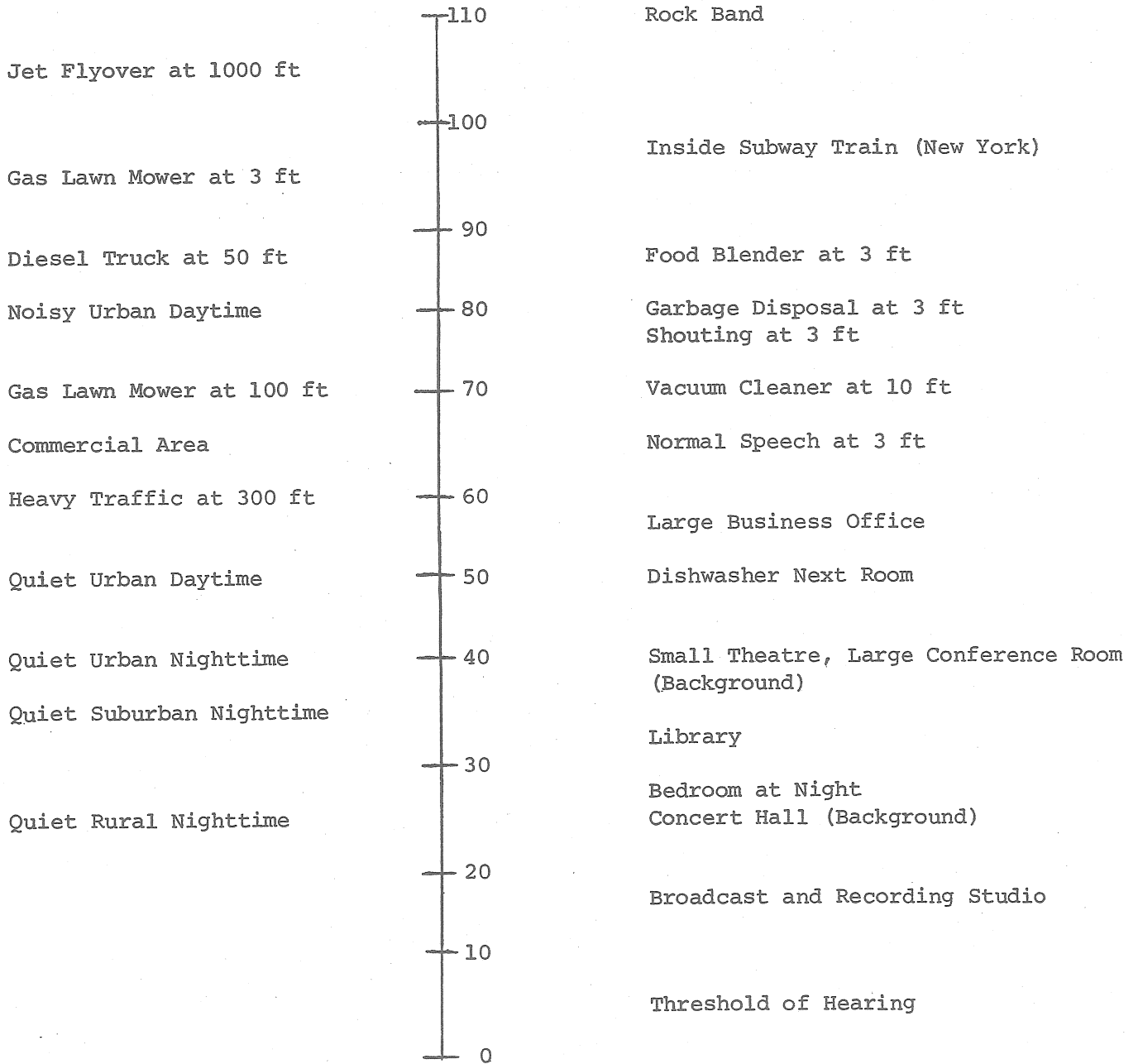
According to State Department of Transportation regulations, the maximum noise level for trucks on highways is 88 dBA. It is estimated by the State Department of Transportation Environmental Planning

COMMON NOISE LEVELS *

COMMON OUTDOOR
NOISE LEVELS

NOISE LEVEL
(dBA)

COMMON INDOOR
NOISE LEVELS



* Adapted from information supplied by the Connecticut Department of Transportation, Environmental Services Division.

Note: An increase of 10 decibels represents a doubling of the noise as perceived by the human ear, and conversely, a decrease of 10 dBA represents a halving of the noise.

Division that a fairly well maintained gravel truck would have a noise level of 80 - 88 dBA at 50 feet under normal operating conditions. A poorly maintained gravel truck may approach 95 dBA. It should be recognized that frequency of occurrence is an important consideration in noise analysis. It is obvious that six truck trips an hour will have a smaller impact than, say, thirty trips an hour. It should also be recognized that noise impact of the operation will be a short-term impact as the entire excavation operation is anticipated to be completed within two years.

The following provisions will minimize, but not eliminate, the environmental degradation due to noise and dust.

1. The exposed area of the operation should not exceed one to two acres at any one time. As the gravel is removed, the top soil should be replaced and the area seeded to a permanent cover. A grass cover will eliminate dust and will reflect less sound than bare ground, as well as reduce soil erosion by water.
2. The loadbed of all trucks carrying excavated material should be covered, as required by State Law.
3. The operation should be restricted to daytime hours during week days. This area is an important recreation and tourist district and the operation of trucks on highways and noise of machinery should be restricted during times of maximum recreational activities. The noise, dust and truck traffic could be particularly annoying to week-end visitors at the nearby parks, forest, and lakes.

VII. CONSISTENCY OF PROJECT WITH REGIONAL, STATE, AND LOCAL PLANS

A. NWCRPA Land Use Policies Plan

In 1977 the Northwestern Connecticut Regional Planning Agency prepared an advisory Land Use Policies Plan which recommended certain goals and strategies for land development in the region. Below is the Plan's policy on mineral extraction:

"Significant sand and gravel deposits (e.g. aquifer recharge areas) should be preserved from both incompatible land uses such as residences and premature intensive utilization. When consistent with the need to preserve aquifers and other critical features, mineral extractions should be regulated as a commercial enterprise including establishing the maximum amount of material that can be removed during a given time period, and management procedures for reclaiming the land after the mining has been completed. The total amount and rate of extraction should not be such as to degrade the environment or the region's quality of life, while allowing for growth within the region at reasonable costs."

It appears that the project will not have an adverse impact on the water quality in the underlying aquifer. However, the application as submitted does not address completely the reclamation of the land after excavation. It is difficult to determine if the project will "degrade...the region's quality of life".

Route 7 has been classified in the NWCRPA/Rhode Island School of Design's report, A Preservation & Conservation Study, as having high scenic character. The site is at the northern end of a panoramic view west of Route 7 across the Housatonic Valley. To preserve this scenic quality the proposed access road on the site should be placed to minimize ground disturbance near Route 7.

B. Housatonic River Management Plan

The subject parcel is located within the Outer Corridor of the Housatonic River Corridor as defined in the Housatonic River Management Plan of October 31, 1978. Under the zoning regulations as proposed in this Plan, *"Mineral exploration to determine the nature or extent of mineral resources shall be accomplished by hand sampling, test boring or other methods which create minimal disturbance. Sand, gravel and topsoil excavation shall be permitted only where such operation, with an accepted conservation plan developed with the County Conservation District will not leave an objectionable scar on the landscape nor adversely affect an aquifer area. Such operations must be completed within a specified time with a specified amount of material to be removed and will require posting of a bond adequate to assure leaving the land with acceptable contours and vegetative cover."*

A conservation plan has not been prepared by the applicant nor has a specific time limit been submitted for this project. To be consistent with the Housatonic River Management Plan, these items should be addressed. It is further recommended that the posting of a bond to meet the objectives of "leaving the land with acceptable contours and vegetative cover" be done according to rules and procedures established by the Cornwall First Selectman in technical consultation with the County Conservation District.

C. State of Connecticut Conservation & Development Policies Plan 1979-1982

In 1979 the State legislature approved the latest version of the "Conservation & Development Policies Plan." The Plan is an advisory document and was prepared to serve as a comprehensive policy framework to guide state government actions and decisions. While the plan has no direct legal bearing on local land use decisions, the policies articulated in the Plan may assist local Planning and Zoning Commissions in determining appropriate land uses in various areas.

According to the "Locational Guide Map" which accompanies the Policy Plan the subject property is designated "conservation". The property

is so designated because it meets the following definition criteria:
"Existing and potential wild and scenic streambelts - major undisturbed stream valleys of significant aesthetic and potential outdoor recreation assets."

The "State Action Strategy" for lands designated "conservation" is:
"Plan and manage for the long term public benefit the lands contributing to the states need for food, fiber, water and other resources, open space, recreation and environmental qualities and insure that changes in use are compatible with the identified conservation values".

Two "Guidelines for state action" for "conservation" areas are relevant for this project. They are:

1. Potential mineral resource areas should not be committed to other uses until there has been an opportunity to fully evaluate and potentially exploit their long-term resource and economic value to the state.
2. Projects within scenic streambelt areas should:
 - a. restrict structural development to the least scenic areas or to areas already significantly altered.
 - b. prohibit clearing of wetland and watercourse vegetation and revegetate scenic areas which are denuded.
 - c. screen visible structures.
 - d. retain right of access and control unauthorized access to potential recreation areas.

It would appear that the above statements conclude that sand and gravel resources could still be utilized in scenic areas but subject to sufficient controls to make the use "compatible with the identified conservation values".

D. Cornwall Plan of Development

The Town of Cornwall Plan of Development, 1965 indicates that the subject property is designated industrial. However, there is nothing indicated in the report which applies directly to this project.

VIII. ZONING CONSIDERATIONS AND EXISTING LAND USE

A. Zoning Regulations

Sec. 252.2 of the Town of Cornwall Zoning Regulations sets forth the procedure for sand and gravel excavation as proposed in this application. Briefly, the regulations require that a number of considerations be addressed including the proposed grading plan (indicating existing and proposed topography), drainage, access, amount of material to

be excavated, number and type of trucks, etc. The application is then to be judged against a series of conditions dealing with proper provision of slopes, drainage, use of fences, and access. If a permit is granted for a sand and gravel operation, it shall be for a period of not more than one year. However, the zoning commission may extend its permission for a period of one year.

In reviewing the proposed Strobel application, there are two concerns which become apparent. According to the grading plan and profiles submitted by the applicant, the finished grade along the northern edge of the site is at a slope of 50% (2:1). This is in conflict with Section 252.2.2g of the zoning regulations which states, "...no gradients in disturbed earth shall be steeper than a slope of 3:1 (horizontal-vertical)". A 3:1 slope is 33 1/3% slope. Also, the zoning regulations indicate "truck access to the site shall be arranged as to minimize danger to traffic and nuisance to surrounding properties". This regulation could be interpreted as providing a basis for requiring the relocation of the proposed existing access point to a point more suitable on the property (See Traffic portion of this report).

A comparison has been made between the Cornwall sand and gravel regulations and two recent reports on sand and gravel excavations ("Regulation of Earth Excavation", Connecticut Dept. of Community Affairs, 1975"; and "Surface Mining in Connecticut: the Public Need for Planning & Regulations for Sand and Gravel Operations", Central Naugatuck Valley Regional Planning Agency). Although Cornwall's regulations are fairly comprehensive, a number of additional provisions could be added to insure maximum protection of the environment. These provisions might include requirements in the following areas of concern:

- Erosion and Sediment Control

The preparation and submission of an erosion and sediment control plan could be required as part of the original application. The Litchfield County Conservation District can provide assistance in the preparation of such plans and can review and make comments on the adequacy of such plans for the Planning and Zoning Commission.

- Dust and Noise Control

Additional provisions to minimize the nuisance of noise and flying dust might include limitations upon the practice of stockpiling excavated materials on the site, the requirement to securely cover transported earth materials with canvas or other cover, or the requirement of a dustless surface on that portion of the access road within the area of operation.

- Hours of Operation

Hours of operation might be restricted to weekdays during the hours of 9:00 am and 4:00 pm.

. Processing

If the processing of sand and gravel (i.e. washing, sorting, crushing) is to occur on-site, there are certain requirements which could be included to minimize the impact on adjacent property owners. For example, setback distances could be required from property lines to working machinery; or additional dust control provisions could be provided. If processing on-site is not desired, regulations could be promulgated to limit the machinery allowed upon the site of excavation to only those that are absolutely necessary for the excavation and removal of the product.

B. Existing Land Use

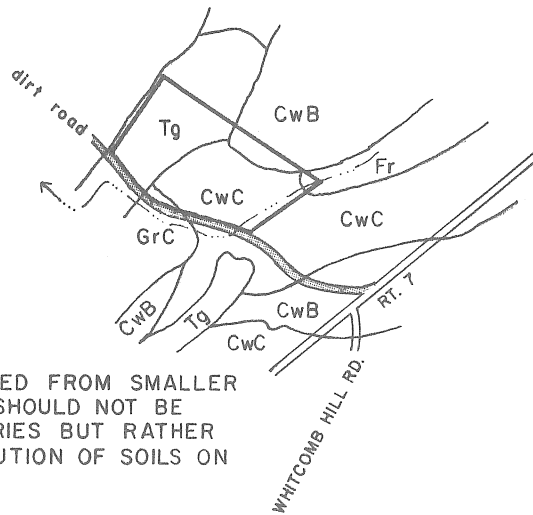
Although located within the Industrial District, land uses surrounding the Strobel property are not industrial in nature. The proposed excavation site is currently a field used for grazing dairy cows. This field is surrounded by similar fields to the northwest and south, active corn fields to the west and northeast, and the Strobel residence and barn to the east. The 'log cabin' next to the Strobel's southerly driveway entrance is currently used as a gun shop. Immediately oposite the Strobel farm, on the northeast corner of the Whitcomb Hill Road and Route 7 intersection, is a residence. It appears that this residence, outside of those on the Strobel farm and the adjacent "log cabin", could be most affected by any noise or dust from the project. Generally, however, the proposed excavation site is well buffered from conflicting land uses.

* * * * *

APPENDIX

SOILS MAP

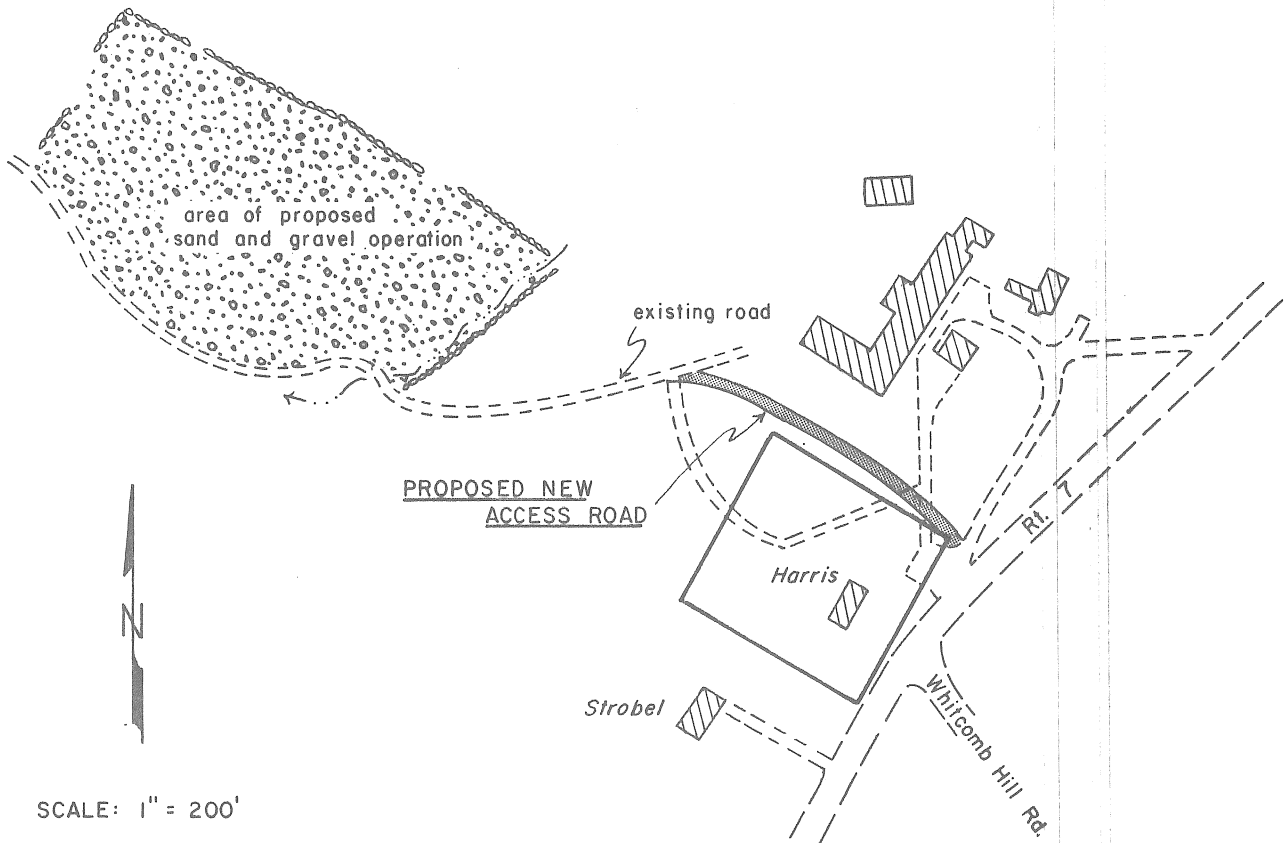
• ADAPTED FROM LITCHFIELD COUNTY
SOIL SURVEY, U.S.D.A. - S.C.S.



SCALE: 1" = 500'

• SOIL BOUNDARY LINES DERIVED FROM SMALLER
SCALE MAP (1" = 1320') AND SHOULD NOT BE
VIEWED AS PRECISE BOUNDARIES BUT RATHER
AS A GUIDE TO THE DISTRIBUTION OF SOILS ON
THE PROPERTY.

SITE PLAN MAP



SCALE: 1" = 200'

SOIL AND WATER FEATURES CHART

MAP SYMBOL	SOIL NAME	DEPTH TO BEDROCK	DEPTH TO SEASONAL HIGH WATER TABLE	Estimated Suitability as a Source Of:
				TOPSOIL SAND & GRAVEL
CwB	Copake loam, 3-8% slopes	10+ feet	48+ inches	Fair; in places contains excessive coarse fragments. Good; in places contains poorly graded sand or gravel.
CwC	Copake loam, 8-15% slopes	10+ feet	48+ inches	Fair; in places contains excessive coarse fragments. Good; in places contains poorly graded sand or gravel.
GrC	Groton gravelly sandy loam, 3-15% slopes	10+ feet	48+ inches	Poor; texture too coarse, in places contains excessive coarse fragments. Good; in places contains poorly graded sand or gravel.
Fr	Fredon silt loam	10+ feet	0-8 inches	Fair. Not suitable; excessive fines; high water table.
Tg	Terrace escarpments	10+ feet	48+ inches	Poor; texture too coarse. Good to fair; in places contains poorly graded sand and gravel.

⇒* = Applicable to Strobel Site.

PERMANENT VEGETATIVE COVER

Definition

Stabilizing sediment producing areas and severely eroded areas by establishing permanent grass and legume cover.

Purpose

To stabilize the soil; to reduce downstream damages from sediment and runoff; improve wildlife habitat; and enhance natural beauty.

Conditions Where Measure Applies

On all urban construction areas subject to erosion where final grading has been completed and where a permanent vegetative cover is needed.

Application and Materials

1. Site Preparation --
 - a. Install needed surface water control measures, such as diversion, berms, and waterways.
 - ⇒* b. Remove loose rock, stone, and construction debris (approximate four-inch size) from area.
 - c. Perform all cultural operations parallel to the contours of the slope.
 - ⇒* d. At least four inches of topsoil may be required over extremely adverse soil conditions. Surface compacted by construction machinery should be disced or chisled before topsoil is added. (Harrow in 20 tons/acre of cow manure in lieu of topsoil, if topsoil not available.)
 - ⇒* e. Apply lime according to soil test or at the rate of two tons ground limestone per acre (100 lbs. per 1,000 square feet).
 - ⇒* f. Apply fertilizer according to soil test --
 - ⇒* - Spring seeding. Work deeply in soil, before seeding, 300 lbs. of 10-10-10 fertilizer per acre (seven lbs. per 1,000 square feet); then six to eight weeks later apply on the surface an additional 300 lbs. of 10-10-10 fertilizer per acre. 1/
 - ⇒* - Fall seeding. Work deeply in soil, before seeding, 600 lbs. of 10-10-10 fertilizer per acre (14 lbs. per 1,000 square feet).

1/ May use alternate single application of 600 lbs. at seeding time if split application is not feasible.

⇒* = Applicable to Strobel site.

2. Establishment --

- ⇒* a. Smooth and firm seedbed with cultipacker or other similar equipment prior to seeding (except when hydroseeding).
- ⇒* b. Select adapted seed mixture from the following table. Note seeding dates.
- ⇒* c. Apply seed uniformly according to rate indicated in the table by broadcasting, drilling, or hydraulic application.
- ⇒* d. Cover grass and legume seeds with not more than 1/4 inch of soil with suitable equipment (except when hydroseeding).
- ⇒* e. Mulch immediately after seeding according to guidelines.
- ⇒* f. Use proper inoculant on all legume seedings, use four times normal rate when hydroseeding.
- g. Use sod where there is a heavy concentration of water and in critical areas where it is important to get a quick vegetative cover to prevent erosion.

3. Maintenance --

- a. Test for soil acidity every three years and lime as required.
- b. On sites where grasses predominate, broadcast annually 500 pounds of 10-10-10 fertilizer per acre (12 lbs. per 1,000 square feet) or as needed according to annual soil tests.
- c. On sites where legumes predominate broadcast every three years or as indicated by soil test 300 pounds of 0-20-20 or equivalent per acre (eight lbs. per 1,000 square feet).

PERMANENT GRASS AND LEGUME SEEDING

SEED MIXTURES, RATES, AND DATES

↗* = Applicable to Strobel site.

Seed Mixture <u>5/</u>	Percent by Wt.	Seeding Rates in lbs. <u>1/</u>		Seeding Dates	Special Adaptation
		1000 Sq. Ft.	Acre		
↗* Ky 31 Tall Fescue	50	1 1/2	50	April 1 - June 15	Droughty Areas
Red Fescue	50			Aug. 15 - Sept. 30	
Ky 31 Tall Fescue <u>2/</u>	80	1 1/2	50	April 1 - June 15	Heavy Use Areas
Annual Ryegrass	20			Aug. 15 - Sept.	
Red Fescue <u>4/</u>	60	1	40	April 1 - June 15	No Mow Areas
Crownvetch	40				Droughty Areas
Crownvetch	60	1/2	25	April 1 - June 15	No Mow Areas
Perennial Ryegrass	40				Droughty Areas
Reed Canary Grass	80	1	50	April 1 - June 15	Wildlife or
Redtop	20			Aug. 15 - Sept. 15	Wet Areas
Red Fescue <u>3/</u>	70	2	80	April 1 - June 15	High Maintenance
Kentucky Blue grass	20			Aug. 15 - Oct. 15	Areas
Perennial Ryegrass	10				
Ky 31 Tall Fescue	70	1	40	April 1 - June 1	No Mow Areas
Birdsfoot Trefoil	30				Wet Areas

OR

1/ These are minimum seeding rates and should be increased if adverse conditions exist.

2/ Straight Ky 31 tall fescue may be used for soccer or football fields (minimum 150 # up to 250# per acre.

3/ 10 lbs. of birdsfoot trefoil may be added to this mixture.

4/ Ky 31 tall fescue may be used in place of red fescue.

5/ May add 5 lbs. of perennial ryegrass for quick fall cover.

MULCHING

Definition

Apply plant residues or other suitable materials, not produced on the site, to the surface of the soil.

Purpose

To protect exposed soil surfaces from excessive soil erosion, reduce offsite compaction or crusting, conserve moisture, aid in establishing plant cover, and control weeds.

Conditions Where Measure Applies

On graded or cleared areas which are subject to erosion, specific mulches (1) may be used in conjunction with permanent or temporary vegetative seeding or (2) may be used alone either as a permanent mulch or as a temporary mulch until permanent vegetation or other protection can be properly implemented.

Application and Materials

1. Application --
 - a. For areas subject to critical erosion install temporary erosion control devices such as furrows, diversions, etc. within or adjacent to area to be mulched.
 - ⇒* b. Select the type of mulch and application rate from Table 1 which will best meet the use and performance requirements. (See Next Page.)
 - c. Determine anchoring requirements if needed and select a method of anchoring from Table 2 which will best meet the specific job requirements.
- ⇒* 2. Maintenance -- Mulched areas should be checked periodically and immediately after severe storms for damage, until the desired purpose of the mulching is achieved. Damaged portions of the mulch or tie down material should be repaired as soon as discovered.
3. Erosion and Pollution Control -- Construction operations should be carried out in such a manner so that erosion and air and water pollution will be minimized.

↗ * = Applicable to Strobel site.

GUIDE TO MULCH MATERIAL

Table 1

Mulch Material	Quality	Application Rates		Remarks
		Per 1000 Sq. Ft.	Per Acre	
↗ * Hay or Straw	Air dried, free from undesirable seeds	75-100 lbs. or 2-3 bales	1.5-2 tons 90-110 bales	Use straw where mulch effect is to be maintained for more than 3 months. Subject to wind blowing unless kept moist or tied down. Good for critical area erosion control. Spread uniformly, leave 10-20% of ground exposed. Excellent for seedbed protection until vegetation is established. Salt marsh hay where available is usually free of weed seeds.
Wood Fiber Cellulose (partly digested wood fibers)	Air dried, non-toxic, and no growth inhibiting factors	25-40 lbs.	0.5 up to 1.0 ton	Apply with hydromulcher. No tie down required. Addition of plastic emulsion to wood fiber mulches makes them adhere better and increase their longevity. Use higher rates on critical erosion areas. Excellent for seedbed protection until vegetation is established.
Gravel or Crushed Stone	Washed Size 1" 60 2 1/2"	9 cu. yds.		Excellent permanent mulch after used alone for short slopes or around wood plants and ornamentals. Use 1/4" to 3/4" size where subject to foot traffic.
Wood Chips	Free from coarse material	500 lbs. dry; to 900 lbs. wet	10 tons dry; to 20 tons wet	Spread uniformly about 4 inches deep; often used alone. Protect from washing on steep slopes. Excellent permanent mulch around trees and shrubs; add small amounts of 10-10-10 fertilizer to stimulate growth. Potential termite problem adjacent to wood structures.

1/ All mulches will provide some degree of (1) erosion control, (2) moisture conservation, (3) weed control, and (4) reduction of soil crusting.

ABOUT THE TEAM

The King's Mark Environmental Review Team (ERT) is a group of environmental professionals drawn together from a variety of federal, state, and regional agencies. Specialists on the team include geologists, biologists, foresters, climatologists, soil scientists, landscape architects, recreation specialists, engineers, and planners. The ERT operates with state funding under the aegis of the King's Mark Resource Conservation and Development (RC&D) Area - a 47 town area in western Connecticut.

As a public service activity, the team is available to serve towns and developers within the King's Mark Area --- free of charge.

PURPOSE OF THE TEAM

The Environmental Review Team is available to help towns and developers in the review of sites proposed for major land use activities. To date, the ERT has been involved in the review of a wide range of significant activities including subdivisions, sanitary landfills, commercial and industrial developments, and recreation/open space projects.

Reviews are conducted in the interest of providing information and analysis that will assist towns and developers in environmentally sound decision-making. This is done through identifying the natural resource base of the project site and highlighting opportunities and limitations for the proposed land use.

REQUESTING A REVIEW

Environmental Reviews may be requested by the chief elected official of a municipality or the chairman of an administration agency such as planning and zoning, conservation, or inland wetlands. Requests for reviews should be directed to the Chairman of your local Soil and Water Conservation District. This request letter must include a summary of the proposed project, a location map of the project site, written permission from the landowner/developer allowing the team to enter the property for purposes of review, and a statement identifying the specific areas of concern the team should address. When this request is approved by the local Soil and Water Conservation District and the King's Mark RC&D Executive Committee, the team will undertake the review. At present, the ERT can undertake two reviews per month.

For additional information regarding the Environmental Review Team, please contact your local Soil Conservation District Office or Richard Lynn (868-7342), Environmental Review Team Coordinator, King's Mark RC&D Area, P.O. Box 30, Warren, Connecticut 06754.