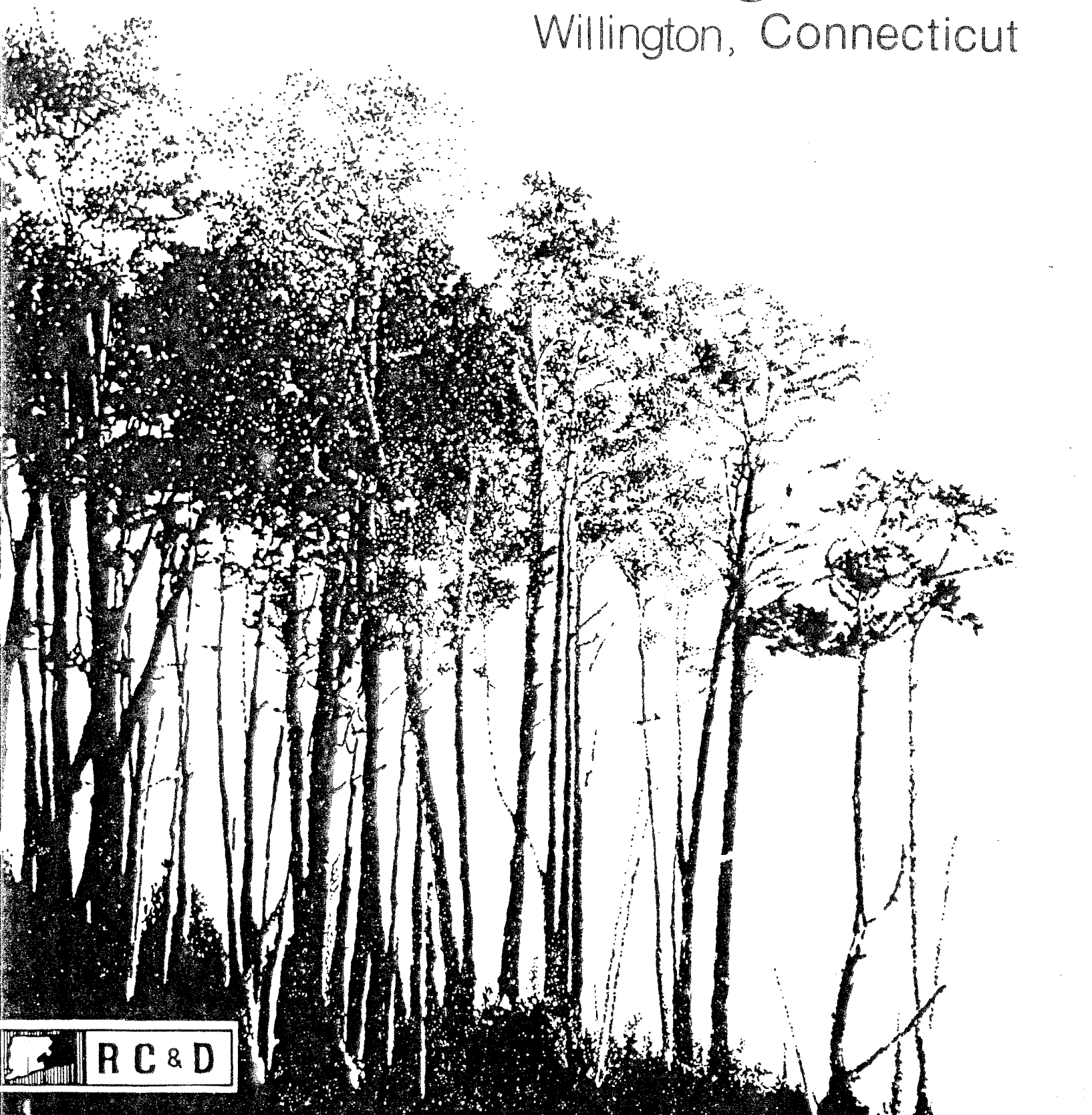


Environmental Review Team Report

Town Garage Sites

Willington, Connecticut

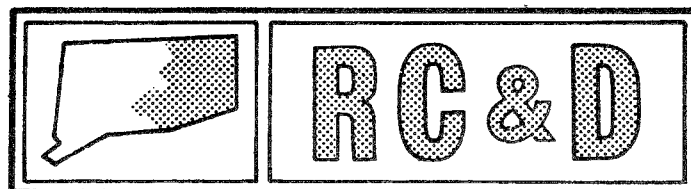


Environmental Review Team
Report

Town Garage Sites

Willington, Connecticut

October 1984

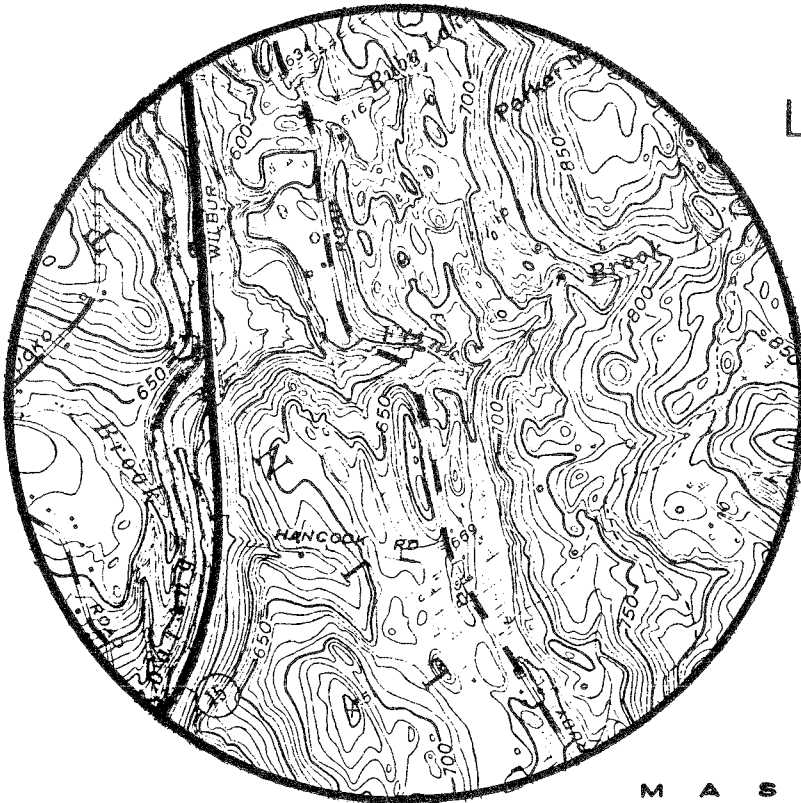


Eastern Connecticut Resource Conservation & Development Area

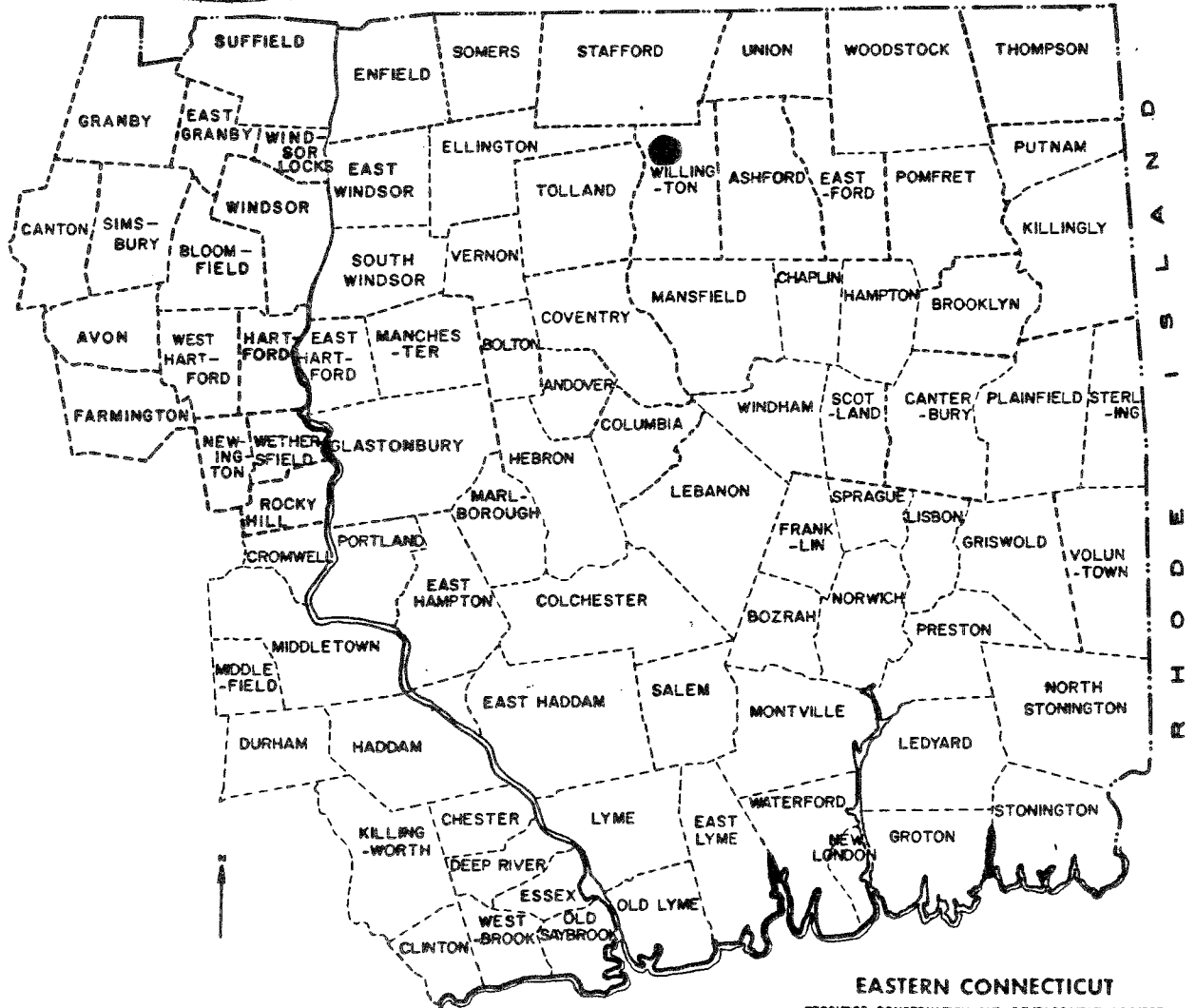
Environmental Review Team
PO Box 198
Brooklyn, Connecticut 06234

Location of Study Site

TOWN GARAGE SITES
WILLINGTON, CONNECTICUT



M A S S A C H U S E T T S



EASTERN CONNECTICUT
RESOURCE CONSERVATION AND DEVELOPMENT PROJECT

ENVIRONMENTAL REVIEW TEAM REPORT
ON
TOWN GARAGE SITES
WILLINGTON, CONNECTICUT

This report is an outgrowth of a request from the First Selectman of Willington to the Tolland 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 was reviewed by the Eastern Connecticut Environmental Review Team (ERT).

The soils of the site were mapped by a soil scientist from the United States Department of Agriculture, Soil Conservation Service (SCS). Reproductions of the soil survey map, a table of soils limitations for certain land uses and a topographic map showing property boundaries were distributed to all Team members prior to their review of the site.

The ERT that field checked the site consisted of the following personnel: Joe Neafsey, District Conservationist, SCS; Jim Parda, Forester, DEP; Bill Warzecha, Geologist, DEP; Don Capellaro, Sanitarian, State Department of Health; Meg Reich, Planner, Windham Regional Planning Agency; and Jeanne Shelburn, ERT Coordinator, Eastern Connecticut RC&D Area.

The Team met and field checked the site on Thursday, April 24, 1984. Reports from each contributing Team member were sent to the ERT Coordinator for review and summarization for the final report.

This report is not meant to compete with private consultants by supplying site designs or detailed solutions to development problems. 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 of Willington. The results of this Team action are oriented toward the development of a better environmental quality and the long-term economics of the land-use.

The Eastern Connecticut RC&D Area Committee hopes you will find this report of value and assistance in making your decisions on this particular site.

If you require any additional information, please contact: Ms. Jeanne Shelburn, Environmental Review Team Coordinator, Eastern Connecticut RC&D Area, RT 205, Box 198, Brooklyn, Connecticut 06234, 774-1253.

Topography

SITE 2

— Site Boundary



INTRODUCTION

The Eastern Connecticut Environmental Review Team was asked to prepare an environmental assessment for a proposed town garage, salt storage area and dog pound for three separate sites in the Town of Willington. Site I is located on Old Farms Road, directly behind the present municipal office building and is approximately 8 acres in size. Site II is approximately 50 acres in size and is located off Hancock Road, adjacent to Willington's sanitary landfill. Site III is located on Ruby Road (Route 320) and is approximately 35 acres in size. All parcels are presently owned by the Town.

The proposed town garage complex will include a garage building with office space, toilets, lockers and storage areas approximately 64' x 72' (4608 square feet) in size; a salt storage and mixing area, approximately 30' x 80' (2400 square feet) in size; and a dog pound, including office space and accommodations for six dogs, approximately 36' x 26' (936 square feet) in size. On-site septic systems and on-site water supply will serve the complex.

The Team is concerned with the effect of this proposed development on the natural resource base of each of these sites. Although many severe limitations to development can be overcome with proper engineering techniques, these measures can often become costly, making a project financially unfeasible.

Each site reviewed by the Team for development of the town garage complex has a number of environmental limitations. Site I's location (close proximity to residences) is a major drawback. Due to the nature of materials used in a garage complex (salt storage, oils, gasoline), there is a potential for contamination of local water supplies, if proper precautions are not taken. Increases in stormwater runoff would occur after full development of this site and sediment and erosion controls should be included in development plans. There is also the possibility of high iron/manganese concentrations in a water supply on this site, due to the underlying bedrock formations. As Site I is located on a "local road," it would seem inappropriate to encourage truck traffic on a roadway primarily serving residences.

Site II on Hancock Road at the Willington landfill limits development, primarily by its slope. Traffic impact on residences in the area should be minor, as Hancock Road and Route 320 are already serving as accessways for truck traffic to the landfill. As with Site I, however, Site II would also have increases in stormwater runoff after development and wells on the site may have high concentrations of iron and manganese. Due to its proximity to the landfill, water from the well serving Site II should be tested periodically to ensure that no contamination from the landfill leachate or materials used at the garage complex has taken place.

Topography

SITE 3

— Site Boundary



The soils on Site III limit development due to their rapid percolation rate. Rapid percolation of septic effluent through a system will not allow sufficient time for effluent to become fully renovated before it reaches the groundwater. This sometimes results in contamination of a water supply. The sand and gravel on site is currently being mined by the Town. To use this site effectively for a town garage complex, the site would need to be entirely excavated or the specific area for the garage would have to be mined before construction could begin. In the Team's opinion, this gravel resource should be used for the Town's purposes before a town garage is placed on the site. Although this site does have a number of limitations, it would produce the least amount of traffic impact on residences of any of the three sites as it has access directly to State Route 320. The current access road into the site, however, has poor vertical site visibility and would need to be relocated if this site is chosen for development.

In the following sections of this report, the Team discusses the advantages and limitations to development on each of these sites in detail. The Team hopes that this information will help the Town to decide which site best suits their needs.

ENVIRONMENTAL ASSESSMENT

TOPOGRAPHY

Site I

This ±8 acre parcel is located in the central part of Town off Old Farms Road. It is located directly behind the present municipal office building. The terrain slopes gently southwestward towards Pelican Pond. Maximum and minimum elevations on the parcel are approximately 690 feet and 710 feet above mean sea level. No perennial streams were observed on the site during the field review. Several natural swales, which will carry water during periods of precipitation, were visible at the rear portion of the site.

Approximately one acre of the parcel is presently being utilized as the town garage site. Because of this use, most of the ground surface in the one acre area has been disturbed by heavy equipment.

Site II

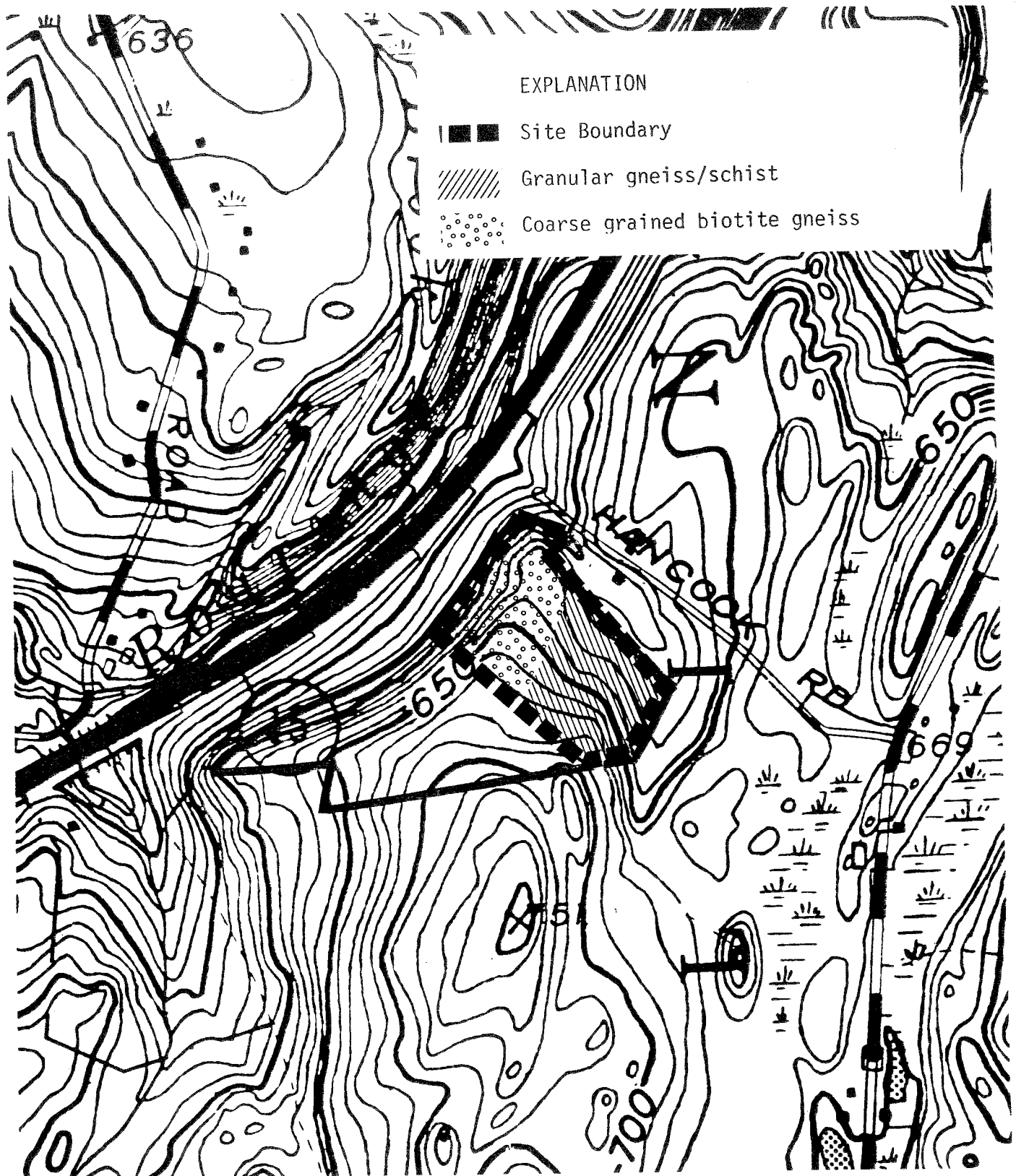
Site II is approximately 32 acres in size and is located in the northwest corner of Town off of Hancock Road. Willington's sanitary landfill is adjacent to the site. For the purpose of this report, the Team directed their attention primarily at ±14 acres in the eastern portion of the site. As shown by the accompanying topographic map, the land slopes moderately northeastward towards Hancock Road in this area. A small, intermittent channel, which is tributary to Roaring Brook flows along the eastern boundary of the parcel.

Site III

Site III consists of a 35 acre parcel of land located in the northwest corner of Town, adjacent to Ruby Road (Route 320). The landscape of the site is diverse, consisting of relatively flat to steeply sloping areas. Steepest slopes are associated with cuts that have been made into the sand and gravel deposits by an active gravel mining operation on the site. Maximum and minimum elevations on the site are approximately 670 feet and 590 feet above mean sea level, respectively. Frink Brook, which is the major watercourse on the site, crosses the southern section of the parcel enroute to Roaring Brook. The only other perennial stream visible on the site is the inlet and outlet stream for the pond in the eastern portion of the parcel.

Bedrock Geology

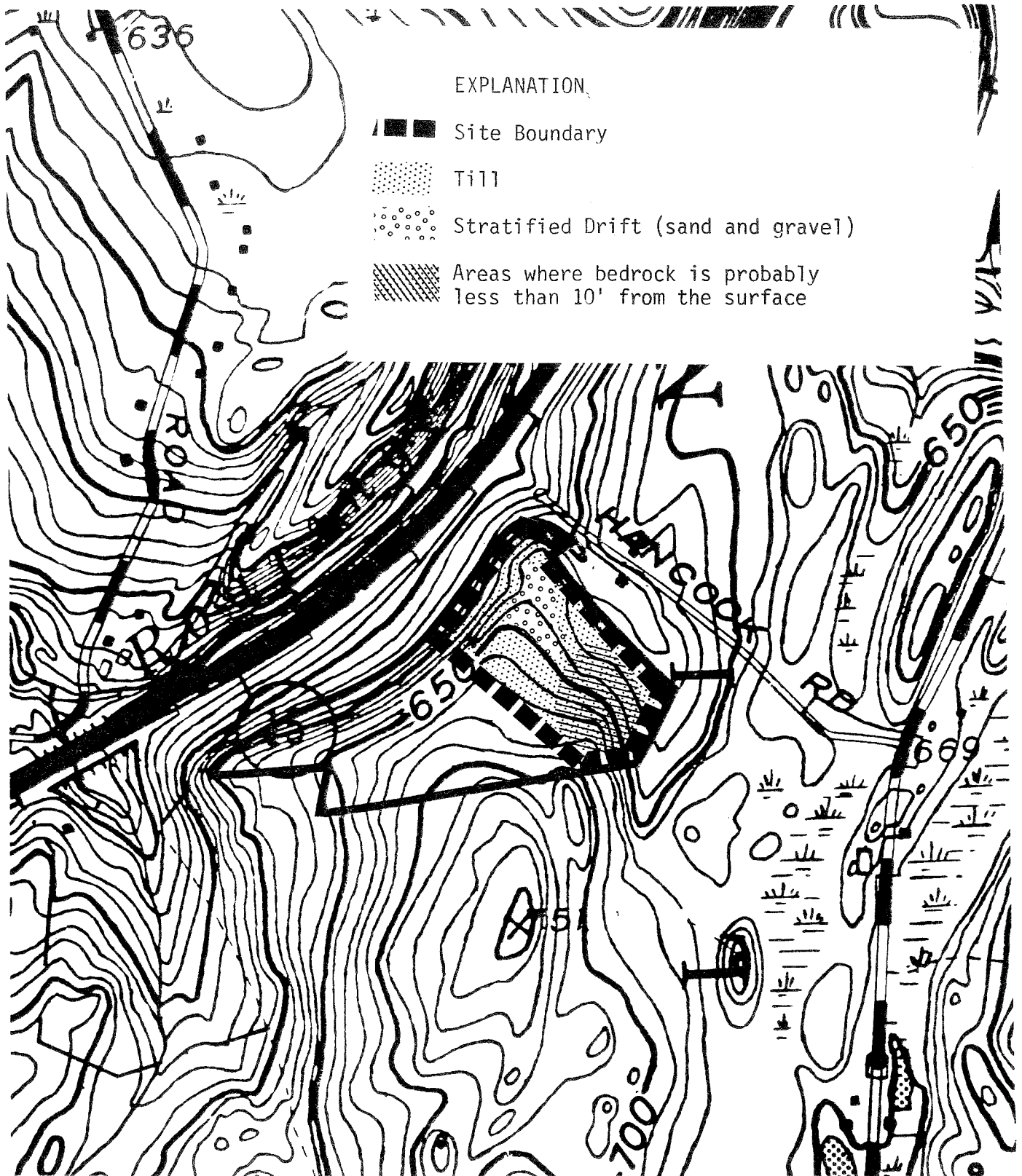
SITE 2



Adapted from the unpublished Bedrock Geologic Map of the Stafford Springs Quadrangle, by M.H.Pease.

Surficial Geology

SITE 2



* Adapted from the Surficial Geologic map for the Stafford Springs Quadrangle, by M.H. Pease.

GEOLOGY

Site I

Site I is covered entirely by till. Till is a sediment that was deposited directly from glacier ice. The sediment consists of varying proportions of sand, silt, gravel, clay, and boulders. Particles of different sizes are generally mixed together in a complex fashion. The texture of the till is generally sandy, stony, and moderately loose in the first 2-3 feet but at depth it becomes siltier and more compact. The contact between these two layers is usually quite abrupt. The exact thickness of the till is not known but it is probably at least 10 feet throughout.

The compact till layer at depth may limit the feasibility of a "standard septic system" for the proposed dog pound and sanitary facilities serving the town garage, but this limitation may be overcome by properly engineered systems. It should be pointed out that if floor drains are installed inside the proposed town garage they cannot discharge directly into the ground, onto the ground surface, into a watercourse or the sewage disposal system(s) serving the facility. They must discharge into a water-tight holding tank, which must be pumped out as often as necessary and the contents disposed in a proper manner. This will apply to any of the sites chosen. In this regard, the project engineer should first contact the Water Compliance section of the Department of Environmental Protection concerning this matter prior to designing the town garage.

The bedrock has been mapped as Hamilton Reservoir Formation (Lower Schist Member)*, a rusty weathering medium-to-coarse grained, interlayered schist and gneiss. It is composed mainly of the minerals quartz, oligoclase, garnet, biotite, potassium feldspar, and sillimanite. Bedrock outcrops in the southern parts of the parcel. Iron and sulfide-bearing minerals often cause the weathered surface of the rock to have a rusty appearance. These minerals also commonly affect local groundwater quality, which will be discussed in the Water Supply section of this report.

Site II

Most of Site II is covered by till (see surficial geology map). Till is a glacial sediment that was deposited directly from a mass of ice. Clay, silt, sand, gravel, and rounded or angular boulders are mixed together in varying proportions in the till. Sand is generally the dominant component, although compact silty layers may be encountered at depths of 2-3 feet below ground level. The upper 3-5 feet of the till are normally loose or only moderately compact and commonly very stony.

The till on the hillside in the eastern section of the area reviewed is relatively thin. Small scattered outcrops southeast of the site suggest that till is generally less than 10 feet thick. Thicknesses of till in the remainder of the site reviewed, may be deeper.

*Source: unpublished bedrock geologic map for the South Coventry quadrangle by Richard J. Fahey and Maurice H. Pease, Jr., 1977.

The potential for a compact till layer at varied depths which often results in a seasonally high groundwater table and the shallow to bedrock conditions in the eastern section of the site may limit development potential. These limitations will weigh most heavily on the ability to provide adequate subsurface sewage disposal. However, properly engineered systems may be able to overcome these limitations. The western portion of the area reviewed is characterized by moderate slopes and relatively deep soils. These limitations would be less restrictive than the shallow to bedrock and steeper slope conditions found in the eastern portion of the site.

A small area in the northern part of the review site contains stratified gravelly sands, which were deposited by streams of glacial meltwater streams. Thicknesses of the sand and gravel probably does not exceed more than ten feet. Based on visual inspection of this area some of this material has been excavated, probably for local fill.

No bedrock outcrops were visible in the area reviewed. Bedrock underlying the site is classified mainly as gneisses, which contain variable percentages of quartz, feldspar and biotite. Locally, there may be some schist layers. A "gneiss" is a crystalline, metamorphic rock (rocks which have been geologically altered by great heat and pressure) that is banded or streaked. A "schist" is a structurally layered crystalline rock, which is also metamorphic.

If shallow to bedrock areas to the east are avoided, the bedrock geology of the site should not have a direct impact on the development of a town garage. However, there is a chance that it may affect the quality and quantity of water withdrawn from a potential well or wells drilled on the site to serve the proposed facility.

Site III

The site is covered entirely by stratified drift deposits. The site itself and surrounding areas (i.e., Roaring Brook Valley) are characterized by distinct topographic and geologic features of ice contact stratified drift. The term "stratified drift" refers to the typically well-layered sediments that were deposited by glacial meltwater streams. "Ice contact" means that the sediments were deposited on, under, or adjacent to the wasting blocks of glacial ice. Sand and gravel are the main components of stratified drift. The stratified drift on the site are comprised largely of sand size particles. The exact thickness of the stratified drift is unknown, but it probably ranges from less than 10 feet to not more than 30 feet; the thickest deposits are likely to occur in areas undisturbed by the active mining operation throughout the western portions.

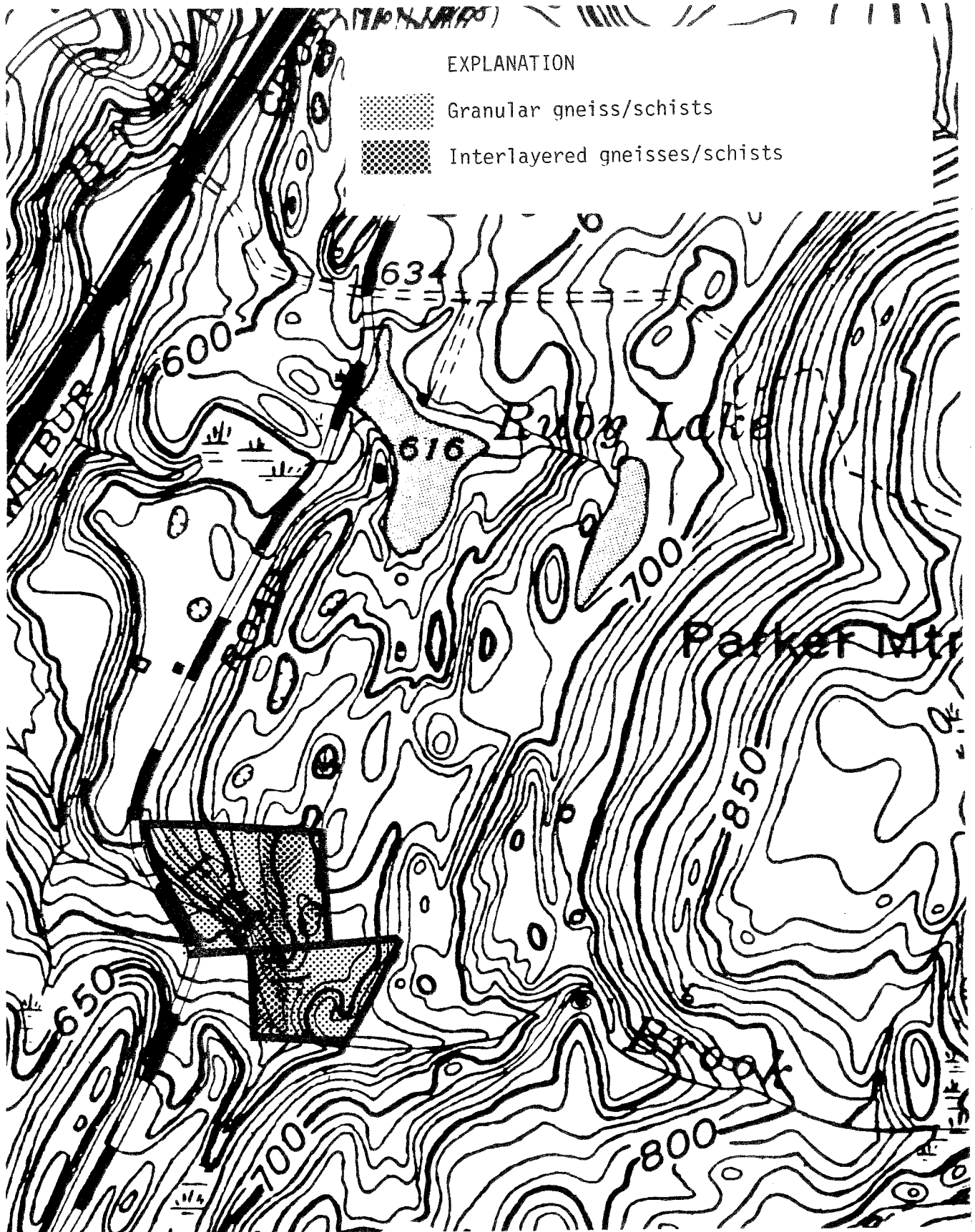
As mentioned earlier, the site has been and is presently being mined for sand and gravel. The exact volume of sand and gravel on the site is unknown. Because it is actively being mined, it is difficult to estimate the volume of remaining sand and gravel. In this regard, the Town should first conduct a study which includes test hole borings to determine the volume, quality and quantity of the sand and gravel, before development plans are made, if this site is chosen for the town garage.

Surficial Geology

SITE 3



Bedrock Geology SITE 3



The presence of the well drained sandy, gravelly soils (stratified drift) on the site would be favorable for construction of on-site sewage disposal systems. However, because of the highly porous nature of these deposits, sewage effluent may easily find its way into the groundwater aquifer, especially if a septic system is installed improperly. On the other hand, this problem is offset by increased natural dilution since the highly permeable sand and gravel soils are capable of absorbing more rainfall than other soils. Therefore, it will be necessary to conduct on-site testing (deep test pits and percolation tests) in the proposed leaching area to determine soil conditions, groundwater level and whether or not there is any shallow underlying bedrock. Also, in view of the porous nature of the sands and gravels, the proper storage of other types of contaminants such as road salt, fuel storage, organic substance, which are commonly stored and disposed of carelessly in or near town garages, should be top priority to the Town on this site, or any one of the sites that may be chosen. If any of these contaminants find their way into the groundwater, certain types of contaminants may seriously degrade the water quality and possibly render the source unusable for potable purposes.

Overlying sand and gravel primarily along watercourses, i.e., Frink Brook and intermittent drainage channels in the central parts of property are seasonally wet areas. These areas, which are designated by the symbol Lg on the accompanying soils map, are inappropriate for any type of development.

No bedrock outcrops were observed on the site. Bedrock underlying the site is believed to be dark-colored gneisses and schists. The term "gneiss" is used for metamorphic rocks, in which thin bands of elongate or platy minerals alternate with layers of granular minerals. The term "schist" is used for metamorphic rocks in which elongate or flaky minerals predominate and align, giving the rocks a layered structure. The most common minerals of the gneisses and schists underlying the site are quartz, oligoclase, biotite and hornblende.

Bedrock underlying the site should pose no major problems in terms of developing the site as a town garage, except in terms of water quality and quantity, since groundwater will probably have to be derived from the bedrock aquifer.

SOILS

Site I

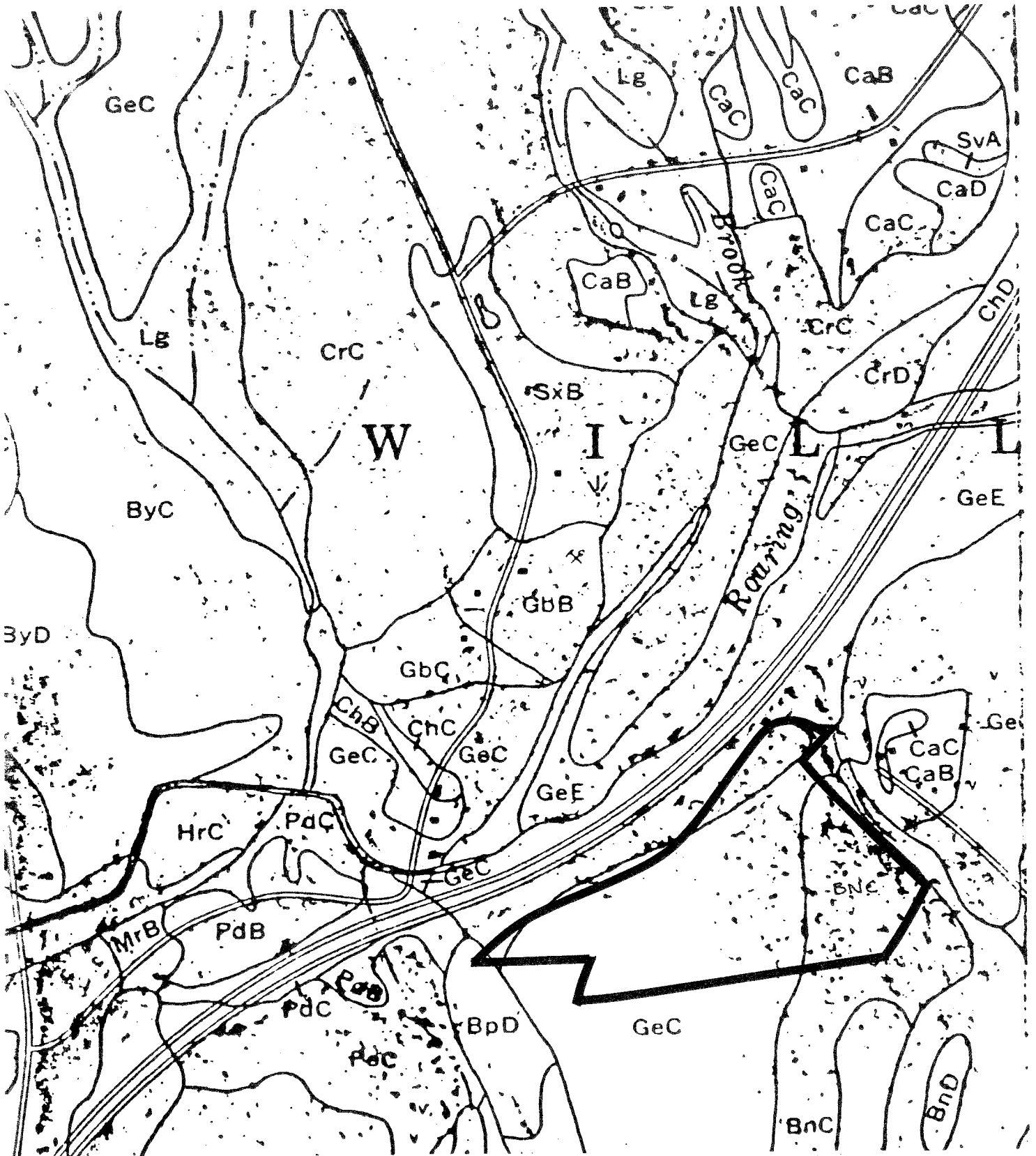
This 8 acre site is currently used for vehicle storage, salt and sand storage and mixing and material storage. This site has potential for development but noise problems from equipment and dogs, groundwater pollution from salt, and control of runoff will need to be addressed in any plans developed.

Site II

This area, located at the town dump on Hancock Road, is on upland till soils. These soils are mostly the somewhat excessively drained Gloucester

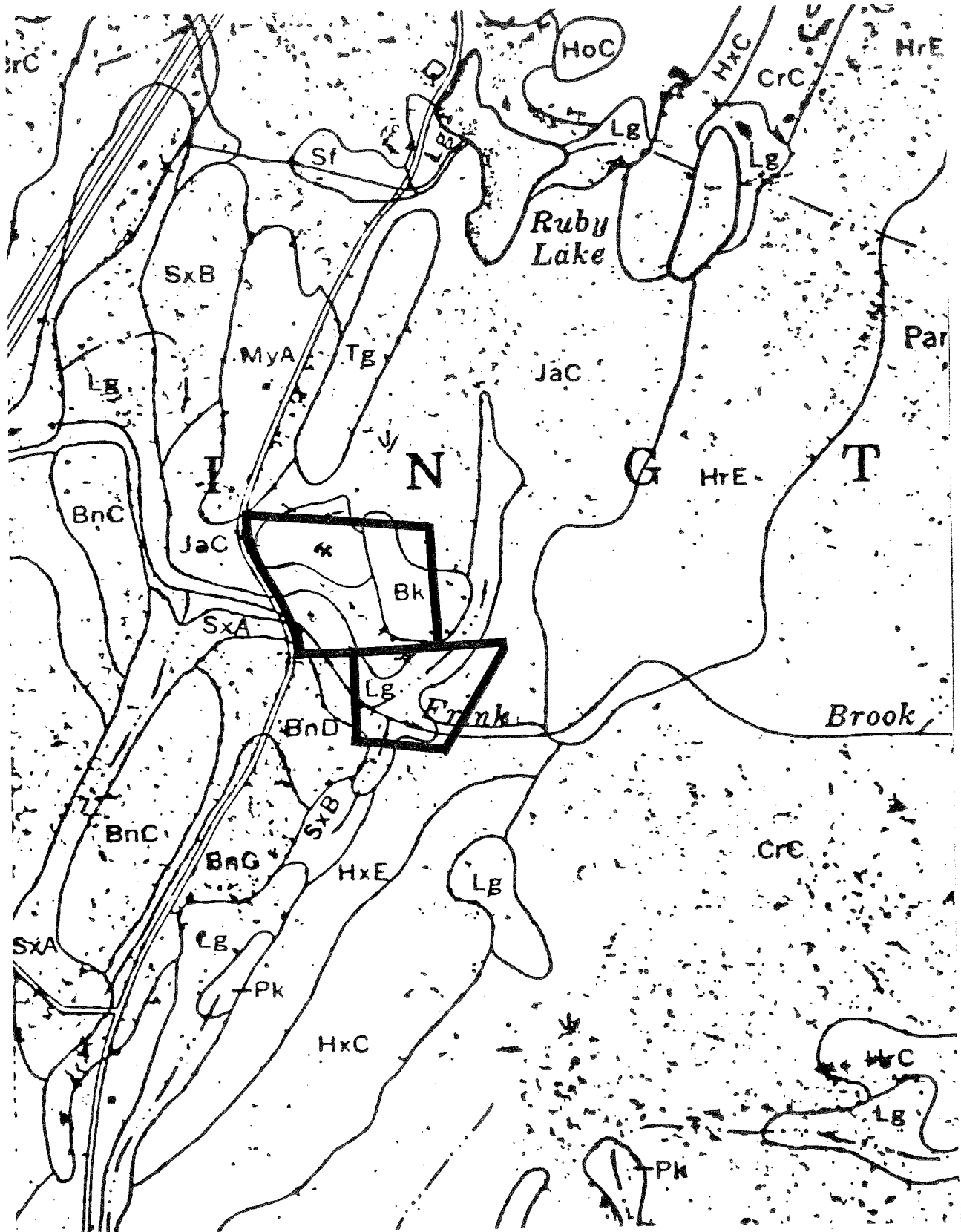
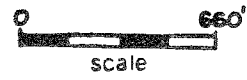
Soils

SITE 2



Soils

SITE 3



series and well drained Canton and Charlton series. Areas of deep loamy well drained Brookfield soils and shallow to bedrock somewhat excessively drained Brimfield soils are to the north and east of this site.

The slopes are smooth and sloping to the northwest about 6 to 8 percent. Steeper slopes are across from the area of interest between the dump and I-86.

In addition to using the site for parking of town vehicles, plans are to store road salt and build a dog pound. The dog pound will require the use of an on-site septic system.

This site appears to have the best potential with respect to soil and site conditions. It is recommended that detailed topographic information be obtained for the site and that deep test pits be dug to fully investigate soil conditions prior to planning. Evaluation of the drinking water supply for the facility should also be completed.

Site III

This area, located on Ruby Road near Frink Brook, consists mostly of stratified drift soils. These are the sandy and gravelly excessively drained Hinckley soils. Areas of the Leicester, Ridgebury and Whitman soils are adjacent to this area along the brook. Areas indicated on the soil map by a pick and axe symbol and with the alphabetical symbols, Bk, JaC and Tg can be interpreted for the Hinckley series. This site is currently an active gravel pit with excavations as deep as 30 or 40 feet below the original ground surface. Permeability of these soils are rapid because of coarse textures throughout the soil profile.

This site is being actively mined as a sand and gravel source for the Town. Any construction on the site would require extensive planning. A thorough inventory and investigation of the gravel resources on the site is recommended. This site may also have problems with groundwater contamination from salt and septic discharges because of the rapid percolation rate of the gravelly soils. Reclaiming fully excavated areas for recreational uses may be a more appropriate use for the site.

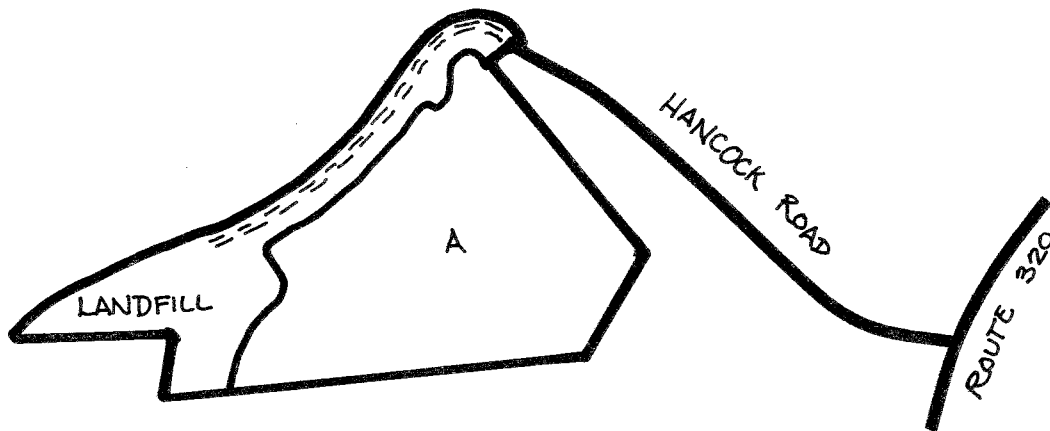
VEGETATION

Sites I and III have been stripped of most of their vegetation. Site II, the second of three potential sites for the Willington Garage Complex, can be divided into two distinct areas. One is the landfill which is open land at this time. The second area is 15 acres in size and forested with a mixture of hardwoods and softwoods.

Vegetation Type Description

Type A (Mixed Hardwoods). This 15 acre tract is a fully stocked stand composed of sawtimber and poletimber sized hardwoods (scarlet oak, white oak, black oak, red oak, red maple, black birch) and softwoods (white pine

Vegetation SITE 2



VEGETATION TYPE DESCRIPTION

Type A: Mixed Hardwoods, fully stocked, sawtimber size with occasional poletimber size, 60% oaks - hardwoods, 40% white pine - hemlocks.

and hemlock). The shrub understory vegetation is composed of mountain laurel, witch hazel, huckleberry, blueberry. Ground cover is scarce with occasional club moss, Canada mayflower and other common flowers. Approximately 60% of the trees in this tract are hardwoods and about 40% are softwoods. Several large white pine and hemlock are scattered throughout the stand and are the survivors of the 1938 hurricane.

Limiting Conditions/Potential Hazards

Windthrow is a potential hazard during storms with high winds and super saturated soils. The tall white pine and hemlock, in excess of 24 inches diameter and 100 feet tall, are especially subject to blowdown. Also, openings which would eliminate side support and windbreaks from the larger trees create a hazardous windthrow situation.

Management Considerations

This tract is presently healthy although very crowded and showing signs of a slowed growth rate. The oaks on the tract are not as well suited to growth in the Gloucester and Brimfield soils as are white pine and hemlock. Two primary considerations should be given to this stand: 1) thin out the trees to reduce the crowding and; (2) promote the natural regeneration of native pine and hemlock over time. Thinnings remove undesirable trees and reduce competition for space, sunlight, water and nutrients. This allows the best trees to improve in health and vigor over time and increase in value, quality and stability. Thinnings improve wildlife habitat in a forest by creating winter food browse and healthy trees produce nuts and acorns for wildlife food. Studies have shown too that managed forests improve the aesthetic quality of woodlands as the largest, straightest trees are retained for growth. Finally, the harvesting of forest products can produce revenue from logs for lumber and fuelwood.

The trees in this stand could be thinned in an Intermediate Sawtimber Harvest to reduce overcrowding by one-third, remove the poorest low quality growing stock, and place the stand at a level of proper stocking. This stand will yield about 30-35 thousand board feet of sawtimber and 30-40 cords of fuelwood in an Intermediate Harvest to reduce overcrowding.

A public service forester or private forester should be contacted to help with the implementation of the recommended thinning.

WILDLIFE

Much of Site III (off Route 320) has been cleared. The surrounding vegetation is mostly evergreens with smaller areas of mixed hardwoods. Site II (off Hancock Road) also contains evergreens such as hemlock and pine and is interspersed with deciduous trees. The understory in this area is quite thick with both coniferous and deciduous species.

Site III is not a good wildlife area. The surrounding area, although not cleared, will not be as attractive to wildlife due to the disturbance

caused by the heavy machinery clearing the area nearby. Site II is a much better wildlife area. The substantial understory made up of evergreens, hardwoods, and shrub species (such as mountain laurel) provide good cover and browse. From a wildlife standpoint, Site III would be a better site for the town garage as it has already been disturbed, while Site II with its existing wildlife habitat, could be left untouched.

WATER SUPPLY

Site I

The parcel lies entirely within the Eldridge Brook watershed. Eldridge Brook, which flows in a southeast direction, is tributary to the Fenton River. Surface runoff from most of the parcel flows downslope by sheetflow, ultimately into Pelican Pond. Sheetflow is intercepted by local discharge areas, i.e., intermittent drainage channels which route the water in a southerly direction towards Pelican Pond.

Development of the site will increase the amount of runoff at least slightly during periods of rainfall. These increases would depend largely upon the amount of impervious surfaces created, soil compaction and the amount of vegetation removed. If this site is chosen, efforts should be made to protect Pelican Pond as well as the existing watercourses from sand and other parking lot debris. In this regard, careful erosion and sediment control plans incorporated into the stormwater management for the site should be prepared for Town review prior to any construction.

Public water facilities are not presently available to this property. Bedrock would undoubtedly be the principal, if not sole, source of water. Bedrock is commonly capable of providing small but reliable yields of groundwater to individual wells. A survey of bedrock wells in the Shetucket River basin (see Connecticut Water Resources Bulletin No. 11) indicates that ninety percent of those wells that were drilled into a rock type similar to that found on the site yielded 3 gallons per minute (gpm) or more. A yield of 3 gpm should meet the needs of a town garage. In addition to water storage tanks, the well shaft itself provides some storage.

The quality of the natural groundwater would be expected to be generally good. The bedrock underlying the site contains relatively high percentages of iron and sulfide bearing minerals. As a result, elevated concentration of iron or manganese may occur in well water drawn from the site, but there are several types of filters available to overcome this problem.

Ample precaution should be taken to keep wells safe from potential contaminants such as road salt storage facilities, sewage disposal systems, as well as storage areas for hydrocarbons, i.e., gasoline, fuel oils, etc., organic compounds, chemical substances, i.e., solvents, herbicides, pesticides, etc., which are commonly stored and sometimes disposed of carelessly in or near town garages. If any of the above mentioned contaminants find their way into the groundwater aquifer, certain types of contaminants may seriously degrade the water quality of the aquifer and possibly render the water

source unusable for potable purposes. Therefore, the well or wells, should be placed uphill from storage areas or sewage disposal systems, properly constructed and installed, and should maintain conservative separating distances from these potential sources of contamination. Also, these same precautions must apply to neighboring wells which might also be affected by contaminants associated with a town garage site.

It is recommended town officials contact representatives from the State Department of Health Services, Public Water Supply section to help assist in locating a well site which would serve the potential town garage. This should be done once site plans have been prepared, and which shows the proposed town garage site, road salt storage facilities, and sand and salt mixing areas.

Site II

Site II lies within the Roaring Brook watershed. Roaring Brook flows in westerly direction north of the site and ultimately empties into the Willimantic River. A watershed may be defined as the land area that drains runoff to a stream, or other surface water body. For purposes of convenience, the Roaring Brook watershed was broken into a smaller watershed, which only includes the area reviewed. As shown by the accompanying Drainage Area Map, nearly all of the potential town garage site is drained by sheetflow to the intermittent stream which flows along the eastern boundary and then north of the parcel. The western half of the parcel, which includes the landfill site, drains westward mainly by sheetflow towards Roaring Brook.

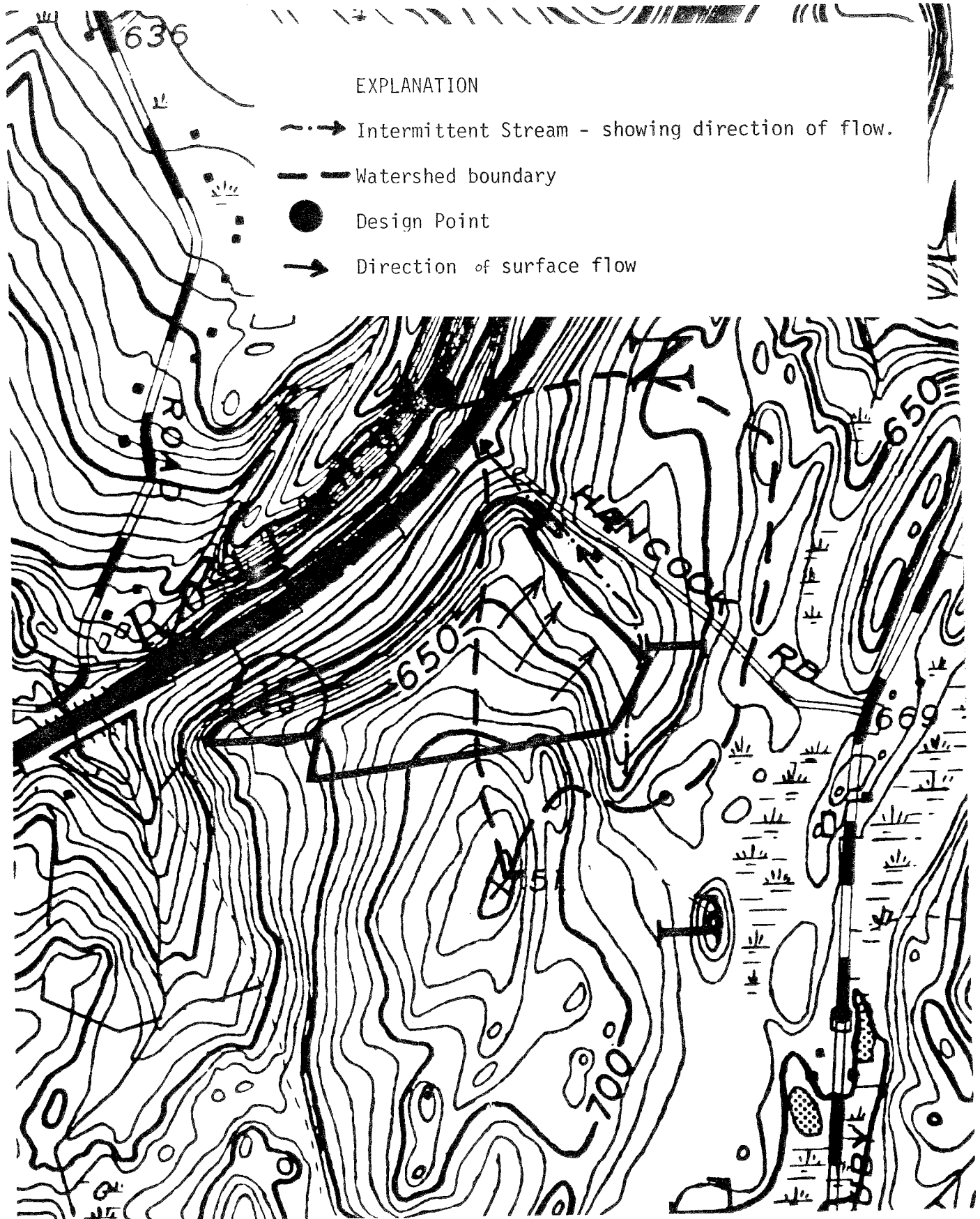
Development of the site as a town garage would probably cause at least a slight increase in runoff, but unless the total area of impervious surfaces were large, the increases should not have a significant affect on peak flows on nearby streams. These increases would result from soil compaction, removal of vegetation, and placement of impervious surfaces, i.e., roof tops, roads, parking areas. In view of the moderate slopes, it is recommended that a detailed erosion and sediment control plan be incorporated with the stormwater management plan prior to any construction.

Underlying bedrock is likely to be the best source of water on the site. Wells drilled 100-200 feet into bedrock are generally capable of supplying small but reliable yields of groundwater. Approximately 90 percent of the bedrock wells surveyed for Connecticut Water Resources Bulletin No. 11 yielded 3 gallons per minute (gpm) or more. The yield of a well tapping the bedrock fracture system depends upon the number and size of the water bearing fractures that the well intersects. Because the fractures are unevenly spaced throughout the rock unit, there is no practical way, short of expensive geophysical tests, to assess the potential of any specific location for a satisfactory yield.

The sand and gravel deposits (stratified drift) found on the site do not appear to be thick enough nor have a large enough areal extent for groundwater supply development. Depending upon the hydrogeologic characteristics and location of sand and gravel deposits, thickness, texture and proximity to major watercourses, they may sometimes be favorable for moderate-to-large scale groundwater supply development.

Drainage Areas

SITE 2



EXPLANATION

- Intermittent Stream - showing direction of flow.
- Watershed boundary
- Design Point
- Direction of surface flow

The quality of the groundwater would be expected to be generally good except possibly in the vicinity of the landfill site, where leachate may find its way into and contaminate groundwater. Leachate, which can contain organic and inorganic contaminants, is the liquid that is created beneath landfills when precipitation percolates downward through the decomposing solid waste.

According to Connecticut Water Resource Bulletin No. 19, Site II lies in an area where bedrock contains relatively high percentages of iron and/or manganese-bearing minerals. If elevated iron and/or manganese levels do occur in well water drawn from the site, there are several types of filters available to overcome this problem.

The well or wells should be located upgradient from any potential source of contamination such as sewage disposal systems, the present landfill as well as future expansion area, salt storage areas, storage areas for fuel oil or other potential pollutants. In addition, they should be located in a direction which would be opposite the expected direction of groundwater movement. Without proper care, salt from salt storage facilities as well as the other contaminants mentioned above may enter the groundwater supply for well(s) on or near the site resulting in contamination. Therefore, it is important road salt storage facilities be properly designed and constructed so as to prevent the possibility of salt contamination to groundwater. It is recommended that the project engineer refer to the publication, "Municipal Road Salt Storage & Application Procedures in the Thames River Basin," which was prepared by the Northeast, Southeast, and Windham Regional Planning Agencies (Connecticut 208 Water Quality Planning Program). This publication discusses measures for road salt storage procedures. Also, once a town garage site is chosen and site plan prepared, it is recommended that a Town representative contact a representative from the Department of Health Services, Public Water Supply section and Department of Environmental Protection, Water Compliance section to help assist in picking a well site location.

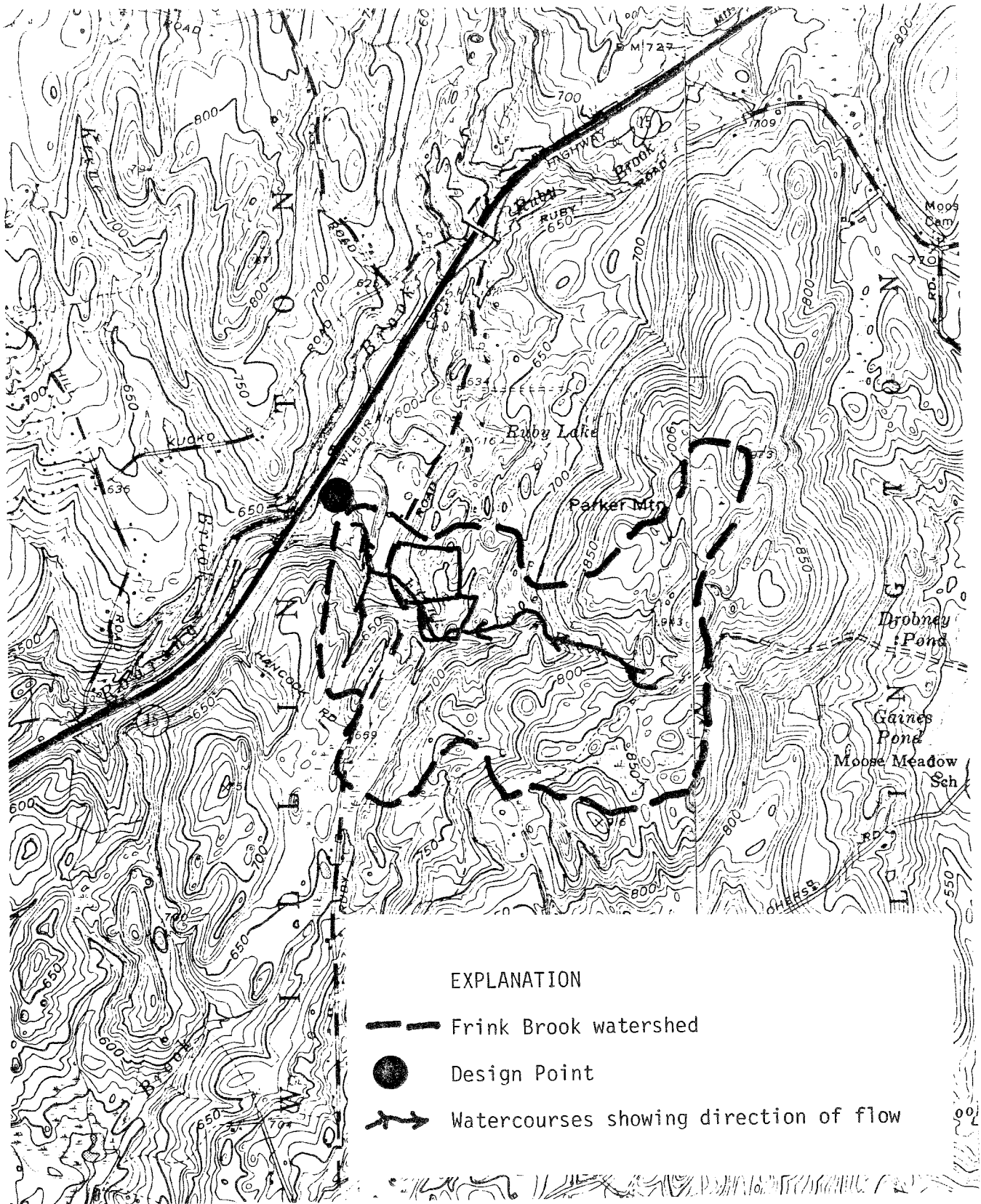
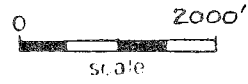
Because of this site's close proximity to the landfill and because of the potential contaminants commonly associated with a town garage, it is recommended that water withdrawn from a well or wells serving the facility be tested on a regular basis to ensure good quality water. If one of the other potential sites is chosen, the well should also be tested on a regular basis for the same reasons mentioned above.

Site III




Site III lies within the drainage area of Frink Brook. Frink Brook drains an area of 450 acres or .7 square miles. Frink Brook passes through the southern limits of the site enroute to Roaring Brook, west of the site. Other watercourses on the site include the inlet and outlet stream for the pond in the eastern part of the site. The outlet stream is tributary to Frink Brook.

Although stratified drift (sand and gravel) deposits have potential for high yielding wells, it is not known whether or not the deposits found on the site would produce high yielding wells. Based on the "Groundwater Availability Map of Connecticut" by Daniel Meade, and a potential aquifer

Drainage Areas SITE 3



EXPLANATION

-  Frink Brook watershed
-  Design Point
-  Watercourses showing direction of flow

map (unpublished) for the Stafford Spring quadrangle, the sand and gravel deposits found on the site do not appear to have potential for high yielding wells, probably due to the relatively shallow thicknesses of the deposits. Nevertheless, because there is a greater risk of well contamination if the stratified drift is tapped, it is suggested that a bedrock-based well or wells be provided. Assuring they are properly installed, bedrock wells generally afford greater protection from surface or near surface pollution and also allows more flexibility in the placement of wells.

As mentioned earlier, bedrock is commonly capable of small but reliable yields of groundwater to individual wells. Most wells that penetrate 150 to 200 feet of bedrock will intersect enough fractures to supply at least 2 or 3 gpm. A yield of 2-3 gpm in conjunction with a water storage tank should adequately meet the needs of a town garage. It should be pointed out that some wells fail to intersect any water-bearing fractures resulting in a "dry hole." There is no practical way of predicting whether any particular location will be good for drilling a well.

The quality of the groundwater would be expected to be satisfactory, however, the bedrock underlying the site contains a relatively high percentage of iron and/or manganese-bearing minerals, which will impart an unpleasant taste and discolor plumbing fixture (Source: Connecticut Resources Bulletin No. 11). There are several filtration devices available to combat this problem.

On-site well or wells should be properly located to maintain conservative separating distances from possible sources of contamination, i.e., sewage system(s), fuel storage tanks, road salt storage, etc. In this regard, wells should be placed uphill from storage areas and septic leaching fields. Also, road salt storage facilities should be properly designed and constructed so as to prevent possible environmental problems, i.e., well contamination, vegetation mortality, associated with road salt, which have occurred in the state.

Prior to picking a potential well site, it is recommended a town representative contact representatives from the Department of Health Services, Water Supply section to help assist in locating a safe well site.

WASTE DISPOSAL

Site I

At the present time, the town hall and senior citizens center are on the parcel along with a parking area for town highway trucks and a covered salt storage shed. The area behind the building has been filled with a number of feet of sandy gravel fill. This was apparently done to regrade and level the area while improving drainage. The terrain beyond this area slopes somewhat towards the wooded rear portion and open side. It appears that the front portion of the parcel contains the most pervious and best drained soils.

The existing facilities are, no doubt, served by both on-site water supply and subsurface sewage disposal. In order to properly consider the development of this parcel for the intended purpose, specific information relative to the siting and type of well water supply and the location(s) of the sewage disposal system should be obtained. In particular, the adequacy and sanitary quality of the existing water supply, if such information is not available, should be determined. Because town trucks and road salting operations are also based at this location, there is also a question of whether or not the groundwater source has been subject to and degraded by sodium chloride or possibly hydrocarbons from petroleum products. The main public health concern of road salt contamination is for persons with hypertension which more often affects the elderly populations.

Assuming the water supply is potable and not having undergone any significant chemical degradation, the site in general would not appear to be compatible with the present town hall and senior citizens center and a more developed town garage and dog pound facility.

Site II

Located on the southwest side of Hancock Road, Site II contains approximately 50 acres of mostly wooded land. The parcel is also adjacent to Willington's refuse disposal area and is located relatively near the Wilbur Cross (Route 15) Parkway. Portions of the hillside terrain slopes towards Hancock Road at the east and the Wilbur Cross Parkway at the northwest. The refuse disposal areas lies towards the west side. The nearest houses are located along Hancock Road.

Based on visual observations and soil service mapping data, it appears portions of the property are suited for sewage and waste water disposal. There is a question of shallow bedrock in the upper part towards the southeast. There is also a drainage course which comes down the hillside near the rear property line. The area further east becomes swampy.

Due to the terrain and limited water quantity needs for highway personnel, animals kept at a pound and for truck washing purposes, a drilled well located near or at the upper part of the property should be adequate for the intended purpose. Also, a well at the high point of the site with surface drainage and most likely groundwater also moving in a direction away from the well, should afford protection for the well from potential pollution. A review of the site, however, should consider the nearness and possible affect from the sanitary landfill operations.

As the proposed garage complex would need to have sanitary facilities for town workers, a wash down waste disposal system for a dog pound, and a disposal area for truck wash water, adequate on-site testing should be done to locate a suitable area(s). Shallow bedrock areas should be avoided and review should be made of the proximity and location of existing dwellings along Hancock Road. Although the distance seems adequate, drainage would seem to favor that direction. Though the disposal and subsequent soil treatment of sanitary wastes (depending upon the volume and soil porosity) should not present any major problem in properly designed and installed subsurface

sewage disposal systems. Salt storage, mixing area where salt and sand are combined and stored and truck washing area (winter salt residue) should be carefully evaluated in relation to water supplies. The salt pile and mixing-storage area (if possible) should be protected from rainfall and runoff. Spillage and stormwater runoff should be directed to a self-contained retention basin. The reduction of the sodium content of wash water disposed of subsurface depends upon dilution dispersal.

Because of the landfill operation, the above site would not be in a remote area and would probably be more readily observed for possible vandalism.

Site III

Located on the east side of Ruby Road (Route 320), Site III consists of approximately 35 acres. The parcel is being utilized as an active borrow area for sand and gravel. In this regard, some areas (front and towards the rear) have been more extensively excavated than others. A small pond is situated towards the rear which flows into Frink Brook, a large watercourse, which is located near the south side and which cuts diagonally across a portion of the front area. One relatively new house was noted south of the rear excavation area, on hillside property beyond Frink Brook. There is the possibility that some of the property in question, towards the upper north side, has underlying rock at a more conservative depth as this area was not as extensively excavated. It also appeared that some rock and stone fill had been deposited in previously dug holes.

For the most part, soils on this property appear to be quite permeable for waste disposal purposes. The main concern might possibly be soils having a very rapid percolation rate, exceeding an inch per minute. In such cases, soils require special design consideration for sewage disposal along with increased separating distances between any wells and the leaching systems in order to provide additional protection for ground and surface waters.

In general, a rock or drilled well, properly cased and sealed into underlying rock, will afford greater protection than one from a shallow groundwater source. Groundwater movement should be expected to be towards the lower area and stream; therefore, a well should be placed on higher terrain, up gradient of any sewage or waste water disposal system. As there is considerable area, this should present no particular problem.

Because of the ongoing sand and gravel removal operation, choosing a particular location within the parcel for the complex and waste disposal facilities, at this time, may restrict or limit some of the area as to the total amount of available fill material which may or could be removed in the future. This resource and possible time frame for implementation of construction should be considered.

For sewage disposal purposes, on-site testing is to be performed. Because of the obvious nature of the soils, leaching facilities should be separated adequately from ground and surface waters. Elevating leaching systems as much as possible above groundwater will reduce the potential for pollution in highly permeable soil. Overall, the total volume of sewage and/or wash water to be discharged should be relatively low.

PLANNING CONCERNS

Relationship to Town Plan/Regional Plan/Zoning

The REGIONAL GROWTH AND PRESERVATION GUIDE PLAN'S LAND USE ELEMENT recommends most of the Town of Willington, including all three proposed garage facility sites for Low Density Rural District uses. This land use district makes up the bulk of the region, offers most of the low density recreational opportunities and contributes to the aesthetic appeal of the region. While this district does not preclude garage facility, it envisions a low density of development (two acre building lots, at minimum, for residential purposes, are recommended in order to keep the area rural), preservation of agricultural lands and operations, creation of new recreational facilities or nature preserves, and emphasis on minimizing the development of existing road frontages are all recommended in this district. Thus, any town garage facility needs to be sensitive to the rural character of the area and through careful site design and landscaping, could be compatible with the existing and proposed uses in this Low Density Rural District.

The Regional Plan does recommend that "new capital facilities should be carefully planned extensions" of existing facilities, generally concerning sewer, water, highway, sidewalks, and schools, but also applicable to a town garage facility.

The Town's Plan of Development can provide a great deal of assistance in deciding upon a town garage location. The natural resources maps contained in the plan indicate important constraints to development. For example, the Depth to Bedrock map (no. 6) indicates portions of Site II (landfill) may have shallow depth to bedrock making building difficult; Sites I and III have no mapped bedrock constraints.

The Wetlands map (no. 7) indicates wetlands nearby all three sites, with Site II (landfill) being farthest from wetlands. Site evaluations back up these findings.

Site III (Ruby Road) overlies coarse stratified drift materials--medium sand and gravel, which could provide a resource (see map 9) for the Town. This site also contains sections of excessively drained soils posing potential design considerations for well and septic system serving the garage facility.

Map no. 11 indicates Site I (Town Offices) is underlain by compact fill with hardpan within three feet of the surface posing design considerations, again, for septic system design.

None of these sites are in the Groundwater Recharge Area (map no. 12). Sites II and III are in the Willimantic River Watershed, Site I in the Fenton River Watershed.

The Town Plan's proposed land use map recommends all three sites for residential land use. The Community Facilities section of the plan recommends a new centrally located Town Office Building near the Willington Green for office space and meeting rooms. It is unclear if the garage facility is recommended to remain where it currently is located or if it too is proposed

to be part of the new Town Offices. A garage facility (with truck and heavy equipment coming and going and the need for salt and sand storage and, perhaps, a dog pound) would probably not be an appropriate use near the Town green with its historic buildings and residential character, although Town Offices could be designed to fit the historic character of the area.

Willington's zoning regulations permit public buildings as of right in residential R-80 zones. All three sites are in R-80 zones, thus there is no particular zoning constraint to putting the garage facility at any one of the three sites.

In accordance with section 8-24 of the Connecticut State Statutes on Municipal Improvements, the Town's planning commission will need to review and report on the project, regardless of the site chosen.

Surrounding Land Uses/Compatibility of Land Uses

Site I (Town Offices) is surrounded by residential uses. The existing town garage facility behind the Town Offices is not a highly disruptive use, but it is also not especially compatible with the surrounding residential uses. Most all public works garaging facilities in all communities are considered rather unattractive uses. Even though Willington's existing facility is neat and well maintained, it would require a great deal of landscaping and buffering to make it less visually obtrusive and thus more compatible with the neighborhood. Expansion of this site is possible with proper landscaping, but an animal shelter/dog pound facility would not be appropriate here due to the proximity of residential uses--even though there currently are only a half dozen houses or so which might be impacted by the barking of dogs at the shelter.

Concerns regarding salt storage and their impact on water supplies at this site may present themselves, again due to proximity of residences. Careful salt storage and mixing procedures need to be maintained (see Municipal Road Salt Storage and Application Procedures by Northeast, Southeast, and Windham Regional Planning Agencies Spring/Summer 1981).

Although Site I would be a convenient location for the new garage facility, it is the least desirable of the three sites due to social and environmental consideration. Site II (landfill) is a large site adjacent to and above the Interstate 86 highway, the town landfill, and Hancock Road. The rear of the site adjoins undeveloped land along Ruby Road. Access to the site is via Hancock Road which is sparsely developed in residential uses.

A garage/animal shelter facility at this site would have minimal visual impact on surrounding land uses since so few uses currently adjoin the site. Noise from the shelter or garage also would present few problems at this site. This site would lend itself to a garage/animal shelter facility, however, the sloping terrain may make grading and developing the site a cost factor to be considered.

Site III (Ruby Road) is surrounded by undeveloped land and a few residences. The rear of the site adjoins Town owned land which was dedicated to the Town in conjunction with the open space dedication requirements for the

subdivision of Deer Run Estates on Pinney Hill Road.

This site is underlain with sand and gravel and has been excavated to some degree. A report titled, "Construction Aggregate Availability Study Summary Report: Highway District 11" by Rino Vitali of the Connecticut Department of Transportation based on field investigations in 1967 and 1968 indicates this site is within a sand and gravel deposit which is estimated to have 460 acre-feet, 20 feet deep of sand and gravel of 25-50% gravel sizes.

Parts of the site are indicated in this reference as excavated pits.

A garage/animal shelter facility would also be a suitable land use on this site, although one residence is in close enough proximity to be impacted by noises from the shelter.

The Town might want to remove the extractable sand and gravel from the site, however, before a facility is constructed. If so, the Town would want to plan the excavation so that a building site could be cleared while the town garage remains behind the Town offices. Other phases of the excavation could be done after the facility was constructed.

The Town's plans for the open space adjoining this site could become a factor in determining whether this site is appropriate for a town garage complex. The garage complex could be compatible with an adjacent recreational use although buffering, landscaping, and even reclamation of the excavated areas should be considered. These are also considerations which could influence the cost of developing the site.

Traffic

The town garage/animal shelter complex will not generate a large number of vehicles. It can be expected to house four trucks and assorted equipment, and generate traffic from the three to four employees, the town public works needs, and three other private vehicles which have access to the salt and sand. The animal shelter will generate traffic from the animal control officers' vehicle and vehicles carrying people to drop off or retrieve animals.

The site should be designed to separate truck traffic and sand/salt storage and mixing areas from the passenger vehicles of the employees and animal shelter.

All three sites are located on roads capable of carrying the traffic generated by the garage complex.

Site III fronting on Ruby Road (Route 320) is directly accessible from the state road (Route 320) and thus would engender the least traffic impact for residences.

The current driveway into Site III has poor horizontal site visibility due to the curving alignment of Route 320, the driveway placement, and the topography of the site. Grading of the site to give adequate site line and/or better driveway alignment would be necessary if a town garage facility were constructed at Site III. Realignment of Route 320 by the state should

be considered but would be immediately necessary only if regrading could not correct visibility problems.

Site II is accessed via Route 320 and Hancock Road. The town landfill site is also accessed via this route. The addition of the vehicle traffic generated by the town garage facility would provide minimal additional impact to the residences along Route 320 and Hancock Road which are already impacted by the landfill traffic.

The intersection of Hancock Road and Route 320 has poor vertical site visibility. This intersection might best be upgraded by improving vertical alignment of the two roads through reconstruction of the intersection. Since Route 320 had only 600 vehicles counted as the average daily traffic in 1980, however, signs or signals might provide a workable solution to this problem intersection.

The Town's plan of development points out Route 320's "dangerous horizontal and vertical curves" which affect Sites II and III.

Site I on Old Farms Road is on a "local road" according to the classification in the Town's plan of development and zoning regulations. Truck traffic, however light, is inappropriate on a local road which serves primarily as access to residences.

Sites II and III provide the better vehicular access.

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.

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, 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 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 Jeanne Shelburn (774-1253), Environmental Review Team Coordinator, Eastern Connecticut RC&D Area, P.O. Box 198, Brooklyn, Connecticut 06234.