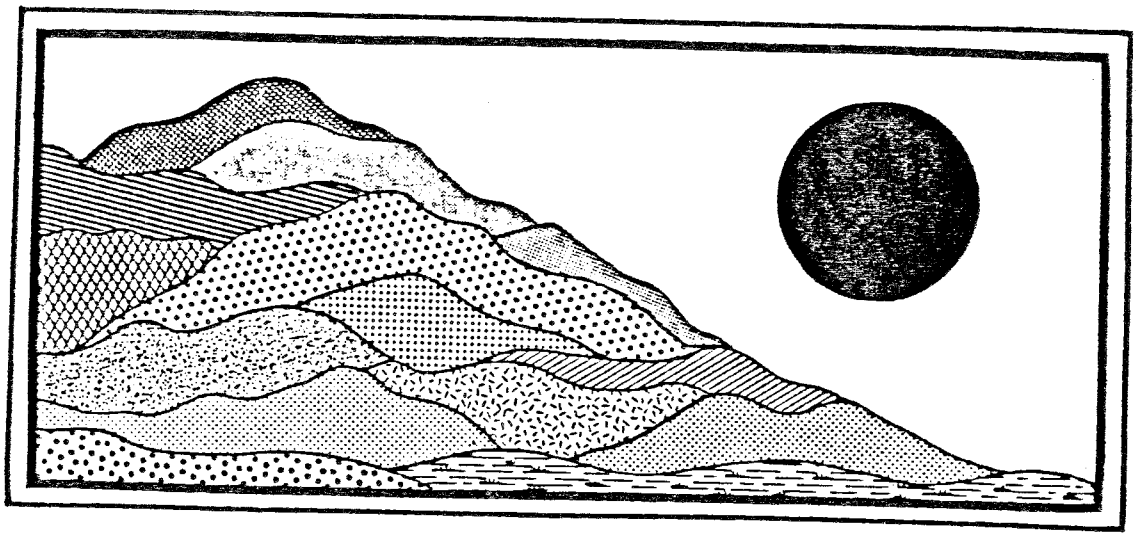
Trash-to-Energy Facility Site

Montville, Connecticut

March 1988



ENVIRONMENTAL REVIEW TEAM REPORT

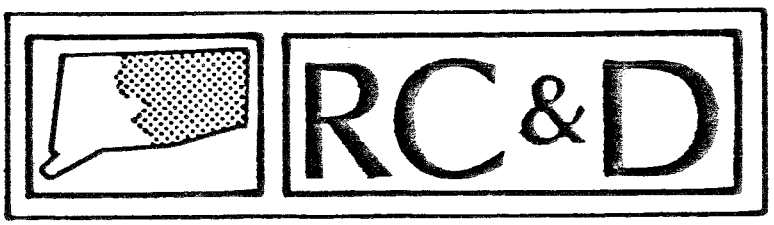
EASTERN CONNECTICUT RESOURCE CONSERVATION AND DEVELOPMENT AREA, INC.

Trash-to-Energy Facility Site

Montville, Connecticut

Review Date: JANUARY 7, 1988

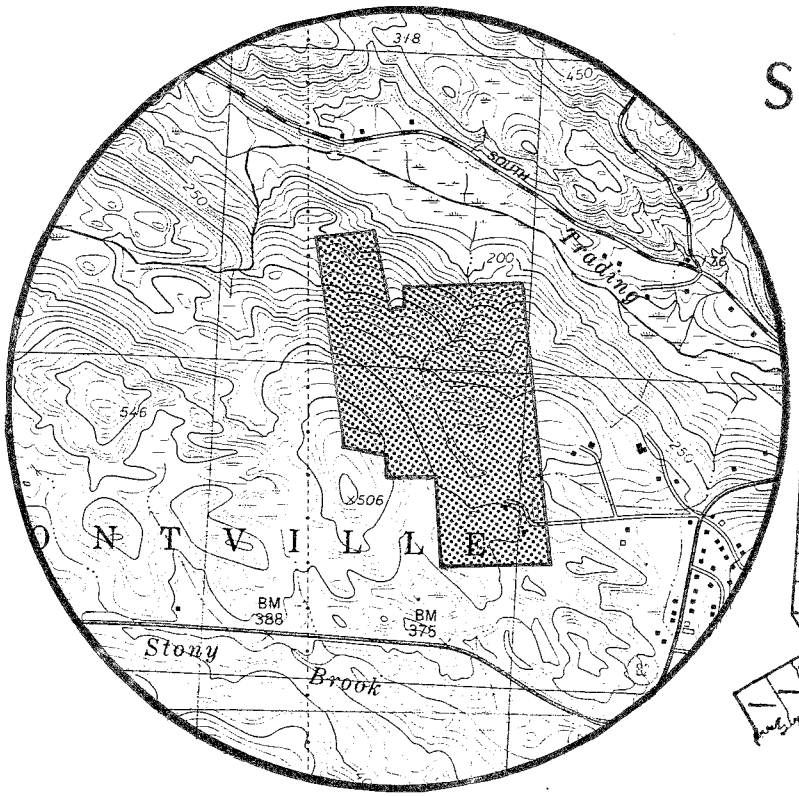
Report Date: MARCH 1988

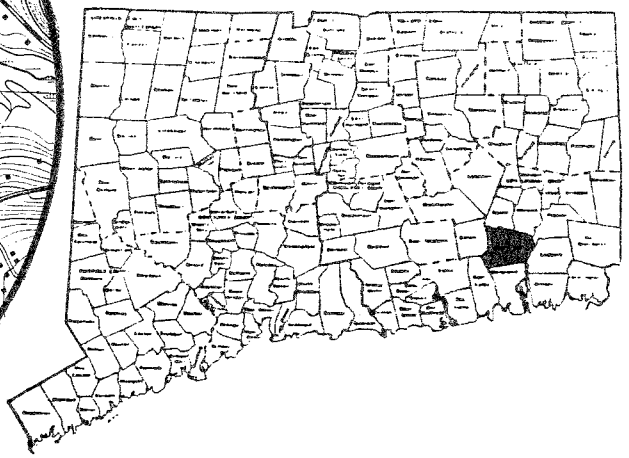


ENVIRONMENTAL REVIEW TEAM
PO BOX 198
BROOKLYN, CONNECTICUT 06234

Site Location

TRASH TO ENERGY FACILITY SITE
MONTVILLE, CONNECTICUT





EASTERN CONNECTICUT

RESOURCE CONSERVATION

& DEVELOPMENT AREA

ENVIRONMENTAL REVIEW TEAM REPORT

ON

POTENTIAL WASTE TO ENERGY FACILITY

MONTVILLE, CONNECTICUT

This report is an outgrowth of a request from the Montville First Selectman to the New London County Soil and Water Conservation District (S&WCD). The S&WCD referred this request to the Eastern Connecticut Resource Conservation and Development (RC&D) Area Executive Committee for their consideration and approval. The request was approved and the measure reviewed by the Eastern Connecticut Environmental Review Team (ERT).

The ERT met and field checked the site on Thursday, January 7, 1988. Team members participating on this review included:

Don Capellaro	--Sanitarian - CT Department of Health
Brian Murphy	--Fisheries Biologist - DEP, Eastern District
Elizabeth Rogers	--Soil Conservationist - U.S.D.A., Soil Conservation Service
Richard Serra	--Regional Planner - Southeastern CT Regional Planning Agency
Elaine Sych	--ERT Coordinator - Eastern CT RC&D Area
Bill Warzecha	--Geologist - DEP, Natural Resources Center

Prior to the review day, each team member received a summary of the proposed project, a list of the Town's concerns, a location map, and a soils map. During the field review the team members were given topographic maps and other maps to review. The Team met with the First Selectman and an interested citizen. Following the review, reports from each team member were submitted to the ERT Coordinator for compilation and editing into this final report.

This report represents the Team's findings. It is not meant to compete with private consultants by providing site designs or detailed solutions to development problems. The Team does not recommend what final action should be taken on a proposed project -- all final decisions and conclusions rest with the Town and landowner. This report identifies the existing resource base and evaluates its significance to the proposed development, and also suggests considerations that should be of concern to the developer and the Town. The results of this Team action are oriented toward the development of better environmental quality and the long-term economics of land use.

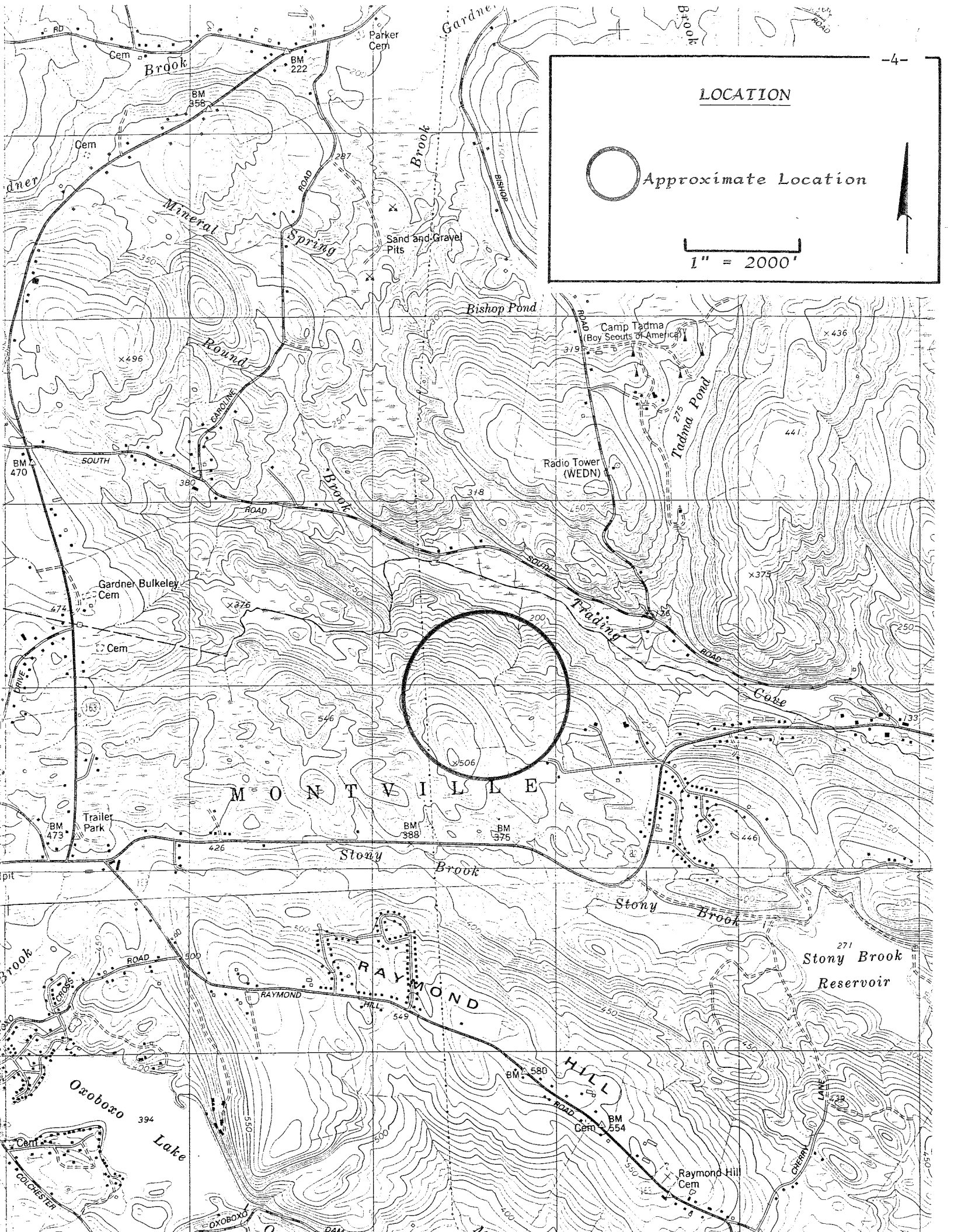
The Eastern Connecticut RC&D Executive Committee hopes you will find this report of value and assistance in making your decisions on this potential site for a waste to energy facility.

If you require any additional information, please contact:

Elaine A. Sych
ERT Coordinator
Eastern Connecticut RC&D Area
P. O. Box 198
Brooklyn, CT 06234
(203) 774-1253

TABLE OF CONTENTS

TABLE OF MAPS


LOCATION
Approximate Location
1" = 2000'
Parker Cem
Cem
Brook
BM 222
BM 358
Mineral Spring
Sand and Gravel Pits
Bishop Pond
Round
Camp Tadma (Boy Scouts of America)
Tadma Pond
Radio Tower (WEDN)
BM 470
SOUTH ROAD
CAROLINE
Gardner Bulkeley Cem
Trading
Coke
MONTVILLE
Trailer Park
BM 473
BM 388
BM 375
Stony Brook
Stony Brook Reservoir
RAYMOND HILL
BM 580
BM 554
Raymond Hill Cem
Oxoboxo Lake
COLCHESTER
OXOBOXO
CHERRY LANE

1. INTRODUCTION

The Eastern Connecticut Environmental Review Team has been asked to provide natural resource information and a preliminary interpretation and analysis for a potential waste to energy facility site. This report should not be viewed as a comprehensive evaluation, but rather as a first step in the lengthy and involved process in determining locations of such facilities.

This approximate 127 acre property is located in the northeastern section of Montville near the Bozrah town line. Access to the property is from Caroline Drive, a relatively short dead ended roadway, which comes off Route 82 opposite Cherry Lane. At the present time an asphalt processing plant is located on the upland property. In addition, an extensive rock and gravel operation was formerly conducted at this location as noted by facilities for the storage of earthen materials and a large, deep excavated area situated in the southern portion of the property.

The site has one or two pond areas, some wetlands and streams and/or drainage courses. Contours are such that drainage enters two major watersheds. The largest part of the property drains in a northerly direction with runoff and surface flows entering Trading Cove Brook. A much smaller part of the southern end of the property drains towards Route 82 and is part of the Stony Brook watershed. While both streams are of good water quality, Stony Brook enters Stony Brook Reservoir which constitutes a public water supply reservoir for the City of Norwich. Although this reservoir is not actively used it serves as an emergency and supplemental water source. Therefore, the need for continued protection of the watershed from possible sources of pollution and the maintenance of water quality should be of a high priority.

Soils on the property range from those in the disturbed mostly excavated area, to well drained soils and rock outcrops on glacial till uplands. Also, in the northern portion is an area with a stony surface and underlying hardpan soils. Soils in this area are prone to a seasonal high water table. Interspersed are some areas of poorly drained wetland soils which are associated with the drainage patterns to Trading Cove Brook.

2. SETTING, LAND-USE HISTORY AND TOPOGRAPHY

The potential waste to energy facility site comprises about 127 acres north of Route 82, near the Montville-Bozrah boundary. It lies north of Route 82, south of Trading Cove Brook, west of Walker Road and east of some Connecticut Light and Power high tension power lines. Present access is by Caroline Road, a paved road off of Route 82.

The site, as well as the surrounding ±350 acres of land, is currently zoned Manufacturing District (see PLANNING CONSIDERATIONS) for further zoning information.). The land area outside of the Manufacturing District in Montville and Bozrah is residential with lot sizes of mainly one (1) and three (3) acres. It should be noted that a considerable portion of the land area west of the site, which is located roughly between the CL&P power lines and Route 163, comprise a Natural Area Inventory Site and Nature Conservancy Preserve. (Refer to NATURAL DIVERSITY DATA BASE section)

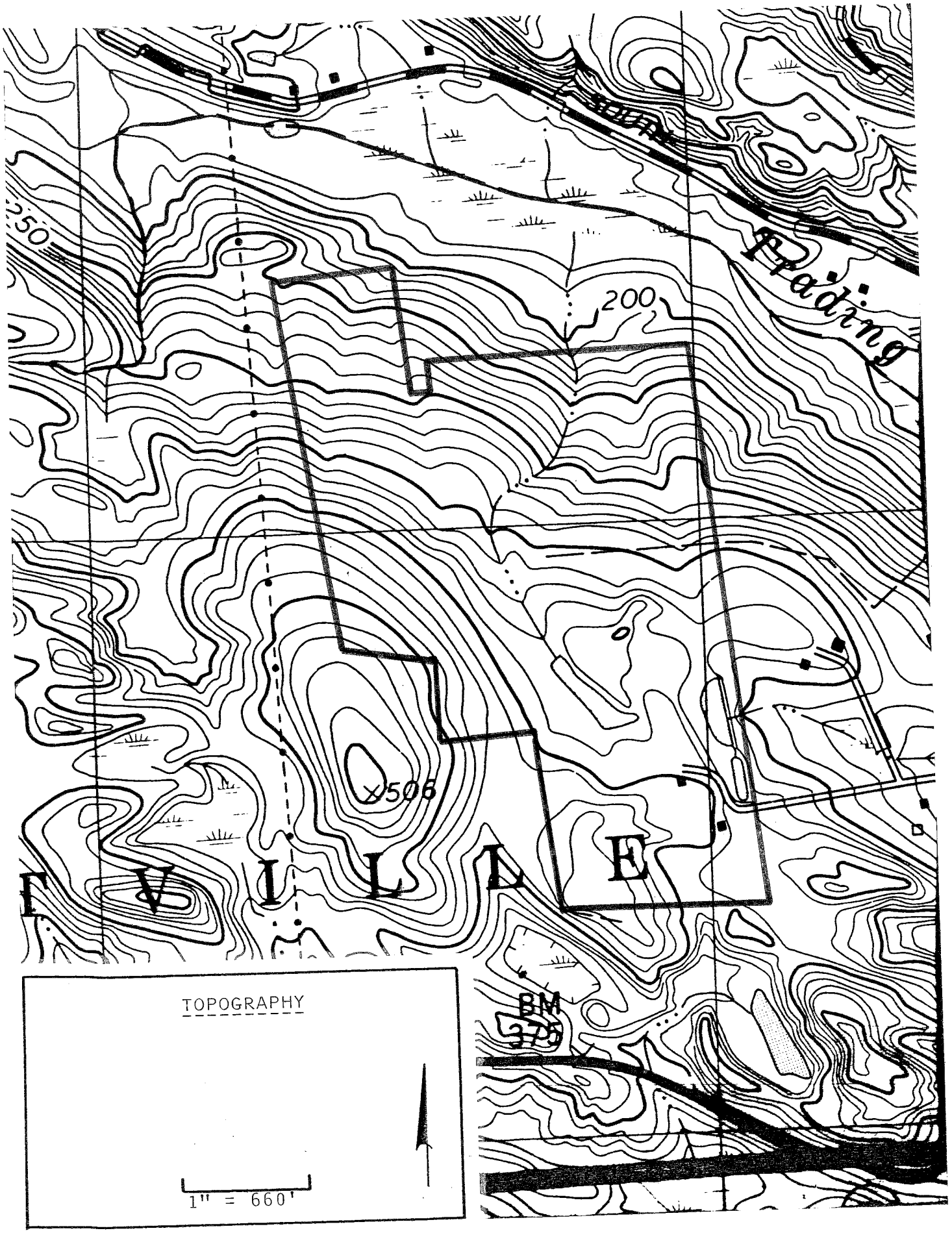
A 1934 air photo revealed that land use on the property was largely agricultural. By 1965 unconsolidated materials in the central and southern part of the site were actively being mined. A rock quarry operation, which infringed on the southern limits of the site was concurrently being mined on an adjoining piece of land to the south. It is understood that the mined materials were used for the construction of I-395, formerly Route 52.

As a result of the mining activity, the land in the area was extensively disturbed and retains features resulting from the excavation. These include open quarry pits on the site and an adjoining piece of land to the south, berms surrounding mined areas, ponds and depressions, all of which have greatly disrupted the natural drainage in the central and southern parts of the site.

The site is currently being used for the processing of asphalt material by the Soneco Company. The northern part of the site, which consists of second growth mixed hardwoods, was not disturbed by the mining operations.

Most of the mining activity occurred on a bedrock knob in the southern half of the site. Even before removal of the unconsolidated materials, the soil cover in this area was probably quite thin. The land surface from the disturbed area (asphalt plant area) slopes moderately to the north. Approximately 200 feet of relief separates the upland sections of the site from the northern property boundary. As mentioned earlier, the land surface throughout the southern limits has been greatly disturbed by the past mining activity.

It should be pointed out that snow covered most of the ground on the field review day.



TOPOGRAPHY

1" = 660'

3. BEDROCK AND SURFICIAL GEOLOGY

The subject parcel is located entirely within the Fitchville topographic quadrangle. A bedrock geologic map (Map 1161-I, by George L. Snyder) and a surficial geologic map (GQ-485, by Fred Pessl, Jr.) for the quadrangle have been published by the U. S. Geological Survey.

Snyder identifies the bedrock underlying most of the site as an alaskite gneiss. It consists of very old metamorphic rocks (rocks geologically altered by great heat and pressure within the earth's crust) of Precambrian age. The rock, which is light-pink to gray in color, is composed primarily of the minerals feldspar and quartz.

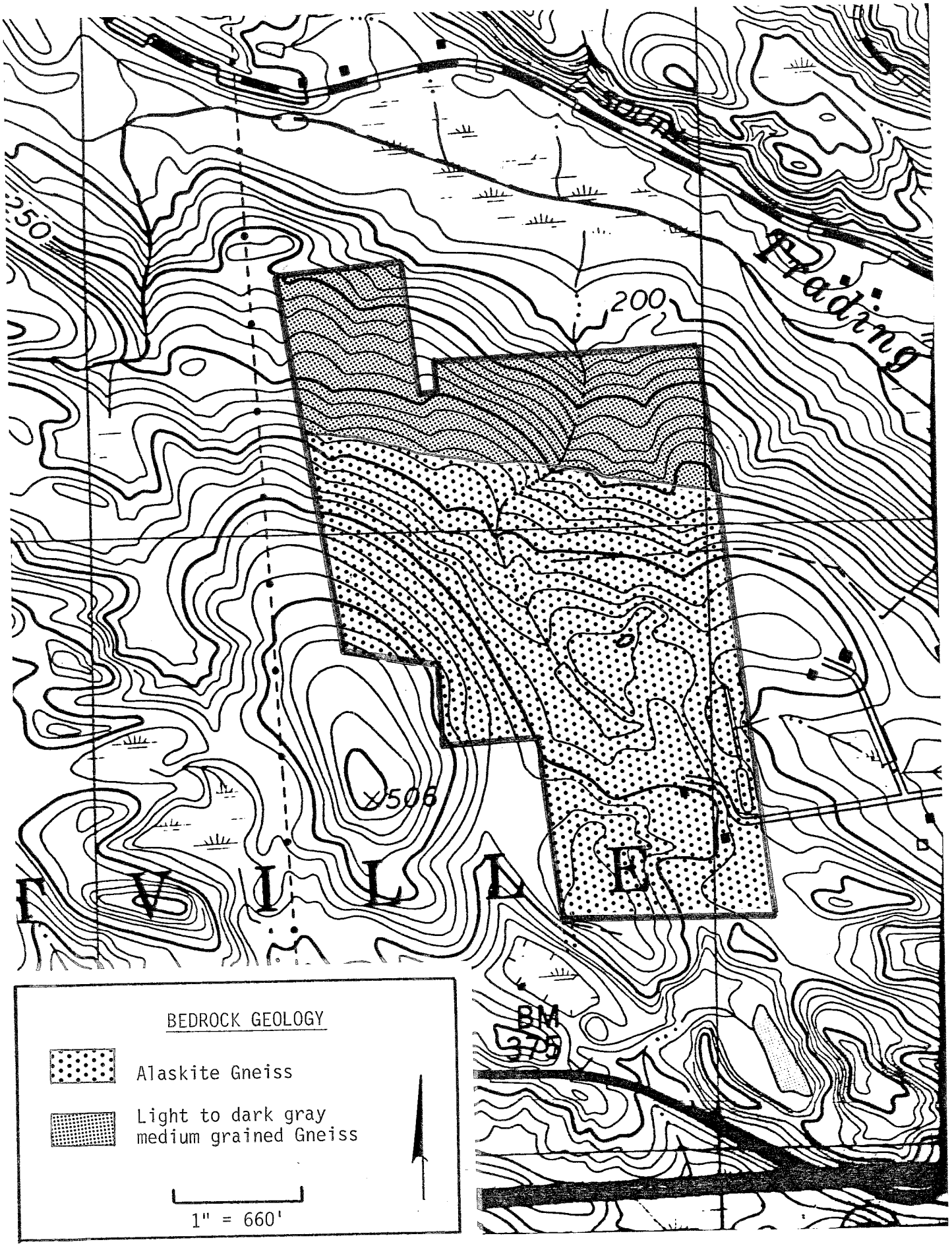
The alaskite gneiss grades into a light-to-dark gray, medium grained gneiss at the northern limits. The word gneiss used above is a textural term given to a metamorphic rock which is characterized by strong layering or banding, and is typically medium to coarse grained.

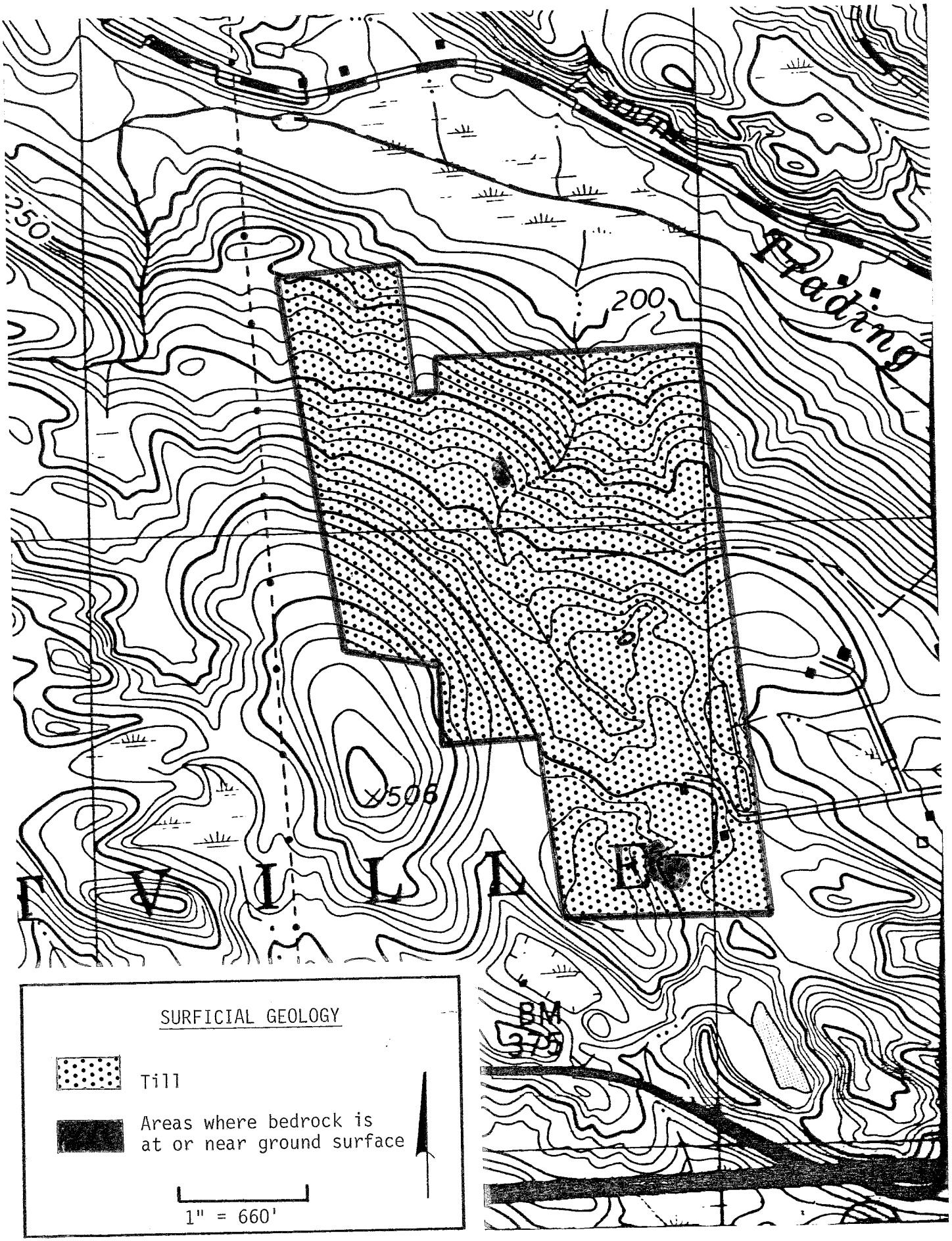
It should be noted that a regional structural feature, known as the Honey Hill Fault, lies just north of the site. The fault, which trends in an east-west direction, tilts northward away from the site. Geologists believe that the fault was active about 300 million years ago, but it is no longer experiencing active movement. A "fault" is a surface or zone of rock fractures caused by bodily movement of one mass of rock against another. The upper 200 to 300 feet of bedrock has probably been fractured and slightly to moderately weathered due to the faulting that took place in the area.

The underlying metamorphic rock is the source of water to many drilled wells serving homes in the area.

A thin blanket of glacial sediment called till overlies bedrock on the site. It consists generally of a non-sorted mixture of sand, silt, clay, gravel and boulder. These materials were collected, transported and redeposited by an ice sheet as it moved through the region about 10,000 to 12,000 years ago. No test pit data was available to Team members on the review day. Nevertheless, soils mapping information for the area suggests that soils are generally shallow (i.e., probably less than five (5) feet throughout the central and southern parts of the site, but this needs to be confirmed by subsurface exploration. Some deeper pockets of soils exist in the northern part. For the most part, the texture of the till on the site is mostly sandy, very stony and loose. However, a more compact and siltier variety appears to cover the northern part.

In order to determine the location of regulated soils (inland-wetland), a certified soil scientist should field check and flag the wetlands on the site. Once they are delineated, their boundaries should be superimposed onto a site plan. This would be beneficial to land use decision makers when reviewing


250
200
Riding
X506
BM
375
BEDROCK GEOLOGY
Alaskite Gneiss
Light to dark gray
medium grained Gneiss
1" = 660'


250
200
Paddington
1506
VILLA
BM
SURFICIAL GEOLOGY
Till
Areas where bedrock is at or near ground surface
1" = 660'

site plans. Based on soil mapping data, it appears that wetlands on the site are seasonal and generally parallel streamcourses on the site. Other potential regulated soils on the site would be those areas where mining excavations encountered or intercepted the groundwater table.

The major geologic limitation on the site is the generally shallow to bedrock condition that prevails on the site. This condition, along with the unavailability of public utilities (water and sewer) makes the site generally unfavorable for most industrial type land uses. Groundwater quality will also play an important role and will be discussed in the HYDROLOGY section of the report.

4. SOILS

Aa - Adrian and Palms mucks

These nearly level, very poorly drained soils are in pockets and depressions of stream terraces, outwash plains, and glacial till uplands. Slopes range from 0 to 2 percent. Mapped areas consist of either Adrian soils or Palms soils, or both. These soils were mapped together because there are no major differences in most uses and management. Adrian soils have a high water table which is at or near the surface for most of the year. Permeability is moderately rapid in the organic layers and rapid in the substratum. The availabile water capacity is high. Runoff is very slow or ponded. Adrian soils are strongly acid through slightly acid. Palms soils have a high water table which is at or near the surface for most of the year. Permeability is moderately rapid in the organic layers and moderately slow in the substatum. The available water capacity is high. Runoff is very slow or ponded. Palms soils are strongly acid through slightly acid. Under Public Act 155 this is a designated wetland soil.

CcC - Canton and Charlton very stony, fine sandy loams, 8 to 15 percent slope

These sloping, well-drained soils are on glacial till, upland hills, plains and ridges. Stones and boulders cover 1 to 8 percent of the surface.

Typically, the Canton soil has a black, fine sandy loam surface layer 1 inch thick. The subsoil is dark yellowish-brown, fine sandy loam and sandy loam 23 inches thick. The substratum is grayish-brown gravelly sand to a depth of 60 inches or more.

Typically, the Charlton soil has a very dark grayish-brown, fine sandy loam surface layer 3 inches thick. The subsoil is dark yellowish-brown, yellowish-brown and light olive brown fine sandy loam 26 inches thick. The substratum is grayish brown fine sandy loam to a depth of 60 inches or more.

Permeability of the Canton soil is moderately rapid in the surface layer and subsoil and rapid in the substratum. The available water capacity is moderate. Runoff is rapid. The soil warms up and dries out rapidly in the spring.

Permeability of the Charlton soil is moderate or moderately rapid. The available water capacity is moderate, runoff is rapid. The soil warms up and dries out rapidly in the spring.

These soils are in capability subclass VIs.

CrC - Charlton-Hollis fine sandy loams, very rocky, 3 to 15 percent slopes

This gently sloping to sloping complex consists of somewhat excessively drained and well drained soils on glacial till uplands. Rock outcrops cover up to 10 percent of the surface. Stones and boulders cover 1 to 8 percent of the surface. The soils of this complex are so intermingled on the landscape that it was not practical to separate them in mapping at the scale used. Permeability of the Charlton soil is moderate or moderately rapid. The available water capacity is moderate. Runoff is medium or rapid. Charlton soil warms up and dries out rapidly in the spring. It is strongly acid or medium acid.

Permeability of the Hollis soil is moderate or moderately rapid above the bedrock. The available water capacity is low. Runoff is medium or rapid. Hollis soil warms up and dries out rapidly in the spring. It is strongly acid or medium acid.

These soils are not suited to cultivated crops. Stoniness and rock outcrops generally make the use of farming equipment impractical. The Hollis soil has a shallow rooting depth and is droughtly. The hazard of erosion is moderate to severe. These soils are in capability subclass VIs.

CrD - Charlton-Hollis fine sandy loams, very rocky 15 to 45 percent slopes

This moderately steep to steep complex consists of somewhat excessively drained and well drained soils on glacial till uplands. Rock outcrops cover up to 10 percent of the surface. Stones and boulders cover 1 to 8 percent of the surface. Permeability of the Charlton soil is moderate or moderately rapid. The available water capacity is moderate. Runoff is rapid or very rapid. Charlton soil warms up and dries out rapidly in the spring. It is strongly acid or medium acid.

Permeability of the Hollis soil is moderate or moderately rapid above the bedrock. The available water capacity is low. Runoff is rapid or very rapid. Hollis soil warms up and dries out rapidly in the spring. It is strongly acid or medium acid.

These soils are not suited to cultivated crops. Stoniness and rock outcrops make the use of farming equipment impractical. The Hollis soil has a shallow rooting depth and is droughty. These soils are in capability subclass VIIs.

HrC - Hollis-Charlton-Rock outcrop complex, 3 to 15 percent slopes

This gently sloping to sloping complex consists of somewhat excessively drained and well drained soils and Rock outcrop on glacial till uplands. Stones and boulders cover 1 to 8 percent of the surface. The soils and Rock outcrop in this complex are so intermingled on the landscape that it was not practical to separate them in mapping at the scale used.

Permeability of the Hollis soil is moderate or moderately rapid above the bedrock. The available water capacity is low. Runoff is medium or rapid. Hollis soil warms up and dries out rapidly in the spring. It is strongly acid or medium acid.

Permeability of the Charlton soil is moderate or moderately rapid. The available water capacity is moderate. Runoff is medium or rapid. Charlton soil warms up and dries out rapidly in the spring. It is strongly acid or medium acid.

These soils are not suited to cultivated crops. Stoniness and the Rock outcrop make the use of farming equipment impractical. The hazard of erosion is moderate to severe. These soils are in capability subclass VIIs.

HrD - Hollis-Charlton-Rock outcrop complex, 15 to 45 percent slopes

This moderately steep to very steep complex consists of somewhat excessively drained and well drained soils and Rock outcrop on glacial till uplands. Stones and boulders cover 1 to 8 percent of the surface. These soils and Rock outcrop in this complex are so intermingled on the landscape that it was not practical to separate them in mapping at the scale used.

Permeability of the Hollis soil is moderate or moderately rapid above the bedrock. The available water capacity is low. Runoff is rapid or very rapid. Hollis soil warms up and dries out rapidly in the spring. It is strongly acid or medium acid.

Permeability of the Charlton soil is moderate or moderately rapid. The available water capacity is moderate. Runoff is rapid or very rapid. Charlton soil warms up and dries out rapidly in the spring. It is strongly acid or medium acid.

These soils in this complex are not suited to cultivated crops.

Stoniness and the Rock outcrop make the use of farmin equipment impractical. The hazard of erosion is severe. These soils in this complex are in capability subclass VIIs.

Rd - Ridgebury, Leicester, and Whitman extremely stony fine sandy loam

These nearly level, poorly drained and very poorly drained soils are in drainageways and depressions of glacial till upland hills, ridges, plains, and drumloidal landforms. Stones and boulders cover 8 to 25 percent of the surface. These soils were mapped together because there are no major differences in use and management. The Ridgebury soil has been a seasonal high water table at a depth of about 6 inches. Permeability is moderate or moderately rapid in the surface layer and subsoil and slow or very slow in the substratum. The available water capacity is moderate. Runoff is very slow or slow. Ridgebury soil warms up and dires out slowly in the spring. It is strongly acid through slightly acid.

The Leicester soil has a seasonal high water table at a depth of about 6 inches. Permeability is moderate or moderately rapid. The available water capacity is moderate. Runoff is very slow or slow. Leicester soil warms up and dreis out slowly in the spring. It is very strongly acid through medium acid.

The Whitman soil has a high water table at or near the surface for most of the year. Permeability is moderate or moderately rapid in the surface layer and subsoil and slow or very slow in the substratum. The available water capacity is moderate. Runoff is very slow, or the soil is ponded. Whitman soil warms up and dreis out very slowly. It is very strongly acid through slightly acid.

These soils are not suited to cultivated crops. Stoniness makes the use of farming equipment impractical. These soils are in capability subclass VIIs. Under Public Act 155 this is a designated wetland soil.

SxB - Sutton extremely stony fine sandy loam, 0 to 8 percent slopes

This nearly level to gently sloping, moderately well drained soil is on upland glacial till plains, hills, and ridges. Stones and boulders cover 8 to 25 percent of the surface. The Sutton soil has a seasonally high water table at a depth of about 18 inches. Permeability is moderate or moderately rapid. The available water capacity is moderate. Runoff is slow or medium. Sutton soil warms up and dries out slowly in the spring. It is strongly acid or medium acid in the surface layer and subsoil and strongly acid through slightly acid in the substratum. This soil is not suited to cultivated crops because stoniness makes the use of farming equipment impractical. This soil is capability subclass VIIs.

Ud - Udorthents and Urban Land Complex

This complex consists of excessively drained to moderately well drained soils that have been disturbed by cutting or filling and areas that are covered by buildings or pavement.

Most areas were cut or filled in order to smooth sites for community developments, recreational facilities, and roads. This complex requires on-site investigation and evaluation for most uses.

WyB - Woodbridge very stony fine sandy loam, 0 to 8 percent slopes

This nearly level to gently sloping, moderately well drained soil is on drumloidal, glacial till, upland landforms. Stones and boulders cover 1 to 8 percent of the surface. Typically, this Woodbridge soil has a very dark brown, fine sandy loam surface layer 6 inches thick. The subsoil is yellowish brown, light olive brown, and grayish brown, mottled fine sandy loam and sandy loam 22 inches thick. The substratum is very firm, brittle, olive sandy loam to a depth of 60 inches or more. The Woodbridge soil has a seasonal high water table at a depth of about 18 inches. Permeability is moderate in the surface layer and subsoil and slow or very slow in the substratum. The available water capacity is moderate. Runoff is medium. This Woodbridge soil warms up and dries out slowly in the spring. It is strongly acid or medium acid in the surface layer and subsoil and strongly acid through slightly acid in the substratum. This soil is in capability subclass VIs.

WzC - Woodbridge and Rainbow extremely stony soils, 3 to 15 percent slopes

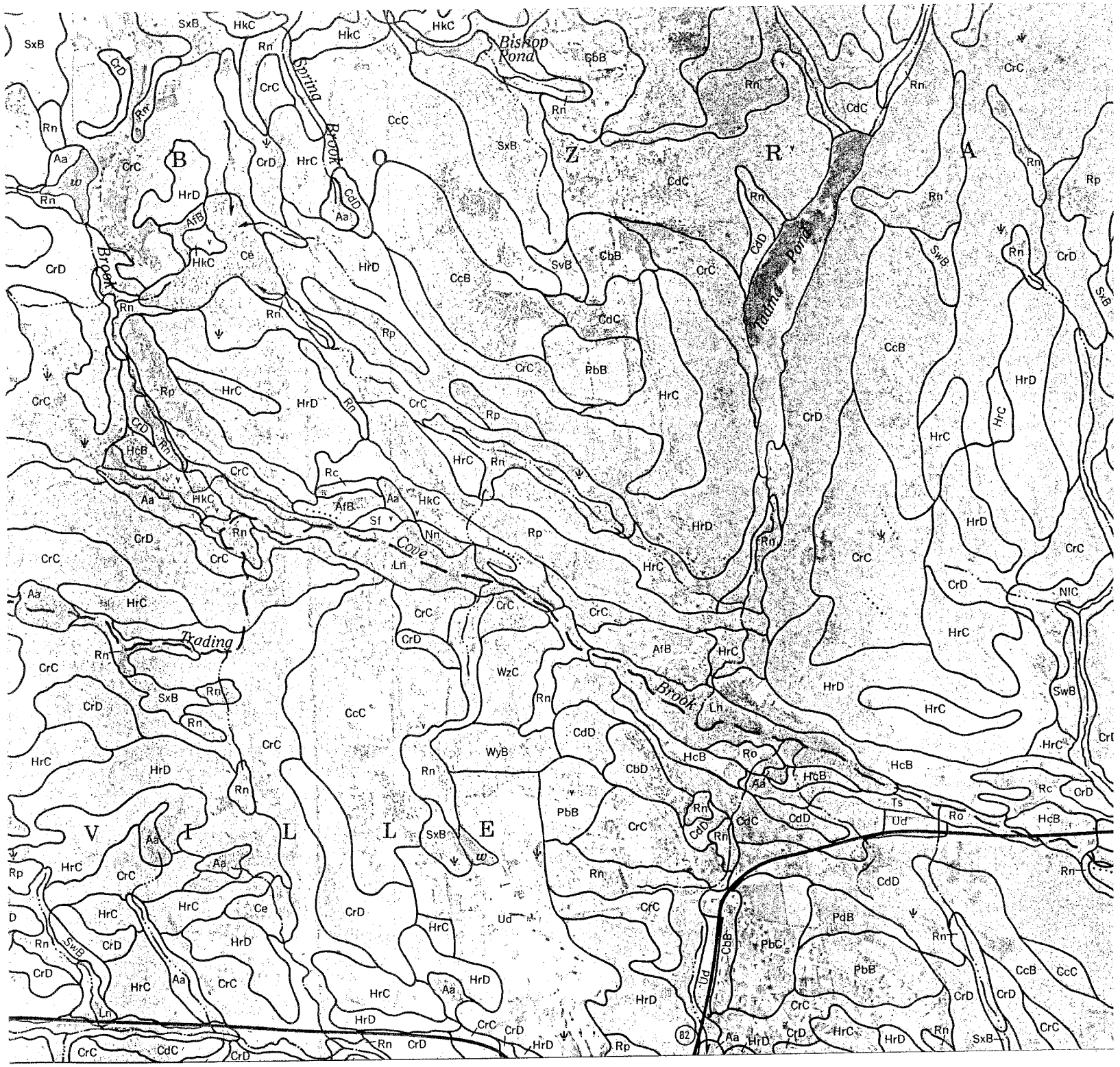
These gently sloping and sloping, moderately well drained soils are on drumloidal, glacial till, upland landforms. Typically the Woodbridge soil has a very dark brown, fine sandy loam surface layer and grayish brown, mottled fine sandy loam and sandy loam 26 inches thick. The substratum is very firm, brittle, olive sandy loam to a depth of 60 inches or more. The Woodbridge soil has a seasonal high water table at a depth of about 18 inches. Permeability is moderate in the surface layer and subsoil and slow or very slow in the substratum. The available water capacity is moderate. Runoff is medium or rapid. Woodbridge soils warm up and dry out slowly in the spring. The Rainbow soil is typically a dark brown, silt loam surface layer 3 inches thick with a subsoil of yellowish brown and light yellowish brown, mottled silt loam 23 inches thick. The substratum is very firm, brittle, pale brown fine sandy loam to a depth of 60 inches or more. The Rainbow soil has a seasonal high water table at a depth of about 18 inches. Permeability is moderate in the surface layer and subsoil and slow or very slow in the substratum. The available water capacity is high. Runoff is medium or rapid. Rainbow soils warm up and dry out slowly in the spring. These soils are in capability subclass VIIs.

United States Department of Agriculture

Soil Conservation Service

New London County
562 New London Turnpike
Norwich, CT 06360
887-4163

Scale 1" = 1320'



5. HYDROLOGY

The major watercourse on the site, which is tributary to Trading Cove Brook, is the outlet stream for the large man-made pond in the central part. There are two other man-made ponds in this area. The surfaces of these water bodies appear to be coincident with the local water table.

The site can be divided roughly into three subdrainage areas. Surface runoff arising from most of the site flows in a northerly direction to Trading Cove Brook. It is characterized by undisturbed, wooded land.

Surface runoff arising from a small area near the ashphalt plant is routed eastward towards a drainageway that parallels Caroline Drive. The water ultimately flows into an unnamed tributary to Trading Cove, which originates near the intersection of Walker Road, Route 82 and Caroline Drive.

Finally, surface runoff in the southern limits of the site appears to drain southerly to a wetland area located between the site and Route 82. The outlet stream for the wetland flows in a southerly direction under Route 82 and ultimately into Stony Brook. Stony Brook flows into Stony Brook Reservoir. The Reservoir is currently an emergency public water supply reservoir owned by the Norwich Public Utilities. (see watershed boundary map)

As mentioned earlier in the report, surface drainage in the southern half of the site has been greatly disrupted by past mining and quarrying activity. Therefore, a detailed field survey of topographic conditions and surface hydrology would be useful for this area. Only then can an accurate determination of surface water flow for this part of the site be made.

According to the Water Quality Classification Map of Connecticut (Murphy, 1987), groundwater within most of the site is classified as GA. Groundwater within the southern limits, which drains to Stony Brook is classified as GAA. A 'GA' classification means that there are presently no known groundwater contamination problems in the area. The groundwater is presumed to be suitable for direct human consumption without need for treatment. The Department of Environmental Protection's (DEP) goal is to maintain the present groundwater classification of GA.

The 'GAA' classification means that the groundwater is within the drainage area of a public water supply watershed. It is also presumed to be suitable for direct human consumption without need for treatment. Again, DEP's goal is to maintain drinking water quality standards. DEP will not permit wastewater discharges into these groundwaters other than those associated with domestic uses, i.e., septic systems serving sanitary facilities or normal agricultural practices.

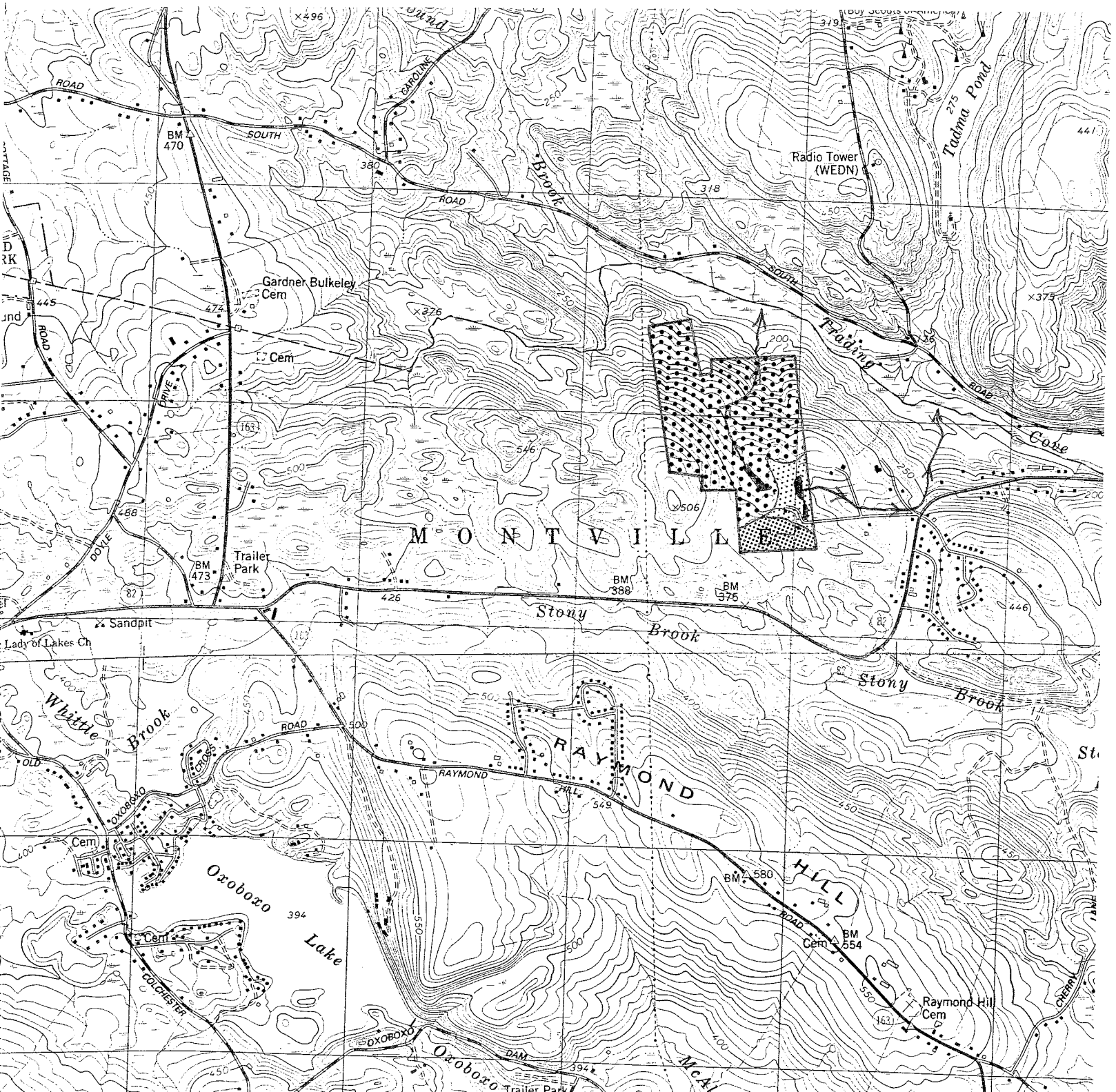
WATERSHED BOUNDARY

Portion of site that drains northward to Trading Cove Brook

Portion of site (mainly around asphalt processing plant) that drains eastward to an unnamed tributary to Trading Cove Brook

Southern limits of the site that drains to Stony Brook and ultimately empties into Stony Brook Reservoir

Scale 1" = 2000'



As mentioned previously, there were no definite plans for the waste to energy facility on the field review day. If the site was developed for a waste to energy facility, groundwater and surface water in both drainage areas (Trading Brook and Stony Brook) could ultimately be affected. A waste to energy facility as well as many other types of industrial/manufacturing land uses may not be consistent with the adopted surface and groundwater classifications for the area. The geologic limitations of the site such as shallow to bedrock conditions, and till soils, which may have seasonal water tables and slow percolation rates and the unavailability of municipal water and sewer also makes the site generally unfavorable for industrial types of development. Industrial land uses, which have no discharges ("dry facilities") other than wastewater discharges from sanitary facilities or those which discharge small quantities of non-contact cooling water and no process water would need to be reviewed and ultimately approved by DEP for the site.

Even with proper engineering, groundwater discharge from a waste to energy plant or other industrial/manufacturing type land uses other than domestic sewage would likely pose too great a risk in pollution of the bedrock aquifer, the principal water supply source in the area. Also, in discussion with a representative from the Norwich Public Utilities Department, the Team's geologist was told that the Department of Public Utilities hopes to be drawing water from Stony Brook Reservoir on a daily basis by the year 2000. Any type of industrial/manufacturing development that takes place in the Stony Brook watershed must be consistent with the current groundwater and surface water classifications.

DEP classifies the surface waters of Stony Brook as Class AA, which means that its designated uses include existing or potential public drinking water supply, fish and wildlife habitat, recreational use, agricultural and industrial supply and other purposes. Certain recreational uses may be restricted.

Surface water quality to Trading Cove Brook to the north may be affected by an active landfill site near its headwater region in Bozrah. As a result, the Brook is classified as B/A, which means that the landfill poses a threat to the Class A water quality criteria and should be monitored. In regard to the latter, there may be ground and surface information on file at DEP's Solid Waste Unit for the area surrounding the landfill and Trading Cove Brook. DEP's goal is to upgrade it to a Class A and will only consider discharge permits for minor cooling water or clean water (no process water). The designated uses for a Class A stream include potential drinking water supply, fish and wildlife habitat, recreational use, agricultural and industrial supply and other legitimate uses including navigation.

6. WATER SUPPLY

At the present time this industrial zoned acreage does not have the availability of either public water or municipal sewerage facilities. The possible utilization of some portion of the property for a waste to energy incinerator with the potential of industrial development of other areas of the property must be considered less desirable from an environmental viewpoint than it would be with public services. The feasibility of developing and/or installing satisfactory on-site facilities would depend, in part, upon the quantity of water needed for incineration operations and the number, type and size of future industries. Certainly not only would it be necessary to obtain sufficient water for intended purposes but to have water of potable quality with assurance that every well site location will have adequate separation from sewage systems or other potential sources of pollution. Such distances could vary from the minimum required by the Public Health Code to much greater, depending upon the topography, soil conditions, type of well and type of waste material(s). An incinerator operation, no doubt, would generate a certain amount of liquid waste as refuse is dumped and stored prior to actual burning, also, any drainage from ash cooled by water spray before hauling to a final disposal site. Perhaps one of the most crucial issues with incineration is the question of a satisfactory area for final ash disposal. At this location the large, deep excavation at the site would probably be a tempting one for possible disposal of such material. However, due to a number of site factors, ground and surface water classifications, stream flow to the nearby reservoir and concerns with ash leachate, this area would not appear to be geologically and hydrologically suitable for this type of activity.

Any wells developed on the propoerty would most likely be of the drilled, rock type as there appears to be little or no areas with highly permeable and saturated soils, conducive for high yielding gravel packed wells. If there is any part of the parcel available for this type of well, it would be adjacent to Trading Cove Brook or possibly other waterways. It should be noted, however, that wells located in a downslope position from potential sources of pollution have more chance of being adversely affected as groundwater flow generally follows the natural slope of the land.

Bedrock is not a prolific aquifer. It is, however, commonly capable of supplying small but reliable yields of groundwater to individual wells. Groundwater moves through bedrock by way of an interconnected fracture system. Most wells that penetrate 150 to 200 feet of bedrock will intersect enough fractures to supply at least 2 or 3 gallons per minute. Some wells, however, fail to intersect any water-bearing fractures. There is no practical way of predicting whether any particular location will be good for drilling a well.

Very few wells in bedrock can be expected to yield 20 gallons or more per minute. However, if the total daily demand for water is only 1,000 - 2,000 gallons, a relatively low-yielding well can adequately serve this need. Storage capacity will usually be needed to allow the flow rate from the system to exceed the actual rate of return flow from the ground into the well. The well shaft will provide some of this storage, but tanks may be needed for some uses.

Because bedrock is not a prolific aquifer, water use information for a waste to energy plant would be required in order to determine whether or not the bedrock aquifer could support such a facility. For example, if we assume the facility used a half a million gallons of water per day (ball park figure for a waste to energy facility), a well pumping continuously for 24 hours would need to yield about 350 gallons of water per minute in order to meet the demands of the facility. The chances of developing such high volume bedrock wells on the site would be very unlikely. Even if several high yielding bedrock wells were developed on the site, they probably could not meet a water demand of a half a million gallons of water per day.

7. SEWAGE DISPOSAL

Sewage and waste water disposal in the area depends upon on site subsurface facilities. According to soil service mapping data there are some well drained soils (Canton and Charlton) but there are also others with high seasonal groundwater table or rock outcorp and areas shallow to bedrock. With limited depths of suitable soil over ledge or impervious soils the opportunity for adequate treatment, renovation and dispersal of effluent is severely limited. The design of leaching systems in an area of shallow ledge rock will depend on the contours and slope of the underlying ledge and the depth of the soil overlying the ledge, both in the immediate area of the systems and downslope of the system. In order to obtain adequate data, it is important that sufficient on-site testing be performed. Basically there should be a minimum depth of 4 to 5 feet of soil above ledge. It should be recognized that the possibility for well pollution is greater in areas of shallow ledge rock, particularly where the density of development tends to be too high or if significant volumes of sewage or other types of wastes are generated.

In the case of seasonal high groundwater, the perched water can usually be controlled by intercepting drains. Also, raising the leaching system in suitable fill is usually necessary and, depending upon the volume of waste water to be disposed of, spreading the system out with the contours for increased lateral dispersal and hydraulic capacity.

This property is located around 2 miles from the termination of existing water and sewer lines on Route 82 in Norwich. It is possible one or preferably both utilities be extended to serve this industrial area, particularly as the most surrounding residential area must rely on private water supplies. Also, it is noted that recent and future development of land along Route 82 in the Town of Bozrah, which lies between the subject site and the Norwich town line, will take place. Retail, commercial or manufacturing activities could obviously benefit if arrangements were made for these utilities.

8. FISH RESOURCES

Site Description

The parcel of land proposed for development lies between two watercourses, Stony Brook and Trading Cove Brook. Both watercourses drain into the Thames River. The surface waters of the Stony Brook watershed including Stony Brook Reservoir are classified by the Department of Environmental Protection (DEP) as "AA". Designated uses for this classification are: existing or potential water supply; fish and wildlife habitat; recreational use (some restrictions may apply); agricultural, industrial supply and other purposes. Stony Brook Reservoir is currently not being used as a drinking water supply. Conversely, Trading Cove Brook surface waters are classified as "B/A". Designated uses are similar to the "AA" classification except that they are not suitable as a drinking water supply. Future goals of all "B/A" classifications are to upgrade to "Class A" where waters could meet potential water supply criteria.

Fish Population

Stony Brook is annually stocked by the Bureau of Fisheries with more than 500 yearling (6-8") brook trout in the town of Montville. Trading Cove Brook is annually stocked with more than 300 yearling brook trout in the towns of Montville, Bozrah, and Norwich. Other species which are expected to inhabit these streams would be wild (naturally reproduced) brook trout, longnose dace, blacknose dace, tasselated darter, and white sucker.

Impacts and Recommendations

At present, little information is available concerning potential impacts of waste to energy facilities to fish and other forms of aquatic life. From a fisheries standpoint, the protection of existing habitat in Stony Brook and Trading Cove Brook would be paramount due to their close proximity to the site. Therefore, all efforts should be expended to ensure that surface and groundwaters draining into these brooks do not become contaminated from on-site pollutants that may be temporarily stored at the facility before being burned.

The scientific community has recently focused its attention on waste products that become airborne during incineration such as dioxins. Studies are now being conducted by the Water Compliance Unit of the DEP on the Connecticut River and other major watercourses to monitor impacts of dioxins on the local fish population.

As more information is obtained, regulatory agencies will be better equipped to analyze and predict the environmental consequences of waste to energy plants. Meanwhile, extreme caution should be exercised to ensure that these facilities are located in areas that are enviromentally feasible.

9. NATURAL DIVERSITY DATA BASE

The Data Base maps and files have been reviewed regarding the study area. According to the information there are no Federally listed Endangered Species or "Species of Special Concern" that occur within the area in question.

However, adjacent to this site is a Natural Area Inventory site. In 1972 the Connecticut Forest and Park Association, Inc. prepared a Natural Area Inventory which included 459 sites. These were nominated as significant sites for one or more of the following attributes: geologic, hydrologic, biologic, archeologic, cultural, aesthetic, research/educational. A site receives no legal protection by being included on the Natural Area Inventory list. This particular Natural Area Inventory site is a Nature Conservancy Preserve, Milo Light Preserve.

Natural Diversity Data Base information includes all information regarding critical biologic resources available at the time of the request. This information is a compilation of data collected over the years by the Natural Resources Center's Geological and Natural History Survey and cooperating units of DEP, private conservation groups and the scientific community. This information is not necessarily the result of comprehensive or site-specific field investigations. Consultation with the Data Base should not be substituted for on-site surveys required for environmental assessments. Current research projects and new contributors continue to identify additional populations of species and locations of habitats of concern, as well as, enhance existing data. Such new information in incorporated into the Data Base as it becomes available.

Please contact the Data Base if you have any further questions (566-3540).

10. PLANNING CONSIDERATIONS

This site is being reviewed for its capability to support a Resource Recovery Facility operation. The capacity of this facility would be 600 tons per day. Major planning considerations are as follows:

Zoning

This site is located within a Manufacturing District. A waste to energy facility is not specifically mentioned but general manufacturing uses are permitted.

The access road (Caroline Drive) to the site is within this manufacturing district. The manufacturing district itself completely surrounds the 127 acre site under review. Presently the site is being used for asphalt processing.

There are some five residences located on Caroline Drive.

Zoning districts adjacent to this manufacturing district are residential. To the east and west of the manufacturing district the residential classification requires 40,000 square foot lot sizes. To the south the zoning classification requires residential lot sizes of 120,000 square feet. The zoning classification to the north of this district is within the Town of Bozrah and it is also residential with a required lot size of 80,000 square feet.

Site Adequacy

Utilities:

The site is not serviced by public water or sewer lines. The closest such lines would be the Norwich Department of Public Utility lines in the vicinity of Route 82 and Interstate 395.

The suitability of the site to support on-site utilities, which is covered elsewhere in this report, is a critical concern.

The topography of the site is relatively level in the area which accesses Caroline Drive. From this level area the site then slopes northly toward Trading Cove Brook. It is in this direction that the majority of the site drainage flows. There is a coarse-grained stratified drift deposit located in the Trading Cove Brook area. This deposit has the potential to produce large quantities of groundwater.

The site does have access to Electric Transmission lines which run north-south adjacent to the parcels westerly property line.

Transportation

Traffic generation:

With regard to trip generation to and from the site as a result of solid waste haulers, the number of vehicles will depend upon vehicle load capacity. As a worse case scenario a small vehicle load capacity of 5 tons is used for calculations.

A 600 ton per day operation would generate 120 vehicle trips per day to and from the site as a result of hauling solid waste.

Other traffic would be generated by the employees of the operation and by vehicles transporting ash residue.

An operation of this size has the potential to generate another 60 vehicle trips to and from the site per day due to the above factors. Accordingly some 180 vehicle trips per day would be generated by this use.

Traffic would utilize State Route 82 and Caroline Drive. It is estimated State Route 82 itself has the capacity to handle such additional traffic flow without adversely impacting the present level of service.

The intersection of Caroline Drive and State Route 82 has a traffic control signal. This signal is very necessary due to the restrictive sight line clearance at this intersection. This traffic control signal is beneficial for any intensive use of this parcel of property.

The paved width of Caroline Drive is approximately 22 feet. This width would be inadequate for major truck traffic as that generated by a resource recovery facility or similar use. For such an activity a paved access road width should be a minimum of 30 feet excluding shoulders.

There are a number of other transportation cost factors that an operator would need to evaluate with regard to this site and proposed use. These factors would include distance to solid waste source and ash residue landfill.

About The Team

The Eastern Connecticut Environmental Review Team (ERT) is a group of professionals in environmental fields drawn together from a variety of federal, state, and regional agencies. Specialists on the Team include geologists, biologists, foresters, climatologists, soil scientists, landscape architects, archeologists, recreation specialists, engineers and planners. The ERT operates with state funding under the supervision of the Eastern Connecticut Resource Conservation and Development (RC&D) Area--an 86 town area.

The Team is available as a public service at no cost to Connecticut towns.

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 reviewing a wide range of projects including subdivisions, sanitary landfills, commercial and industrial developments, sand and gravel operations, elderly housing, recreation/open space projects, watershed studies and resource inventories.

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 officials of a municipality or the chairman of town commissions such as planning and zoning, conservation, inland wetlands, parks and recreation or economic development. Requests should be directed to the Chairman of your local Soil and Water Conservation District. This request letter should include a summary of the proposed project, a location map of the project site, written permission from the landowner allowing the Team to enter the property for purposes of review, a statement identifying the specific areas of concern the Team should address, and the time available for completion of the ERT study. When this request is approved by the local Soil and Water Conservation District and the Eastern Connecticut RC&D Executive Council, the Team will undertake the review on a priority basis.

For additional information regarding the Environmental Review Team, please contact Elaine A. Sych (774-1253), Environmental Review Team Coordinator, Eastern Connecticut RC&D Area, P.O. Box 198, Brooklyn, Connecticut 06234.