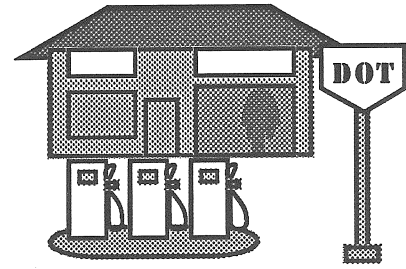


Proposed ConnDOT Maintenance Facility



Willington, Connecticut

Eastern Connecticut Environmental Review Team Report

Eastern Connecticut Resource Conservation & Development Area, Inc.

**Proposed
ConnDOT Maintenance Facility**

Wilmington, Connecticut

Environmental Review Team Report

**Prepared by the
Eastern Connecticut Environmental Review Team
of the
Eastern Connecticut Resource Conservation and Development Area, Inc.**

**for the
First Selectmen's Office
and the
Inland Wetlands Commission
Wilmington, Connecticut**

September 1996

**CT Environmental Review Teams
1066 Saybrook Road
P.O. Box 70
Haddam, CT 06438
(860) 345-3977**

ACKNOWLEDGMENTS

This report is an outgrowth of a request from the Willington First Selectman's Office, and the Inland Wetlands Commission to the Tolland County Soil and Water Conservation District (SWCD). The SWCD referred this request to Eastern Connecticut Resource Conservation and Development Area (RC&D) Executive Council for their consideration and approval. The request was approved and the measure reviewed by the Eastern Connecticut Environmental review Team (ERT).

Eastern Connecticut Environmental Review Team Coordinator, Elaine Sych, would like to thank and gratefully acknowledge the following Team members whose professionalism and expertise were invaluable to the completion of this report.

The field review took place on Tuesday, June 25, 1996.

David Askew District Manager
Tolland County Soil & Water Conservation District
(860) 875-3881

Nicholas Bellantoni State Archaeologist
UCONN - CT Museum of Natural History
(860) 486-5248

Jenny Dickson Wildlife Biologist
DEP - Sessions Woods Wildlife Management Area
(860) 675-8130

Norman Gray Geologist
UCONN - Dept. Of Geology and Geophysics
(860) 486-4434

Doug Hoskins Environmental Analyst III/Wetland Specialist
DEP - Inland Water Resources Division
(860) 424-3903

Robert Hust Senior Environmental Analyst
DEP-Bureau of Water Management
Planning and Standards Division
(860) 424-3718

consultants by providing site plans or detailed solutions to development problems. The

Lori Mathieu	Planning Analyst Department of Public Health -Water Supplies Section (860) 509-7333
Dawn McKay	Biologist/Environmental Analyst DEP - Natural Resources Center (860) 424-3592
Brian Murphy	Fisheries Biologist DEP - Eastern District Headquarters (860) 295-9523
David Poirier	Archaeologist State Historical Commission (860) 566-3005
J. Eric Scherer	Resource Conservationist USDA - Natural Resources Conservation Service (860) 688-7725
Robert Scully	Sanitary Engineer 3 Department of Health - Environmental Engineering Section (860) 509-7296

I would also like to thank Susan Yorgensen, Willington wetlands and zoning enforcement officer, Greg Blessing, chairman of the Inland Wetlands Commission, John Waleszczyk, DOT, project manager, Diane Bray, DOT, environmental planning, Christopher Malik, DOT, environmental planning and Dennis Miller of Frederic R. Harris, Inc. for their cooperation and assistance during this environmental review.

Prior to the review day, each Team member received a summary of the proposed project with a location and soils map. During the field review Team members were given site plans, with additional information being mailed to some Team members at a later date. 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 Team does not recommend what final action should be taken on a proposed project - all final decisions rest with the Town and developer. 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 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 Council hopes you will find this report of value and assistance in reviewing plans for this proposed DOT maintenance facility.

If you require additional information please contact:

Elaine Sych, ERT Coordinator
CT ERT Program
P.O. Box 70
Haddam, CT 06438
(860) 345-3977

Table of Contents

	Page
Acknowledgments _____	ii
Table of Contents _____	v
Introduction _____	1
Geology _____	6
Soil Resources _____	8
Water Resources _____	13
Wetland Resources _____	21
Fish Resources _____	23
The Natural Diversity Data Base _____	27
Water Supply _____	29
On-Site Sewage Disposal _____	35
Archaeological Review _____	37
Planning and Site Selection _____	38
Appendix A _____	40

List of Figures

1. Site Location _____	4
2. Location and Topographic Map _____	5
3. Soils Map (1966) _____	11
4. Soils Map (Updated) _____	12
5. Drainage Basin Map _____	17
6. Level B Mapping _____	18
7. Aquifer Map _____	19
8. Water Quality Map _____	20
9. Level B Mapping Aquifer Recharge Map _____	31
10. Tolland Wellfields _____	32
11. North Willington Village and Deer Park Apartments _____	33
12. Stratified Drift Areas Map _____	34

Introduction

Introduction

The Willington First Selectman's Office and the Willington Inland Wetlands and Watercourses Commission (IWWC) have requested an environmental review of a proposed Connecticut Department of Transportation (ConnDOT) maintenance facility.

The proposed site is approximately 13 acres located on Connecticut Route 32, just north of Interstate 84. The facility will consist of 18 garage bays with a centrally located office core. The maintenance bays will include a wash bay with a monorail crane. The office area will include two offices, women's and men's restrooms, a crew area, mechanical/electrical support space and a janitor's closet. Site work associated with this new facility will include paved areas for parking, a motor fueling farm with underground fuel storage, a loading ramp for the building, a water supply well and a septic system. A sand and salt storage area is proposed to be added at some future time (year 2000).

The ConnDOT currently has an existing facility located on approximately 49 acres on Connecticut Route 74, near its intersection with Route 32. This facility, which is to be removed and the site remediated, is the source of salt and benzene contamination to nearby residential wells.

Objectives of the ERT Study

The town has requested assistance in reviewing the proposed project because of their extreme concern with the location chosen for this new facility because of the factors described below and the pollution problems with the existing site.

The site is located on a large stratified drift aquifer and according to state groundwater mapping, the aquifer is known or inferred to be capable of yielding moderate to very large amounts of water. The Town of Willington Aquifer Protection Zone includes the project site, and it prohibits activities such as underground fuel storage and road salt storage.

The site is within 25 feet of Roaring Brook and its tributaries, and within 600 feet of the Willimantic River. The section of the Willimantic River from the mouth of Roaring Brook downstream to the Route 74 crossing is designated as a Trout Management Catch and Release Area in which "fly-fishing only" regulations are in effect.

This report describes the natural/cultural resources present, discusses the possible environmental impacts to those resources, addresses the town's concerns and presents planning and land use guidelines.

The ERT Process

Through the efforts of the town this environmental review and report was prepared for the Willington Selectmen and the Inland Wetlands and Watercourses Commission.

The review process consisted of four phases:

1. Inventory of the site's natural resources;
2. Assessment of these resources;
3. Identification of resource problem areas and review of plans and other documentation;
4. Presentation of management and land use guidelines.

The data collection phase (inventory) involved both literature and field research. The field review was conducted on June 25, 1996. The emphasis of the field review was on

the exchange of ideas, concerns and recommendations. Being on site allowed Team members to verify information and to identify other resources.

Once Team members had assimilated an adequate data base, they were able to analyze and interpret their findings. Individual Team members then prepared and submitted their reports to the ERT Coordinator for compilation into this final ERT report.

Figure 1

↑
N

Site Location

Scale 1" = 2000'

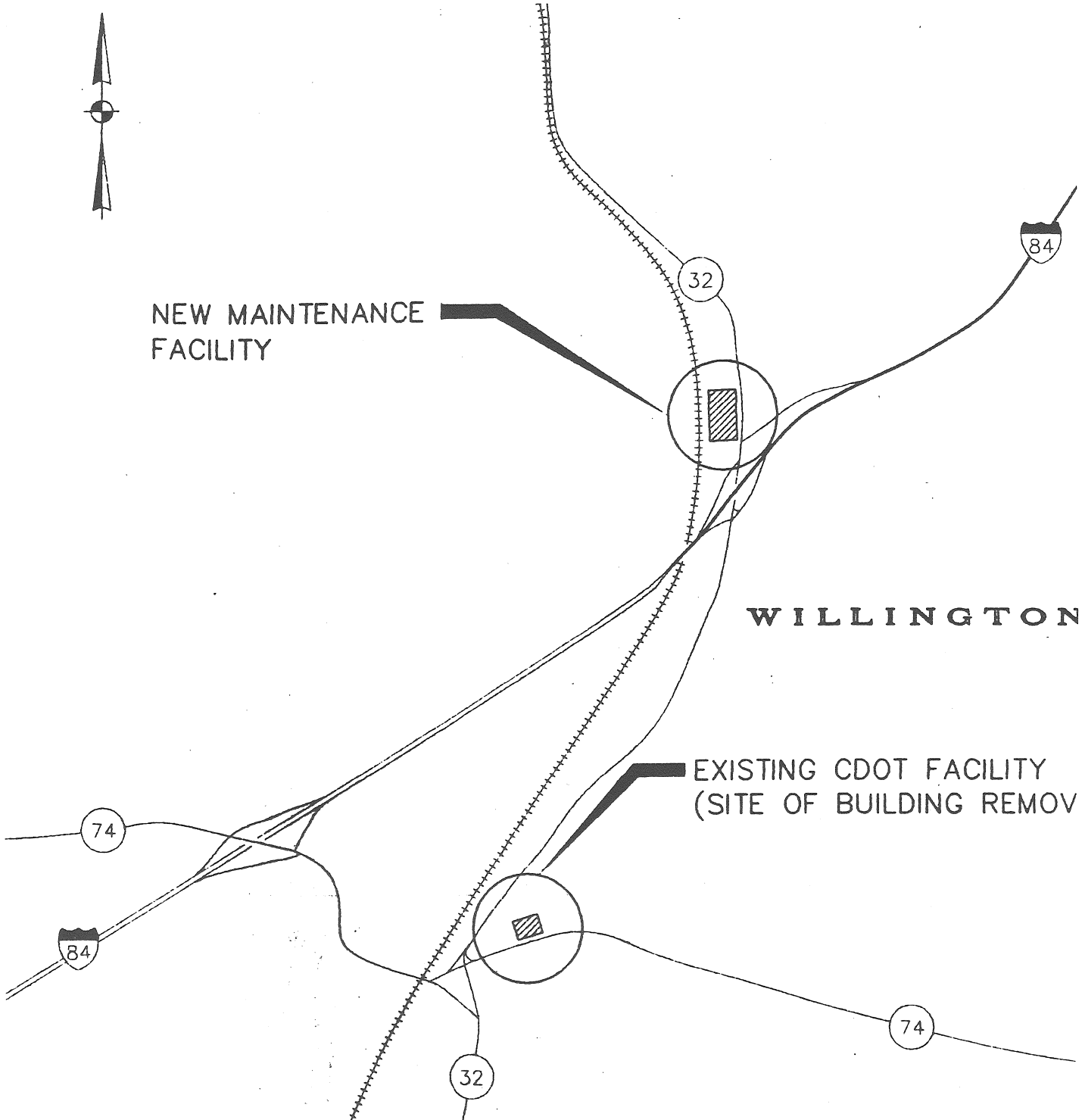
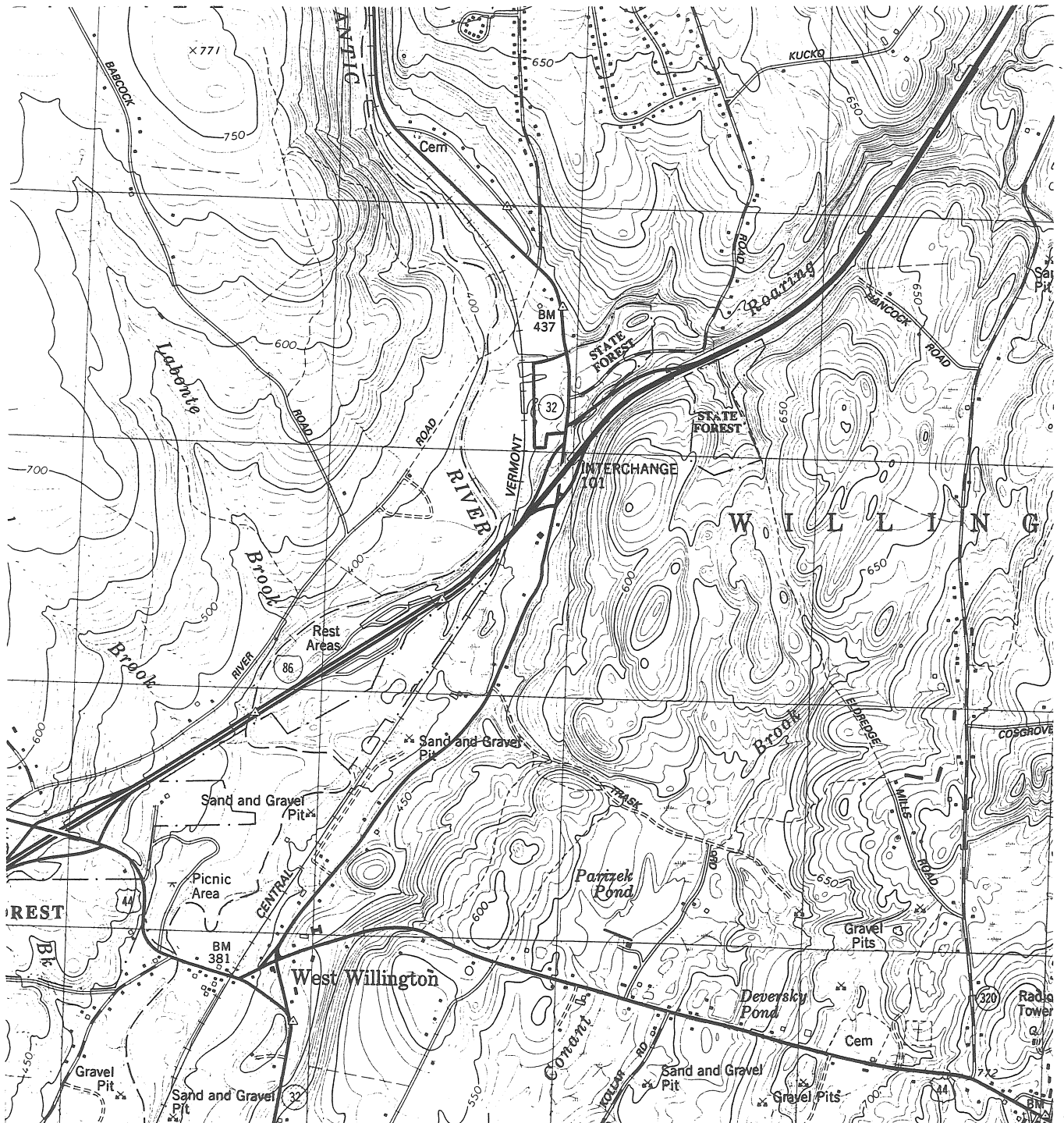


Figure 2

↑
N

Topographic Map

Scale 1" = 2000'



Geology

Surficial Geology

The proposed maintenance facility is situated on a relatively flat terrace at the confluence of two U-shaped bedrock valleys - the Willimantic and Roaring Brook. The terrace is underlain by at least 10 feet of sand and gravel material. These materials were deposited by sediment choked streams confined to the edges of the present valleys by large blocks of melting stagnant ice at the end of the last major ice age, roughly 14,000 years ago. Small knobby hills of much coarser bouldery (boulders up to 3 feet in diameter) material which rise 10 feet or so above the general level of the terrace represent material originally deposited in crevasses when the valleys were completely filled with ice. A series of three such knobs extend southwesterly across the central portion of the site, marking the course of a high permeability zone, now buried and concealed by several feet of terrace sands and gravels.

The distribution of the terrace deposits ("stratified drift") in the Willimantic and Roaring Brook Valleys is accurately shown on the 1975 USGS Surficial Geological map of the Stafford Springs Quadrangle (GQ-1216) by M. Pease. The large volume interconnected deposits of stratified drift in the area is potentially a very significant aquifer. Although the saturated thickness of stratified drift at the proposed site may only amount to less than 10-20 feet (based on the limited well data shown on the surficial map) the fact that several coarse grained, and thus high permeability, zones may underlie and hydraulically connect the site to areas of thicker stratified drift across and down valley suggests precautions be taken not to contaminate even the local groundwater system. The salt shed, for example should be kept well away from the buried crevasse fill system that traverses the center of the property.

Bedrock Geology

Although bedrock is not exposed, the evidence recorded on the 1975 USGS open-file map of the Bedrock Geology of the Stafford Springs Quadrangle suggests that the site is underlain by the rusty-weathering Brimfield Schist. This rock contains a few percent of the mineral pyrrhotite (FeS) which when oxidized readily produces ferrous iron

(rust) and sulfuric acid. Any action that lowers the water table, even locally, exposes fresh pyrrhotite to oxidation. For example, a heavily pumped bedrock well at the site would tend to become more acidic and iron rich after a year or two of production.

Soil Resources

The landscape of this site is typical of the nearly level to undulating and sloping soils found on floodplains and terraces in the narrow valleys along streams in Tolland County. Soils on this site are represented by the soil association Hinckley-Merrimac-Podunk. Texture of these soils range from loamy sand or sand to silt loam. The drainage of these soils range from excessive to very poor. The topographic range of this area is between 400 and 425 feet (NGVD).

The *Soil Survey of Tolland County, Connecticut* (1966), atlas sheet number 22, indicates those soil map units found to exist on this site (Figure 3). An update of the soil survey is in progress and interim mapping has been completed for this area. Changes to the atlas sheet number 22 for this site is shown on Figure 4, "Proposed Willington MTCE Facility Site", prepared from CT DEP/NRCS digitized soil mapping presented by Christopher Malik, Transpiration Planner, CT-DOT. The digitized map represents changes to the official soil map of the 1966 Soil Survey. This remapping was completed prior to the placement of fill materials in the mid 1990's. Field investigation by the USDA-Natural Resources Conservation Service (NRCS) confirm the recent remapping and concur that it should be used as the official soils map for pre-fill conditions. Any new mapping completed should show an extension of the map unit 306 (Udorthents) into the map unit 57B (Gloucester gravely sandy loam) which would represent the filled area.

Appendix A contains general soils information for soils located on and adjacent to the site. Included in this information is a Nontechnical Soil Description Report, Hydric Soils List, Soil Features, Physical Properties of Soil, Water Features, Sanitary Facilities, Building Site Development and Water Management. These reports should prove useful in providing general planning and site evaluation information.

In using the attached soil reports, the reviewer should use the soil map unit and description OnA for the unit-101 (Occum fine sandy loam), PoA for unit 102 (Pootatuck fine sandy loam), GcA for units 57B and 57C (Gloucester sandy loam), SbA for unit 108 (Saco silt loam), Am for unit 109 (Fluvaquents-Unifluvents Complex) and Ma for unit 306 (Udorthents).

The general suitability and limitations of these soil map units for the proposed uses will be discussed within the text and the referenced tables included within this report. Soil limitations for this site range from slight to severe, depending upon potential development opportunities of the site.

The limitations for identified uses are considered “slight” if soil properties or site features are favorable for the intended use and limitations are minor or easily overcome. “Moderate” limitations occur if soil properties are not favorable for the intended use and specific planning, design, or maintenance is needed to overcome or minimize limitations. “Severe” limitations occur when soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs and possible increased maintenance are required. A review of the soils map and the attached reports will indicate any areas of potential soil limitations. The dominant soil features of the non-hydric soils on this site are excessive drainage. These complex soils have bedrock at depths greater than 60 inches below the surface.

The *Soil Survey of Tolland County, Connecticut* (1966), is not a substitute for on-site soils investigations. It will be necessary to conduct an on-site investigation to accurately determine the suitability of any soil type for any intended use. Due to the modifications that have occurred on this site as a result of filling, it is recommended that the applicant utilize a professional geotechnical engineer to determine site suitability for intended use and engineering requirements for appropriate engineering designs. The *Soils Report, Connecticut Department of Transportation - Soils and Foundations, Project Number: 160-128, New Maintenance Facility, Town of Willington, July 3, 1996* provides appropriate guidance in the use and development of this site in relation to utilizing the existing fill material.

Concern over the recently placed fill for the intended use was raised as a result of observed surface failures along sections of the fill’s perimeter. These failures appeared to be limited to the outside fill areas (also see *July 3, 1996 CT-DOT Soil Report, Observations and Findings*, page 2 of 3).

In review of the site, and through discussions with CT-DOT staff, those concerns raised over fill placement and stability were addressed by a review of the State of CT-DOT *Form 814, Section 2.02 “Roadway Excavation, Formation of Embankment and Disposal of Surplus Material.”* This standard was used in the placement of fill at the site.

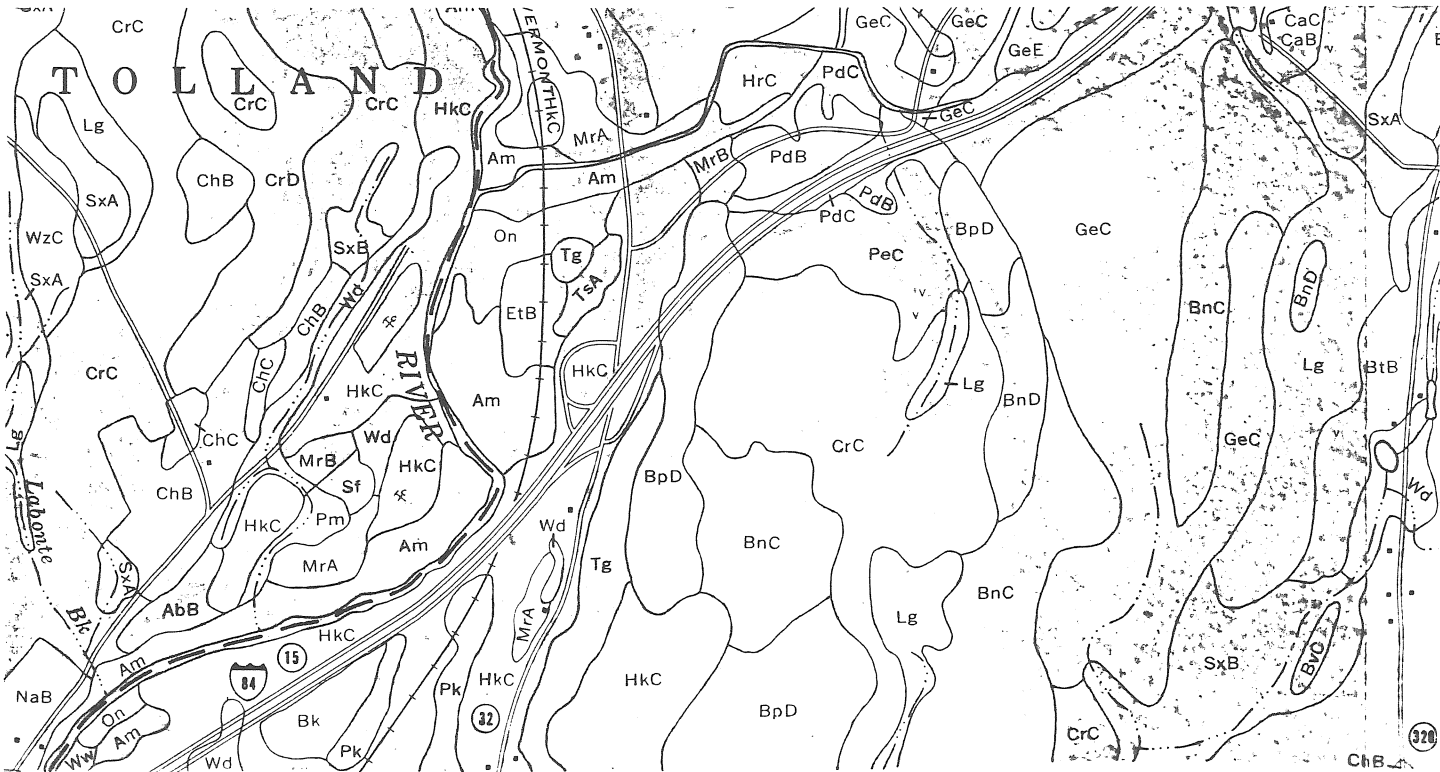
Following this procedure and those recommendations in the July 3rd CT-DOT report will help to ensure proper site design for proposed facilities.

Figure 3



Soils Map (1966)

Scale 1" = 1320'



Soil Map Legend
To be used with Figure 4

Map symbol	Soil name
OnA	ondawa sandy loam, 0 to 3 percent slopes
PoA	podunk sandy loam, 0 to 3 percent slopes
GcA	gloucester fine sandy loam, 0 to 3 percent slopes
SbA	saco silt loam, 0 to 3 percent slopes
Am	alluvial land
Ma	made land

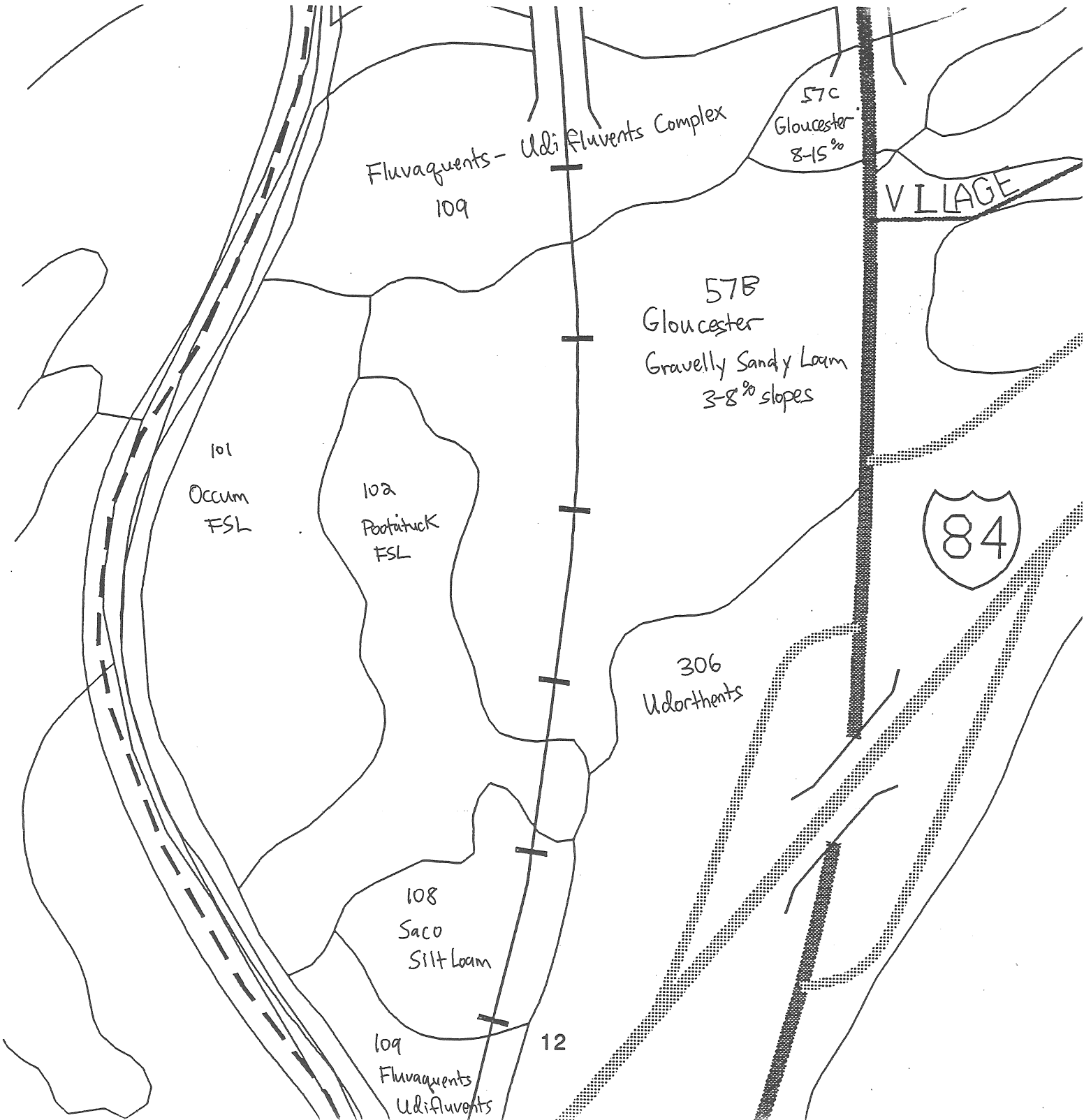
Figure 4

↑
N

Soils Map

(Prepared from CT DEP/USDA-NRCS Digitized Soil Mapping and CT DOT TRU by Christopher Malik)

Scale 1" = 250'



Water Resources

Description of the Resources

The site is located at the outlet of the Roaring Brook watershed where it enters the Willimantic River. Roaring Brook drains approximately 21.6 square miles of watershed in four towns. The Willimantic River is a regional drainage basin of 225 square miles, ranging from Massachusetts to Willimantic. The site is located in the upper middle part of the basin (see Figures 5 & 6 for the drainage basin map and site location). Although the site topography has been altered with fill, the surface drainage pattern is to the north and west entering a wetland and overflow (secondary) channel of Roaring Brook which flows to the Willimantic River. The site is located on a large stratified drift deposit which parallels the Willimantic River valley. A stratified drift aquifer underlies the site south to Coventry. According to the state groundwater mapping, the aquifer is known or inferred to be capable of yielding moderate to very large amounts of water. Groundwater flow at the site would generally be in the west direction toward the Willimantic River (see Figure 7).

DEP classifies water quality conditions and sets goals for all surface and groundwater resources based on designated use and the State Water Quality Standards. The Standards and Classifications are designated to manage water quality to protect health, the environment, and legitimate uses of water resources. The lower segment of Roaring Brook is classified B/A water quality, B is the existing condition and A is the goal. The "A" quality designates use of the brook as potential drinking water supply, fish and wildlife habitat, recreation, agricultural, industrial supply and other legitimate uses. The existing "B" quality condition indicates it may not be meeting the water quality criteria for one or more designated uses. Potential sources of impairment includes the Willington mixed waste landfill about one (1) mile upstream. The Willimantic River is classified "B" water quality and designated for all uses above except potential water supply. Treated waste water discharges are not allowed in Class A waters but may be allowed in Class B subject to state discharge permitting requirements (see Figure 8).

Groundwaters at and surrounding the site are classified GA water quality. These are groundwaters within areas of existing private supply wells or potential private or public water supply wells. It is presumed to be suitable for drinking use without treatment. It also

provides base flow to hydraulically connected surface waters. All the surrounding land in Willington is served by on-site private or small community wells. Non-domestic (non-sewage) wastewater discharges are prohibited to the ground in GA areas.

The Willimantic River aquifer has been characterized by several hydrogeologic reports and studies concerning both existing water supply wells and potential use. The aquifer segment within several miles of the site is currently developed for supply by the Tolland Water Department approximately three (3) miles downstream. The water department has also generally indicated in their water supply plan that a potential well field may be about one (1) mile north of the existing well field. The existing well field has been preliminarily mapped under the State Aquifer Protection Area Program and the DOT site is not within the recharge area (see Figure 6). Although no information is available for the potential well, based upon the above information is extremely unlikely the recharge area would extend to the DOT site. From available information about the river bottom conditions, indirect well field recharge from induced infiltration would not occur under normal pumping conditions. If induced infiltration under limited conditions occurred it would not be expected to negatively impact the wells.

Previous studies of potential water supply yield from stratified drift deposits just south of the site area suggested that production of up to 14 mgd (million gallons per day) was possible (Conn. Water Resources Bulletin No. 11, 1967). However, these estimates utilized limited data and assumed that all the streamflow in the Willimantic River could be drawn for water supply. Recently revised estimates of 0.9 mgd (Mazzaferro Groundwater Yields for Selected Stratified Drift Areas in Connecticut, 1986) utilize additional data for the region and allow for maintenance of streamflow levels (see Figure 7). The revised estimate provides a more reasonable assessment of the potential yield from this aquifer. This represents a moderate potential yield for use as a local community supply or regional supply supplement. Further assessment of water quality conditions and potential threats would also be necessary for consideration as a community water supply, as well as examination of impacts to surface water flow. According to water supply plans in the area, no formal well field is planned in the area except the Tolland Water Department's potential well site. According to Willington's zoning regulations they are using the 1980 208 program aquifer mapping and regulation to broadly protect all of the stratified drift which is 10 feet saturated. The Willington Aquifer Protection Zone includes the DOT site.

Concerns and Recommendations

A highway maintenance facility can pose a number of potential concerns to water quality, especially groundwater. The facility will generate wastewaters from the wash bay and service floor drains, discharge of domestic sewage on-site (discussed in the Sewage Disposal section), and present potential non-point pollution sources from the use and storage of fuel and maintenance chemicals. Stormwater from the site also will need to be managed. Several state permits or registrations will be required for the facility for wastewater discharges, petroleum storage, and stormwater. The DEP document *Best Management Practices for the Protection of Groundwater* (November 1992) provides procedures and methods to prevent pollution and reduce releases to the environment, including specific information on vehicle service facilities. Below is a discussion of protection measures for the most critical activities.

Wastewater Discharges

Wastewater discharges as indicated in the water quality portion of this section is wastewater from the wash bay and service bays and is not allowed to the ground and must be disposed of off site by a licensed hauler. The availability of public sewers to discharge treated wastewaters is desirable for a facility of this type and size. Presently holding tanks are proposed but depending on discharge volumes could create large disposal and maintenance costs. Installation of approved pretreatment structures (oil, particle separation) may qualify the wastewater for a general permit, but would still require off-site disposal at a sewage treatment plant.

Storage and Handling of Hazardous Materials

The underground storage of fuel represents the greatest potential threat to groundwater quality from tank spills or leaks. Petroleum storage tanks for gasoline and heating oil will have to be registered under the State Underground Petroleum Storage Regulations and meet those standards for integrity and monitoring. The holding tank may also have to be registered depending on pretreatment. Where possible tanks should be put above ground with secondary containment. Where not possible (such as gasoline), tanks and lines which are underground should be double walled with overfill protection and interstitial monitoring. Although not on the site plan, DOT indicated at the ERT review meeting that they planned to do this. All other maintenance chemicals (solvents, lubricants, etc.) should be stored inside the building or other enclosed structures with an impervious floor and secondary containment. Waste oil tanks and hazardous wastes should also be stored in

approved containers, in areas meeting the above protection measures. Hazardous waste generated from solvent use must be hauled and disposed of by a licensed hazardous waste company. An emergency spill containment plan should be developed for the facility.

Stormwater

The site will require a State Stormwater General Permit for construction and for the facility itself. The construction permit must address sediment and erosion control. Currently, no specific measures are shown. The facility permit must address pollution source controls, stormwater management and disposal, and system maintenance. Source controls are a primary measure and should include storage measures discussed above and protecting materials which can leak or leach from stormwater contact with a roof and containment. Only, clean, non-leachable materials should be stored outside. The proposed stormwater system calls for a gross particle separator but provides no details. The structure should be designed to remove 80% solids from the runoff. The use of a "swirl type" separator with sufficient storage for floatables should be used. To aid in spill containment and treatment, catch basin structures should have deep (4 feet) sumps and be hooded. These are especially useful in the gasoline dispensing and loading areas. Also the outlet splash pad should be constructed as a plunge pool providing additional settling and spill containment.

Future Salt Storage Area

Although not part of the present facility development at this time, additional consideration should be given to the future salt storage area, especially if the aquifer will be used locally as a community supply. The storage facility would at a minimum have to be in an approved salt storage shed with provisions to prevent tracking on or off the site. Containment would also apply to salt/sand mixture.

Conclusion

In conclusion, there are some concerns with the type of facility, lack of sewers, and local groundwater resources. Presently the Willington Aquifer Protection Zone prohibits several activities proposed including underground fuel storage and road salt storage. These issues and alternatives should be fully examined through the Connecticut Environmental Protection Act (CEPA) process.

Figure 5



Drainage Basin Map

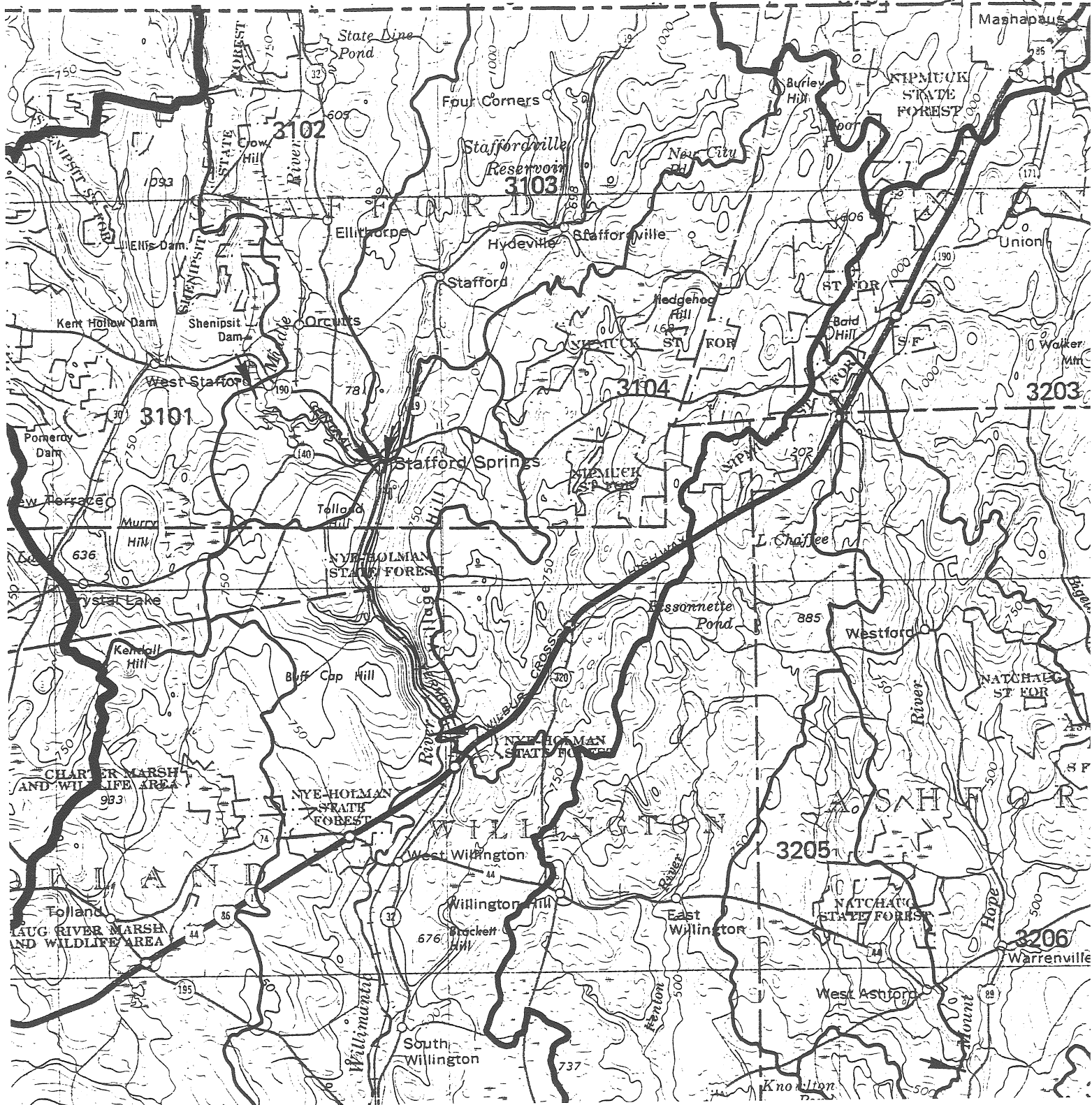


Figure 6



Aquifer Protection Areas - Level B

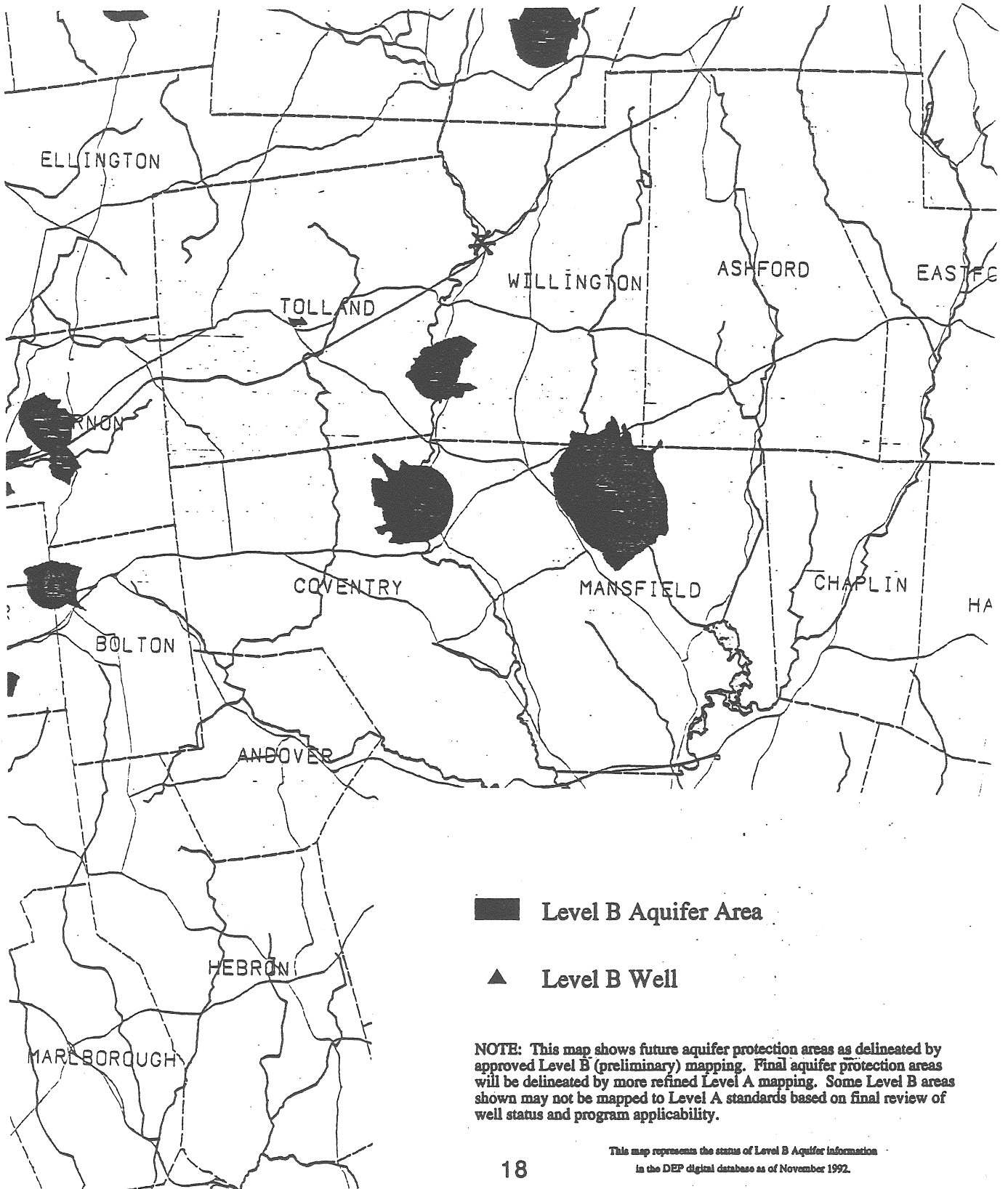


Figure 7



Stratified Drift Aquifer Map

AQUIFERS

STRATIFIED-DRIFT AREAS — Areas underlain by stratified-drift deposits that have a saturated thickness of 10 feet or more and thought to be capable of yielding moderate to large amounts of ground water. The contact line that delineates these areas is from Meade (1978). All stratified-drift areas in Connecticut are not shown.

EXPLANATION

This map is a compilation of data from 162 stratified-drift aquifers in Connecticut that have been evaluated for long-term yields. It was originally compiled by the U.S. Geological Survey as part of the Northeast Glacial Aquifers Regional Aquifer-System Analysis study and subsequently revised as part of a cooperative program with the Connecticut Department of Environmental Protection. The long-term yield estimates on this map were taken from published reports or were calculated by the author using hydrologic data contained in previous reports. Five items of information are shown for each aquifer. They are 1) the estimated, long-term yield; 2) the method of analysis used to determine the yield; 3) the low flow of streams that are adjacent, and assumed to be hydraulically connected to the aquifer; 4) an identification number based on natural surface-water drainage basins in Connecticut; and 5) a reference number indicating the principal report that contains yield, low-streamflow or other hydrogeologic information. The 162 aquifers shown on this map include all those that have estimated long-term yields of 5 million gallons per day or more, most of those that have estimated long-term yields between 1 and 5 million gallons per day, and a few of those with estimated long-term yields of less than 1 million gallons per day. Additional stratified-drift aquifers occur in Connecticut but are not shown on this map because data needed to estimate their long-term yields are unavailable.

The long-term yield estimates shown on this map reflect the hydrogeologic characteristics and quantity of water available to aquifers as well as the amount, completeness, and degree of accuracy of available data, and the method of analysis. Only the quantity of water available from an aquifer is estimated; no attempt is made to determine if the quality of the available water is suitable for human consumption or other uses.

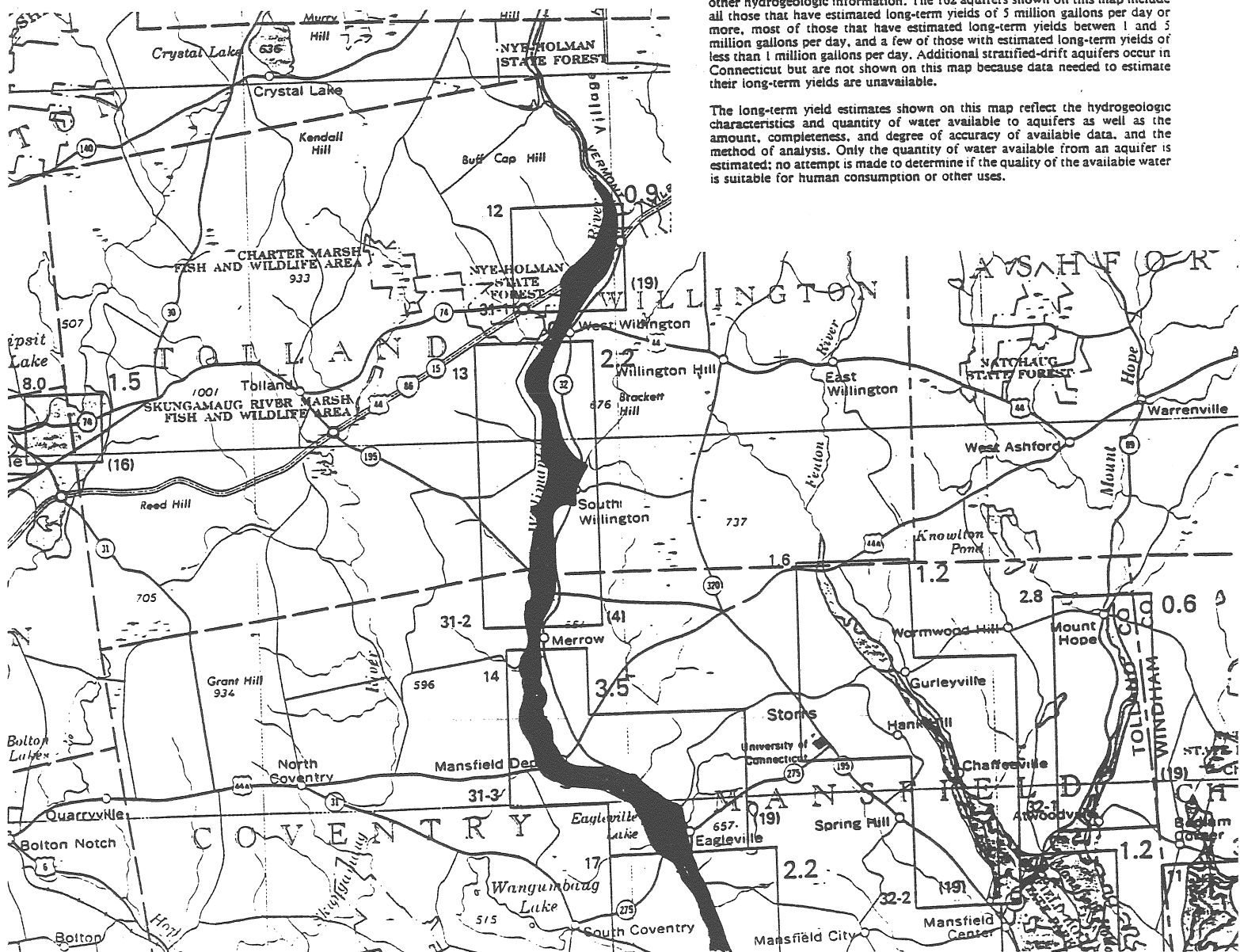
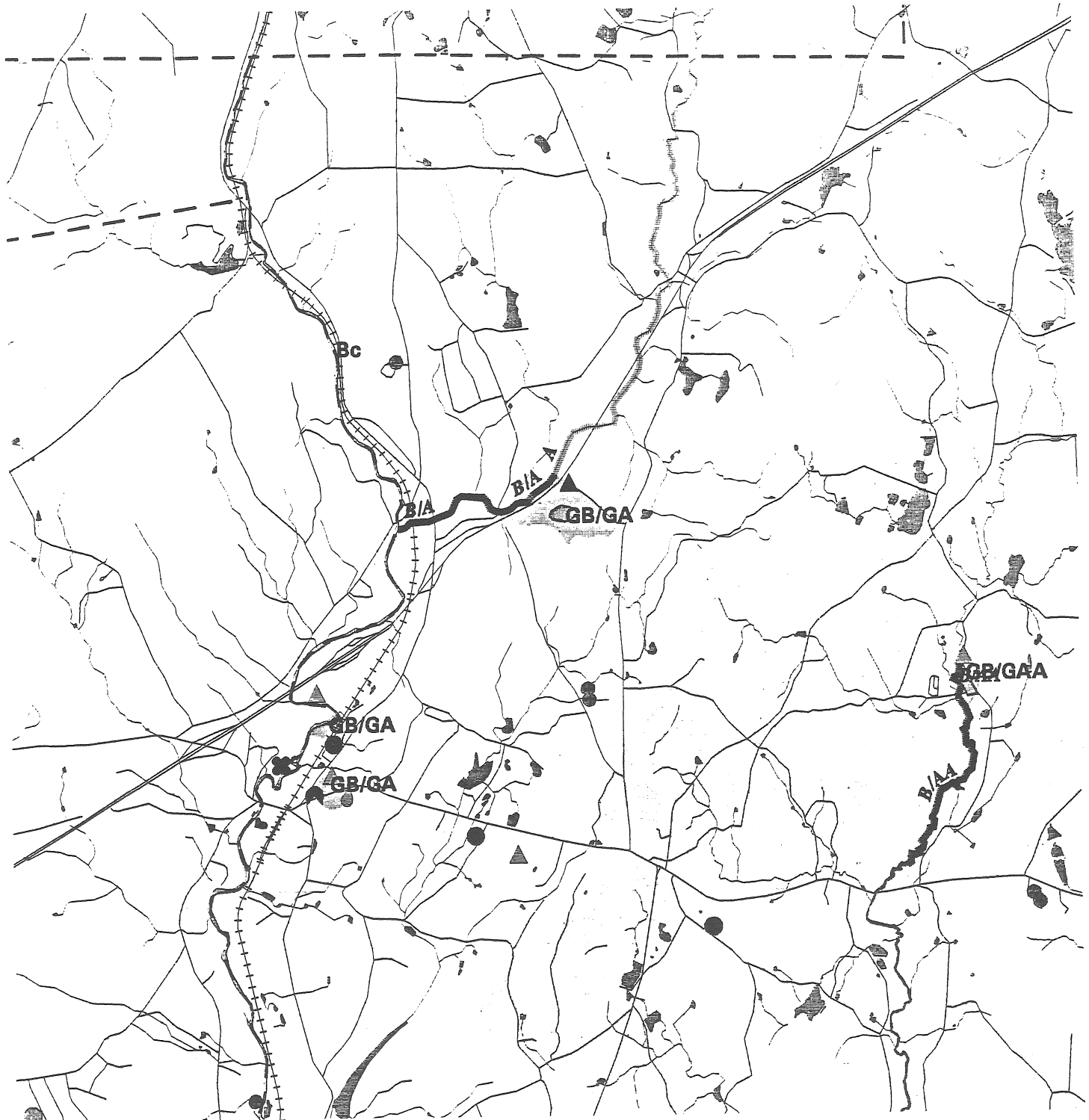


Figure 8

↑
N

Water Quality Map



Wetland Resources

On site wetlands consist of a small area of forested wetland on the east portion of the site. The hydrology of this system is primarily influenced by surface drainage from the other side of Connecticut Route 32 which is conveyed under the road through a culvert. Substantial fill material has been placed in proximity to this wetland however, it is evident from the natural grades which remain between the wetland and the filled area that there is no defined watercourse which serves as a surface outlet from this wetland area.

Nearby off-site regulated areas include Roaring Brook which lies, at its closest, 25 feet off the northern property line. This system consists of the Roaring brook proper as well as braided streams which branch from the "mainstem" and its associated floodplain. The Willimantic River is located approximately 600 feet off the western property line.

Wetland permit staff from the DEP's Inland Water Resources Division had previously inspected this site with DOT personnel to confirm the existing wetland delineation and to determine the need for a State Inland Wetlands and Watercourses Permit. The conclusion of this investigation was that the wetland boundaries as delineated in the field and represented on the site plan were substantially correct and that there were no regulated activities proposed as part of this project which would require a permit from the Inland Water Resource Division. While this previous investigation focused on the more "direct" impacts to wetlands and watercourses, such as the placement of fill or excavation in wetlands, suggestions can be made which may reduce the effect of possible indirect wetland impacts such as reduced stormwater quality and sedimentation. To that end, it is recommended that the following items be incorporated into the site plan and/or supporting documentation for this proposal:

- Schedule of major construction activities (including erosion and sedimentation control measures), preferably in the form of a "Gant" type bar chart listing each activity in proper sequence and assigning to them start and stop dates;

- Locus map of project at a scale of 1" = 2000', including project limits, north arrow, street names, major drainage ways and watershed limits;
- Proposed contour lines with elevation clearly indicated;
- Detailed drawings for the proposed gross particle separator which includes measures for the retention of petroleum waste contained in the "urban" stormwater runoff;
- Documentation as to the anticipated stormwater velocities at the end of proposed outlet-protection pads during theoretical design-storm events;
- Planned permanent and temporary vegetation including landscaping plan, seed mixtures, mulch types, fertilizer requirements and proposed planting dates;
- Maintenance requirements of temporary measures (i.e. Silt fences) during the construction period;
- Maintenance requirements for permanent measures (i.e. gross particle separators) after the construction period;
- Finally, additional treatment of the stormwater runoff being discharged from the facility beyond what will be accomplished by the gross particle separator is recommended. The possibility of a suitably sized, created wetland area for the purpose of water quality renovation (ideally a "wet-detention basin") should be investigated.

Fish Resources

Introduction

The northern section of the proposed maintenance facility will be adjacent to an abandoned overflow channel of Roaring Brook. In addition to a maintenance facility, future plans call for the construction of a salt storage shed to be located south of the main building.

Stormwaters will be outletted to a riprap splash pad to be installed approximately 60 feet from the edge of the abandoned, overflow channel. The entrance of this abandoned channel is approximately 750 feet upstream from the Route 32 crossing. This side channel receives streamflow when the mainstem overtops its banks which most likely occurs at a frequency of every 1.5 years.

This section will address impacts to aquatic resources on the property and delineate measures necessary to effectively mitigate impacts.

Fish Population

Roaring Brook supports a high quality coldwater fishery. It is annually stocked with over 3,600 adult rainbow, brook, and brown trout. It is known to support a wild brown trout fishery and native brook trout. The DEP Fisheries Division has also stocked this stream with brown trout fry. Fry survival has been good with many fish growing to a larger size and being observed moving down into the Willimantic River. Roaring Brook near its confluence with the Willimantic River may often serve as a thermal refuge during the summer when coldwater fish such as trout temporarily move into the stream when mainstem ambient conditions reach stressful conditions.

The Willimantic River is a highly prized and productive trout stream supporting over 17 species of finfish. The Willimantic River is annually stocked by the Department of Environmental Protection, Fisheries Division with over 8,000 rainbow, brook, and brown trout in the towns of Tolland, Willington, Coventry, and Mansfield. The river also supports a native (wild) brown trout fishery. The section of the river from the mouth of Roaring Brook downstream to the Route 74 crossing is designated as a Trout Management Catch and Release Area in which “fly-fishing only” regulations are in effect and all angled fish must be released unharmed.

Impacts

The following impacts on aquatic ecosystems can be expected if proper mitigation measures are not implemented:

Construction site soil erosion and sedimentation of streams through increased runoff from unvegetated areas.

During project construction, topsoil may be exposed and become susceptible to runoff events, especially if erosion and sediment controls are not properly installed and maintained. Specifically, the following impacts to fisheries could be expected if erosion and sedimentation occurs:

- (1) Sediment reduces the survival of resident fish eggs and hinders the emergence of newly hatched fry. Adequate water flow, free of excess sediment particles is required for fish egg respiration and successful hatching.
- (2) Sediment reduces the survival of aquatic macro-invertebrates. Since aquatic insects are important food items in fish diets, reduced insect populations levels in turn will adversely affect fish growth and survival. Fish require an excessive output of energy to locate preferred prey when aquatic insect levels decrease.
- (3) Sediment reduces the amount of usable habitat required for spawning purposes. Excessive fines can clog and even cement gravels and other desirable substrate

together. Resident fish may be forced to disperse to other areas not impacted by siltation.

- (4) Sediment reduces stream pool depth. Pools are invaluable stream components since they provide necessary cover, shelter, and resting areas for resident fish. A reduction of usable fish habitat can effectively limit fish population levels.
- (5) Turbid waters impair gill functions of fish and normal feeding activities of fish. High concentrations of sediment can cause mortality in adult fish by clogging the opercular cavity and gill filaments.
- (6) Sediment encourages the growth of filamentous algae and nuisance proportions of aquatic macrophytes. Eroded soils contain plant nutrients such as phosphorous and nitrogen. Once introduced into aquatic habitats, these nutrients function as fertilizers resulting in accelerated plant growth.
- (7) Sediment contributes to the depletion of dissolved oxygen. Organic matter associated with soil particles is readily decomposed by microorganisms thereby effectively reducing oxygen levels.

Stormwater/Downstream Impact Concerns

At present, stormwater design will concentrate flows and sediment directly into the abandoned channel of Roaring Brook. Albeit the stormwater system includes a gross particle separator and catch basins, suspended sediments not collected by the drainage system will be transported to this abandoned stream channel. Coarse sands can then be easily transported to the mainstem of Roaring Brook. Any water quality problems and habitat degradation that occurs within Roaring Brook will eventually affect the Willimantic River. The protection of Roaring Brook and Willimantic River trout fisheries is contingent upon the maintenance of existing water quality standards and instream habitat conditions.

Recommendations

The following recommendations are provided to assist with the mitigation of the previously outlined impacts.

1. Construction of a lined basin for accidental spills. Given the close proximity of this facility to Roaring Brook, consideration should be given to building a lined basin in the area of the proposed riprap splash pad to collect any fuels, oils, or other materials toxic to aquatic ecosystems that may accidentally spill from this facility and enter the stormwater drainage system. This basin may alleviate concerns for possible surface water/groundwater contamination.

2. Develop an aggressive and effective erosion and sediment control plan. Proper installation and maintenance of erosion/sediment controls is critical to environmental well being. This includes such mitigative measures as filter fabric barrier fences, staked hay bales, and sediment catch basins. Land disturbance and clearing should be kept to a minimum and all disturbed areas should be restabilized as soon as possible. Exposed, unvegetated areas should be protected from storm events. Proper installation and maintenance of controls is particularly important on the project site since all surface water drains immediately downslope to Roaring Brook and the Willimantic River.

The Natural Diversity Data Base

The Natural Diversity Data Base maps and files have been reviewed for the project site. According to our information, there are no known extant populations of Federal or State Endangered, Threatened or Special Concern Species that occur at the site in question.

However, a significant wetland habitat classified as a poor fen occurs just south of this proposed project; it is within this wetland that two state listed (R.C.S.A. sec. 26-306) species may be found. *Ledum groenlandicum* (Labrador tea) is a State Threatened plant species that occurs in the fen. Nancy Murray, DEP program biologist, recommends that an evaluation be done to assess potential impacts to the species and habitat as a result of this project. The NDDB would like to receive a copy of the final report.

In addition, a State Special Concern Species, *Ardea herodias* (Great blue heron) also occurs in the poor fen wetland to the south of the proposed project. Any potential impacts to the great blue heron can be minimized by insuring that erosion control practices are utilized to prevent downstream sedimentation/discharge to the wetland area.

The Wildlife Division has not made an on-site inspection of the project area.

Natural Diversity Data Base information includes all information regarding critical biological resources available to us 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 and the Wildlife Division has not an on-

site inspection of this project area. Consultations with the Data Base should not be substitutes 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 is incorporated into the Data Base as it becomes available.

Also be advised that this is a preliminary review and not a final determination. A more detailed review may be conducted as part of any subsequent environmental permit applications submitted to DEP for the proposed site.

Water Supply

Public Water Supply

Tolland Water Department

The Tolland Water Department (TWD) owns and operates an existing well field located approximately 16,000 feet south of the proposed DOT maintenance facility. This well field, made up of two individual wells (one active well, one emergency well), serves as the single source for the TWD. The level B aquifer recharge area has been delineated and is shown on Figure 9. The 1995 population served for the TWD was estimated at approximately 332 service connections or 1,082 people. The TWD water service area is located to the south of Interstate 84 and east of Route 195. The number of services is projected to grow to 1,000 by the year 2040, or approximately 3,260 people.

The TWD has identified an areas owned by the Town of Tolland located approximately 10,000 feet to the south of the proposed DOT facility for a potential well field. This proposed well field site (Figure10) may be utilized to support future long term growth of the TWD system.

North Willington Village

North Willington Village is a condominium complex located approximately 5,000 feet to the north of the proposed DOT facility (Figure11) serving approximately 60 people in the town of Willington. The water system is made up of one bedrock well.

Deer Park Apartments

Deer park Apartments are located approximately 6,000 feet to the southeast of the proposed DOT facility (Figure11) serving approximately 90 people in the town of Willington. The water system is made up of two bedrock wells.

Town of Willington

The Town of Willington has identified the proposed DOT facility site as a possible future potential public water supply well supply site for the Town of Willington. The Town has identified this area based upon data from the DEP Natural Resources Center 1986 study and mapping entitled *Ground-Water Yields for Selected Stratified*

Drift Areas in Connecticut (Figure 12). This area is shown to potentially yield 0.9 million gallons per day. Presently, the Town of Willington does not own or operate an existing public water supply system, nor have any formal water supply plan on file pursuant to Connecticut General Statute 25-32d with the Department of Public Health to serve future populations.

Comments and Recommendations

Based upon the above information, the proposed DOT facility is determined to have no impact to any existing public water supply sources as shown on Figures 10 and 11. The proposed DOT facility site is not located within the Level B aquifer recharge area of the Town of Tolland's existing public water supply well field. This no impact determination is based upon assumptions that all potential chemical spills can be contained by measures located on the proposed DOT site, and that appropriate best management practices for the handling of chemicals (including salt) are adhered to by DOT staff.

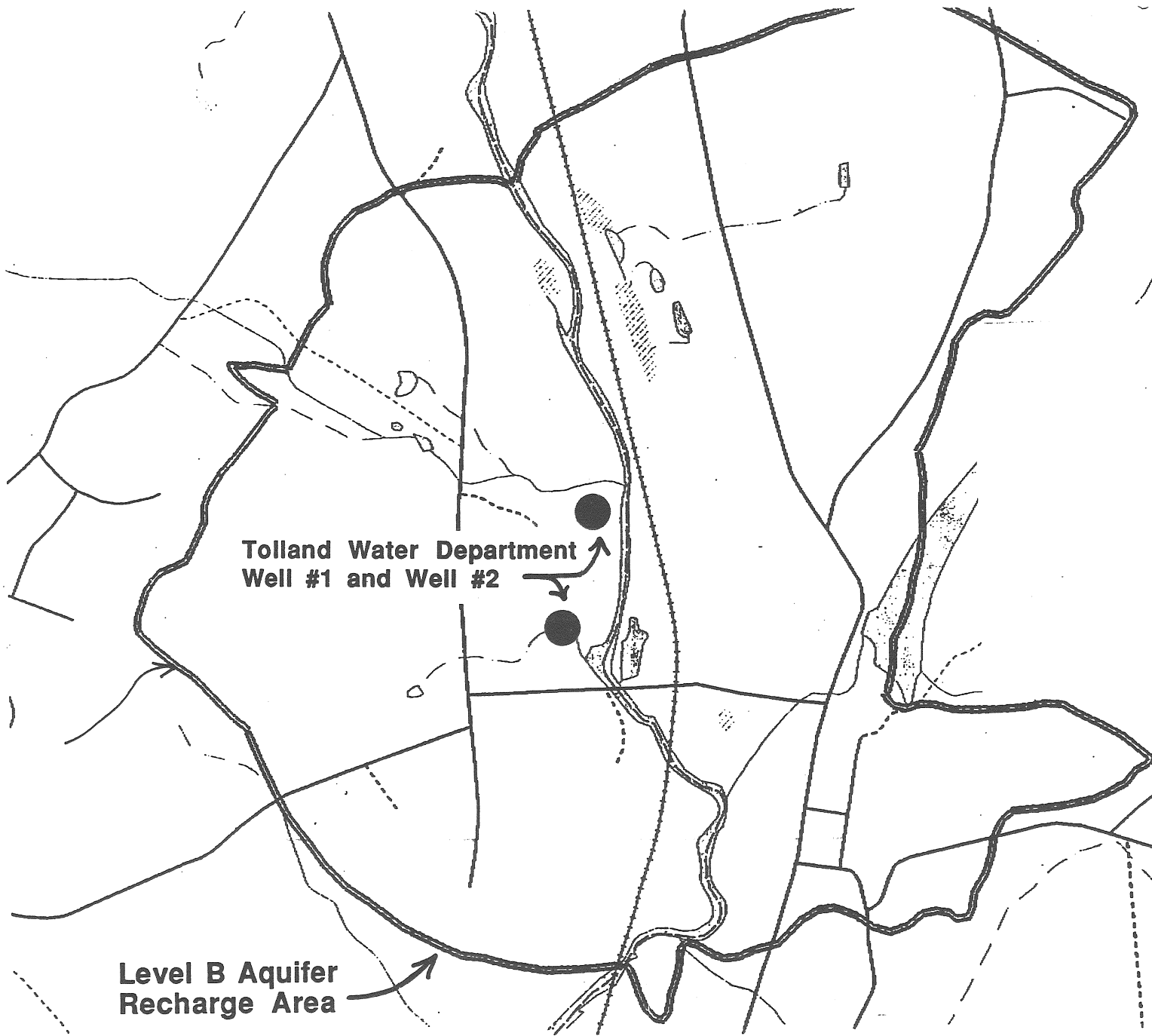
Location of a DOT maintenance facility over an identified high yield sand and gravel aquifer may in the future render that particular site unusable for use as a public water supply source. If the Town of Willington projects to utilize this sand and gravel aquifer in the future as a public water supply source, then this area should be protected from potential adverse impacts from commercial/industrial type land uses. The proposed DOT facility is this type of land use in which the State's Conservation and Development Policies Plan for Connecticut 1992-1997 has determined to be a potential hazard to existing and potential public water supply sources. High yield sand and gravel public water aquifer areas are highly susceptible to chemical spills, requiring expensive treatment systems or possible elimination of use as an active source of public water.

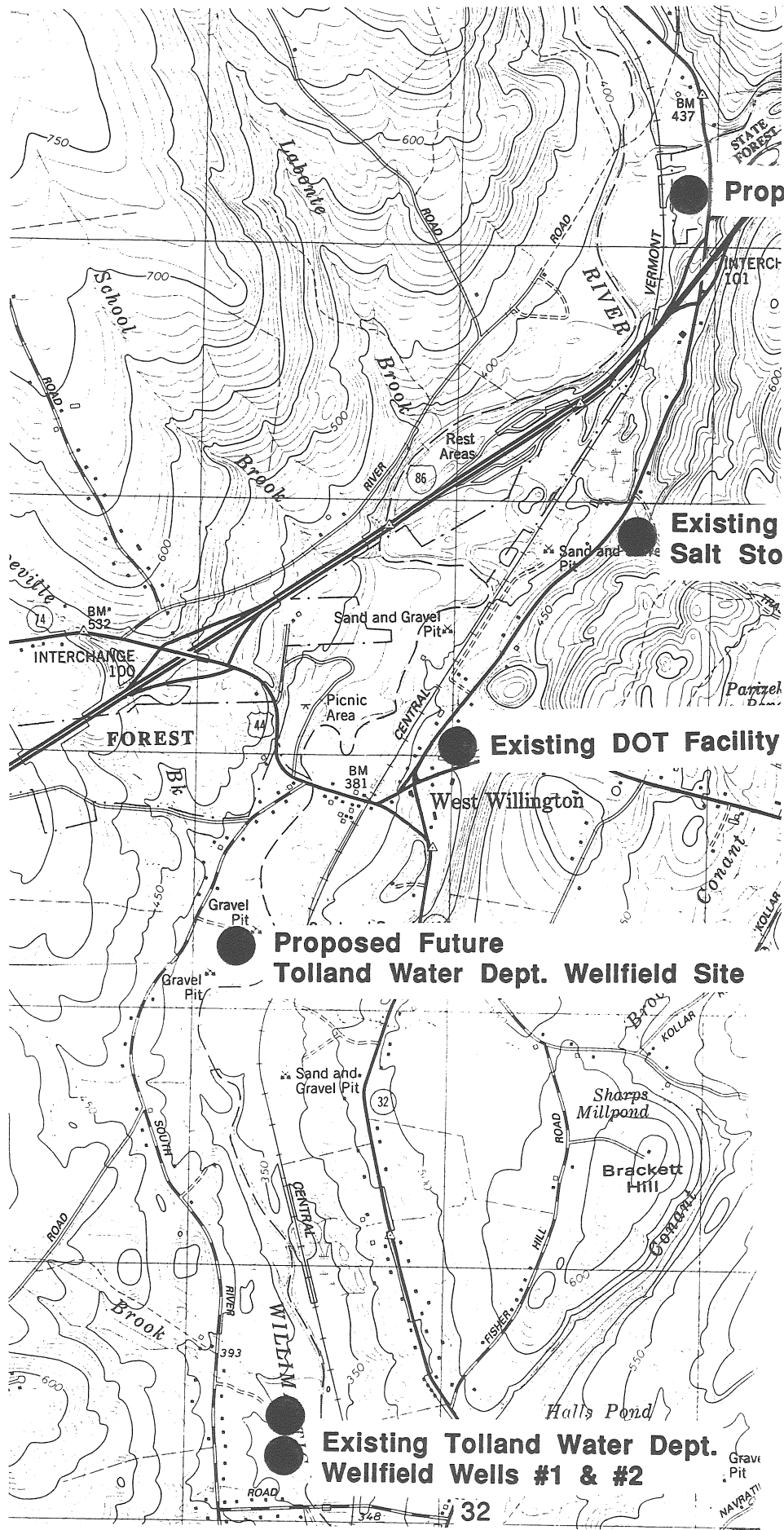
Figure 9

↑
N

Level B Mapping Aquifer Recharge Area

No Scale





Proposed DOT Facility

Existing DOT Salt Storage Facility

Existing DOT Facility

Proposed Future Tolland Water Dept. Wellfield Site

Existing Tolland Water Dept. Wellfield Wells #1 & #2

Figure 10

Tolland Wellfields

Scale 1" = 2000'

Figure 11



North Willington Village and Deer Park Apartments

Scale 1" = 2000'

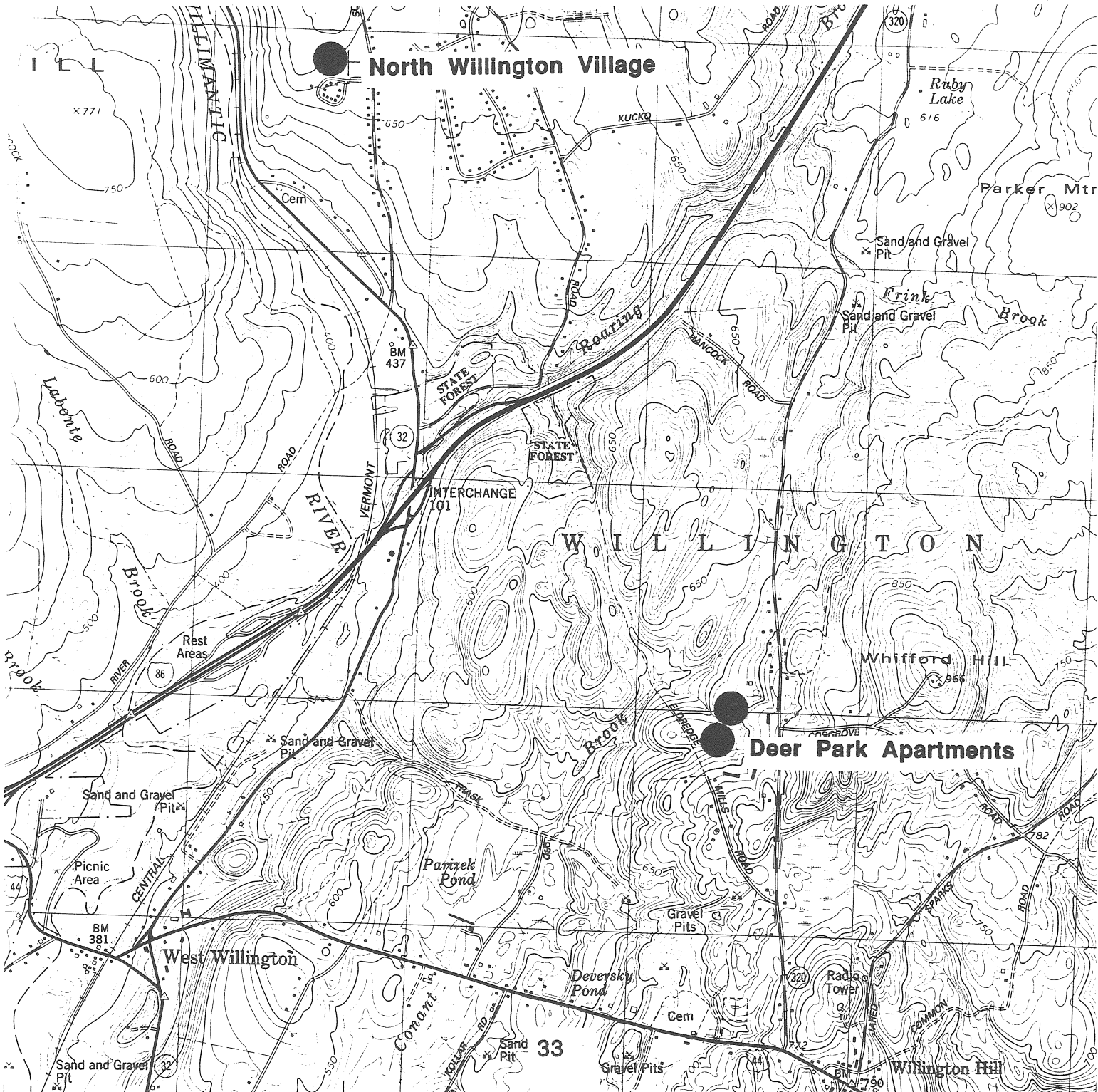
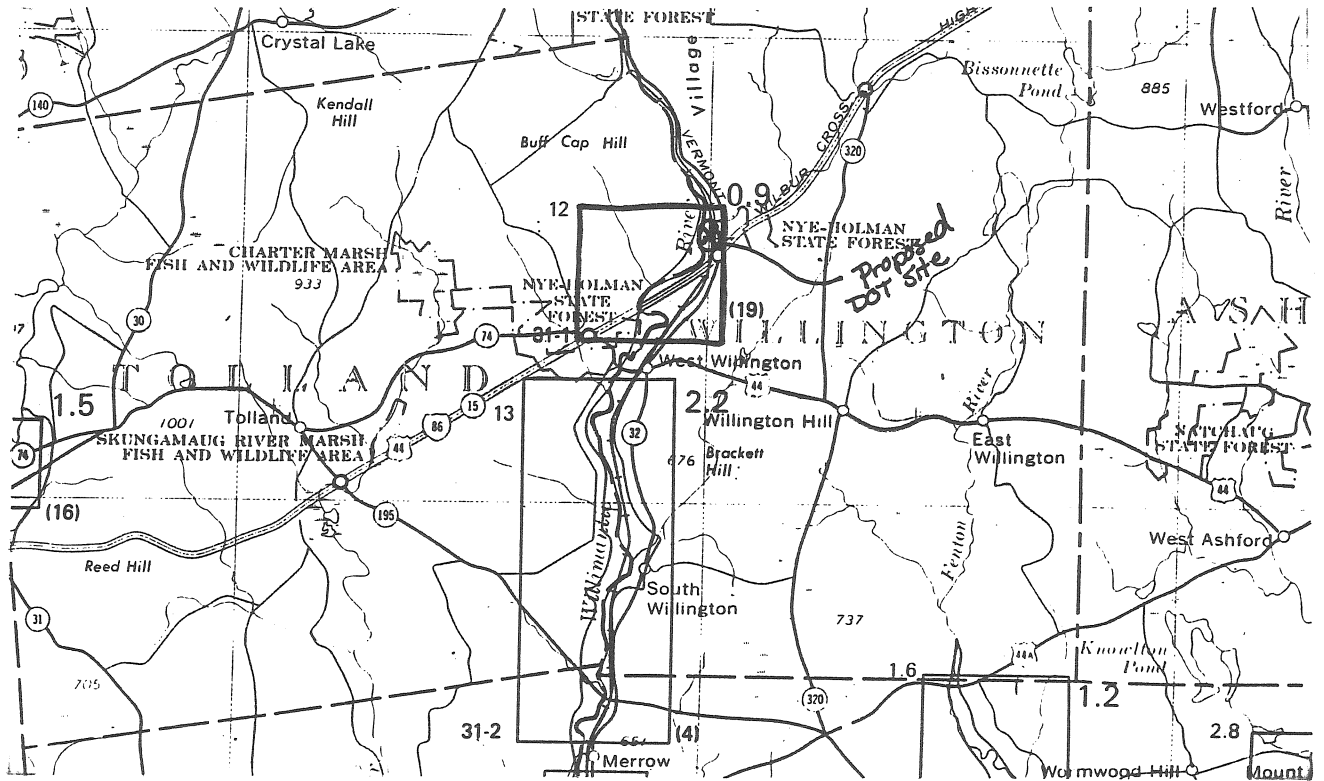


Figure 12

↑
N

Groundwater Yields for Selected Stratified Drift Areas



On-Site Sewage Disposal

The plans for the proposed maintenance facility at the time of the ERT field walk were designated as "Design Development 60% Submittal." Final plans had yet to be prepared.

The maintenance building is to be served by on-site water supply (well) and subsurface sewage disposal facilities. The proposed sewage disposal system includes a 1,000 gallon septic tank and 48 linear feet of 4' x 4' concrete leaching galleries. Septic system details are shown on sheet No. C-4 (un-dated) of the plans. The proposed septic system is a conventional system and must only receive "domestic sewage". Domestic sewage generated at the maintenance facility is limited to the central portion of the building where the restroom/shower facilities, the break room, and the janitors closet are to be located. The floor drains in the garage bay areas, and the wash bay will appropriately be directed to an on-site non-discharging holding tank. The floor drains in the vehicle service/wash areas must not be connected to the sewage disposal system.

The sewage disposal system must be designed in accordance with Public Health Code Section 19-1 3-B 103 and its Technical Standards. Due to the preliminary nature of the plans, sufficient on-site soil test data is not available to determine if the proposed septic system is satisfactory. The site contains vast quantities of fill. The proposed leaching system is located at the base of the fill. Soil testing including deep test pits and percolation tests must be conducted in the natural soils in the area of the proposed leaching system. The surrounding naturally occurring soils must have the ability to adequately absorb or disperse the expected volume of sewage effluent without overflow, breakout or detrimental effect on ground or surface water. The Health Code regulations include criteria for evaluating a site's suitability and hydraulic capacity. On-site soil testing should be arranged with the CT Department of Public Health and the local health department.

The leaching system may have to be at least partially located in select fill material depending on the test results. Soil test data should be provided on the finalized sewage disposal system design plans. The plans should also show a cross section of the sewage disposal system, and provide fill placement information if fill is required for the system installation. The finalized design plans should also include design criteria (e.g. number of employees, anticipated use, design flow, etc.) for the sewage disposal facilities. The Code requires that a reserve leaching area be designated and prepared.

The sewage disposal system laid out on the 60% submittal plans does not meet the separating distance requirements cited in Table No.1 of the Technical Standards. The septic tank and the leaching system must be a minimum of 15 feet from the building. This distance applies to buildings with no footing drains.

Sewage disposal has been cited as a specific area of concern. The subsurface sewage disposal system for the proposed maintenance facility does not represent a contamination threat as long as the system only receives domestic sewage, and the system is designed in accordance with the Code. The Department of Transportation and the project engineer should keep a close eye on the plumbing system to ensure that non-domestic sewage such as the garage bay floor drains are not directed to the sewage disposal system. A general permit is needed from DEP (contact: Kevin Barrett of the Permitting, Enforcement and Remediation Section, 424-3833) for the garage and wash bay floor drainage system. Plumbing fixtures such as the janitors sink and the floor drain in the mechanical room are directed to the sewage disposal system should be clearly posted with warning literature to prevent disposal of harmful products into the septic system.

In closing, on-site soil testing is needed in order to finalize the sewage disposal system design. The preliminary plans appropriately show the septic system receiving only domestic sewage. The local health department and the CT Department of Public Health should be contacted in order to schedule the soil testing. Finalized design plans for the sewage disposal facilities should be reviewed and approved for code compliance by CT Department of Health and the local health department.

Archaeological Review

The State Historic Preservation Office (SHPO) reviewed this proposed facility at the request of CONNDOT. SHPO staff archaeologist David Poirier undertook an on-site review with CONNDOT's Environmental Planning staff. Approximately 90% of the proposed project area is composed of extensive rubble fill demonstrating that the area has been significantly disturbed and possesses no archaeological integrity.

A review of the State of Connecticut Archaeological Site Files and Maps shows a prehistoric rockshelter site along Roaring Brook in close proximity of the project area. In addition, SHPO identified a minor area along the northern boundary of the project area along Roaring Brook which appeared to merit an archaeological investigation. The Public Archaeology Survey Team Inc., as on-call consultant to CONNDOT, carried on limited field study which indicated no archaeological resources.

In addition, no historic or architectural properties which might be eligible for the National Register of Historic Places are located in the general vicinity of the proposed new maintenance facility.

The Office of State Archaeology and the Connecticut Historical Commission concur that this project should have no adverse effect on the state's archaeological resources.

Planning and Site Selection Process

- DOT currently operates a maintenance facility off Exit 69 of I-84. The proposal is to develop a new maintenance site off Exit 70 a few miles north of the existing facility. The existing facility is the source of benzene and salt pollution of local wells.
- The existing facility sits on approximately 49 acres. The proposed site is approximately 13 acres.
- Based on a review of available maps and discussions with Willington land-use staff, there are no significant resources (wetlands, watercourses, groundwater resources etc.) associated with the existing site. In contrast, the proposed site is bordered on one side by the Willimantic River, on another by Roaring Brook, and is over a large stratified drift deposit which may be capable of yielding moderate to large amounts of water.

The three items listed above raise significant issues regarding the entire process by which DOT decided to proceed with planning for a new facility. Review of the proposal should not move beyond consideration of these items. Some fundamental issues must first be addressed. These issues include the following:

- Was expansion of the existing facility considered? If not, why not? What factors are driving the need for new facilities, as opposed to expansion? Is there a clearly established need for a new facility?

- What is the rationale for abandoning an existing contaminated site for a new site where contamination of nearby resources would affect far more valuable resources than any known to exist at the existing facility? Although DOT proposed numerous safeguards to protect against contamination at the new facility, there is still a potential for contamination? Also, DOT will (presumably) have to clean up the existing site, regardless of the location of a new or expanded facility. Expansion of the existing facility represents a lesser risk to resources with no obvious disadvantages in terms of cost or location.

Any additional review of the proposal is irrelevant until these issues are addressed. It is strongly recommended that DOT reconsider its current proposal and look at the existing facility for expansion.

Appendix

For Appendix Information please contact
the ERT Office at 860-345-3977

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, soil 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 region.

**The services of the Team are 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, landfills, commercial and industrial developments, sand and gravel excavations, 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 official 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 and the ERT Coordinator. A request form should be completely filled out and should include the required materials. 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 and request forms regarding the Environmental Review Team please contact the ERT Coordinator: 860-345-3977, Eastern Connecticut RC&D Area, P.O. Box 70, Haddam, Connecticut 06438.