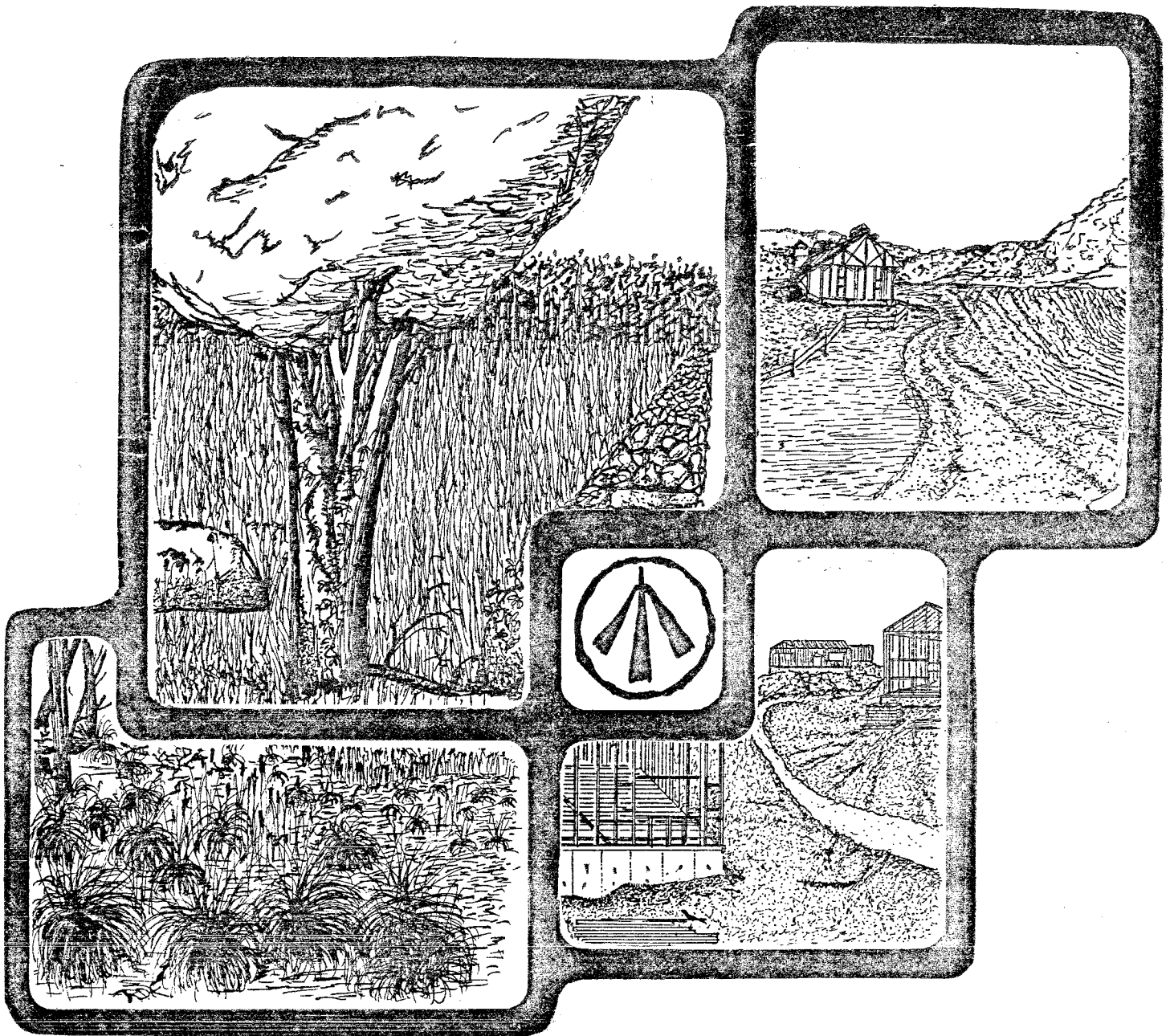


ENVIRONMENTAL REVIEW TEAM REPORT



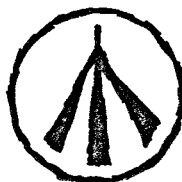
POTENTIAL MUNICIPAL INDUSTRIAL PARK WATERTOWN, CONNECTICUT

KING'S MARK
RESOURCE CONSERVATION & DEVELOPMENT AREA

KING'S MARK
ENVIRONMENTAL REVIEW TEAM REPORT

**POTENTIAL MUNICIPAL INDUSTRIAL PARK
WATERTOWN, CONNECTICUT**

MARCH, 1983



King's Mark Resource Conservation and Development Area
Environmental Review Team
Sackett Hill Road
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

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

Central Naugatuck Valley Regional Planning Agency

Housatonic Valley Council of Elected Officials

Southwestern Regional Planning Agency

Greater Bridgeport Regional Planning Agency

Regional Planning Agency of South Central Connecticut

Central Connecticut Regional Planning Agency

Capitol Regional Council of Governments

American Indian Archaeological Institute

Housatonic Valley Association

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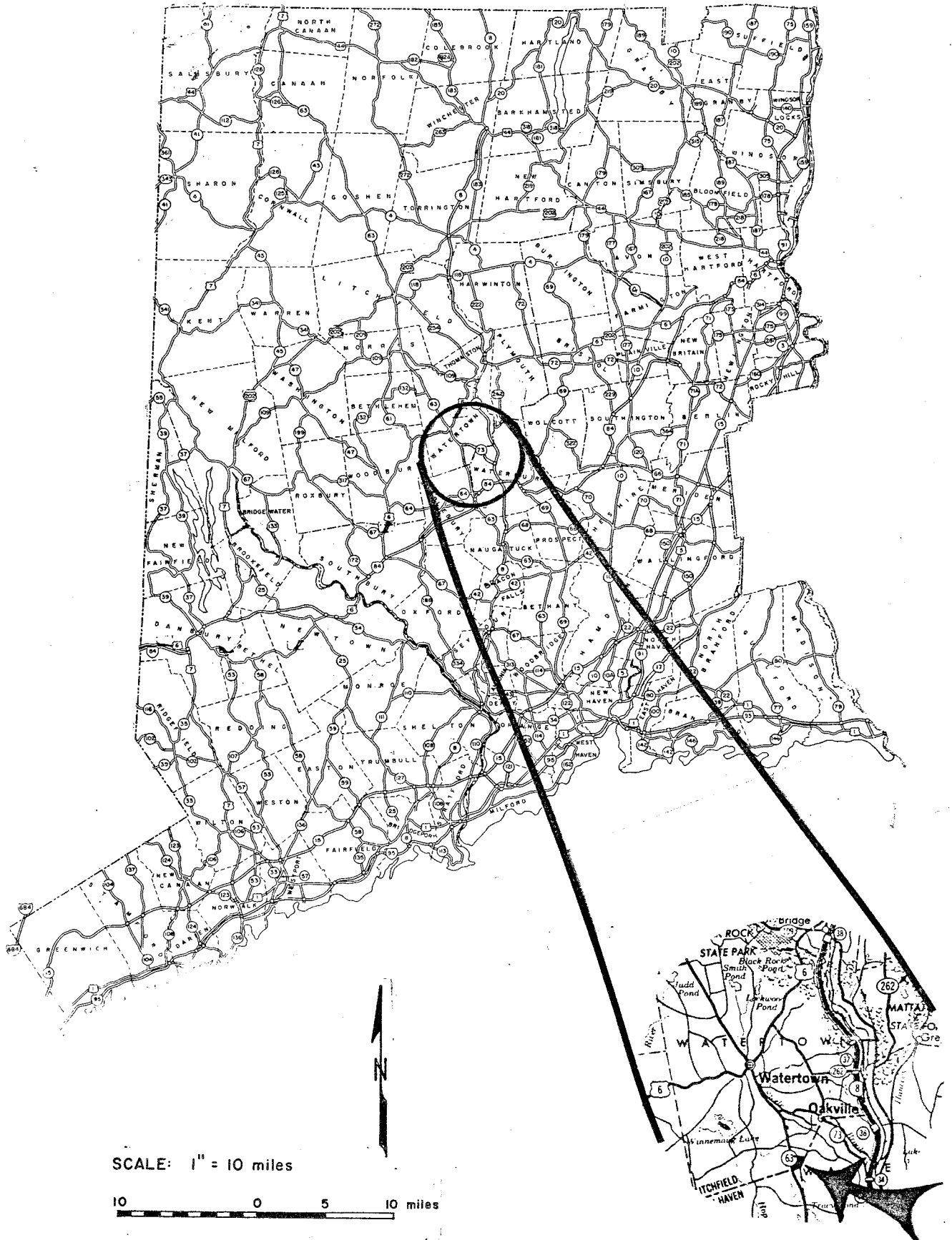
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LOCATION OF STUDY SITE



ENVIRONMENTAL REVIEW TEAM REPORT
ON
POTENTIAL MUNICIPAL INDUSTRIAL PARK
WATERTOWN, CT

I. INTRODUCTION

The Watertown Economic Development Commission is considering the town acquisition and development of a municipal industrial park. The subject site is + 100 acres in size and located in the southeastern corner of town. Access to the area is available off Route 63 and Bunker Hill Drive.

As shown in Figure 1, the site is characterized by moderate slopes. The eastern half of the property is wooded; the western portion consists predominantly of old field. The western perimeter of the property along Rt. 63 has already been developed for commercial use. North of the site the land use is predominantly residential. To the east and south the land is undeveloped. West of the site, land use is predominantly commercial.

The subject site is now privately owned by several individuals and is zoned for industrial use with minimum 80,000 square foot lots. The site is served by a sewer line along Route 63. The town has constructed a 1.4 mg water tank on the property to which it has vehicular access by right-of-way from Route 63 (see Figure 1).

The Watertown Economic Development Commission initiated this study by the King's Mark Environmental Review Team to learn of the potential of the subject area for municipal industrial park development. The Team was asked to: 1) provide a natural resource inventory and evaluation of the area, 2) to discuss the suitability of the area for industrial park use, and 3) to discuss mitigating measures which could be implemented to lessen any negative impacts.

The King's Mark Executive Committee considered the Town's request for an ERT study, and approved the project for review by the Team.

The ERT met and field reviewed the site on January 12, 1983. Team members for this review included:

Brian Curtis.....	Sanitary Engineer.....	Connecticut Department of Environmental Protection
Kathy Hanford.....	Soil Conservationist.....	U.S.D.A. Soil Conservation Service
Ralph Scarpino.....	Forester.....	Connecticut Department of Environmental Protection
Bill Warzecha.....	Geohydrologist.....	Connecticut Department of Environmental Protection
Charles Vidich.....	Planner.....	Central Naugatuck Valley Regional Planning Agency

Figure 1
TOPOGRAPHIC MAP



Scale 1" = 1000'

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 soils limitation chart and a topographic map of the area. The day of the field review, the ERT met with representatives from the Town of Watertown and walked the property. 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. It is hoped the information contained in this report will assist the Town of Watertown 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, CT 06754.

* * * * *

II. HIGHLIGHTS

1. The majority of the property consists of moderate slopes which are suitable for industrial development.
2. Most of the property drains northerly via intermittent streams to Steele Brook. Development of the site can be expected to lead to increases in stormwater runoff. Since flooding is already a problem downstream from this site, a stormwater detention system should be designed to keep peak flow runoff at pre-development levels. This stormwater detention system should be based on a thorough hydrological evaluation of before and after development conditions. Recommended storm frequencies to check for pre- and post-development are the 2, 10, 25 and 100 year, 24-hour storm events.
3. Approximately 50% of the site is underlain by soils which are suitable for industrial development (see Figure 3). Elsewhere the property is limited by either wet soil conditions, steep slopes, or shallow to bedrock conditions. An erosion and sediment control plan should be included with any plan for development of the property.
4. The rolling topography and vegetative characteristics of this site offer an attractive setting for industrial development. Four vegetative types have been identified on the site. While the value of the wood on the property is not particularly high from a commercial standpoint, the forest plays an important role in the aesthetics and water storage capacity of the landscape, and provides a diversified wildlife habitat. Provisions for protecting or improving these amenities should be included with any plans for industrial development.
5. Alteration of the wetland on this property should be minimized as it is providing an important runoff control function.
6. The Watertown municipal sewer system, which is tributary to the Waterbury sewage treatment plant, is available to the site along both Route 63 and Bunker Hill Road. The sewage treatment plant and the sewers should have adequate hydraulic capacity for typical water use rates in an industrial park of the proposed type. While there are no capacity problems with regard to the discharge of domestic waste waters to the sewer system, both an intertown contract and DEP permitting procedures will limit the type and quantity of industrial waste waters that can be discharged to the system. This is an important consideration and the town should inquire early on about the industrial waste water disposal needs of prospective tenants.
7. Construction of sewers on-site should not pose any unusual problems and most, if not all, of the site could be sewered by gravity sewers without the need for pump stations.
8. There are no limitations to development based on public water supplies. The tract of land is served by a 1.4 million gallons per day water tank which has 80% of its capacity available for industrial use. The bedrock aquifer underlying the site should be capable of supplying small but reliable yields of groundwater, should supplemental water ever be necessary.

9. To minimize potential land use conflicts, a vegetative buffer should be established along the northern border of the tract to protect the character of the adjacent residential neighborhood along Bunker Hill Road. An industrial park at this site would probably not create any land use conflicts with the commercial establishments located along Route 63.
10. Route 63 provides excellent access to the proposed industrial site. The principal limitation to development of the site is the high traffic volume found on Route 63 between Route 84 and Route 73. Any development at the proposed industrial park site is likely to create some traffic congestion and queuing, particularly near Route 64 in Middlebury. In light of this potential traffic impact, Watertown should consider seeking industries which do not rely on labor intensive manufacturing activities. In effect, traffic volume problems can be mitigated by the types of industries selected for the proposed park.
11. A conceptual site plan showing fourteen 2-5 acre lots is presented in Figure 5. The plan was prepared for illustrative purposes, and does not necessarily represent the "best" layout for the industrial park. The plan is sensitive to the natural resources of the site, however, and should provide a basis for discussion.

III. TOPOGRAPHY AND GEOLOGY

The potential municipal industrial park site occupies a broad hilltop, which slopes moderately north, towards Bunker Hill Road. Land surface elevation of the property is 750 feet above mean sea level at it's highest point and slopes down to approximately 600 feet above mean sea level to the north. A water storage tank is situated at the highest point on the property.

The steepest topography is found in the southwestern section of the property where slopes exceed 30% in some places. As shown in Figure 2, however, the majority of the property slopes moderately (5-10%).

The bedrock geology of the property is described in the Geologic Map of the Waterbury Quadrangle, Connecticut (Quadrangle Report Number QR22 by Robert M. Gates and Charles Martin 1962-64).

The rock unit underlying the entire parcel is the Waterbury Formation. This formation is a light-to-dark gray, fine to medium grained gneiss composed of muscovite-biotite-oligoclase to andesine-quartz. The term "gneiss" refers to a concisely crystalline metamorphic rock formed under conditions of high temperature and pressure deep within the earth. Gneisses are characterized by bands, which are produced by alteration of dark and light layers of minerals such as quartz, feldspar and biotite. Bedrock outcropping on the subject site was observed in the southeastern and western portions of the property (see Figure 2).

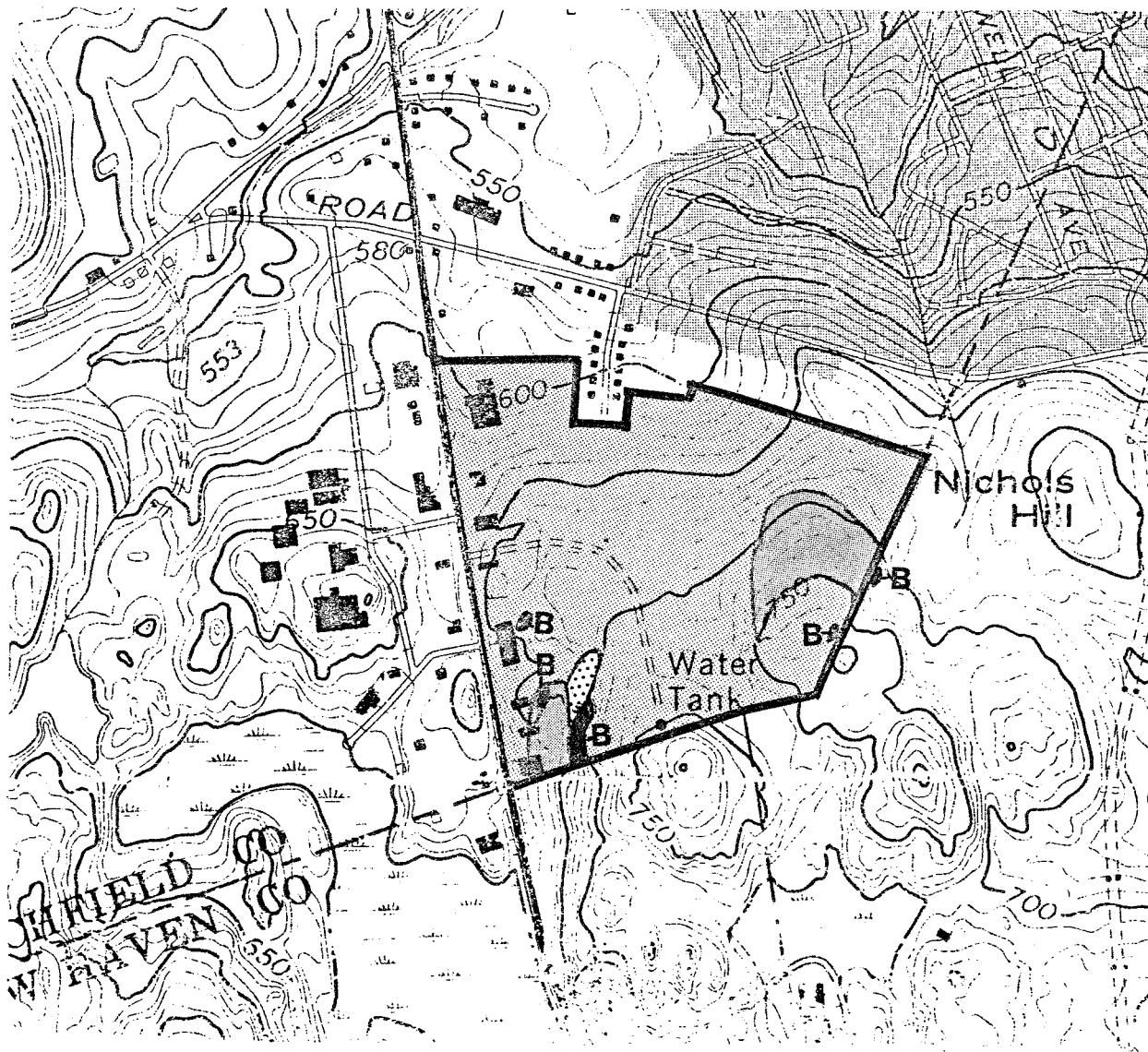
While the site is adequately served by a public water supply, it should be noted that the bedrock aquifer underlying the site could be utilized to supplement the current supply. The anticipated yield however is comparatively small. Based upon statistics presented in Water Resources Bulletin #19 by the U.S. Geological Survey, 90% of the wells tapping the type of bedrock underlying this site are capable of yielding at least two gallons of water per minute but less than 10% yield 20 gpm or more.

The unconsolidated earth materials lying over the bedrock on the property is glacial till which may be divided into two types: 1) compact glacial till which in this area are those soils delineated by the soils map (see Appendix of this report) as Paxton, Woodbridge, Leicester, Ridgebury and Whitman; and 2) a sandy till delineated by the soils map as Gloucester.

Compact till has a high content of fine grained material and a hardpan is usually present which causes a seasonal high water table and drainage difficulties. The presence of a "hardpan" means the soil is highly compacted, which will usually hinder the movement of water, air and plant roots.

Thicknesses of the till deposits will probably vary from less than 10 feet in the southeast and southwest section of the property to depths of greater than 10 feet throughout the remaining portions of the property.

Figure 2
SLOPE CONDITIONS AND BEDROCK OUTCROP



Scale 1"=1000'

- SLOPE**
- 20%+
 - ▨ 15-20%
 - ▩ 0-15%
- B** Bedrock Outcrops

IV. HYDROLOGY

The largest portion of the property lies within the watershed of Steele Brook. Drainage from most of the site flows northerly by sheet flow into intermittent streams which subsequently discharge into Steele Brook approximately one mile northeast of the site. Approximately 20 acres in the southwestern portion of the property drains southerly however, to a large wetland in the Town of Middlebury. This wetland, in turn, drains southerly to Hop Brook.

Development of this site can be expected to lead to increases in stormwater runoff. As was stated by Town officials at the time of the ERT's field review, Watertown requires a 0% increase in "peakflow" runoff. This is an important provision with regards to this site as concern has been expressed by residents living in the Bunker Hill section over the possible increase of flooding conditions during heavy rainfall as a result of developing the parcel.

The amount of increased runoff will depend on the extent of development, amount of vegetation removed, impervious surfaces created, and the timing of development of each lot. For this reason, a detailed engineering study of the pre- and post-development runoff from the entire site as well as a careful runoff control plan should be prepared and implemented prior to development. Major concerns such as changes in present runoff, location of proposed roads, sediment erosion, and wetland protection should be assessed early in the planning stages of the development.

One way of controlling run-off would be the construction of a retention basin which would intercept runoff from the property. A favorable location for the basin(s) would be in the northcentral section of the property. This basin(s) could also serve a sediment retention function. Periodic removal of accumulated sediment in the basin would be necessary to assure that the runoff storage capacity of the basin is not diminished. The USDA Soil Conservation Service in Litchfield (567-8288) is available to assist in the siting and design of stormwater control structures.

V. SOILS

Soil Descriptions:

As noted in the Geology section, the soils on the site consist of two major groupings. One group is formed in very friable, coarse textured glacial till. The other is formed in very dense glacial till. The location of the soils is shown on the soils map in the appendix of this report. A soils limitation chart is also included in the appendix. A description of each of the soils on the site is presented below.

A. Soils formed in friable coarse textured glacial till.

1. Gloucester Series (Map Symbols GaB, GaC, GeC).

The Gloucester Series consists of somewhat excessively drained soils that developed in very friable, coarse textured glacial till. The till was derived mainly from coarse textured granite, but in places

includes some gneiss. Consequently, the soil material has a relatively high content of sand. Permeability is moderately rapid, and the available moisture capacity is low.

A typical profile in a cultivated area has a dark-brown sandy loam surface layer 8 inches thick. The subsoil is dark yellowish-brown sandy loam in the upper part and grades to yellowish-brown loamy sand in the lower part. These layers are all very friable. Below a depth of 24 inches, the soil is light olive-brown gravelly loamy sand and olive gravelly coarse sand. Stones, cobblestones, and pebbles are common on the surface and in the profile. These coarse fragments are granitic in origin. As shown in Figure 3, these soils have good to moderate potential for industrial development.

B. Soils formed in very dense glacial till.

1. Paxton series (map symbol PbB).

The Paxton series is made up of well-drained soils that developed in glacial till derived principally from schistose rocks mixed with gneiss and granite. These soils have a compact layer (hardpan) at a depth of about 2 feet. They commonly occupy smoothly rounded drumlins or drumoidal hills that were elongated in a north-south direction by moving glaciers. Permeability of the Paxton soils is moderate in the surface layer and subsoil but slow or very slow in the substratum.

A typical profile in a cultivated field has a surface layer of friable, very dark grayish-brown fine sandy loam about 8 inches thick. The upper part of the subsoil is dark yellowish-brown fine sandy loam, and the lower part is light olive-brown grading to grayish-brown fine sandy loam. At a depth of about 26 inches, the subsoil is underlain by a substratum of very fine, dark grayish-brown gravelly fine sandy loam. This very firm layer is known locally as hardpan and water passes through it slowly. It is hard and brittle when dry.

Paxton fine sandy loam, 3-8% slopes is rated a prime farmland soil and as shown in Figure 3, has good potential for industrial development.

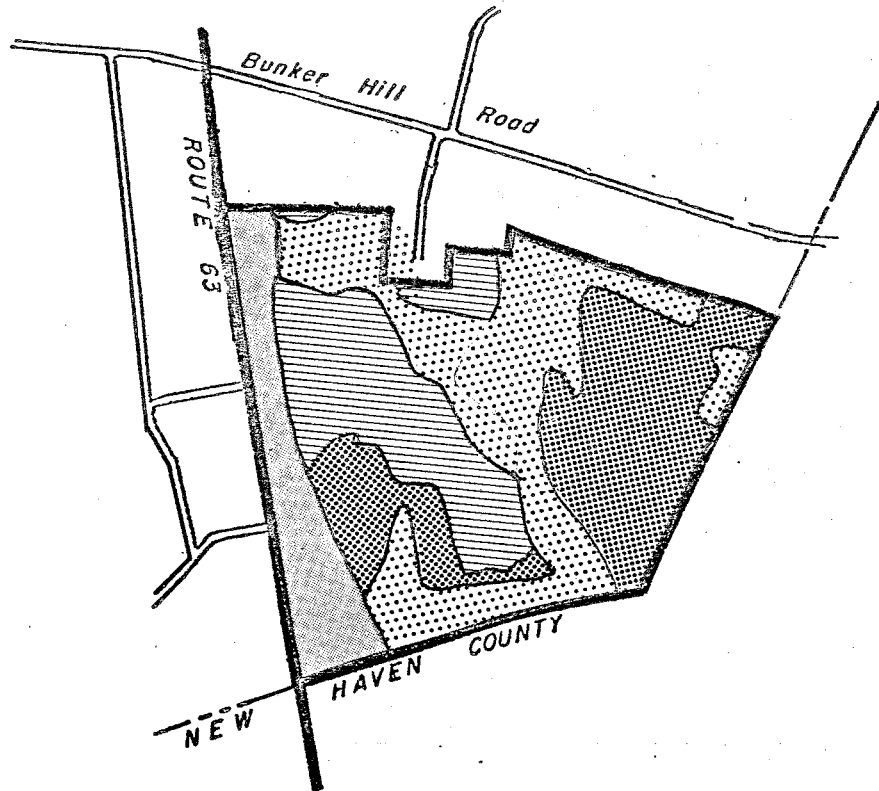
2. Borrow and Fill Land (Map Symbol B1).





Borrow and fill land consists of areas where the original soil has been disturbed or removed during the construction of highways, industrial and housing developments, etc. Each site should be investigated to determine its suitability for any specific use.

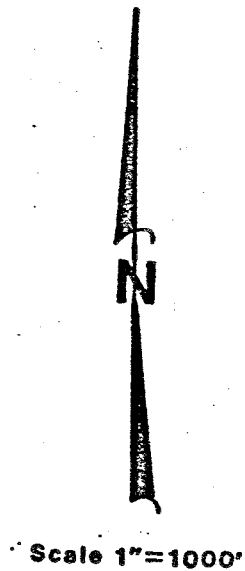
Borrow and fill land, loamy material (B1) consists of borrow areas and cut and fill material over loamy materials. Generally, it occurs in areas of soils that formed in glacial till and range from fine sandy loam to silt loam in texture. It varies in permeability, drainage, and suitability for vegetation. The B1 soil on this particular site should be well suited to industrial development.

Figure 3

INDUSTRIAL DEVELOPMENT POTENTIAL



	GOOD POTENTIAL,	25 Acres
	MODERATE POTENTIAL,	28 Acres
	POOR POTENTIAL,	33 Acres
	ALREADY DEVELOPED,	14 Acres



Based upon soil characteristics and on-site inspection.

3. Woodbridge Series (Map Symbol WzC).

The Woodbridge series consists of moderately well drained, nearly level to sloping soils that developed in compact glacial till of Late Wisconsin age. The till was derived mainly from gray mica schist but includes varying amounts of granite and gneiss. These soils are underlain by a compact layer, or hardpan, at a depth of about 24 inches. Their permeability is moderate in the surface layer and subsoil but is slow or very slow in the substratum.

A typical profile in a forested area has a surface layer of friable, very dark grayish-brown very stony fine sandy loam about 3 inches thick. The subsoil is dark yellowish-brown fine sandy loam that contains olive and light brownish-gray mottles (an indicator of a seasonally high water table) in the lower part. This layer extends to a depth of about 22 inches. The substratum is a hard, compact layer consisting of light olive-brown sandy loam that is strongly mottled with light brownish gray, reddish brown, and dark brown. It is very slowly permeable and extremely hard when dry. Below a depth of 28 inches, the mottles are fewer and less distinct and the texture is gravelly fine sandy loam. Due to wetness, this soil has poor potential for industrial development.

4. Leicester Series (Map Symbol Lg)

The Leicester series consists of poorly drained or somewhat poorly drained soils that developed in very friable to firm glacial till of Late Wisconsin age. The till was derived mostly from schist, gneiss, and granite but includes small amounts of quartzite and other rocks. These soils occupy wet, low-lying areas. Their permeability is moderate in the surface layer and subsoil and is moderately rapid in the substratum.

A typical profile in an undisturbed forested area has a surface layer of black, very friable fine sandy loam that is about 6 inches thick and is high in organic matter content. The upper part of the subsoil is grayish-brown fine sandy loam that contains mottles of dark yellowish brown, brown, and light brownish gray. The lower part is olive gray sandy loam, and it contains similar mottles. This layer extends to a depth of 25 inches. It is underlain by a substratum of grayish-brown gravelly sandy loam that is mottled with brown and light olive gray. This material shows fewer mottles than the subsoil.

The use of this soil is regulated by PL-155, Connecticut's Inland Wetland and Watercourses Act. The soil has poor potential for development.

5. Hollis Series (Map Symbol HrE)

The Hollis series consists of well-drained or somewhat excessively drained, gently sloping to steep soils that are very shallow or shallow over crystalline bedrock, including schist and gneiss. These soils developed in a thin mantle of glacial till and the underlying residuum derived from bedrock. They are the most extensive soils in Litchfield County. Their permeability is moderate or moderately rapid.

A typical profile in a forested area has a surface layer of very dark grayish-brown fine sandy loam about 1 inch thick. The subsoil is dark yellowish-brown, yellowish-brown, or light olive-brown fine sandy loam. The depth to schist bedrock is 15 inches. Outcrops occupy as much as 50 percent of the surface area, and stones and angular rock fragments are common. Due to steep slopes and shallow depths to bedrock, this soil has poor potential for industrial development.

EROSION AND SEDIMENT CONTROLS

An erosion and sediment control plan should be included with any plan of development for the property. The objective of this plan should be to disturb as little of the total area as possible and to keep sediment on the property and away from streams and wetlands. The erosion and sediment control plan should include such features as: phased construction; hay bale erosion checks downslope from construction; temporary vegetation on stock piled top soil and when work will be halted over winter months; permanent vegetative cover and other measures are needed for the final development plan. Information is available at 567-8288 from the Soil Conservation Service (SCS) office in Litchfield for developing this plan. Once the erosion and sediment control plan is developed, SCS has staff available to review the plan for the town.

STORMWATER CONTROL

As discussed in the Hydrology section of this report, a storm drainage plan is also needed in the final development plan. This plan should include drainage calculations for both the before and after development conditions. Since flooding is already a problem downstream from this site, a storm water retention system should be designed to keep peak flow runoff at the pre-development levels. The SCS method for estimating runoff would be appropriate to use on this type of site. Recommended storm frequencies to check for pre- and post-development are the 2, 10, 25 and 100 year, 24 hour storm events.

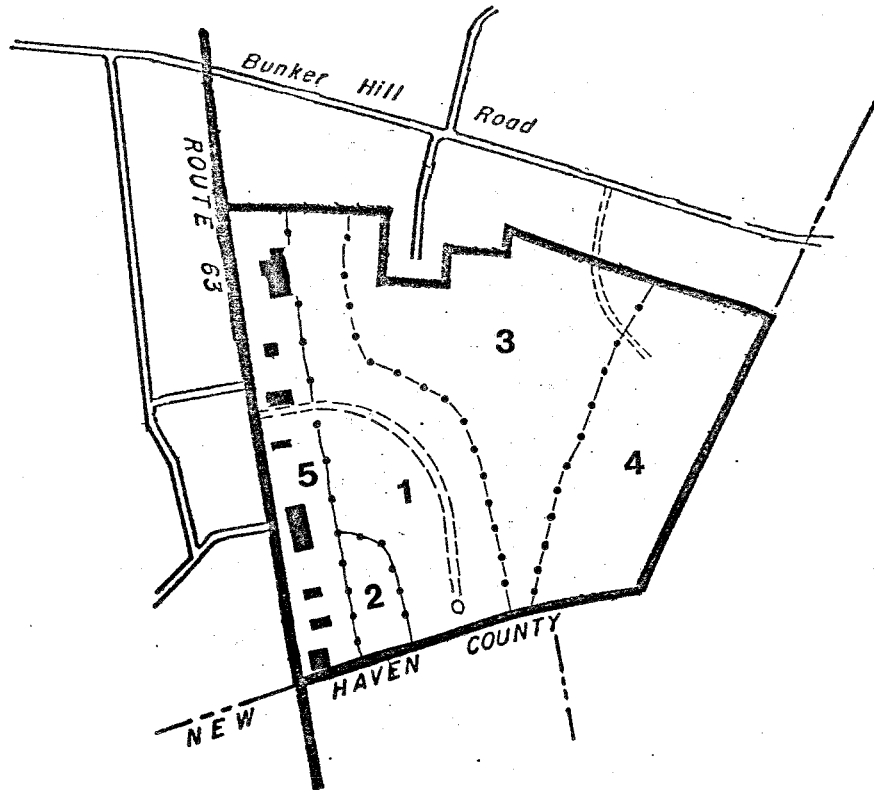
VI. VEGETATION

The vegetation of the subject site can be divided into 4 separate cover types. These types are described in detail below. Most of the property is heavily wooded (with the exception of type #1) with common tree species. These include red maple, black birch, aspen, hickory, ash and red oak. The dominance of one species is primarily dictated by the depth of the soil to underlying ledge or the water table.

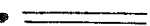



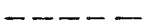
In a commercial sense, the value of the wood found on this parcel is not particularly high. The forest nevertheless plays an important role in the aesthetics and water storage capacity of the landscape, and provides a diversified wildlife habitat. Protection or improvement of these amenities should be considered whether the land stays as is or is developed for a municipal industrial park.

Figure 4

VEGETATION TYPE MAP



LEGEND

-  Major Roads
-  Town Boundaries
-  Site Boundaries
-  Stand Boundaries
-  Unimproved Roads

KEY

- TYPE 1 Old fields
- TYPE 2 Mixed hardwoods
- TYPE 3 Maple swamp
- TYPE 4 Mixed hardwoods
- TYPE 5 Developed area



Scale 1"=1000'

VEGETATIVE TYPE DESCRIPTIONS

Type I, Old Field. This type is dominated by early successional species. It appears as though most of the topsoil has been removed over the years and exposed soil has given way to "pioneer" vegetation. Pioneer species include aspen, grey birch, sweet cherry, sumac, highbush blueberry, sweet fern, blackberry, and sensitive fern. Also present are a variety of hardy grasses.

Type II, Mixed Hardwoods. This area lies in the southwest corner of the property and is differentiated from type IV primarily for topographic reasons. The slope here is quite steep facing Rt. 63. This steepness of slope may preclude the desirability for development. Tree species include several scattered large red oak as well as red maple, black and grey birch.

Type III, Maple Swamp. Red maple dominates this cover type. Associated species include aspen, hickory and white ash. Most of these trees are pole-sized; that is, the diameters of the stems are between 4 and 10 inches. The understory consists of scattered highbush blueberry and dense thickets of spice bush and sweet pepper bush. A variety of ferns will be found on the forest floor. Damper areas will contain skunk cabbage. The high water table impedes tree growth potential.

Type IV, Mixed Hardwoods. This type consists primarily of pole sized hardwood trees. Species include red oak, grey birch, hickory, black cherry and red maple. The understory contains low bush and highbush blueberry, hazelnut and princess pine.

Type V. This area is already industrialized and is largely void of vegetation.

LIMITING CONDITIONS AND POTENTIAL HAZARDS

The maple swamp on this site has a water table close to the surface of the ground. This allows for shallow root penetration of the trees, resulting in the potential for windthrow. Light thinnings in these areas may help to improve tree stability, however openings and clearings in and along side of the wetland areas should be avoided if possible.

Alterations in the wetlands which permanently raise the water table and/or restrict natural drainage may have a negative impact on the vegetation within and adjacent to the wetlands. For example, raising the water table may drown root systems causing widespread mortality in the plant community. As a result, such alterations should be avoided.

MANAGEMENT CONSIDERATIONS

The potential municipal industrial park if developed as proposed will have a significant impact on the present vegetation. Many small lots with individual establishments will break up the continuity of most of this parcel. Overall concern therefore, should be for maintaining and enhancing the vegetation which can be left. It would be desirable to incorporate the retention of individual trees and clumps of trees and shrubs into the final site plan. These trees and shrubs should be identified and marked on the ground so as to insure their retention.

Trees are quite sensitive to changes in soil conditions. Development practices near trees may disturb the root zone and ultimately their health and vigor. Trees in the process of dying, and indeed dead trees, reduce the aesthetic appeal of an area, become hazardous, and may be expensive to remove. Where possible, trees should be left in clumps or clusters. This lowers the possibility of soil disturbance and mechanical injury to individual trees.

Trees which are presently unhealthy and not growing vigorously due to crowded conditions are most susceptible to further degradation from environmental stresses brought on by development as well as disease, insect infestation and adverse weather conditions. It would be desirable to remove such undesirable trees, thereby reducing competition for sunlight, nutrients and water from the residual, more desirable stems. This improvement thinning can be done even on a small scale (such as clumps of trees) and over time will allow residual trees to improve in health, vigor, quality and stability. These thinnings when implemented properly can improve the aesthetic value of an area, improve tree health and vigor, improve wildlife habitat and provide wood products.

Any cutting, whether it is done for thinnings or for clearing of roadways and building sites, should be done to take advantage of the high demand for all wood products. Firewood will be the main product and is highly sought after. The proper marketing of this product should be a concern and should be planned for.

A public service forester or a private forester may be of assistance in either on the ground planning or the marketing of the wood products. A public service forester from the Connecticut Department of Environmental Protection may be contacted at 379-0771.

VII. WASTE DISPOSAL

On-Site Sewage Disposal

Discussion of on-site sewage disposal systems will be limited to a few general comments in view of preliminary indications from the town's economic development commission that the industrial park will be sewerred if it goes ahead. Approximately half of the soils on the property would have modest to limited capacity for subsurface sewage disposal systems. The Gloucester soils are the best in terms of hydraulic capacity followed by the Paxton soils which are more limited due to a compact substrata and seasonal high water table at approximately 24-26 inches in depth. The Woodbridge soils would be very limited for any large scale sewage disposal system due to an even higher seasonal water table than the Paxton soils. The Hollis and Leicester soils would be unacceptable due to shallow ledge and very high ground water conditions respectively. In walking over the site it also appears that the Leicester soils are more extensive in the northern portion of the property than is shown on the preliminary soils map. If subsurface sewage disposal systems were built, a local and/or State Health Department Permit would be required for any systems less than or equal to 5,000 gallons per day of domestic sewage and a State Discharge Permit would be required from the Department of Environmental Protection for systems larger than 5,000 gallons per day. In all cases these systems would be for the disposal for domestic sewage only.

In view of the ground water classification for this area being GA in Connecticut's Water Quality Standards and Criteria the only other wastes which would be considered acceptable for treatment and discharge to the ground would be certain agricultural wastes, backwash from public drinking water treatment systems, minor cooling or clean water, or substances of natural origin or materials which easily biodegrade in the soil system and pose no threat to untreated drinking water supplies.

Municipal Sewers

The Watertown municipal sewer system, which is tributary to the Waterbury Sewage treatment plant, is available to the site along both Rt. 63 and Bunker Hill Road. The sewage treatment plant and the sewers should have adequate hydraulic capacity for typical water use rates in an industrial park of this type. If any large water uses were proposed the sewer and treatment plant capacity would have to be reviewed on a case-by-case basis. Due to the fact that the Waterbury plant employs a biological form of sewage treatment system, only domestic sewage or wastewaters amenable to biological treatment would be encouraged for discharge to the sewers. This is very important and should be considered by the town in determining what types of industry should be encouraged at the site. Early on in the marketing process, potential industrial tenants should be made aware of the limitations for industrial waste water treatment. Any proposed discharges to the system such as treated metal plating wastewaters, cooling waters, or clean waters which would only take up capacity and not receive further treatment at the Waterbury plant may not be allowed by the Department of Environmental Protection.

In addition, it should be noted that the Town of Watertown has a contract with the City of Waterbury for the treatment of its waste water at the Waterbury sewage treatment plant. While no limit has been set for the treatment of domestic waste water under the contract, treatment of industrial waste water has been limited to 100,000 gallons per day. As of 1983, 90,000 gallons of industrial waste water are treated daily leaving only 10,000 gallons of additional industrial waste water capacity based on the current contract with the City of Waterbury. Therefore, even if a DEP discharge permit was received, the inter-town contract would limit the amount of industrial wastewater which could be treated at the sewage treatment plant.

These limitations for industrial waste water disposal will clearly restrict the types of industries that can locate at the proposed industrial park. At a minimum, metal plating firms and industries with chemical discharges should be low on the list of priority industries. It would be desirable for Watertown to inquire early on what the industrial wastewater disposal needs are of prospective tenants.

Construction of sewers on-site should not pose any unusual problems and most if not all of the site could be served by gravity sewers without the need for pump stations. The major construction difficulties will be dewatering efforts in high ground water areas and possible blasting of ledge closer to the high points of the site.

The design and specifications for the overall sewer system must be approved by the Water Compliance Unit of the Department of Environmental Protection and individual connections of domestic sewage greater than 5,000 gallons per day

will require a State Discharge Permit. The discharge of any quantity of industrial process wastewaters requires a State Discharge Permit from the Department of Environmental Protection and will be based upon hydraulic capacity and compatability as previously mentioned.

Potential ground water quality impacts will be dependent upon the amount and type of chemicals that any particular industry may use in its processes. In most cases it's simply a matter of how careful, conscientious or properly managed an industry is in its storage, handling and disposal of these materials as both raw products and wastes. It is good practice for the town to incorporate review of these procedures, especially for raw products, during site plan review for application by a particular industry and at the time of property transfer from one industry to the next. The storage, transport, treatment, or disposal of any hazardous wastes would be administered by the Hazardous Wastes Management Unit of the Department of Environmental Protection.

VIII. WATER SUPPLY

In contrast to waste water discharges there are no limitations to development based on public water supplies. The tract of land is served by a 1.4 million gallons per day water tank which has 80% of its capacity available for industrial use. The Watertown Sewer and Water Authority would welcome the full use of this water supply system by industrial customers.

As discussed in the Geology Section of this report, the bedrock aquifer underlying the site should be capable of supplying small but reliable yields of groundwater, should supplemental water ever be necessary.

IX. PLANNING CONSIDERATIONS

Approximately 50 out of the 100 acres in the proposed industrial park site are designated as suitable for industrial development according to the Regional Plan of Development map prepared by the Central Naugatuck Valley Regional Planning Agency (CNVRPA). The remaining 50 acres are designated as a proposed open space area largely due to the limitations created by soils in the eastern part of the proposed industrial park site. Similarly, Watertown's Comprehensive Plan of Development prepared in 1965 indicates that approximately 50 acres are suitable for General Industrial and Heavy Commercial use and 50 acres for high density residential use.

In contrast to the local and regional Plans of Development, the Watertown Zoning Map designates the entire site as a General Industrial District (IG-80) with a minimum of 80,000 square feet per lot. The IG-80 district permits manufacturing activities along with a variety of commercial activities. However, dwelling units, motor vehicle service stations and bowling alleys are not permitted in this zone.

A. Land Use Issues

An industrial park at this site would probably not create any land use conflicts with the commercial establishments located on Route 63. However, land use conflicts could emerge along that portion of the tract bordering Bunker Hill Road. Along the northern border of the tract, a vegetative buffer should be established to protect the character of this residential neighborhood. The Watertown Zoning Regulations require that industrial buildings be setback at least 50 feet from a residence district boundary. This setback standard should include a provision for a visual barrier between the existing neighborhood and the proposed industrial park.

B. Traffic Circulation

The proposed industrial park has access to Route 63 which serves as the major connector to Interstate 84 to the south. Route 63 has recently been widened and resurfaced. In its present condition it provides excellent access to the proposed site. The principal limitation to the proposed site is the high traffic volumes found on Route 63 near its junction with Route 64 and Interstate 84. In 1980, Route 63 between Route 84 and Route 73 had an average daily traffic count of 10,600 vehicles. This traffic level results in a vehicle to capacity ratio of .654 or slightly less than the .70 threshold where traffic congestion and queuing begins to occur. Any development at the proposed industrial park site is likely to create some traffic congestion and queuing, particularly near Route 64 in Middlebury.

C. Traffic Impact

Perhaps the most serious issue that would be created by developing the 100 acre site would be the increased traffic volume on Route 64 between Route 63 and Interstate 84. In 1982, the Central Naugatuck Valley Regional Planning Agency determined that this portion of Route 64 (which serves as the industrial park's eastbound connection to I-84) had an average daily traffic count of 17,400 vehicles and a volume to capacity ratio of 1.48 making it the most congested highway corridor in the Central Naugatuck Valley Region. At this volume to capacity ratio one can expect reduced travel speeds and stoppages in the flow of traffic due to the fact that the capacity of the road has been reached.

There are two implications from these findings. One implication is that the Town of Watertown should seek to attract industries which do not rely on labor intensive manufacturing activities. In effect, traffic volume problems can be mitigated by the types of industries selected for the proposed park.

The second implication is that Bunker Hill Road may become a more significant access route to the proposed industrial park due to the expected traffic congestion problems on Route 63.

Based on trip generation intensity factors for industrial parks developed by the U.S. Department of Transportation, the proposed industrial park is expected to generate 55.3 vehicle trip per acre, or approximately 5,530 for the 100 acre industrial park at its ultimate development. Assuming that 50% of

this traffic utilized Route 63, it is expected that the proposed industrial park could raise the average daily traffic count on Route 63 to 12,680 and increase the volume to capacity ratio of this road to a near capacity level of approximately .94. At this level, travel speeds are reduced and there are stoppages in the flow of traffic.

D. Industrial Development

These anticipated traffic impacts can be avoided to some degree by selecting less labor intensive industries for the proposed industrial park. In 1979 the CNVRPA completed a study entitled, The Locational Advantage of the Waterbury Labor Market Area: 21 Industries with Growth Potential. The study identified 21 growth industries which are uniquely suited to the Waterbury Labor Market area based on their raw material needs, energy requirements, labor force composition, sewer and water needs, and their historical affiliation with this Region of the State. The 21 industries are listed in Table 1 below. As can be seen in Table 1, surgical, medical and dental supply firms, manufacturers of electronic components and establishments involved in metal coating and the manufacture of optical instruments and lenses are ranked high on the list of priority industries for the Waterbury Labor Market area. As discussed in the Waste Disposal Section of this report, however, the waste disposal needs of certain industries may prohibit their locating at this particular site.

Site Design

Figure 5 shows a conceptual site plan for fourteen lots at this site. The lots are located in the best soil areas and are 2-5 acres in size. Because the dead-end access road is a lengthy 3,000 feet, an emergency access road has been provided to Bunker Hill Road for safety reasons. Figure 5 was prepared for illustrative purposes, and does not necessarily represent the "best" layout for the industrial park. The plan is sensitive to the natural resources of the site, however, and should provide a basis for discussion.

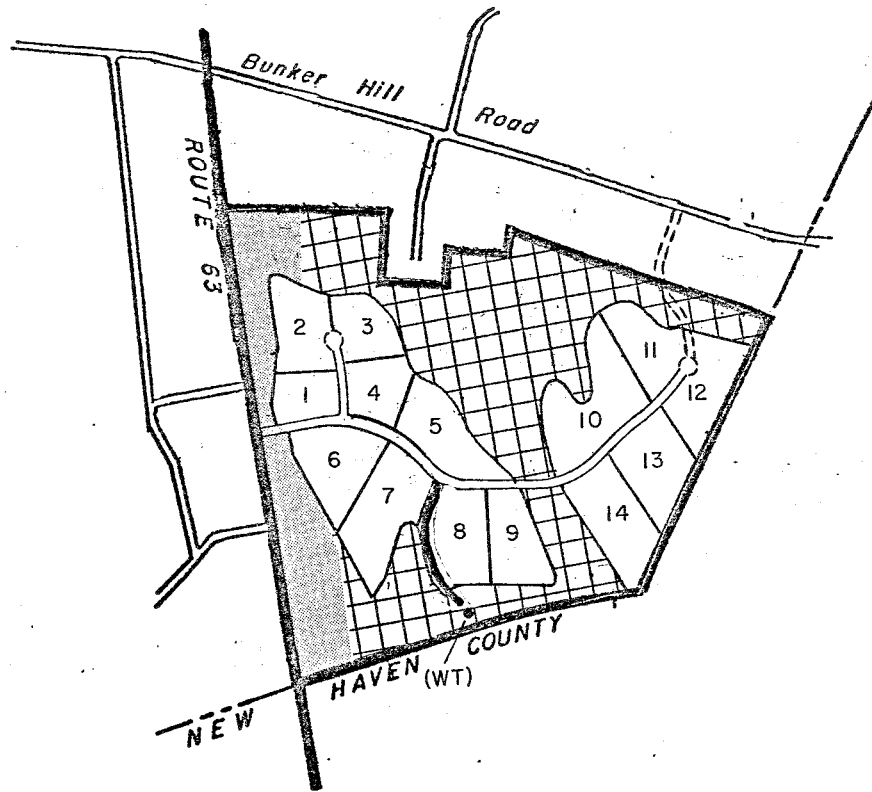
Table 1: Priority Ranking of Major Industries with Economic Growth Potential in the Waterbury Labor Market Area





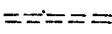

Standard Industrial Classification	Industry	Rank
3479	Metal Coating and Allied Services	1
3841	Surgical and Medical Instruments	2
3843	Dental Equipment and Supplies	3
3842	Surgical Appliances and Supplies	4
3549	Metalworking Machinery NEC*	5
3832	Optical Instruments and Lenses	6
3579	Office Machines, Typewriters, etc.	7
3678	Electronic Connectors	8
3573	Electronic Computing Equipment	9
3421	Cutlery	10
3674	Semi-Conductors and Related Devices	11
2752	Commercial Printing, Lithographic	12
2339	Women's and Misses' Outerwear NEC*	13
2844	Toilet Preparations	14
2024	Ice Cream and Frozen Desserts	15
2647	Sanitary Paper Products	16
3498	Fabricated Pipe and Fittings	17
3564	Blowers and Fans	18
3079	Miscellaneous Plastic Products	19
3563	Air and Gas Compressors	20
2649	Converted Paper Products	21

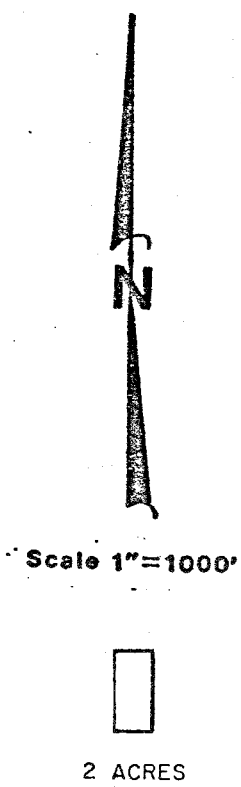
*NEC = not elsewhere classified.

Source: The Locational Advantage of the Waterbury Labor Market Area: 21 Industries with Growth Potential, 1979, Central Naugatuck Valley Regional Planning Agency, Waterbury, CT.

Figure 5 CONCEPTUAL SITE PLAN

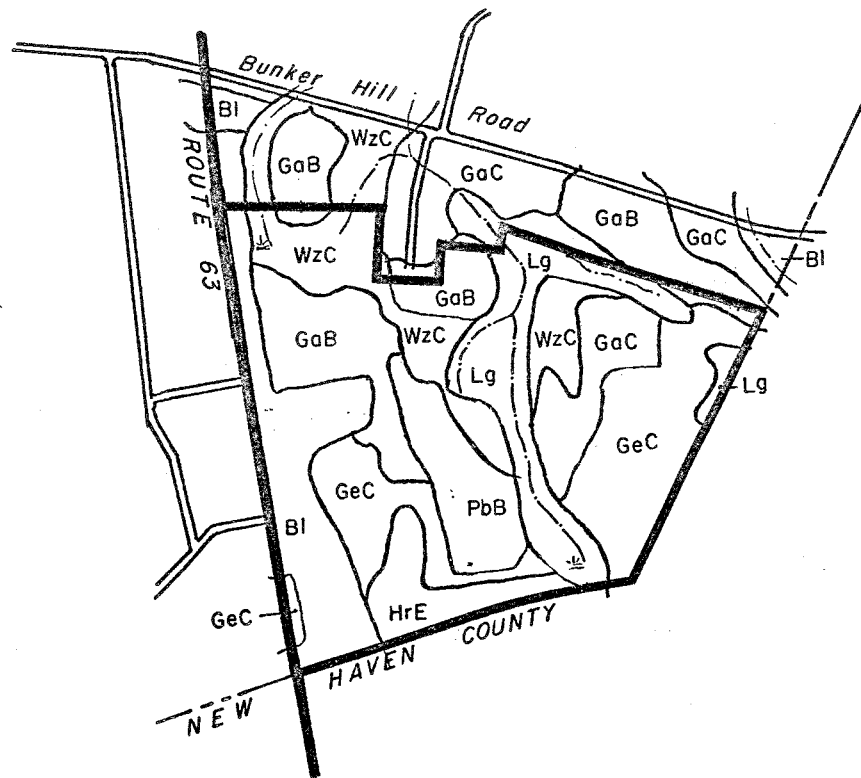


-  Possible lot
-  Access road
-  Already developed land
-  Open space (land with poor potential for industrial development)
-  Emergency access road
-  Access to water tank (WT)



NOTE: This plan was prepared for illustrative purpose only

SOILS MAP



Scale 1"=1000'

• 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.

• Adapted from Litchfield County Soil Survey, U.S.D.A.-S.C.S.

• Soil types described in text.

SOILS LIMITATIONS CHART

Soil Symbol	Soil Name	Shallow Excavations	Small Commercial Buildings	Basements	Lawns & Landscaping	Local Roads
B1	Borrow and fill, leamy material	Severe -1				
GaB	Gloucester Sandy loam, 3 to 8 % slope	Severe-1	Moderate-2-3	Moderate-3	Moderate 4-5	Moderate 2-3
GaC	Gloucester sandy loam, 8 to 15% slope	Severe-1,2	Severe-2	Moderate 2,3	Moderate 2,4,5	Moderate 2,3
HrE	Hollis very rocky fine sandy loam, 15 to 35% slopes	Severe-2,6	Severe-2,6	Severe-2,6	Severe-2,7	Severe-2,6
Lg	Leicester, Ridgebury & Whitman very stony fine sandy loam	Severe-8	Severe-8	Severe-8,9	Severe-8	Severe-8
WzC	Woodbridge very stony fine sandy loam, 3 to 15% slopes	Severe-8	Moderate-2,8	Severe-2,8	Moderate-8,2	Severe-9
PjB	Paxton fine sandy loam, 3 to 8% slopes	Moderate-10,8	Moderate-2,8	Moderate-8	Slight	Moderate-9,8

Reason for moderate or severe rating:

1. cutbanks cave
2. slope
3. large stones
4. small stones
5. droughty
6. depth to rock
7. thin top soil layer
8. wetness
9. frost action
10. dense layer

EXPLANATION OF RATING SYSTEM:

SLIGHT LIMITATION - indicates that any property of the soil affecting use of the soil is relatively unimportant and can be overcome at little expense.
MODERATE LIMITATION - indicates that any property of the soil affecting use can be overcome at a somewhat higher expense.
SEVERE LIMITATION - indicates that the use of the soil is seriously limited by hazards or restrictions that require extensive and costly measures to overcome.

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.