FILE COPY

EASTERN CONNECTICUT
RESOURCE CONSERVATION & DEVELOPMENT
PROJECT

FILE COPY
#106

August 30, 1972

ENVIRONMENTAL REVIEW TEAM REPORT
ON
LITAS INVESTING COMPANY, INC. - QUASSET LAKE SUB-DIVISION
WOODSTOCK, CONNECTICUT

This report is the outgrowth of a request from the Town of Woodstock, with the approval of the owner and developer, to the Windham County Soil and Water Conservation District. The S&WCD referred this request to the Eastern Connecticut RC&D Project Committee for their consideration and approval as a Project measure. The request had been approved and the measure reviewed by the Environmental Review Team.

The soils of the site were mapped by a soil scientist, of the U.S.D.A. Soil Conservation Service. Reproductions were made of the soil survey, natural soil group descriptions, proportional extent of soils, and a table of limitations for urban development were forwarded to all members of the Team prior to their review of the site.

The Team that reviewed the Litas Investing Company, Inc. - Quasset Lake Sub-division consisted of the following personnel:

A. Weeks, District Conservationist, Soil Conservation Service
E. Minnick, Engineering Specialist, Soil Conservation Service
P. Schur, Senior Sanitarian, Connecticut State Department of Health
Dr. H. Thomas, Geologist, Department of Environmental Protection
C. Tiffany, Forester, Department of Environmental Protection
R. Capiga, Wildlife Biologist, Department of Environmental Protection

The Team met and reviewed the entire site on the afternoon of August 2, 1972. Reports from each Team member were sent to the Team Coordinator for review and summarization.

This report is not meant to compete with private consultants by supplying site designs or detailed solutions to development problems. The report identifies the existing resource base and evaluate its significance to the proposed development and also suggests considerations that should be of concern to both the administrative agency and the developer. 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 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:

Windham County Soil and Water Conservation District
Brooklyn Agricultural Center
Brooklyn, CT 06234

Phone: 774-0224

Environmental Review Summary

1. Water Supply

   a. Municipal or Community — Such systems do not exist in area to be expanded to the review site.

   b. On - Site — Adequate quantity and quality of water for household use should be obtainable from individual bedrock wells at the density of development indicated on the plat plan. Wells should not be located where there is the slightest chance of septic effluent seeping into the area of the well.

2. Waste Disposal

   a. Sewers — Sewerage collection systems do not exist in the area to be expanded to the review site.

   b. On - Site — The most critical aspect of the review is that the types and variety of soils in combination with the topography of the site indicate the need for selective placement of the septic system within each lot. The location of the house should be dependent on the location of the septic system.

   The resource conditions of concern are the perched water table, slow transmission of fluids through the soil (till) and the sharp topographic change on the side slope. In addition to percolation, care should be taken to avoid the fluids surfacing along the break in slope. A strong consideration should be given to a location along the top of the hill, rather than on the steeper side slope or along the pond edge.

3. Foundation Development Concerns:
   Substratum Support
   Slope Stability
   Drainage
   Erosion & Sedimentation

   No major difficulties are expected in excavation or the stability of footings. There is possibility of differential settlement as ground slope increases. There is great need for test holes. Also a need for foundation drains, but care must be taken not to interfere with septic systems.

   The area adjacent to West Quasset Road is best suited for home building.

   Temporary Seeding should be established during construction which is needed to prevent erosion and sedimentation.

   Sand placed on the beach area should be protected plus sedimentation in Quasset Lake by a properly designed diversion.

3. Foundation Development (continued)

Runoff problems can be reduced by sound planning before construction of driveway locations, walk, yard and garden edges to follow level contours and gentle slopes. When grading around buildings, reshape ground surfaces by planning cuts and fills to give maximum area of gentle slopes and to dispose of runoff water safely. Surface water should be diverted from critical areas.

Prevent erosion by annual checking of ground cover. If cover is not adequate, such in the hayfields, fertilize according to the results of a soil test. Well maintained lawns and ornamental plantings not only beautify but are sediment and erosion control measures.

Areas shown on the natural soils group map that are other than well drained can be improved by tile drainage.

4. Roads & Utilities

On A (0-3%) and B (3-8%) slopes little or no difficulty is expected in the construction and maintenance of roads or driveways, providing that proper roadside drainage is installed. Problems can be expected if roads are placed on C and D (greater than 8%) slopes. It is suggested to limit construction to only one access road to the shore area due to grade and drainage problems. Also excessive erosion and sedimentation may occur if such a road is constructed perpendicular to the shoreline.

Utilities may be placed underground with little or no limitations.

5. Hazards (natural and man-induced)

A major change in the hydrology of the area may produce problems relative to the increased erosion of the land, sedimentation in the pond, and water level of the pond. For example, if excessive cover removal and paving causes greater runoff at the expense of ground water movement, the pond may receive a greater peak volume of water during the wet season and less ground water discharge in the dry season. This may have undesirable effects on the water level of the pond since the watershed is so small.

The possibility of man-induced hazards can be reduced by keeping land use change to a minimum, improving the hydrologic characteristics that already yield excessive runoff; anticipating the increase in runoff from buildings, roads, and cleared areas; placing sediment and erosion control devices at critical locations; and anticipating future land use not only on the subdivision but on any land in the watershed leading to the subdivision.

6. Esthetics & Preservation (continued)	A 150' to 200' wide buffer zone parallel and adjacent to the lake shore would not only increase the esthetic value of the development but would aid in the preservation of wildlife. This environmental corridor which could include the beach area, would be of immeasurable value to the entire community.
7. Services to Support Development Concern: do proper services exist or can they be developed or expanded?	Check with the Regional Planning Agency and the Town Plan of Development
8. Compatibility of Surrounding Land Uses	Check with the Regional Planning Agency and the Town Plan of Development
9. Alternative Land Uses for Site	No Specific Recommendations
Concern: is it the best use relative to the existing resources? Are there priorities on the use of the land?	However, it is recognized that the land must be developed properly or problems can be created which will decrease the land value and limit the best use of the surrounding land and resources.

6. Esthetics & Preservation

Wildlife: The area is capable of supporting populations of both forest and farm game. Although the area now provides good to excellent habitats for wildlife, these particular habitat types are not unique or fragile. There is always a loss of wildlife habitat when there is construction of houses, roads, and other construction that is necessary when new developments are undertaken. Losses of habitat can and should be kept at a minimum with sound planning before development.

The number of proposed buildings if properly situated on the lots and the remaining land properly managed, will not severly alter the wildlife populations. If houses are located on upper portions the lower portions will be suited for forest game providing the remaining area is not severely altered (the converse also holds true).

Fish: Sewage and detergents entering the pond would be a critical concern. These will cause algae and weed production to take place. Eventually, fish and other aquatic life will be adversely affected. Siltation of the water would have a direct effect on fish biology as well as causing weed growth by making the pond more shallow and thus the water warmer.

Forestry: The southern stand should not be disturbed by development since it is on the east facing slope and is not wind-firm. Hemlock should be used as an underplanting to establish an evergreen belt along the slope to the pond. In the northern stand development should be limited to the upper to middlesslopes with hemlock underplantings along the pond. The woodland fields located adjacent to the lake form an environmental corridor along the lake.

Construction should be limited to the upper area. In open areas after house construction is completed the portions of land between the house and the lake could be planted to an evergreen crop of white pine, norway spruce and hemlock. The native fruiting shrubs now present along the hedgerows and edges of the hayfields could be encouraged by cutting or girdling undesirable woody vegetation. Along the north boundary of each property in the hayfields consider planting a windbreak of conifers.

INTERDEPARTMENT MESSAGE

SAVE TIME: Handwritten messages are acceptable. Use carbon if you really need a copy.

TO: John Olson — Address: Region IV — DATE: 8/11/72

Regional Director

FROM: T. E. Linkkila — Address: Region IV — Telephone:

Wildlife Biologist

SUBJECT:

Proposed development of 85 acre tract lying between W. Quasset Road and Quasset Lake.

The area is approximately 20 percent cultivated fields, 30 percent old fields, and 50 percent wooded. The area is capable of supporting populations of both forest and farm game. Although the area now provides good to excellent habitats for wildlife, these particular habitat types are not unique or fragile.

The number of proposed buildings if properly situated on the lots and the remaining land properly managed, will not severly alter the wildlife ppppulations. If the houses are located on the upper portions near West Quasset Road, the lower portions will be suitable for forest game, if the remaining area is not severly altered. Conversely, if the houses are located on the lower portions near Quasset Lake, the remaining upper portion of open land will be suitable for farm game, if the area is not severly altered.

With either of the portions developed the remaining portions could be enhanced through sound wildlife management practices.

There is always a loss of wildlife habitat when there is construction of houses, roads, and other construction that is necessary when new developments are undertaken. Losses of habitat can and should be kept at a minimum with sound planning before development.

T. E. Linkkila
Wildlife Biologist

TEL:sbt

INTERDEPARTMENT MESSAGE
STO 201 3.69

SAVE TIME: Handwritten messages are acceptable.
Use carbon if you really need a copy.

TO John Olsen Regional Director	AGENCY Region IV	DATE 8/11/72
FROM Cliff Tiffany Supervising Forester	AGENCY Region IV	TELEPHONE

SUBJECT

80 Sub-division, Wappaquasset Pond, Woodstock

The area is approximately 35 percent forested. The remaining land is in old field, cultivated, and hay lands. There are two major timber types found on the area. On the northern portion, 16 acres, there is mainly red maple with a few scattered yellow birch, black birch, red oak and hickory. The south side is made up mainly of white oak and hickory. There are also some scattered white birch and red oak.

The northern most stand is an even-aged stand on very moist soil. It is evident from the wind-thrown trees that their root systems are very shallow. The southern stand is not wind firm as evidenced by the root sprung and wind-thrown trees. This stand is a two-aged stand. The understory is mostly hickory.

Recommendations: Most of the southern stand is on the east facing slope and is not wind-firm. I recommend that the stand not be disturbed with houses or roadways, as this will allow wind avenue into the stand, increasing the chance of severe blow-down. I also recommend that hemlock be underplanted to establish an evergreen belt along the slope to the pond. Construction should be limited to the upper area of old fields above the slope.

In the northern stand which is younger and even-aged, I recommend that development be limited to the upper to middle slope with hemlock underplanted to create a good soil holding evergreen belt along the pond.

In the open area, non-forested, I recommend that after house construction is completed that the portions of land between the lake and house be planted to an evergreen crop of white pine, Norway spruce, and hemlock. This type of planting would stabilize the area.

C. Tiffany

Cliff Tiffany
Supervising Forester

CT:abt

Environmental Review of West Quasset Road Property, Woodstock (80 acres)

Review Subject: Geology

Reviewer: Hugo F. Thomas

Date of Review: August 2, 1972

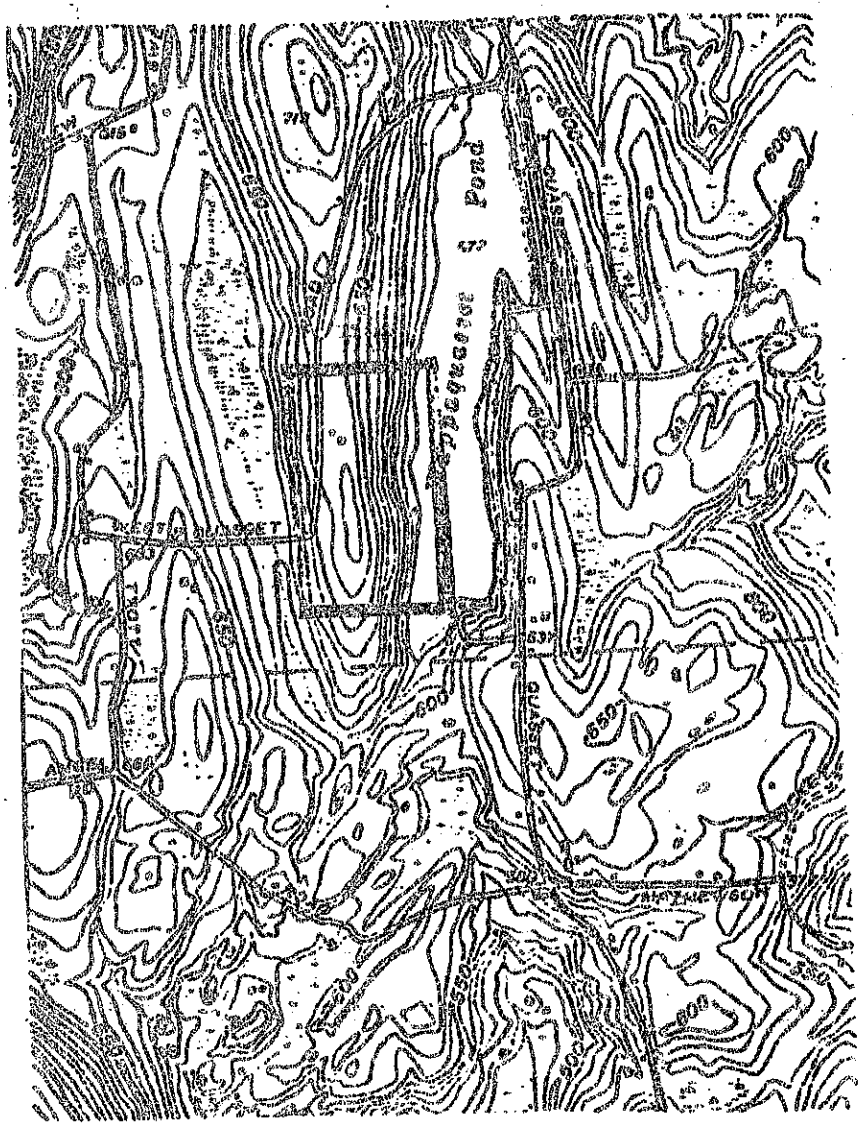
Resource Description

Topography - The property in review lies between the west shore of Wappaquasset Pond and West Quasset Road. The elevation of the pond is 570 feet. The land raises to a knoll of 670 feet near the road. The distance between the pond edge and the road is approximately 900 to 1000 feet with a vertical change in elevation (relief) of about 100 feet.

The knoll is elongate in a general north-south direction, which parallels the long direction of the pond. The ridge top, which has the lowest slope, crosses the road on the northern end of the property and strikes about 250 to 350 feet east of the road on the southern end of the property. There is a distinct break in slope from the ridge top easterly to the pond. Although the side hill portion of land has a fairly steep slope and is irregular, there are no significant ridges, gullys, trenches, or depressions perpendicular to the shoreline of the pond.

Bedrock - The bedrock is reported to be in access of 40 feet below the surface on the east side of the lake. Bedrock is at the surface in the northwestern extreme of the property. The float (rock boulders) at the surface is somewhat more dense along the northern portion of the property indicating that bedrock may be near the surface. It appears that although the bedrock may exert a control over the topography, the depth to rock increases to the south and is of limited concern in this review. Without test holes, this can not be verified.

The bedrock in the area consists mainly of quartz, feldspar gneisses and schists, and some quartzites. These rocks are not particularly



Topographic Index Map

Scale 1:24,000

susceptible to unusual weathering.

Surficial Geology - The dominate cover material over the bedrock is a clayey till (a mixture of gravel, sand, silt and clay size particules with interspersed boulders that was deposited directly from the ice during glaciation). Some sandy zones may be found interspersed in the till, as well as, some boulder concentrations where the finer material has been winnowed from the till.

Hydrology - The area is within the Putnam Watershed. Precipitation is dispersed in three modes: surface runoff, subsurface movement, and evapotranspiration (water returned to the atmosphere by direct evaporation from water surfaces and moist soil, and by transpiration from plants).

The watershed for Wappaquasset Pond is quite small. The major drainage source is from the upland wetland to the west of the site and from the slow release of ground water from the adjacent slopes.

The characteristics of the till (hardpan) is such that water circulation through this material is slow and a perched water table condition is often present (water saturated material above less saturated material).

Surface runoff at the site is mostly of a sheet nature, except where land use (roads, vegetation cutting, etc.) tends to concentrate the flow of water.

Evaporation from the pond and evapotranspiration from the vegetation and ground surface is probably of a significant amount in calculating the total water budget for the basin.

The natural quality of ground water should be good since the rocks in the area are not those types associated with a high mineralization of ground water.

ets of Resources on Proposed Land Use and the Proposed Land Use on the Resource

Water Supply - No unusual conditions were observed that should prohibit the development of an adequate quantity and quality of water for household use from individual bedrock wells at the density of development indicated on the plat plan.

Waste Disposal - Waste disposal appears to be one of the more critical problems. Since sewer service does not exist in the area, on-site septic disposal must be utilized. The geologic resource conditions of concern are perched water table, slow transmission of fluids through the till, and the sharp topographic change on the side slope. In all likelihood the fluids will move along the interface of the upper soil horizon and the till, and/or along the interface of the till and bedrock.

A detail investigation on each lot should be conducted to determine the most suitable place to install each system. Additional care should then be given to the possible surfacing of fluids along the break in slope line. A strong consideration should be given to a location along the top of the knoll rather than on the steeper side slope or along the pond edge.

Foundation Support - No unusual geologic problem is evident for foundation support, except for the slope condition. Reference should be made to the soil engineer review.

Roads and Utilities - Service roads or paths to the homes or shoreline may create excessive erosion of the slope material and sedimentation in the pond if contructed perpendicular to the shoreline.

The developer may wish to give consideration to burying the utility lines.

Hazards - A major change in the hydrology of the area may produce problems relative to the increased erosion of the land, sedimentation in pond,

and the water level of the pond. For example, if excessive cover removal and paving causes greater runoff at the expense of ground water movement, the pond may receive a greater peak volume of water during the wet season and less ground water discharge in the dry season. This may have undesirable effects on the water level of the pond since the watershed for the pond is so small.

Sedimentation can be somewhat controlled by maintaining a proper vegetation buffer between the pond and the developed areas.

Esthetics & Preservation - Geologically, there are no unique features to be concerned with, except the protection of the pond from sanitary pollution, sedimentation, and excessive changes in the hydrologic system.

Geologic Summary

The geology of the area should not present any major problem for water supply and foundation development at the density anticipated if the proper sites and construction methods are chosen.

Special consideration should be given to location of the waste disposal systems, erosion of the land surface, sedimentation in the pond, and any major changes in the hydrologic system as it affects the pond for the reasons discussed in the review.

No other unique geologic features were identified on the site.

UNITED STATES DEPARTMENT OF AGRICULTURE

SOIL CONSERVATION SERVICE

Mansfield Professional Park, Storrs, Connecticut 06268

SUBJECT: EMC - Review of the West Quonset Road and Quonset Lake Proposed Subdivision, Woodstock, Conn.

DATE: August 23, 1972

TO: Albion L. Weeks, District Conservationist, SCS, Brooklyn, Connecticut 06234

This report contains observations and/or suggestions that I feel merit consideration in the development of the above mentioned subdivision. Some of the material presented herein is out of my discipline as an engineer, however, I am first of all a human being and as such have opinions concerning the environment.

The following is a list of the review subjects as they will appear in the content:

1. Waste Disposal
2. Water Supply
3. Foundation
4. Roads and Utilities
5. Hazards, natural or man induced
6. Esthetics and Preservation

1. Waste Disposal

Assuming sanitary sewers will not reach this area for some time, household septic systems will probably be installed. The types and variety of soils in combination with the topography of the site indicate the need for selective placement of the septic system within each lot. The location of the house should be dependent on the location of the septic system.

2. Water Supply

Based upon site discussion with the geologist, capped, deep bedrock wells should give adequate water supply to individual homes. However, as common sense would dictate, wells should not be located where there is the slightest chance of septic effluent seeping into the area of the well.

3. Foundations

In general no major difficulties are expected in the excavation for or the stability of the footings. However, the possibility of differential settlement increases as the ground slope steepens. Differential settlement occurs when the relatively uniform load carried by the footing is placed on material of differing load carrying capabilities. As an extreme example consider what would happen if the front footing was placed on bedrock and the rear footing on top soil. The need for test holes to properly locate the footing depth cannot be overemphasized.

Foundation drains will be needed for each house. Care must be taken during planning that the foundation drains will not interfere with the septic systems.

4. Roads and Utilities

On the A and B slopes little or no difficulty is expected in the construction or maintenance of roads or driveways providing proper roadside drainage is installed. Problems can be expected if the roads are placed on the C and D slopes. Road grade and drainage is most critical on these steeper slopes. It is for this reason I would suggest limiting the construction of only one access road to the shore area.

If from the esthetic and safety point of view the developer wishes to place the utilities underground the soils indicate little or no limitations.

5. Hazards, natural or man induced

In any subdivision development, both during and after construction, there exists the possibility of detrimental effects due to the changes in land use. In most instances proper planning and implementation can minimize and sometime negate these detrimental effects. A few items for the developer to consider during planning would be:

a. Keep land use change to a minimum
b. Strive to improve the hydrologic characteristics of areas that may already yield excessive runoff. This can be done with proper grading and or plantings.
c. Anticipate the increase in runoff from buildings, roads and cleared areas when designing drainage facilities.
d. Place sediment and erosion control devices at critical locations.
e. Anticipate future land use not only on the subdivision but on any land in the watershed leading to the subdivision.

6. Esthetics and Preservation

It is my opinion that a 150' to 200' wide buffer zone parallel and adjacent to the lake shore would not only increase the esthetic value of the development but aid in the preservation of wildlife. This environmental corridor which could include the beach area, would be of immeasurable value to the entire community.

Edwin L. Minnick
Engineering Specialist

To
Litas Investing Co., Inc
Woodstock Planning Commission

6/14/72

From
A. L. Weeks, Soil Conservation Service

The land owned by Litas Investing Co., Inc is about 80 acres located on the west side of Quasset Lake and is about 4000 feet long and about 1000 feet wide. An area about 1000feet by 1000 feet on the north end is 100% wooded. In the center a block 700 feet wide and 1700 feet long is mostly open hayland that is mowed yearly. The hedgerows and edges of the hayland fields offer both food and cover for wildlife. Some of the native fruiting shrubs and trees observed were apple, silky dogwood, arrowwood, bayberry, blueberry, alder, elderberry, sumac, gray dogwood, grape and cherry. Bramble, Red cedar, juniper and hickory also add to the wildlife value. The tree growth is mostly sapling to pole size between 15 and 35 years old. Trees on the northern end are mostly red maple and hickory, white oak, black oak on the southern end. The woodland fields were once pasture fields that have grown up to trees. Some of the other trees present are red cedar, poplar, red oak and gray birch. The woodland fields are located adjacent to the lake and form an environmental corridor along the lake. Adjacent to West Quasset Road is the area best suited for home building. The developer should consider the possibility of using a single beach, boat launching area and have one access road. The environmental corridor would be damaged by the cutting of twelve roads through the woodland to the lake plus would save the need of planning for proper road drainage and sedigent and erosion control in the road area. Some of the slopes in the woodland area are between 15 and 25%. During home construction proper grading should be planned and proper the proper amounts of seed, lime and fertilizer should be applied. Temporary seedings should also be applied if needed. Open areas should be mowed yearly as a

weed control measure. Hedgerows and edges about 20 feet wide should be improved by cutting or girdling trees with little or no wildlife value. This will give the native fruiting shrubs present a chance to furnish a larger amount of seed and fruit. During the fall season wildlife food could be increased by establishing strips about 75 feet wide that run across the general slope of the land and planted to annual grains such as Japanese millet and buckwheat. Open steep slopes in the hayfield should be checked annually for proper cover. If cover is not adequate fertilize with a complete fertiliser such as 10-10-10 or follow the results of a soil test. Sand placed on the beach area should be protected from erosion plus sedimentation in Quasset Lake by a properly designed diversion. For the homes, on-site septic tank filter fields should be properly designed. Tile drainage should be installed around all basement footings. Along each north boundary in the hayfields consider a windbreak of conifers.

Esthetics & Preservation- Proper sound planning is needed before construction of homes and buildings. Reduce runoff problems by locating driveways, walks, yard and garden edges to follow level contours and gentle slopes. When grading around buildings reshape ground surfaces by planning cuts and fills to give maximum area of gentle slopes and to dispose of runoff water safely. Turn water away from critical areas by diversions to a safe outlet or a waterway. Waterways like diversions need to be designed to carry the amount of water they will receive. Well maintained lawns and ornamental plantings not only beautify but are sediment and erosion control measures. Areas shown on the natural soils group that are other than well drained can be improved by tile drainage.

Land care is a continuing long term affair. An effort should be made to hold the area in the same state of ecology as it is now. Improvement of hedgerows and edges plus maintain the woodland corridor along the lake should insure that the environment for people as well as fish and wildlife will stay the same or could be improved.

Albion L. Weeks,
District Conservationist

8/6/72

John Olsen — Department of Environmental Protection

Robert Capiga — Department of Environmental Protection
Summer Research Assistant

80 Acre proposed Sub-division located between West Quasset Road and Quasset Lake.

Basically, two aspects of the proposed development are the main concern; that is, Waste Disposal and Siltation.

Each lot will have its own septic system. Disposal of waste products may inadvertently cause water quality problems. Although the buildings may be constructed at the farthest possible points from the waters edge, the soil conditions do not permit the percolation and filtration of these wastes downward. This condition exists because of hardpan and slope; thus, these factors will cause lateral movement of the waste products downward, and eventually make their way to the pond.

Upon entering the pond, the sewage and detergents that make up the waste products will cause algae and weed production to take place. Eventually, fish and other aquatic life will be adversely affected.

Any form of construction that takes place may cause a siltation problem. Roads which are to be constructed should be done so with proper drainage, so as to eliminate or at least reduce the amount of silt that may result. Care should be taken to put some form of cover over places dug up around foundations and drainage areas.

Siltation of the water would cause weed growth by making the pond more shallow and the water to become warmer. From an aesthetic viewpoint, no one cares to have a weed-choked pond or a foam-covered body of water.