

COASTAL

ENVIRONMENTAL SERVICES INC.

LACEY TOWNSHIP PARKS TREE INVENTORY AND EVALUATION

Prepared for:

Lacey Township Environmental Commission
818 W. Lacey Road
Forked River, NJ 08731

Prepared by:

Coastal Environmental Services, Inc.
2 Research Way
Princeton, NJ 08540
(609) 987-0966

Project No. 92-172-09

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TABLE OF CONTENTS

I. INTRODUCTION

II. PARK REVIEWS

1. Bamber Lake Park
2. William Hebrew Park
3. Vincent Clune Park
4. Huffy Wallis Park
5. Charles Mezera Park
6. Ash Road Park
7. Deerhead Lake Park
8. Williams Street Park
9. John Anderson Park
10. Devon Street Park
11. Mill Pond
12. Cedar Creek Park
13. Deerhead Lake Beach
14. Lake Barnegat Beach
15. Forked River Beach
16. Laurel Boulevard Park
17. Public Docks (North and South)
18. Meadowlark Drive Park

III. CONCLUSIONS

LIST OF APPENDICES

- Appendix 1 - Revised Attachment 1 - Lacey Township Recreational Areas**
- Appendix 2 - TreeKeeper Jr. Data Sheets**
- Appendix 3 - Pruning Standards for Shade Trees**
- Appendix 4 - Photographs**

LACEY TOWNSHIP PARKS TREE INVENTORY AND EVALUATION

I. INTRODUCTION

Numerous opportunities exist within the Lacey Township Park system to improve the health, appearance and longevity of the parks' trees. In order to facilitate these improvements, Coastal Environmental Services, Inc. (Coastal) was retained by the Lacey Township Environmental Commission to conduct a tree inventory and evaluation. The following recommendations are intended to accomplish several goals, including the reduction of any potential hazard to park visitors or municipal employees, the improvement of park aesthetics, and the enhancement of the trees' health and longevity.

A thorough review of the trees located in the 18 parks listed in Revised Attachment 1 was performed between 3 August and 11 August 1992. Selected individual trees located in Bamber Lakes Park, William Hebrew Park, Vincent Clune Park, Charles Mezera Park, Huffy Wallis Park, and Deer Head Lake Park were tagged, identified, measured, and rated for condition and percentage of deadwood present in the canopy. If utility wires were present in the canopy this was also noted.

This data was collected in a format compatible with the Tree Keeper Jr. Tree Inventory System. In the following park reviews, tree identification codes, as entered in the Tree Keeper Inventory system, are bracketed. A full explanation of the codes and categories utilized in this survey can be found in the Tree Keeper Jr. Tree Inventory System manual initially submitted with this report.

Once these trees had been inventoried, specific pruning or maintenance suggestions were recommended for each tree (Appendix 2). Individual trees that pose a risk or require priority treatment were identified. Some of the recommendations include the pruning or removal of deadwood, the removal of girdling wires, and the addition of mulch or fertilizer. In some instances the elevation of the canopy was recommended. This procedure would improve sight lines to park features, such as lakes, and also as a safety consideration for pedestrians. For most of the trees, a Class II-standard pruning is the recommended treatment. A description of this treatment is provided in the National Arborist Association Standards (Appendix 3).

The trees located in the remaining parks were evaluated in a more general manner. The general health of the population was noted and specific problems, where present, were recorded. In all parks, hazard trees requiring removal were marked with yellow tree marking paint (Photograph #1). After removal, all hazard tree stumps should be ground to six inches below the surface.

Also, at the request of the Lacey Township Environmental Commission, Coastal evaluated tree planting opportunities in selected areas of the Township's parks. In some areas, Coastal concluded that additional planting would be beneficial. These areas are noted in both the appropriate park section and in Section III, along with suggested plant species and recommendations for their care and maintenance.

II. PARK REVIEWS

1. **Bamber Lake Park**

Fifty-four trees were tagged and evaluated at Bamber Lake Park (BLP). Fifty-one of these were in the vicinity of the main park area, and three were located in the area of the east beach front. The trees located in BLP are generally in moderate to poor condition. The trees within BLP have not received any form of pruning for many years and present numerous opportunities for improvement. The majority of the species present in BLP were planted at least 80 years ago.

The most immediate concern at BLP is the removal or heavy pruning of the black locust (*Robinia pseudoacacia*) trees located along Good Luck Road. These trees exhibit evidence of locust borer (*Megcallene robiniae*) and signs of heart rot fungus (*Phellinus rimosus*). Four of these black locust trees were marked for removal (Photographs #2 and #3), while the remaining black locusts [BL 9, BL 12, and BL 14] require heavy pruning in order to reduce their hazard potential (Photograph #4). The remaining trees located along this portion of Good Luck Road are all black cherries (*Prunus serotina*) (Photograph #5). These trees exhibit evidence of black knot fungus (*Apiosporina morbosa*), which causes roughened swellings of the twigs and stems and eventually leads to the deaths of the smaller branches. The black knot fungus does not pose a serious structural threat, nor would it cause the death of the trees, except in the most severe infestations. It is therefore not necessary to attempt to control this disease. These trees should receive a light pruning to improve their appearance and health.

The white pine (*Pinus strobus*) [BL 21] should receive a light pruning and have the trumpet vines (*Campis radicans*) removed. (Photograph #6). The ginko (*Ginko biloba*) [BL 20] should also have the trumpet vines removed from its limbs and trunk. These vines, although ornamental in nature, impose additional weight and can lead to limb breakage. The dead locust stem located approximately 10 feet southeast of BL 20 should be pruned to remove dangerous deadwood, leaving the trunk to remain as a "trellis" for the existing trumpet vine if desired.

The large Norway spruce (*Abies picea*) [BL 33] located in the center of the main park area (Photograph #7) has been struck by lightning and presently exhibits evidence of decay associated with this injury (Photograph #8). This tree should be lightly thinned and pruned and closely monitored for further evidence of this decay. Regular fertilizer application should be provided in order to improve the vitality of this tree and to promote healing. A discussion of fertilization techniques is included in section III.

The remaining inventoried trees within this park all require light to moderate pruning in order to upgrade their general appearance and improve their health. Five additional trees within this park were marked for removal. These trees were selected for removal if they were determined to be dying or if their removal would substantially improve the health of an adjacent and more valuable tree.

The black locust (Photograph #9) and eastern red cedars (*Juniperus virginiana*) (Photograph #10) located west of the tennis court and soccer field would benefit from a light pruning to remove the most obvious deadwood. The eastern red cedars should have their lower canopies raised up to about eight feet in height and have the remaining stubs properly pruned.

Vegetation along the lake shore consists primarily of red maple (*Acer rubrum*), Atlantic white cedar (*Chamaecyparis thyoides*), black gum (*Nyssa sylvatica*), sweet pepperbush (*Clethra alnifolia*) and bayberry (*Myrica pensylvanica*). These plants exhibit few signs of stress and require little maintenance. This area should remain undisturbed in order to maintain a healthy buffer between upland areas and the lake.

It should also be noted that several planting opportunities exist in this park, particularly along the perimeter of the parking area and along the east beach. Red maple, pin oak and willow oak could be planted in these areas to provide additional shade for beach users.

2. William Hebrew Park

Ninety trees were tagged and evaluated at William Hebrew Park (WHP). The majority of these trees are located in the vicinity of the main facilities, i.e. the parking area, the tennis and basketball courts, and the children's play areas. This park is dominated mostly by tree species that have remained subsequent to the clearing of the woodland for the construction of the park. The trees within this park are generally in good to moderate health.

The most immediate recommendation involves the maintenance of the grove of black oak (*Quercus velutina*) trees located between the tennis court and the parking lot (Photograph #11). The damage that these trees exhibit is consistent with fire scorch from approximately 15-20 years ago. These trees [WH 41, WH 42, WH 43, and WH 44] all have severe trunk damage which runs the entire length of the stem (Photograph #12). WH 41 also has severe basal rot (Photograph #13). These trees are structurally unsafe and should all receive a Class IV crown reduction pruning of approximately 10 feet in order to reduce their hazard potential. Ideally these trees should be removed altogether and replaced; however, they do provide shade for passive recreation. An exception to this is the Black oak located four feet southwest of tree WH 43, which should be removed as it is extremely top heavy and is structurally not amenable to crown reduction.

Black oak [WH 26] (Photograph #14), white oak (*Quercus alba*) [WH 28] (Photograph #15), and pin oak (*Quercus palustris*) [WH 29] (Photograph #16), are all located in prominent positions within WHP and are extremely valuable specimen trees. These trees should receive priority pruning. They each require a light pruning to remove obvious deadwood and correct structural problems and should have "stubs," the short dead branches that occur as a result of improper pruning techniques, properly pruned from the lower trunk. In addition, WH 29 should have its lower canopy raised four to six feet above the roof of the storage building. The other trees within this area (WH 31 through WH 38) should also receive some light pruning as this area is heavily utilized. Pitch pine (*Pinus rigida*) [WH 32] should be pruned to reduce the weight on the limb that hangs over the tennis court (Photograph #17).

The white oak [WH 39] (Photograph #18) located in the center of the small children's play area should receive priority pruning as it contains approximately 15% deadwood and numerous dead branch ends.

Eastern red cedar [WH 9] (Photograph #19) contains a girdling wire which was apparently installed to prevent splitting of the trunk. This wire is now girdling the trunk and should be removed. The two leaders of this tree should be cabled together to prevent the tree from splitting apart.

The area containing approximately 35 mature black and white oaks located between the eastern soccer fields contains a quantity of large deadwood within the lower tree canopies (Photograph #20). This area is conspicuous and receives a moderate amount of use; therefore, this deadwood should be pruned out.

The wooded western portion of the park is comprised largely of black oaks, white oaks, and pitch pines with a few eastern red cedars and pin oaks intermixed. The soils in this area are generally infertile and sandy, but do possess a thin organic layer (Photograph #21), which provides an important source of nutrients and moisture for the trees. Due to the vehicular traffic throughout this area, much of this organic layer has been lost (Photograph #22). The trees in this area exhibit some symptoms of decline, especially evident amongst the eastern red cedars, and would benefit from the establishment of designated parking areas to reduce any unnecessary vehicular traffic. Leaf mold or wood chips could be distributed throughout this portion of the park in order to improve the surface soil structure and reduce erosion. Additionally, seasonal leaf raking is not necessary in this portion of the park. The leaves should be left in this area, and leaves from other areas of the park should be deposited here in order to enrich the organic layer. The largest diameter pitch pines and oaks were inventoried within this portion of the park and generally require light to medium pruning to remove deadwood (Photograph #23). The pitch pine located closest to the southwest corner of the pavilion has been marked for removal. It is structurally unsound due to extreme basal rot.

There is some evidence of mower/weed trimmer damage to some of the smaller trees that are situated in the lawn areas of the park. Callousing and swelling of the damaged basal portions of the stem are typical symptoms of this type of repeated

damage (Photograph #24). These smaller trees should be mulched with a ring of wood chips. Wood chips prevent weeds, promote moisture retention (especially important for smaller trees), and facilitate mowing.

The large white oak located across the access road from the northeast soccer field is structurally unsound and has been marked for removal. A small planted red maple directly across the access road from this white oak should also be removed and replaced. This tree possesses extremely poor form and may exhibit undesirable growth patterns (Photograph #25).

The heavily wooded southwestern portion of the park is comprised largely of pitch pine, black oak, eastern red cedar and red maple. This stand of trees presently has an average diameter of 11.5 inches with a basal area of 80 square feet per acre. The stocking percentage, a measure of relative stand density, is approximately 68%, which is near the lowest level of what is considered a fully stocked stand for upland hardwoods. This stand is therefore growing at an appropriate rate and does not require any treatment at this time to maintain a healthy stand.

A final recommendation for this park is to have the concrete and asphalt removed from the bases of trees WH 46 and WH 48 (Photograph #26) located adjacent to the basketball court. The asphalt around the base of WH 48 should be cut back approximately 12 inches.

3. Vincent Clune Park

Twenty-one trees were tagged and evaluated at Vincent Clune Park (VCP). The trees within this park consist of pitch pines and mixed black and white oaks and are in poor to moderate health. The trees that were selected for tagging and evaluation were those specimens that were the largest and/or in relatively prominent locations.

In general, the trees within this park (especially the oaks) are suffering from top dieback (Photograph #27), a typical response to general root zone damage. Vehicular traffic traverses the entire site (Photograph #28), resulting in the erosion of the surface layer and exposed portions of the tree root systems (Photograph #29). The pitch pines, a deeply rooted tree, do not appear as damaged as the other trees.

The trees within this park would benefit from the construction of a physical barrier in order to restrict access to the wooded areas. In addition, these trees would benefit from the application of fertilizer and leaf mold or wood chips. Seasonal leaf raking is not necessary in this portion of the park and leaves from other portions of the park could be distributed here.

The entire wooded area would benefit from a light to medium pruning to remove the dead tops in the oaks and to remove the largest deadwood and stubs from the pitch pines. This is especially true for the areas surrounding the parking, storage and bathroom facilities and the picnic tables. Pruning of the trees around these areas should receive priority treatment. Fifteen trees throughout this wooded park were

marked for removal. None of these trees pose an immediate hazard; however, all are dead or dying and should be removed to improve the aesthetic appearance of the park.

VC 20 and VC 21, located at the entrance to the small children's play area, both require light pruning and VC 21 should have the marked leader removed (Photograph #30). The wooded area located to the north side of the small children's play area is presently underutilized, but would benefit from the pruning of the large lower deadwood.

4. Huffy Wallis Park

Twelve trees were tagged and evaluated at Huffy Wallis Park (HWP). The majority of the trees within this park are located in the vicinity of the storage building/picnic table area at the intersection of Edgewood and Whitcomb Streets. The tree species are comprised of mixed oaks and pitch pines, with eastern red cedars ringing portions of the playing fields. The pitch pines in HWP are in good condition, while the oaks and cedars are in moderate to poor condition.

Trees HW 6 and HW 7 (Photograph #31) both contain large amounts of deadwood hanging directly over the picnic area. Lacey Township Municipal employees have been alerted to this imminent hazard. Trees HW 9, HW 10, HW 11 and HW 12 all require light pruning and should have their root zone protected. The area beneath these trees is presently used for parking (Photograph #32) which has led to soil compaction and the loss of the organic layer. This area should be protected from vehicular access and leaf mold or mulch may be distributed throughout. This area would also benefit from an annual fertilizer application.

The eastern red cedars which ring the playing fields would benefit from a light pruning and the removal of the lower stubs in order to promote rapid healing.

5. Charles Mezera Park

Eleven trees were tagged and evaluated for maintenance at Charles Mezera Park (LBP). The trees within this park have not received any maintenance in the recent past. Tree health within this park is generally moderate to poor. Five trees have been marked for removal and LB 3 and LB 4 should have their large dead tops removed.

Trees LB 1 and LB 7 should each receive priority maintenance. LB 1 is a specimen white oak which is in need of moderate pruning to improve its health and structure. LP 7 is a large black cherry which is situated in a prominent location. This tree contains a large quantity of deadwood and would benefit aesthetically from a moderate pruning. The tree has also been affected rather severely by the black knot fungus and is presently declining in health. It may be possible to prevent further decline through an annual application of fertilizer along with mulching of the area beneath the tree canopy to reduce water stress.

If vista pruning is to be performed, Coastal recommends that the trees lining the lake have their canopies raised to approximately 12 feet and the shrubs beneath be pruned to approximately three feet in height. It would be most effective to perform this vista clearing only in areas where the vegetation is relatively narrow (less than 10 feet in width between the waters edge and the park edge). However, it is only recommended to provide vista pruning along the lake in areas where public facilities are presently located. The shrubby vegetation lining the lake edge should not be cut below 3 feet in height. It is important to maintain a vegetated cover to prevent erosion and provide cover for wildlife.

The small wooded portion of LBP in the northwest corner presently needs no active maintenance. The eastern red cedars which ring the children's play area and line the street edge of the park are in excellent health.

6. Ash Road Park

Ash Road Park contains nine red maples, three sassafras (*Sassafras albidum*), 1 black cherry and 1 American white birch (*Betula papyrifera*). The red maples which dominate this park average 10-12 inches in diameter and are approximately 25 feet in height. There are no hazard trees and only a light pruning is needed to remove the obvious deadwood. Two basal stems have been marked for removal in order to improve the future structure of their parent trees (Photograph #33).

7. Deerhead Lake Park

Three trees in Deerhead Lake Park were tagged and evaluated for maintenance. The trees in this park have received some pruning within the past several years and are generally in good health, except for some evidence of mower/weed trimmer damage.

The two large black cherries [DH 1 and DH 2] are declining in health and should receive priority pruning. DH 1 has been struck by lightning and as a consequence has a dead top which should be removed. This tree is presently structurally sound; however, the lightning wound has provided entry for fungi. This tree should be periodically monitored for future hazard.

The black locust [DL 3] has a large limb growing out over the small children's play area. Basal rot is present which leads up to the crotch of this tree and has reduced the structural soundness of this limb (Photograph #34). This large limb should be cut back by approximately 20 feet in order to reduce its weight. A cable may also be installed.

The grove of four persimmon (*Diospyros virginiana*) trees located in the northern end of the park are beautiful specimen trees and rather unique (Photograph #35). These trees have suffered some mower/weed trimmer damage and would benefit from the construction of a mulch bed. One smaller persimmon tree, located in the small

triangular park to the northeast, is nearly dead and has been marked for removal. This tree has suffered repeated mower damage to its base which has contributed to its decline.

8. Williams Street Park

Williams Street Park contains mature specimens of pitch pine, shortleaf pine (*Pinus echinata*), Virginia pine (*Pinus virginiana*), eastern red cedar, pin oak, and several small black cherry trees.

The trees within this park are in excellent health and require little pruning. The lower deadwood and stubs within the 13 pines could be removed to improve park aesthetics, and stubs on the eastern red cedars could be properly pruned to promote rapid healing.

The large pile of topsoil (approximately 100 cu.yds.) located within this park should not be distributed across any of the existing lawn/tree area. The heavy equipment that will be used to spread this soil should be limited to using only the existing disturbed area when regrading the site. Snow fencing can be set up prior to the advent of regrading activities in order to delineate the right-of-way. Heavy equipment can be extremely detrimental to the root zone of existing trees, causing soil compaction and physical damage to the roots. A circular radius from the base of the tree equal to 1.5 feet for each diameter inch of the tree (at breast height) should be protected during construction activities near trees.

9. John Anderson Park

This small park is well groomed and requires little maintenance. The species composition is pitch pine, black oak, japanese black pine (*Pinus thunbergiana*), atlantic white cedar, pin oak, white oak, and one planted redbud (*Cercis canadensis*) and one ornamental plum (*Prunus spp.*). The pitch pines and the oaks would benefit from light pruning to remove obvious deadwood.

The shoreline is vegetated with black cherry, sweetbay magnolia (*Magnolia acuminata*), red maple, and sweet pepperbush. This vegetation should not be disturbed. Should access to the water be desired in the future, it should be provided in such a way as to create minimal disturbance to prevent erosion, and protect the stream bank.

10. Devon Street Park

This small park is dominated by black oaks, chestnut oaks (*Quercus prinus*), and pin oaks. There is a great deal of deadwood present in several of the trees which

should be removed, especially in the vicinity of the two park tables. Six dead or dying trees were marked for removal. There is little threat or hazard associated with the trees in this park.

11. Mill Pond

As a result of siltation, Mill Pond has become extremely shallow and has developed into an emergent wetland. Emergent wetlands such as this provide valuable habitat for numerous species of wildlife. At the request of the Lacey Township Environmental Commission this area was evaluated for planting recommendations. The exposed bank, parallel to Parker Avenue extension, is approximately 720 feet long and 10 feet in width. A wooden rail or barrier should be installed along the edge of the road (between the road and the lake); such a barrier would help control access to prevent erosion and protect the shoreline (as well as the roadway), and also assist in the establishment of natural vegetation.

The planting of vegetative cover along this stretch, between the road and the waters edge, will increase the wildlife value of this emergent wetland. The bank should be planted with native species that are present along the adjacent pond fringes. Tree species identified along the adjacent pond fringes were atlantic white cedar, red maple, pitch pine, black gum and pin oak. Shrub species identified were highbush blueberry (*Vaccinium corymbosum*), bayberry, inkberry holly (*Ilex glabra*), sweet pepperbush and winged sumac (*Rhus coppalina*).

Planting should be performed in a random fashion to mimic a natural arrangement. Tree species may be planted in groups, or singly at 10 to 20 foot intervals. Shrub species should also be planted at irregular intervals, using 5 to 10 foot spacing. Approximately 144 plants selected from the native species suggested above would begin to provide the necessary vegetative cover. Additionally, all mowing along this bank edge should be terminated.

Should the current gravel parking area opposite the lake be more defined, planting opportunities would be created around the perimeter of the designated parking area. Most of the large trees mentioned in Section II would be suitable for this area, especially red maple, pin oak and willow oak.

12. Cedar Creek Park

This small park located along Cedar Creek has a black gum and red maple near the waters edge and a small stand of oaks and pitch pines located to the east of the parking area. The red maple along the water's edge has a number of ropes tied around large limbs within the tree. These ropes should be removed in order to prevent girdling of the limbs. A large declining white oak is located in the southwestern corner of the park. This tree has lost much of its top and provides little hazard despite its

advanced decay. The small stand of trees to the east of the parking area requires no maintenance at this time.

The park has suffered from repeated erosion events and due to its proximity to Cedar Creek, beach nourishment is prohibited. This park area will continue to deteriorate as the beach erodes. One method of slowing this process is by stabilizing an area of approximately 10-20 feet in width between the parking area and the beach. This buffer strip, if planted, will slow and diffuse the water which runs off of the adjacent parking areas and is presently gullyng the beach. Native, hardy herbaceous species (such as those mentioned below in Deerhead Lake Beach) would provide an excellent buffer. This buffer strip, if created, should remain unmowed.

13. Deerhead Lake Beach

There are a total of seven trees in this area: three black locusts, three eastern red cedars, and one red maple located at the southern end of this beach. The black locusts require a moderate pruning to remove the deadwood and dead branch ends. They pose some hazard to beach visitors who use them for shade. These trees are declining due to the impacts imposed on their root zones. It was noted during the inspection that portions of the root system had been raked out of the sand and exposed by the tractor used to groom the beach (Photograph #35). These trees would also benefit from an annual application of fertilizer.

The small beach area and retention basin found adjacent to Ravine Road were also evaluated. The trees located along the retention basin are generally in moderate health; however, they show some symptoms of decline due to root injury received during the construction of the retention basin. One white oak located at the west end of this site should have a dead leader (marked) removed. It presents no threat of hazard as this area is underutilized. There was some erosion noted along the banks of the retention pond. These areas should be seeded and mulched and should not be mowed in order to stabilize the banks and promote sediment and nutrient uptake. Native herbaceous species such as little bluestem (*Andropogon scoparius*), switchgrass (*Panicum virgatum*), partridge pea (*Cassia fasciculata*), deertongue (*Panicum clandestinum*), and black-eyed susan (*Rudbeckia hirta*) are appropriate for planting in eroded areas. These species should be planted at a rate of ten lbs./acre for the first four species and one lb./acre for the black-eyed susan. This planting mix and seeding rate are appropriate for any areas within Lacey Township which may require stabilization. All are drought tolerant and grow well in infertile soils. These species are also noted for their inherent benefits to wildlife.

The trees located at the southern and northern ends of the beach area are generally in good health. There is some deadwood, but the hazard potential of these trees is slight. One dead stem was found along Lakeside Drive south which should be removed.

Should the current gravel parking area opposite the lake be more defined, planting opportunities would be created around the perimeter of the designated parking area. Most of the large trees mentioned in Section II would be suitable for this area, especially red maple, pin oak and willow oak.

14. Lake Barnegat Beach

This beach area has a grove of approximately 12 pitch pines located at the southern end, scattered small trees paralleling the beach along the northern end, and a wooded area near the restrooms at the extreme northern end of the park. The grove of pitch pines found at the southern end of the beach is healthy, but contains large amounts of deadwood and numerous stubs. This is a popular area for passive recreation due to its proximity to the water and the moderate shade provided by the pines. These 12 trees should receive a priority pruning as the deadwood they contain could pose a hazard. One severely declining pin oak located among the pitch pines was marked for removal.

The smaller trees located along the northern portions of the beach, comprised of eastern red cedars, white oak, chestnut oak, persimmon, black oak and black cherry, are relatively small in stature and severely declining in health due to the drastic modification of their rooting environment. These trees pose little hazard, and may respond favorably to a light pruning to remove obvious deadwood. An annual application of fertilizer would also be beneficial.

The trees in the vicinity of the restrooms are in moderate health, although the Catalpa (*Catalpa speciosa*) and sassafras to the rear of the restrooms exhibit residual signs of construction damage. Due to their remote location there is little reason to provide maintenance for these two trees.

The stand of trees located between the restrooms and the northern end of the beach is comprised of pitch pine, red maple, sassafras, white oak and pin oak. These trees are in good health and require no maintenance. One black cherry, near the corner of the fence along Lakeside Drive, was marked for removal.

15. Forked River Beach

There are no trees located at this beachfront park. Bayberry, black cherry, winged sumac, eastern red cedar and common reed (*Phragmites communis*) line the entrance path. Beachfront landscapes located at or near sea level are generally vegetated with salt tolerant grasses, herbaceous plants and shrubs which are suitable to this harsh environment. These species can withstand periodic storms and become rapidly re-established.

16. Laurel Boulevard Park

There are no trees located at this beachfront park. This park appears relatively unused and is presently vegetated with smooth cordgrass (*Spartina alterniflora*), salt hay (*Spartina patens*), seaside goldenrod (*Solidago spp.*), common reed and shrubs of bayberry and winged sumac. The site is presently entirely vegetated.

17. Public Docks (north and south)

There are no trees located at the public docks north facility. It is presently entirely paved and does not provide any opportunities for planting.

There are presently no trees located at the public docks south facility. This facility has an unpaved area surrounding the restrooms and a small grassed area at the end of Basin Road south. The unpaved area around the restrooms might benefit from having a parking area designated. The pitch pines which are encroaching into this area should be encouraged to grow. Additional trees might be planted if a designated parking area is constructed. Tree species such as American holly (*Ilex opaca*) and black gum are salt tolerant and would perform well in this location. The small grassy area at the end of Basin Road south would also provide an excellent location for a planted tree. Either of the two species previously mentioned would perform suitably in this location as well.

18. Meadowlark Drive Park

This small beachfront park presently contains no trees. This is a sandy and exposed site which is not suitable for tree planting due to view constraints.

III. CONCLUSIONS

In all Lacey Township Parks, with the exception of Deerhead Lake Park, the trees have received only emergency maintenance and minimal branch pruning to improve mower access in the recent past. The recommendations as identified in the inventory and discussed in the text provide numerous opportunities to reduce any potential hazard, improve the park's aesthetics, and promote the health and longevity of the park's trees. The trees identified as priority trees in each of the parks discussed above should be given preferential treatment.

The overall health of the trees in the parks of Lacey Township is moderate to good in areas that have not sustained excessive vehicular traffic. Portions of William Hebrew Park, Vincent Clune Park, and Huffy Wallis Park would each benefit from the construction of designated parking areas in order to prevent vehicular access to the

wooded areas. These parks would also benefit from the addition of leaf mold or wood chips to improve soil structure in these areas.

A number of trees, as identified in the text, would benefit from an annual application of fertilizer. In general the trees most in need of fertilization are those which are located in the beach areas, and those that have been exposed to vehicular traffic. Due to the sandy nature of the soils throughout Lacey Township and the proximity of fertilizer application areas to lakes, nutrient leaching is an important consideration. Tree fertilizer consists of standard Nitrogen-Phosphorus-Potassium (N-P-K) formulations, with a recommended ratio of 20:7:7. Fertilizers which contain a high percentage of organic nitrogen or natural sources of nitrogen will be released more slowly than inorganic or chemical formulations and are therefore most appropriate for the Lacey Township soil conditions. Granular fertilizers should be applied at a rate of 2.5 - 3.0 lbs of actual nitrogen for each 1000 square feet of area beneath a tree's canopy on an annual basis. In beach front areas such as Lake Barnegat and Deerhead Lake, the fertilizer should be placed in holes drilled 6-12 inches deep into the ground distributed beneath the tree canopy. In upland areas, such as Huff Wallis and Vincent Clune Parks, the fertilizer may be applied to the surface.

Tree pruning should be performed in accord with National Arborist Association Standards. A copy of these standards is included with this report (Appendix 3). Class II - standard pruning is the recommended degree of pruning that the trees throughout the parks should receive.

In selected areas, particularly in William Hebrew Park and Charles Mezera Park, canopy elevation was recommended. One of the reasons for this is the improvement of sight lines and aesthetics. Elevating the canopy is also beneficial to the safety and comfort of pedestrians who may traverse these areas.

Several tree planting opportunities exist throughout the Township's parks. Some of the areas where additional trees could be planted include the Lake Barnegat and Deerhead Lake beaches, the east beach at Bamber Lake, the Public Docks south and along the fringes of the Mill Pond. Native species were identified and should be utilized to revegetate the Mill Pond shoreline. Several species were also recommended for the Public Docks south. Included below are selected tree species that are tolerant of droughty, acidic soils, beneficial to migratory birds (as listed by the New Jersey Audubon Society), tolerant of salt and disease resistant.

Small trees- suitable for planting beneath overhead utility wires

<i>Acer campestre</i> -	hedge maple
<i>Amelanchier</i> -	serviceberry
<i>Cornus racemosa</i> -	gray dogwood
<i>Cornus florida</i> -	flowering dogwood
<i>Craetagus Crus-galli inermis</i> -	thornless cockspur hawthorne
<i>Malus spp.</i> - crabapple varieties.	
<i>Ilex opaca</i> -	American holly

Large trees - suitable for open areas, no overhead wires

<i>Nyssa sylvatica</i> -	black gum, tupelo
<i>Acer pseudoplatanus</i> -	sycamore maple
<i>Betula nigra</i> -	river birch
<i>Acer rubrum</i> -	red maple
<i>Quercus phellos</i> -	willow oak
<i>Quercus palustris</i> -	pin oak
<i>Pinus strobus</i> -	eastern white pine

Appendix 1

Revised attachment 1 - Lacey Township Recreation Areas

REVISED ATTACHMENT 1

LACEY TOWNSHIP RECREATIONAL AREAS

Class I - Major Park/Recreation Area		
1.	Bamber Lake Recreation Area *	38.75
2.	William Hebrew Park	26.50
3.	Vincent Clune Park	15.34
4.	Huffy Wallis Park	3.21
	Class Subtotal (acres)	83.80
Class II - Mini Park/Playground		
5.	Charles Mezera Park	1.75
6.	Ash Road Park	1.68
7.	Deerhead Lake Park	.52
8.	Williams Street Park	.52
9.	John Anderson Park	.35
10.	Devon Street Park	.23
	Class Subtotal (acres)	5.05
Class III - Freshwater Beach/Lakeshore		
11.	Mill Pond**	5.00
12.	Cedar Creek	3.20
13.	Deerhead Lake	2.34
14.	Lake Barnegat**	2.00
	Class Subtotal (acres)	12.54
Class IV - Bayfront Beach/Park		
15.	Forked River Beach	9.76
16.	Laurel Boulevard	3.49
17.	Public Docks (North & South)	.86
18.	Meadowlark Drive	.85
	Class Subtotal (acres)	14.96
	TOTAL ACREAGE	116.35

* Includes freshwater beach/lakeshore area

** Estimated land area

Appendix 2
TreeKeeper Jr. Data Sheets

TreeKeeper jr. Selected Fields and Field Definitions
Lacey Township Environmental Commission

Field: Height

Straight Value
Field width = 10

Field: Maint

Coded Values:

0 LT. PRUNE
1 MED.PRUNE
2 HVY.PRUNE
3 TOP PRUNE
4 INST.CABLE
5 GRDL.ROOT
6 PRUNE STUB

Field: Condition

Straight Value
Field width = 10

Field: Deadwood

Straight Value
Field width = 10

Field: Utilities

Coded Values:

0 ---
1 P--
2 -S-
3 --O
4 PS-
5 P-O
6 -SO
7 PSO

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SPECIES LIST - BOTANICAL NAME

08/18/92
page 1

Code	Botanical Name	Common Name	Value
006	ACER PLATINOIDES	NORWAY MAPLE	0
011	ACER RUBRUM	RED MAPLE	0
019	ACER SACCHARINUM	SILVER MAPLE	0
020	AILANTHUS ALTISSIMA	AILANTHUS	0
022	DIOSPYROS VIRGINIANA	PERSIMMON	0
007	GINKO BILOBA	GINKO	0
009	ILEX OPACA	AMERICAN HOLLY	0
028	JUGLANS NIGRA	BLACK WALNUT	0
005	JUNIPERUS VIRGINIANA	EASTERN RED CEDAR	0
017	LARIX DECIDUA	LARCH	0
023	MORUS ALBA	WHITE MULBERRY	0
021	NYSSA SYLVATICA	BLACK GUM	0
018	PICEA ABIES	NORWAY SPRUCE	0
027	PINUS ECHINATA	SHORTLEAF PINE	0
025	PINUS RIGIDA	PITCH PINE	0
008	PINUS STROBUS	WHITE PINE	0
026	PINUS VIRGINIANA	VIRGINIA PINE	0
003	PRUNUS SEROTINA	BLACK CHERRY	0
013	QUERCUS ALBA	WHITE OAK	0
014	QUERCUS PALUSTRIS	PIN OAK	0
015	QUERCUS PRINUS	CHESTNUT OAK	0
012	QUERCUS VELUTINA	BLACK OAK	0
004	ROBINIA PSEUDOACACIA	BLACK LOCUST	0
024	SASSAFRAS ALBIDUM	SASSAFRAS	0
002	Stump	STUMP	0
010	TAXUS	YEW	0
016	ULMUS AMERICANA	AMERICAN ELM	0
001	Vacant planting site	VACANT PLANTING SITE	0

Lacey Township Environmental Commission / TreeKeeper jr.
ALL TREE SITES ON A BLOCK

08/18/92
Page 1

On BAMBER LAKE PARK from BL to BL

Address	Site	Species	DBH	Height	Maint	Cond	Deadwood	Util
* BAMBER LAKE PARK								
1	0	PRUNUS SEROTINA	14	30	LT. PRUNE	60	15	-SO
2	0	PRUNUS SEROTINA	12	30	LT. PRUNE	60	10	-SO
3	0	PRUNUS SEROTINA	10	30	LT. PRUNE	50	10	-SO
4	0	PRUNUS SEROTINA	14	25	GRDL.ROOT	30	5	-SO
5	0	PRUNUS SEROTINA	14	30	LT. PRUNE	70	5	-SO
6	0	PRUNUS SEROTINA	14	30	LT. PRUNE	70	10	-SO
7	0	JUNIPERUS VIRGINIANA	24	50	PRUNE STUB	80	5	-SO
7	1	JUNIPERUS VIRGINIANA	24	50	PRUNE STUB	80	5	-SO
8	0	PRUNUS SEROTINA	11	35	LT. PRUNE	80	10	-SO
9	0	ROBINIA PSEUDOACACIA	25	40	HVY.PRUNE	30	60	---
10	0	PRUNUS SEROTINA	10	35	LT. PRUNE	60	20	---
11	0	PRUNUS SEROTINA	15	40	MED.PRUNE	70	20	---
12	0	ROBINIA PSEUDOACACIA	26	50	HVY.PRUNE	60	30	---
13	0	PRUNUS SEROTINA	10	25	LT. PRUNE	50	30	---
14	0	ROBINIA PSEUDOACACIA	25	40	HVY.PRUNE	30	50	---
15	0	PRUNUS SEROTINA	15	25	MED.PRUNE	70	10	---
16	0	PRUNUS SEROTINA	11	30	LT. PRUNE	80	5	---
17	0	PRUNUS SEROTINA	10	25	LT. PRUNE	70	5	---
18	0	ACER PLATINOIDES	20	40	MED.PRUNE	30	20	---
19	0	ACER PLATINOIDES	15	30	MED.PRUNE	40	30	---
20	0	GINKO BILOBA	18	40	LT. PRUNE	70	5	---
21	0	PINUS STROBUS	34	110	LT. PRUNE	100	5	---
22	0	ILEX OPACA	14	35	LT. PRUNE	80	10	---
23	0	TAXUS	10	20	LT. PRUNE	90	15	---
24	0	PRUNUS SEROTINA	16	40	LT. PRUNE	80	5	---
25	0	PRUNUS SEROTINA	14	10	MED.PRUNE	70	15	---
26	0	ACER RUBRUM	25	30	MED.PRUNE	30	20	---
27	0	ULMUS AMERICANA	36	50	TOP PRUNE	20	30	---
28	0	LARIX DECIDUA	10	20	TOP PRUNE	40	15	---
29	0	ROBINIA PSEUDOACACIA	10	40	LT. PRUNE	80	10	---
30	0	JUNIPERUS VIRGINIANA	10	25	LT. PRUNE	40	10	---
31	0	ROBINIA PSEUDOACACIA	15	35	LT. PRUNE	80	10	---
32	0	ROBINIA PSEUDOACACIA	10	35	LT. PRUNE	40	20	---
33	0	PICEA ABIES	36	80	LT. PRUNE	40	20	---
34	0	ROBINIA PSEUDOACACIA	16	35	HVY.PRUNE	30	25	---
35	0	ROBINIA PSEUDOACACIA	14	40	LT. PRUNE	85	10	---
36	0	ROBINIA PSEUDOACACIA	15	35	LT. PRUNE	85	15	---
37	0	ROBINIA PSEUDOACACIA	8	30	MED.PRUNE	50	30	---
38	0	ACER RUBRUM	19	35	LT. PRUNE	70	10	---
39	0	ROBINIA PSEUDOACACIA	9	30	MED.PRUNE	60	20	---
40	0	PRUNUS SEROTINA	14	35	MED.PRUNE	50	25	---
41	0	ROBINIA PSEUDOACACIA	10	30	LT. PRUNE	60	10	---
42	0	JUNIPERUS VIRGINIANA	29	40	LT. PRUNE	90	5	---
43	0	ROBINIA PSEUDOACACIA	20	40	HVY.PRUNE	40	25	---
44	0	JUNIPERUS VIRGINIANA	20	50	MED.PRUNE	70	10	---
45	0	ACER SACCHARINUM	30	45	MED.PRUNE	60	15	---
46	0	PRUNUS SEROTINA	28	45	MED.PRUNE	70	15	---
47	0	JUNIPERUS VIRGINIANA	19	50	LT. PRUNE	75	5	---

On BAMBER LAKE PARK from BL to BL

Address	Site	Species	DBH	Height	Maint	Cond	Deadwood	Util
=====								
* BAMBER LAKE PARK								
48	0	ROBINIA PSEUDOACACIA	9	30	LT. PRUNE	60	10	---
49	0	ACER RUBRUM	20	50	MED. PRUNE	60	25	---
50	0	AILANTHUS ALTISSIMA	17	40	LT. PRUNE	80	5	---
51	0	AILANTHUS ALTISSIMA	12	45	LT. PRUNE	60	5	---
52	0	NYSSA SYLVATICA	8	25	LT. PRUNE	60	10	---
53	0	ACER RUBRUM	10	25	LT. PRUNE	50	10	---
54	0	ACER RUBRUM	14	35	MED. PRUNE	50	15	---

Lacey Township Environmental Commission / TreeKeeper jr.
ALL TREE SITES ON A BLOCK

08/18/92
Page 1

On WILLIAM HEBREW PARK from WH to WH

Address	Site	Species	DBH	Height	Maint	Cond	Deadwood	Util
* WILLIAM HEBREW PARK								
1	0	QUERCUS VELUTINA	24	55	LT. PRUNE	85	10	---
2	0	MORUS ALBA	10	25	MED. PRUNE	80	5	---
3	0	SASSAFRAS ALBIDUM	14	40	LT. PRUNE	80	15	---
4	0	JUNIPERUS VIRGINIANA	16	35	LT. PRUNE	90	5	---
5	0	QUERCUS VELUTINA	32	65	LT. PRUNE	100	16	---
6	0	JUNIPERUS VIRGINIANA	10	25	LT. PRUNE	100	5	---
7	0	DIOSPYROS VIRGINIANA	62	5	LT. PRUNE	100	0	---
8	0	SASSAFRAS ALBIDUM	92	5	LT. PRUNE	90	10	---
9	0	JUNIPERUS VIRGINIANA	20	30	LT. PRUNE	90	10	---
10	0	ACER PLATINOIDES	14	25	MED. PRUNE	30	15	---
11	0	ACER PLATINOIDES	14	25	LT. PRUNE	65	10	---
12	0	ACER PLATINOIDES	16	25	GRDL. ROOT	90	5	---
13	0	JUNIPERUS VIRGINIANA	16	30	LT. PRUNE	90	10	---
14	0	QUERCUS VELUTINA	25	60	LT. PRUNE	90	10	---
15	0	SASSAFRAS ALBIDUM	14	35	MED. PRUNE	40	20	---
16	0	PRUNUS SEROTINA	16	30	MED. PRUNE	60	15	---
17	0	QUERCUS VELUTINA	22	65	LT. PRUNE	90	10	---
18	0	QUERCUS VELUTINA	20	60	MED. PRUNE	60	15	---
19	0	QUERCUS VELUTINA	13	45	MED. PRUNE	65	15	---
20	0	QUERCUS VELUTINA	23	55	LT. PRUNE	90	5	---
21	0	QUERCUS VELUTINA	28	70	LT. PRUNE	85	10	---
22	0	QUERCUS VELUTINA	22	45	LT. PRUNE	80	10	---
23	0	QUERCUS VELUTINA	14	45	LT. PRUNE	75	10	---
24	0	ILEX OPACA	83	0	LT. PRUNE	60	10	---
25	0	QUERCUS RUBRA	8	25	PRUNE STUB	90	5	---
26	0	QUERCUS VELUTINA	36	70	MED. PRUNE	100	10	---
27	0	PINUS RIGIDA	8	20	LT. PRUNE	70	15	---
28	0	QUERCUS ALBA	35	55	LT. PRUNE	100	5	---
29	0	QUERCUS PALUSTRIS	28	55	MED. PRUNE	90	10	---
30	0	PINUS RIGIDA	16	55	MED. PRUNE	80	10	---
31	0	PINUS RIGIDA	12	45	LT. PRUNE	80	5	---
32	0	PINUS RIGIDA	20	45	LT. PRUNE	90	5	---
33	0	PINUS RIGIDA	16	45	LT. PRUNE	90	10	---
34	0	QUERCUS VELUTINA	9	30	MED. PRUNE	30	30	---
35	0	SASSAFRAS ALBIDUM	9	30	MED. PRUNE	30	30	---
35	1	QUERCUS VELUTINA	72	5	LT. PRUNE		100	P-0
36	0	QUERCUS VELUTINA	7	25	LT. PRUNE	100	5	---
36	1	QUERCUS VELUTINA	72	5	LT. PRUNE		100	P-0
37	0	QUERCUS VELUTINA	14	40	LT. PRUNE	90	5	---
38	0	QUERCUS ALBA	20	50	MED. PRUNE	100	10	---
39	0	QUERCUS ALBA	16	55	MED. PRUNE	70	15	---
40	0	QUERCUS ALBA	15	55	LT. PRUNE	90	5	---
41	0	QUERCUS VELUTINA	22	45	TOP PRUNE	30	10	---
42	0	QUERCUS VELUTINA	24	55	TOP PRUNE	30	10	---
43	0	QUERCUS VELUTINA	17	50	TOP PRUNE	30	10	---
44	0	QUERCUS VELUTINA	18	50	TOP PRUNE	30	10	---
45	0	NYSSA SYLVATICA	13	40	LT. PRUNE	70	5	---
46	0	QUERCUS VELUTINA	19	50	LT. PRUNE	80	5	---

On WILLIAM HEBREW PARK from WH to WH

Address	Site Species	DBH	Height	Maint	Cond	Deadwood	Util
* WILLIAM HEBREW PARK							
47	O QUERCUS VELUTINA	11	40	LT. PRUNE	70	10	---
48	O QUERCUS ALBA	19	50	LT. PRUNE	90	10	---
49	O QUERCUS ALBA	18	45	LT. PRUNE	100	5	---
50	O QUERCUS VELUTINA	18	45	MED. PRUNE	85	15	---
51	O QUERCUS VELUTINA	19	55	LT. PRUNE	80	10	---
52	O QUERCUS ALBA	30	55	LT. PRUNE	90	5	---
53	O QUERCUS VELUTINA	19	45	LT. PRUNE	90	10	---
54	O PINUS RIGIDA	20	50	LT. PRUNE	90	10	---
55	O QUERCUS VELUTINA	19	50	LT. PRUNE	85	10	---
56	O PINUS RIGIDA	18	40	MED. PRUNE	75	10	---
57	O QUERCUS VELUTINA	27	65	MED. PRUNE	80	10	---
58	O QUERCUS ALBA	18	50	LT. PRUNE	70	5	---
59	O JUNIPERUS VIRGINIANA	8	25	LT. PRUNE	75	10	---
60	O QUERCUS ALBA	17	45	LT. PRUNE	95	5	---
61	O JUNIPERUS VIRGINIANA	17	25	LT. PRUNE	50	10	---
62	O QUERCUS VELUTINA	11	25	LT. PRUNE	100	5	---
63	O QUERCUS VELUTINA	14	35	LT. PRUNE	100	5	---
64	O PINUS RIGIDA	15	55	MED. PRUNE	70	10	---
65	O PINUS RIGIDA	16	60	MED. PRUNE	70	10	---
66	O QUERCUS VELUTINA	13	45	LT. PRUNE	90	10	---
67	O QUERCUS VELUTINA	24	65	LT. PRUNE	100	5	---
68	O PINUS RIGIDA	24	70	MED. PRUNE	90	15	---
69	O QUERCUS ALBA	26	60	LT. PRUNE	100	10	---
70	O PINUS RIGIDA	19	60	LT. PRUNE	95	10	---
71	O PINUS RIGIDA	13	45	MED. PRUNE	75	10	---
72	O QUERCUS ALBA	15	50	MED. PRUNE	80	10	---
73	O PINUS RIGIDA	15	50	MED. PRUNE	85	10	---
74	O PINUS RIGIDA	14	45	MED. PRUNE	85	10	---
75	O PINUS RIGIDA	17	50	MED. PRUNE	65	10	---
76	O PINUS RIGIDA	17	55	MED. PRUNE	85	10	---
77	O PINUS RIGIDA	16	45	MED. PRUNE	90	5	---
78	O PINUS RIGIDA	18	60	MED. PRUNE	90	10	---
79	O PINUS RIGIDA	18	60	MED. PRUNE	90	15	---
80	O PINUS RIGIDA	18	60	MED. PRUNE	90	10	---
81	O PINUS RIGIDA	15	50	MED. PRUNE	90	10	---
82	O PINUS RIGIDA	13	45	MED. PRUNE	60	10	---
83	O QUERCUS VELUTINA	15	45	LT. PRUNE	80	5	---
84	O PINUS RIGIDA	16	50	MED. PRUNE	60	10	---
85	O NYSSA SYLVATICA	13	50	MED. PRUNE	85	10	---
86	O PINUS RIGIDA	12	25	LT. PRUNE	70	10	---
87	O PINUS RIGIDA	12	40	MED. PRUNE	75	10	---
88	O QUERCUS VELUTINA	15	40	LT. PRUNE	85	5	---
89	O PINUS RIGIDA	13	40	MED. PRUNE	40	10	---
90	O PINUS RIGIDA	16	50	MED. PRUNE	90	10	---

Lacey Township Environmental Commission / TreeKeeper jr.
ALL TREE SITES ON A BLOCK

08/18/92
Page 1

On VINCENT CLUNE PARK from VC to VC

Address	Site	Species	DBH	Height	Maint	Cond	Deadwood	Util
=====								
* VINCENT CLUNE PARK								
1	0	PINUS RIGIDA	14	45	LT. PRUNE	90	10	---
2	0	PINUS RIGIDA	13	45	MED. PRUNE	70	10	---
3	0	PINUS RIGIDA	14	50	MED. PRUNE	80	10	---
4	0	PINUS RIGIDA	13	50	MED. PRUNE	75	10	---
5	0	PINUS RIGIDA	14	5	LT. PRUNE	80	5	---
6	0	QUERCUS VELUTINA	94	0	LT. PRUNE	80	10	---
7	0	PINUS RIGIDA	16	55	MED. PRUNE	90	10	---
8	0	PINUS RIGIDA	8	40	LT. PRUNE	75	5	---
9	0	QUERCUS VELUTINA	11	45	LT. PRUNE	80	5	---
10	0	PINUS RIGIDA	11	45	MED. PRUNE	70	10	---
11	0	PINUS RIGIDA	15	50	MED. PRUNE	80	5	---
12	0	PINUS RIGIDA	15	55	MED. PRUNE	90	10	---
13	0	PINUS RIGIDA	12	40	LT. PRUNE	85	5	---
14	0	PINUS RIGIDA	13	50	MED. PRUNE	90	10	---
15	0	PINUS RIGIDA	13	50	MED. PRUNE	90	10	---
16	0	PINUS RIGIDA	15	55	MED. PRUNE	85	10	---
17	0	PINUS RIGIDA	11	45	MED. PRUNE	80	10	---
18	0	PINUS RIGIDA	17	45	MED. PRUNE	90	5	---
19	0	PINUS RIGIDA	16	50	MED. PRUNE	70	10	---
20	0	QUERCUS VELUTINA	13	45	LT. PRUNE	90	5	---

On HUFFY WALLIS PARK from HW to HW

Address	Site	Species	DBH	Height	Maint	Cond	Deadwood	Util
=====								
*	HUFFY WALLIS PARK							
1	0	PINUS RIGIDA	16	50	MED.PRUNE	85	10	---
2	0	PINUS RIGIDA	18	55	MED.PRUNE	95	10	---
3	0	PINUS RIGIDA	17	50	MED.PRUNE	80	10	---
3	1	PINUS RIGIDA	17	50	LT. PRUNE	85	5	---
4	0	PINUS RIGIDA	15	50	LT. PRUNE	85	5	---
5	0	PINUS RIGIDA	19	45	LT. PRUNE	95	5	---
6	0	QUERCUS PALUSTRIS	21	40	MED.PRUNE	40	20	---
7	0	QUERCUS PALUSTRIS	14	35	MED.PRUNE	30	25	---
8	0	PINUS RIGIDA	18	40	LT. PRUNE	90	10	---
9	0	QUERCUS PALUSTRIS	15	50	MED.PRUNE	70	15	---
10	0	PINUS RIGIDA	15	45	LT. PRUNE	70	10	---
11	0	PINUS RIGIDA	12	45	LT. PRUNE	70	5	---
12	0	QUERCUS PALUSTRIS	13	40	MED.PRUNE	75	15	---

Lacey Township Environmental Commission / TreeKeeper jr.
ALL TREE SITES ON A BLOCK

08/18/92

Page 1

On LAKE BARNEGAT PARK from LB to LB

Address	Site	Species	DBH	Height	Maint	Cond	Deadwood	Util

*	LAKE BARNEGAT PARK							
1	0	QUERCUS ALBA	35	55	MED.PRUNE	80	15	---
2	0	QUERCUS VELUTINA	23	60	MED.PRUNE	70	10	---
3	0	QUERCUS ALBA	29	40	HVY.PRUNE	30	30	---
4	0	JUGLANS NIGRA	17	30	MED.PRUNE	30	30	---
4	1	SASSAFRAS ALBIDUM	7	30	LT. PRUNE	70	10	---
5	0	SASSAFRAS ALBIDUM	7	30	LT. PRUNE	70	70	---
6	0	AILANTHUS ALTISSIMA	19	40	LT. PRUNE	50	15	---
7	0	PRUNUS SEROTINA	25	30	MED.PRUNE	40	20	---
8	0	QUERCUS ALBA	13	35	LT. PRUNE	60	10	---
9	0	QUERCUS PALUSTRIS	24	60	MED.PRUNE	90	15	---
10	0	QUERCUS VELUTINA	17	60	MED.PRUNE	90	10	---

Lacey Township Environmental Commission / TreeKeeper jr.
ALL TREE SITES ON A BLOCK

08/18/92
Page 1

On DEERHEAD LAKE PARK from DL to DL

Address	Site	Species	DBH	Height	Maint	Cond	Deadwood	Util
=====								
* DEERHEAD LAKE PARK								
1		O PRUNUS SEROTINA	30	45	TOP PRUNE	40	10	---
2		O PRUNUS SEROTINA	19	40	MED. PRUNE	60	15	---
3		O ROBINIA PSEUDOACACIA	25	65	LT. PRUNE	65	5	---

Appendix 3

Pruning Standards for Shade Trees

PRUNING STANDARDS FOR SHADE TREES

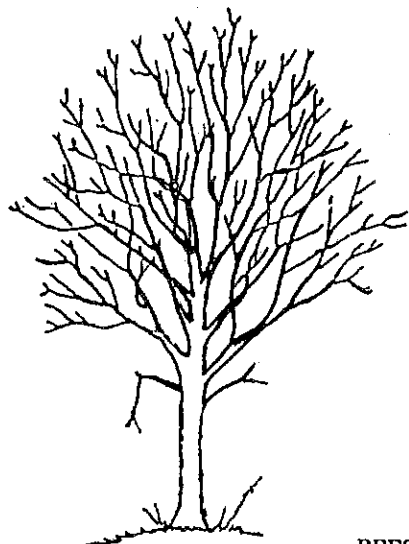
(Revised 1988)

This standard is provided by the National Arborist Association to assist tree service companies, utilities, municipalities, governmental agencies, architects, landscape architects, and others in writing contract specifications for tree pruning. It is not intended to be a "how-to" manual but to define the limits and criteria for arboricultural work, recognizing that regional practices may dictate variations in this standard.

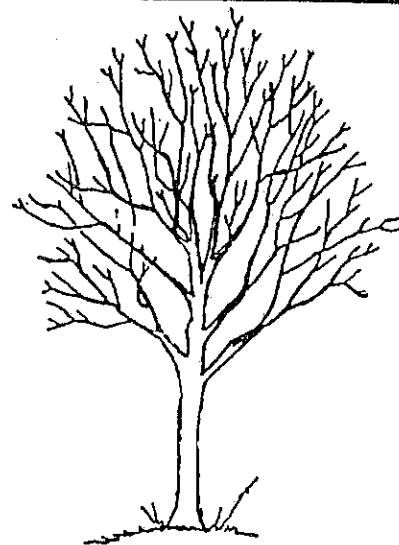
This standard was prepared by the Standard Practices Committee of the National Arborist Association, Inc., a professional trade association founded in 1938.

INTRODUCTION

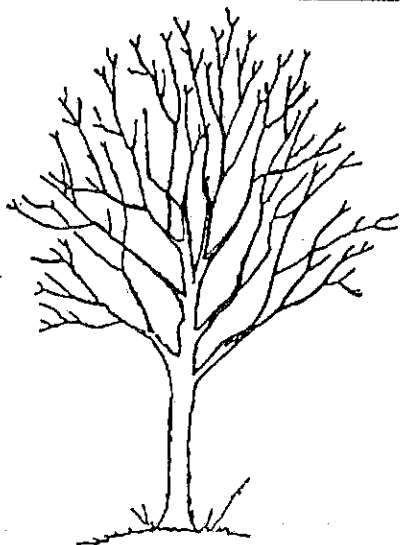
Pruning of shade trees shall only be performed by qualified tree workers who, through related training and/or on the job experience, are familiar with the techniques and hazards of arboricultural work including trimming, maintaining, repairing or removing trees, and the equipment used in such operations. The pruning of trees can be a potentially hazardous occupation and is to be undertaken only by qualified personnel or trainees under the direct supervision of qualified personnel. All tree workers/trainees should be covered by worker's compensation, property damage, public liability and completed operations insurance.



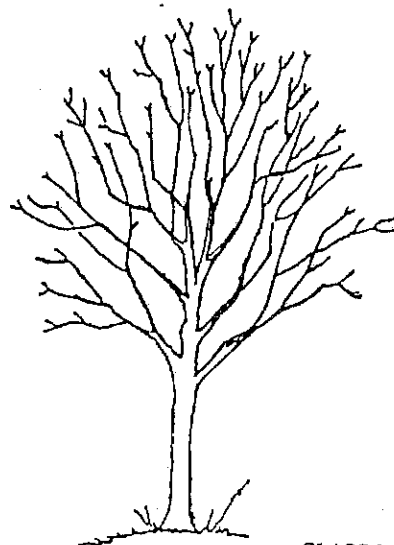
BEFORE PRUNING



CLASS III - HAZARD PRUNING



CLASS II - STANDARD PRUNING



CLASS I - FINE PRUNING

DIAGRAM A - The Three Classes of Pruning

Trees are complex living organisms whose growth, appearance, condition and longevity are greatly influenced by environmental factors. Useful generalizations concerning pruning practices can be made to improve the health, structure, aesthetics, and safety of trees, even though tree species may vary in their cultural requirements, and even within a species individual trees differ in branch configuration.

There are four classes of pruning established to accommodate varying work needs. Pruning performed on certain tree types, such as palm and Norfolk Island pine, might not fall into these categories due to these plants' particular growth characteristics.

CLASS I - FINE PRUNING

- Fine pruning is recommended for premium quality work with an emphasis on aesthetic considerations in addition to structural integrity. Fine pruning shall consist of the removal of dead, dying, diseased, decayed, interfering, objectionable, obstructing, and weak branches, as well as selective thinning to lessen wind resistance. The removal of such described branches is to include those on the main trunks, as well as those inside the leaf area (see Diagram A). An occasional undesirable branch up to one-half inch (1.25 cm) in diameter, as described above, may remain within the main leaf area to its full length when it is not practical to remove it.

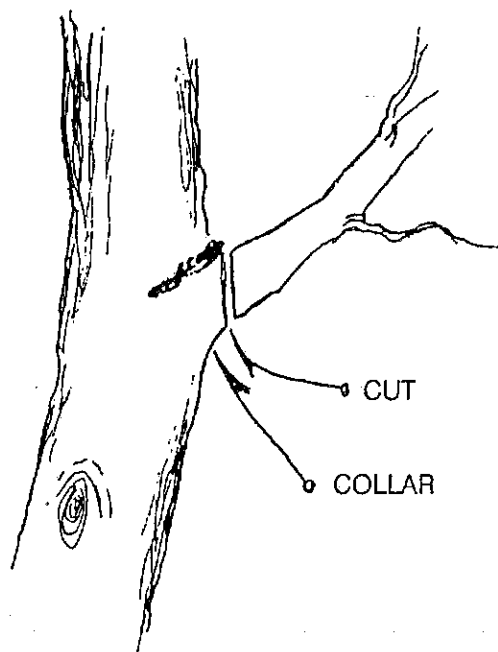


DIAGRAM B

All of the following of General Specifications, listed below in italics, apply to Class I, Fine Pruning:

- a. *All cuts shall be made as close as possible to the trunk or parent limb, without cutting into the branch collar or leaving a protruding stub (See diagram B). Bark at the edge of all pruning cuts should remain firmly attached.*
- b. *All branches too large to support with one hand shall be precut (see Diagram C) to avoid splitting or tearing of the bark. Where necessary, ropes or other equipment should be used to lower large branches or stubs to the ground.*

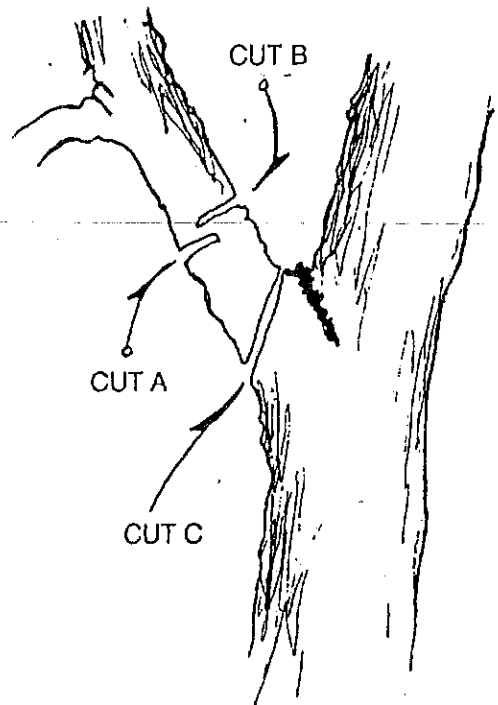


DIAGRAM C

- c. *Treatment of cuts and wounds with wound dressing or paints has not been shown to be effective in preventing or reducing decay, and is not generally recommended for that reason. Wound dressing over infected wood may stimulate the decay process. If wounds are painted for cosmetic or other reasons, then materials non-toxic to the cambium layer of meristematic tissue must be used. Care must be taken to apply a thin coating of the material only to the exposed wood.*
- d. *Old injuries are to be inspected. Those not closing properly and where the callus growth is not already completely established should be bark traced if the bark appears loose or damaged. Such tracing shall not penetrate the xylem (sapwood), and margins shall be kept rounded.*
- e. *Equipment that will damage the bark and cambium layer should not be used on or in the tree. For example, the use of climbing spurs (hooks, irons) is not an acceptable work practice for pruning operations on live trees. Sharp tools shall be used so that clean cuts will be made at all times.*

Class I - Continued

f. All cut limbs shall be removed from the crown upon completion of the pruning.

g. Trees susceptible to serious infectious diseases should not be pruned at the time of year during which the pathogens causing the diseases or the insect vectors are most active. Similarly, if pruning wounds may attract harmful insects, pruning should be timed so as to avoid insect infestation.

These additional specifications shall also apply to Class I, Fine Pruning:

h. Remove the weaker or less desirable or crossed or rubbing branches. Such removal, if possible, should not leave large open spaces in the general outline of the tree.

i. Where practical, all visible girdling roots shall be treated as follows:

1. Cut root at either end, or;
2. Sever root in center with a chisel and allow growing tree to push root away.
3. Remove section of root.

j. The presence of any disease condition, fungus fruit bodies, decayed trunk or branches, split crotches or branches, cracks, or other structural weakness shall be reported in writing to a supervisor and/or the owner, and corrective measures recommended.

CLASS II - STANDARD PRUNING

Standard pruning is recommended where aesthetic considerations are secondary to structural integrity and tree health concerns.

Standard pruning shall consist of the removal of dead, dying, diseased, decaying, interfering, objectionable, obstructing, and weak branches, as well as selective thinning to lessen wind resistance. The removal of such described branches is to include those on the main trunks, as well as those inside the leaf area (see Diagram A). An occasional undesirable branch up to one inch (2.5 cm) in diameter may remain within the main leaf area where it is not practical to remove it.

The following General Specifications, listed below in *italics*, apply to Class II, Standard Pruning.

a. All cuts shall be made as close as possible to the trunk or parent limb, without cutting into the branch collar or leaving a protruding stub (See diagram B). Bark at the edge of all pruning cuts should remain firmly attached.

b. All branches too large to support with one hand shall be pre-cut (see DIAGRAM C) to avoid splitting or tearing of the bark. Where necessary, ropes or other equipment should be used to lower large branches or stubs to the

c. Treatment of cuts and wounds with wound dressing or paints has not been shown to be effective in preventing or reducing decay, and is not generally recommended for that reason. Wound dressing over infected wood may stimulate the decay process. If wounds are painted for cosmetic or other reasons, then materials non-toxic to the cambium layer of meristematic tissue must be used. Care must be taken to apply a thin coating of the material only to the exposed wood.

d. Old injuries are to be inspected. Those not closing properly and where the callus growth is not already completely established should be bark traced if the bark appears loose or damaged. Such tracing shall not penetrate the xylem (sapwood), and margins shall be kept rounded.

e. Equipment that will damage the bark and cambium layer should not be used on or in the tree. For example, the use of climbing spurs (hooks, irons) is not an acceptable work practice for pruning operations on live trees. Sharp tools shall be used so that clean cuts will be made at all times.

f. All cut limbs shall be removed from the crown upon completion of the pruning.

g. Trees susceptible to serious infectious diseases should not be pruned at the time of year during which the pathogens causing the diseases or the insect vectors are most active. Similarly, if pruning wounds may attract harmful insects, pruning should be timed so as to avoid insect infestation.

These additional specifications shall also apply to Class II, Standard Pruning:

h. All visible girdling roots are to be reported to a supervisor and/or the owner.

i. The presence of any disease condition, fungus fruit bodies, decayed trunk or branches, split crotches or branches, cracks, or other structural weakness should be reported in writing to a supervisor and/or the owner, and corrective measures recommended.

CLASS III - HAZARD PRUNING

Hazard pruning is recommended where safety considerations are paramount.

Hazard pruning shall consist of the removal of dead, diseased, decayed, and obviously weak branches, two inches (5 cm) in diameter or greater (see DIAGRAM A).

The following General Specifications, listed below in *italics*, apply to Class III, Hazard Pruning:

a. All cuts shall be made as close as possible to the trunk or parent limb, without cutting into the branch collar or leaving a protruding stub (See DIAGRAM B). Bark at the edge of all pruning cuts should remain firmly attached.

b. All branches too large to support with one hand shall be precut (see DIAGRAM C) to avoid splitting or tearing of the bark. Where necessary, ropes or other equipment should be used to lower large branches or stubs to the ground.

c. Treatment of cuts and wounds with wound dressing or paints has not been shown to be effective in preventing or reducing decay, and is not generally recommended for that reason. Wound dressing over infected wood may stimulate the decay process. If wounds are painted for cosmetic or other reasons, then materials non-toxic to the cambium layer of meristematic tissue must be used. Care must be taken to apply a thin coating of the material only to the exposed wood.

d. Old injuries are to be inspected. Those not closing properly and where the callus growth is not already completely established should be bark traced if the bark appears loose or damaged. Such tracing shall not penetrate the xylem (sapwood), and margins shall be kept rounded.

e. Equipment that will damage the bark and cambium layer should not be used on or in the tree. For example, the use of climbing spurs (hooks, irons) is not an acceptable work practice for pruning operations on live trees. Sharp tools shall be used so that clean cuts will be made at all times.

f. All cut limbs shall be removed from the crown upon completion of the pruning.

g. Trees susceptible to serious infectious diseases should not be pruned at the time of year during which the pathogens causing the diseases or the insect vectors are most active. Similarly, if pruning wounds may attract harmful insects, pruning should be timed so as to avoid insect infestation.

These additional specifications shall also apply to Class III, Hazard Pruning:

h. All visible girdling roots are to be reported to a supervisor and/or the owner.

i. The presence of any disease condition, fungus fruit bodies, decayed trunk or branches, split crotches or branches, cracks, or other structural weakness should be reported in writing to a supervisor and/or the owner, and corrective measures recommended.

CLASS IV - CROWN REDUCTION PRUNING

Crown reduction pruning shall consist of the reduction of tops, sides or individual limbs. It involves the removal of a parent limb or dominant leader at the point of attachment of a lateral branch, as illustrated in DIAGRAM D. This practice is to be undertaken only for the following reasons:

a. In situations where branches interfere with utility lines.

b. When there has been significant crown dieback.

c. When it is necessary to achieve specific topiary training or dwarfing.

d. In cases where, due to storm damage or prior incorrect pruning, it is appropriate to prune for safety and aesthetic reasons.

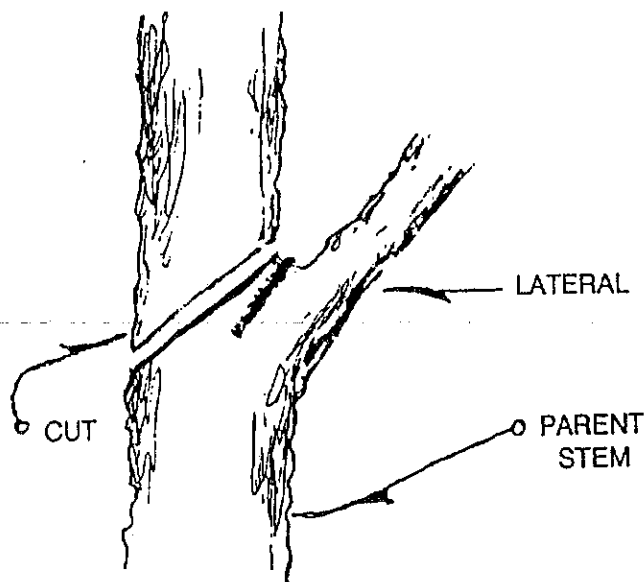


DIAGRAM D

The terms "cutting back" and "drop crotch pruning" are sometimes used interchangeably with the term crown reduction pruning. By contrast, the term "topping" is often used to refer to a generally unacceptable arboricultural practice. Please refer to the Terminology section of this Standard for further information.

All of the specifications of General Specifications, listed below in *italics*, apply to Class IV, Crown Reduction Pruning:

a. All branches too large to support with one hand shall be precut (see DIAGRAM C) to avoid splitting or tearing of the bark. where necessary, ropes or other equipment should be used to lower large branches or stubs to the ground.

b. Treatment of cuts and wounds with wound dressing or paints has not been shown to be effective in preventing or reducing decay, and is not generally recommended for that reason. Wound dressing over infected wood may stimulate the decay process. If wounds are painted for cosmetic or other reasons, then materials non-toxic to the cambium layer of meristematic tissue must be used. Care must be taken to apply a thin coating of the material only to the exposed wood.

c. Old injuries are to be inspected. Those not closing properly and where the callus growth is not already completely established should be bark traced if the bark appears loose or damaged. Such tracing shall not penetrate the xylem (sapwood), and margins shall be kept rounded.

d. Equipment that will damage the bark and cambium layer should not be used on or in the tree. For example, the use of climbing spurs (hooks, irons) is not an acceptable work practice for pruning operations on live trees. Sharp tools shall be used so that clean cuts will be made at all times.

e. All cut limbs shall be removed from the crown upon completion of the pruning.

f. Trees susceptible to serious infectious diseases should not be pruned at the time of year during which the pathogens causing the diseases or the insect vectors are most active. Similarly, if pruning wounds may attract harmful insects, pruning should be timed so as to avoid insect infestation.

These additional specifications shall also apply to Class IV, Crown Reduction Pruning:

g. When removing a parent leader or limb to a lateral branch, the final cut should be made as close to parallel as possible with the branch bark ridge and the lateral limb. The cut should be made as close to the bark ridge as possible without cutting into it. Care should be taken to avoid damaging the lateral limb when the final cut is made.

h. Remove the weaker or less desirable of crossed or rubbing branches. Such removal should not leave large open spaces in the general outline of the tree.

i. Generally in crown reduction pruning, not more than one-third of the total area should be removed in a single operation. Every effort should be made to cut back to a lateral at least one-third to one-half the diameter of the parent limb or leader that is being removed. Cuts not made to a suitable lateral, sometimes called topping cuts, shall not be permitted.

j. Before a branch is cut back, the ratio of live wood in the branch to leaf surface area in the remaining branch should be considered carefully. The leaves must supply sufficient carbohydrates (food) to

maintain the wood in the remaining branch as well as send excess carbohydrates to the trunk and roots for storage and later use. Generally, not more than one-third the total leaf surface area should be removed at any one time.

k. Trees should be pruned to a shape typical of their species.

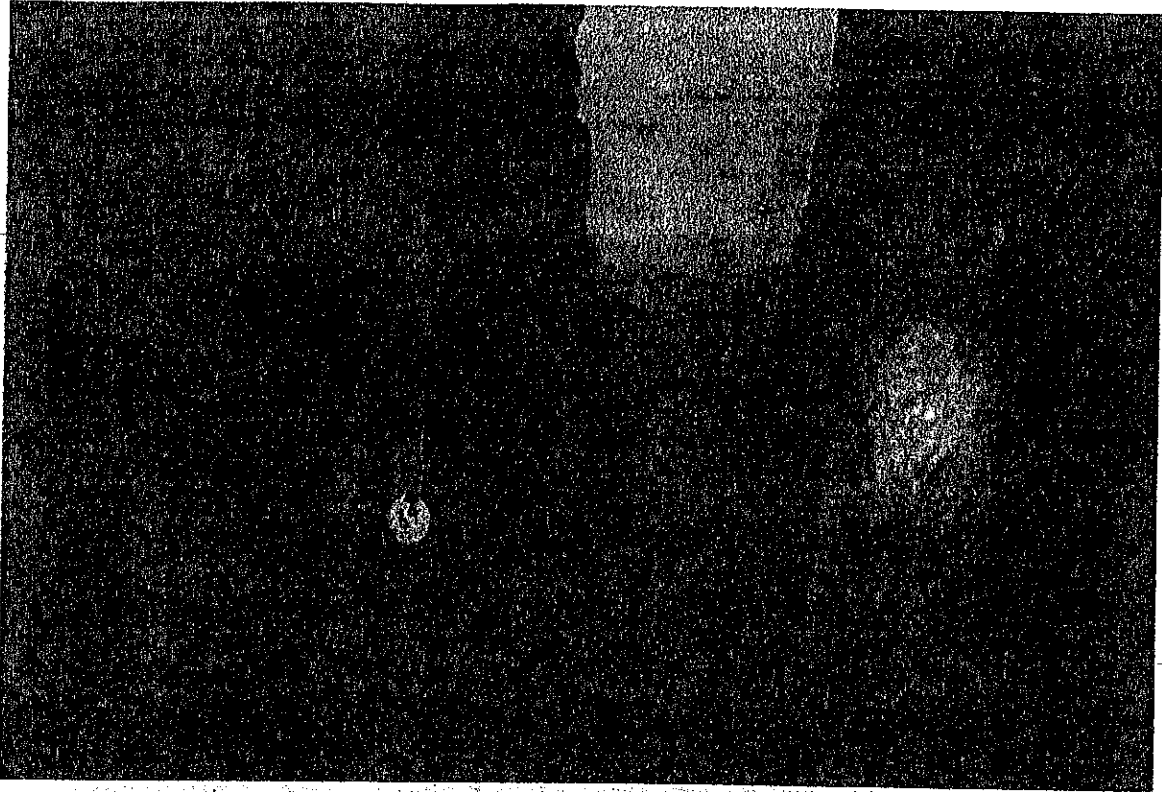
l. To prevent sunburn on thin-barked trees, just enough limbs shall be removed to get the desired effect without admitting too much sunlight to the trunk of the tree or the top of large branches. Care should be taken with the following species: Linden (*Tilia* spp.), maple (*Acer* spp.), beech (*Fagus* spp.), apple (*Malus* spp.), oak (*Quercus* spp.), and other trees susceptible to sunburn. The above damage may be minimized by doing work on susceptible species during the dormant season.

m. When removing the lower branches of trees for crown elevation or underclearance, care should be taken to maintain a symmetrical appearance, and cuts should not be made so large or so numerous that they will prevent normal sap flow.

n. Periodic crown reduction for certain species such as silver maple, the true poplars, and other trees with brittle and soft wood is an established arboricultural practice. This procedure has proven beneficial in maintaining safety over long periods of time. In all cases, it is preferable to make cuts when branches are small so as to avoid developing stem decay, and to begin training these trees when they are young and prune them regularly thereafter so as to avoid removing an excessive amount of leaf surface in one operation.

Appendix 4

Photographs
Lacey Township Park
Tree Inventory and Evaluation



Photograph #1. Typical tree I.D. tag and yellow marking of hazard trees



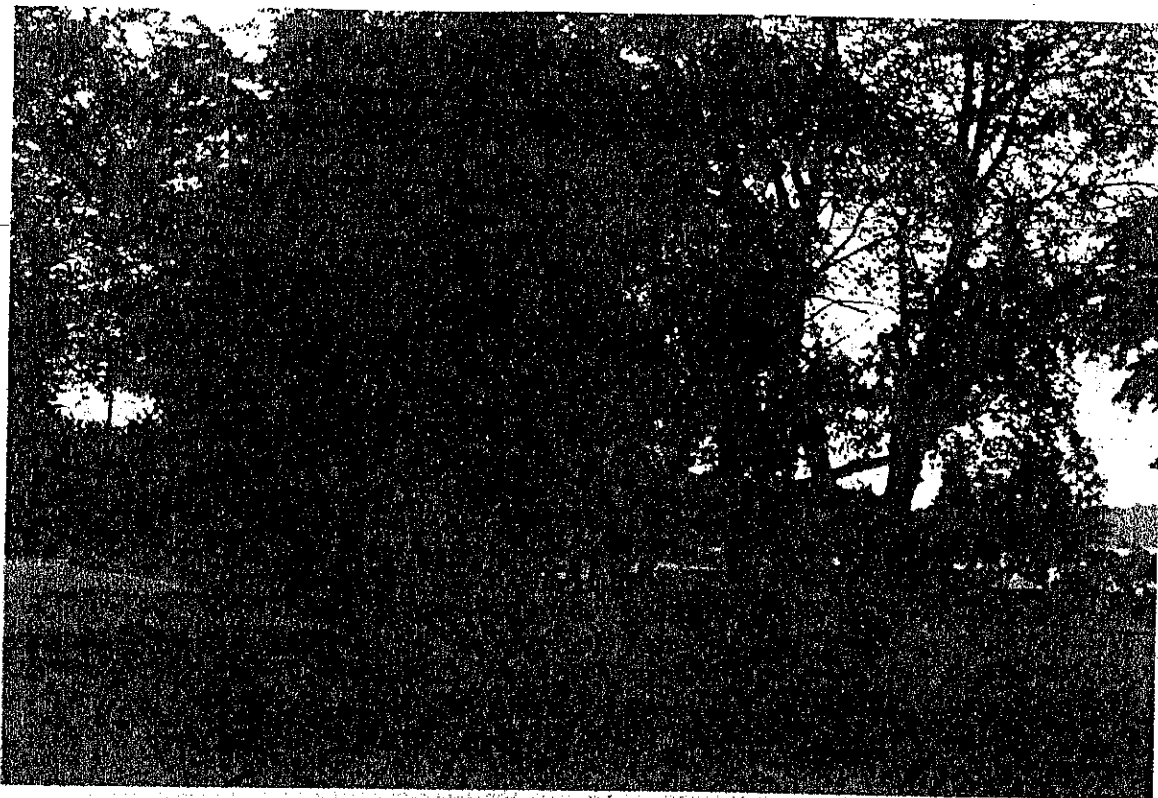
Photograph #2. Two hazard trees located at corner of Bamber Lake parking lot



Photograph #3. Hazard tree located at corner of ballfield marked for removal



Photograph #4. Top prune BL #9 to reduce hazard potential



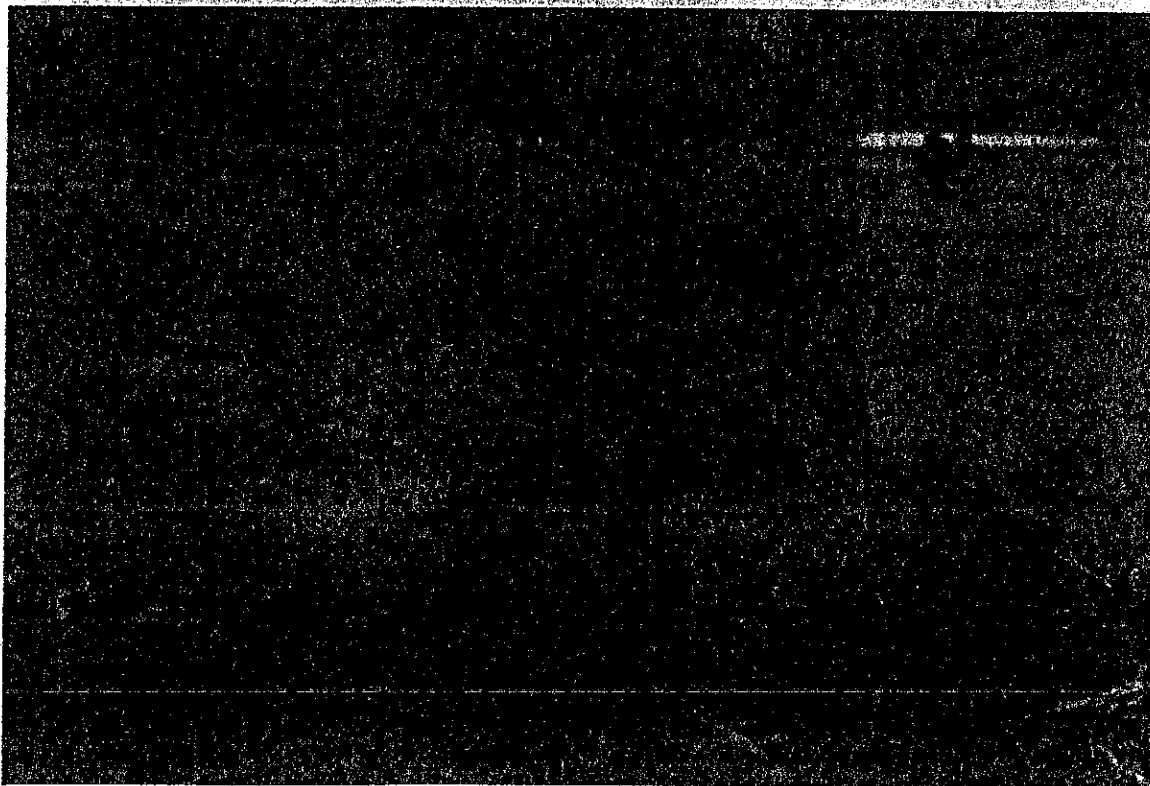
Photograph #5. Black cherry trees along Good Luck Road



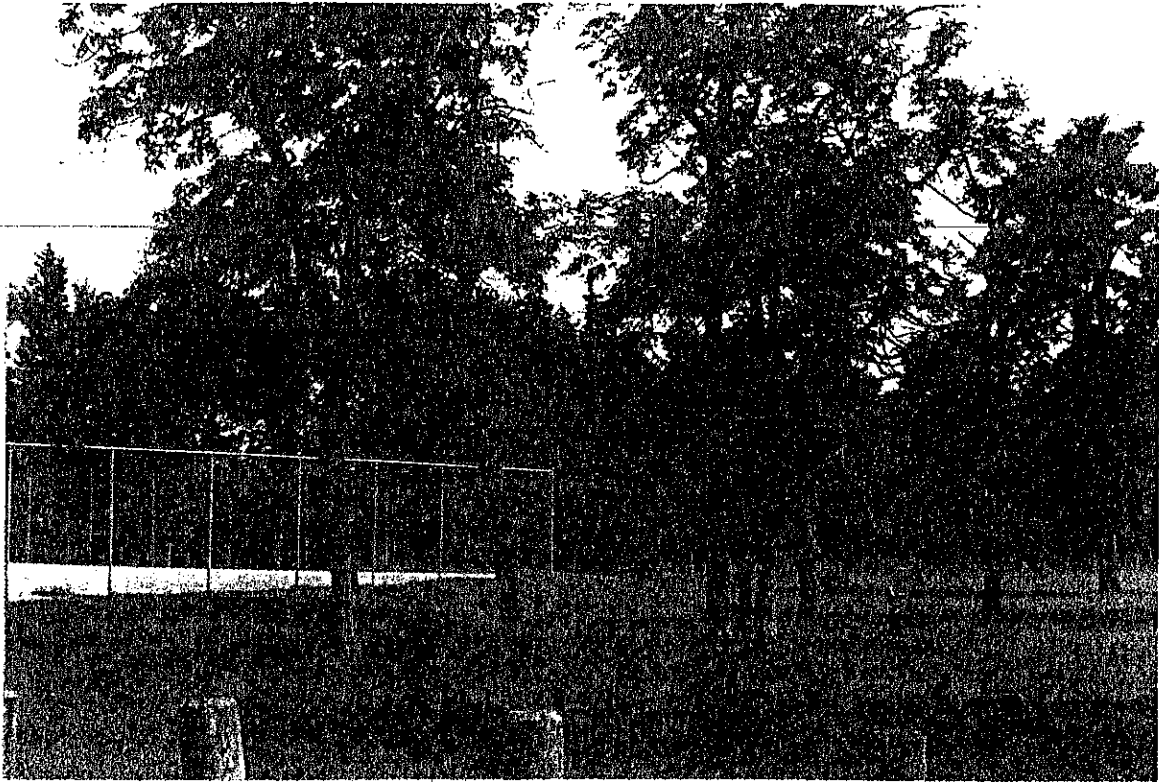
Photograph #6. Specimen white pine BL #21



Photograph #7. Norway spruce BL #33



Photograph #8. Basal rot on Norway spruce BL #33



Photograph #9. Black locust grove, west of tennis courts



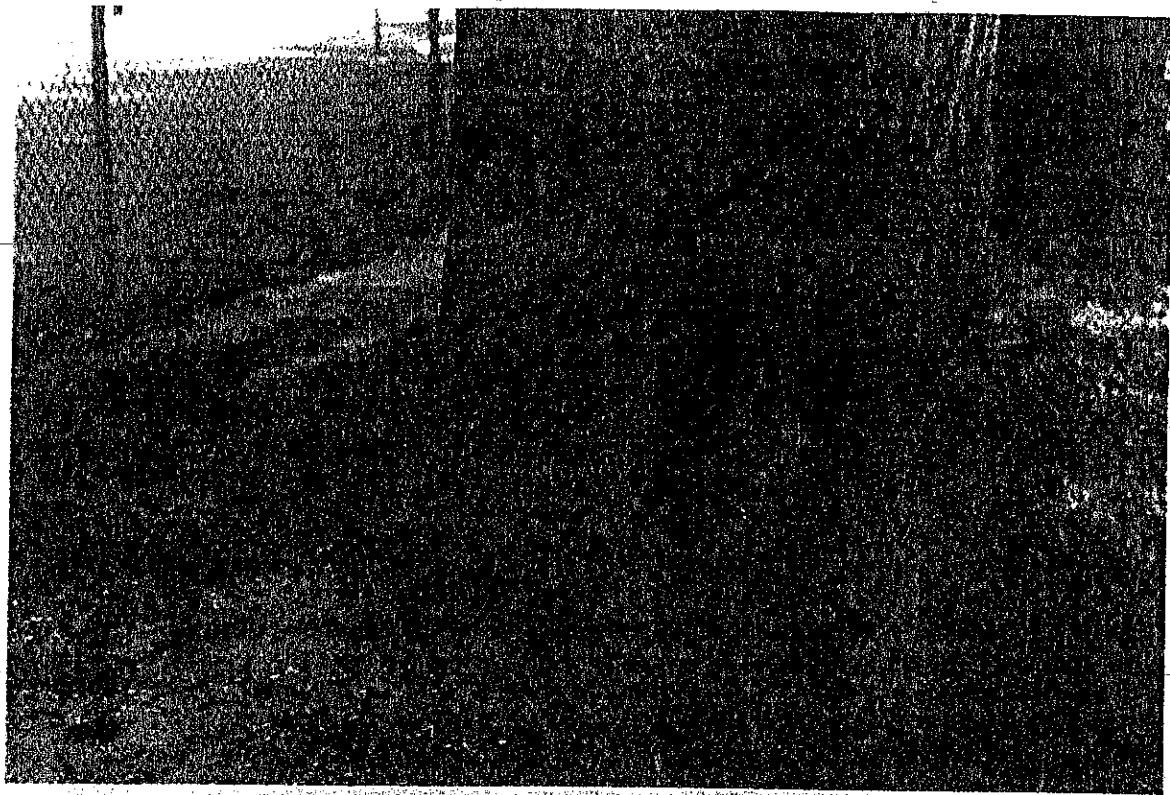
Photograph #10. Eastern red cedars, west end of soccer fields



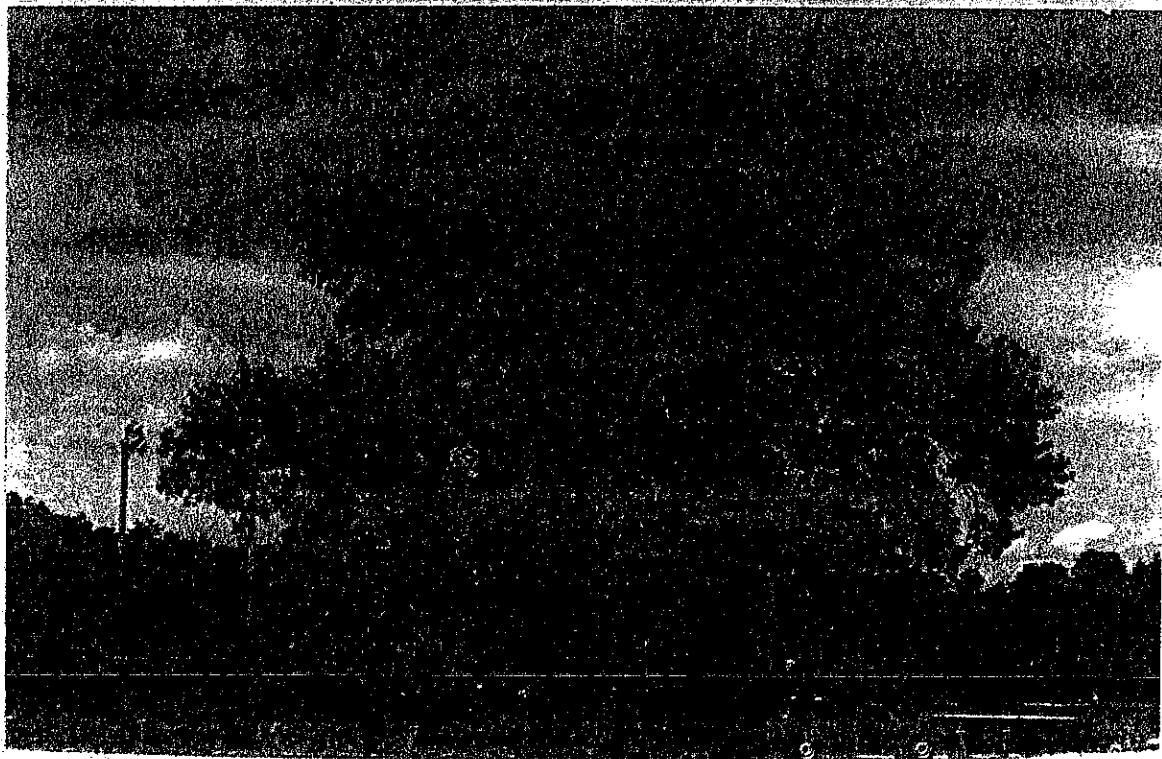
Photograph #11. Black oaks, WH #41 through WH #46, require top pruning to reduce hazard



Photograph #12. Trunk damage on WH #43 and WH #44 due to past fire scorch



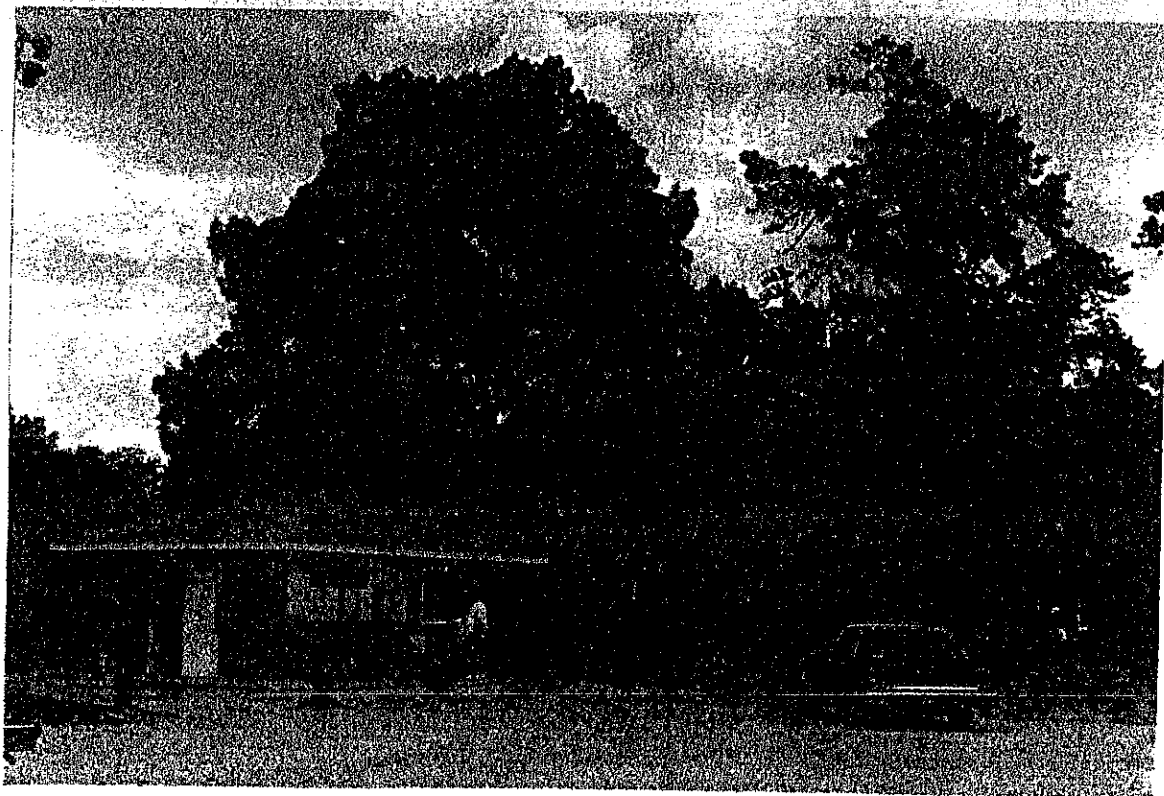
Photograph #13. Basal wound on WH #41



Photograph #14. Specimen black oak WH 26



Photograph #15. Specimen white oak WH #28



Photograph #16. Specimen pin oak, WH #29



Photograph #17. Pitch pine, WH #32, should have limb reduced over tennis court



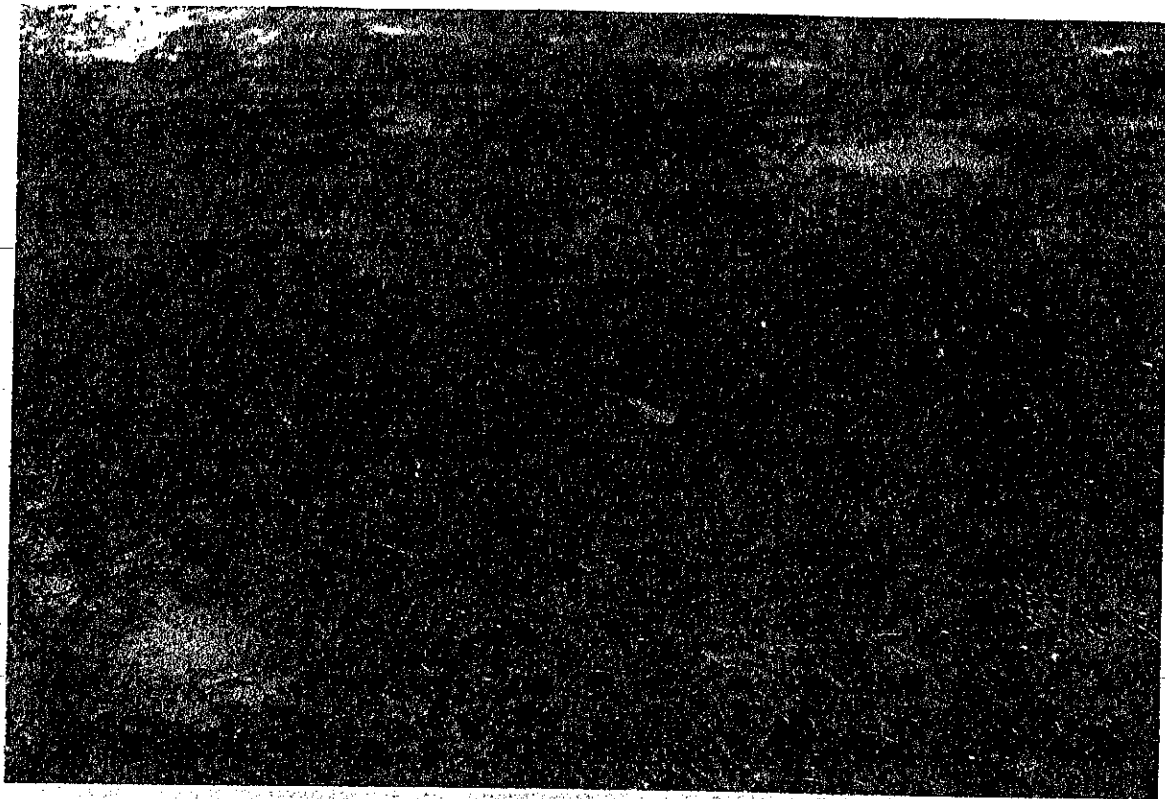
Photograph #18. WH #39 and WH #40 located in small children's play area



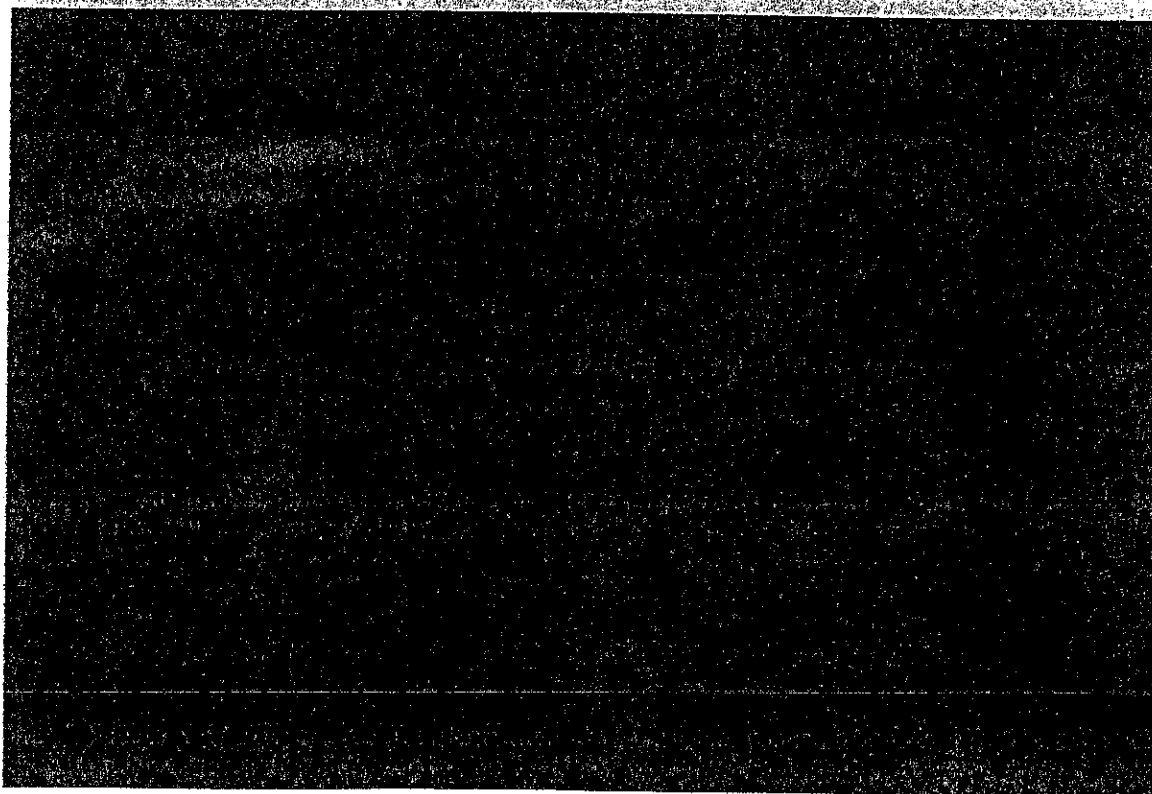
Photograph #19. Girdling wire in WH #9. Should be removed and tree should be cabled



Photograph #20. Large deadwood in row of trees between eastern soccer fields



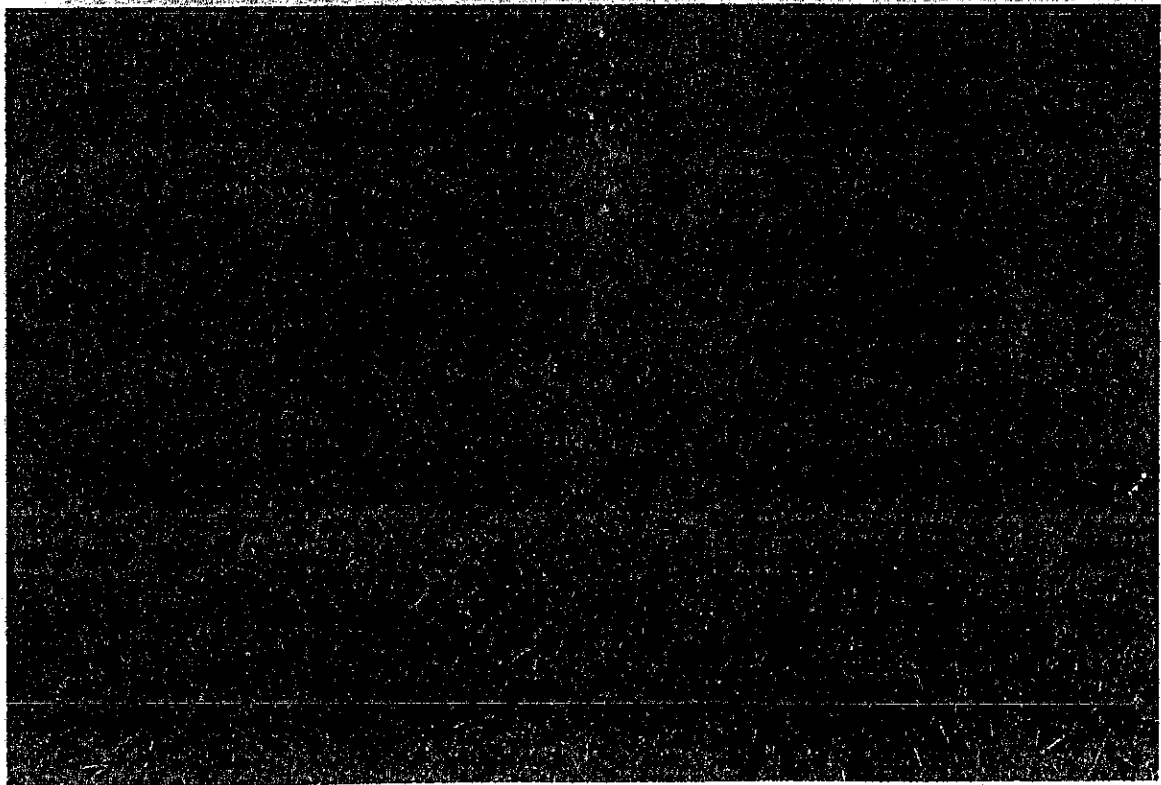
Photograph #21. Organic soil layer present on surface in low traffic area



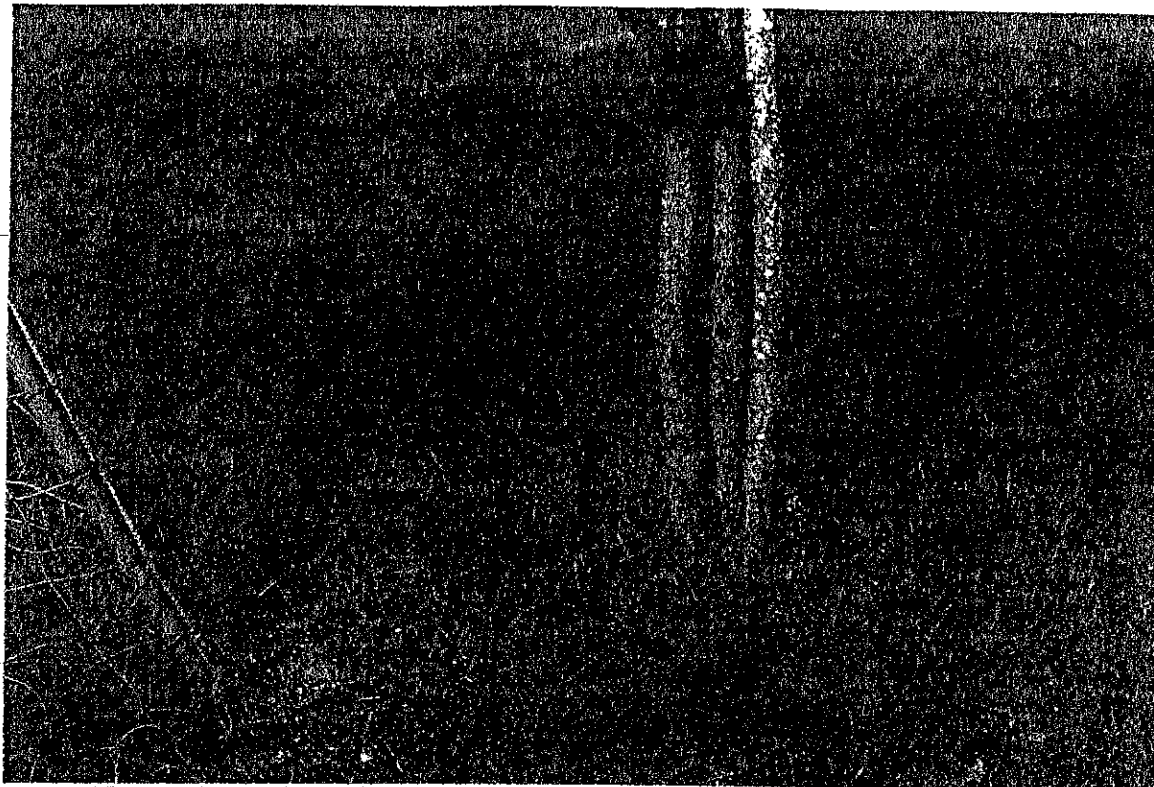
Photograph #22. Absence of organic layer in high volume traffic area



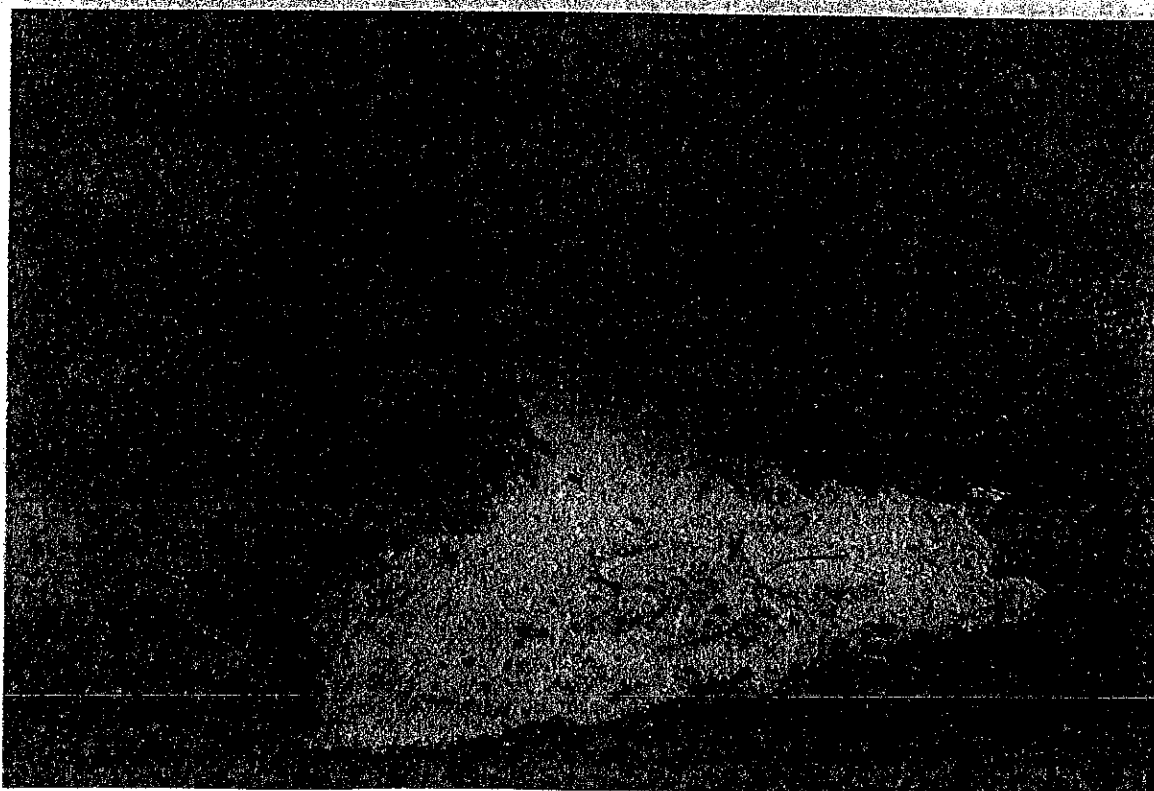
Photograph #23. Typical lower deadwood and "stubs" on large pitch pines



Photograph #24. Typical basal swelling from repeated mower damage



Photograph #25. Planted red maple with extremely poor form



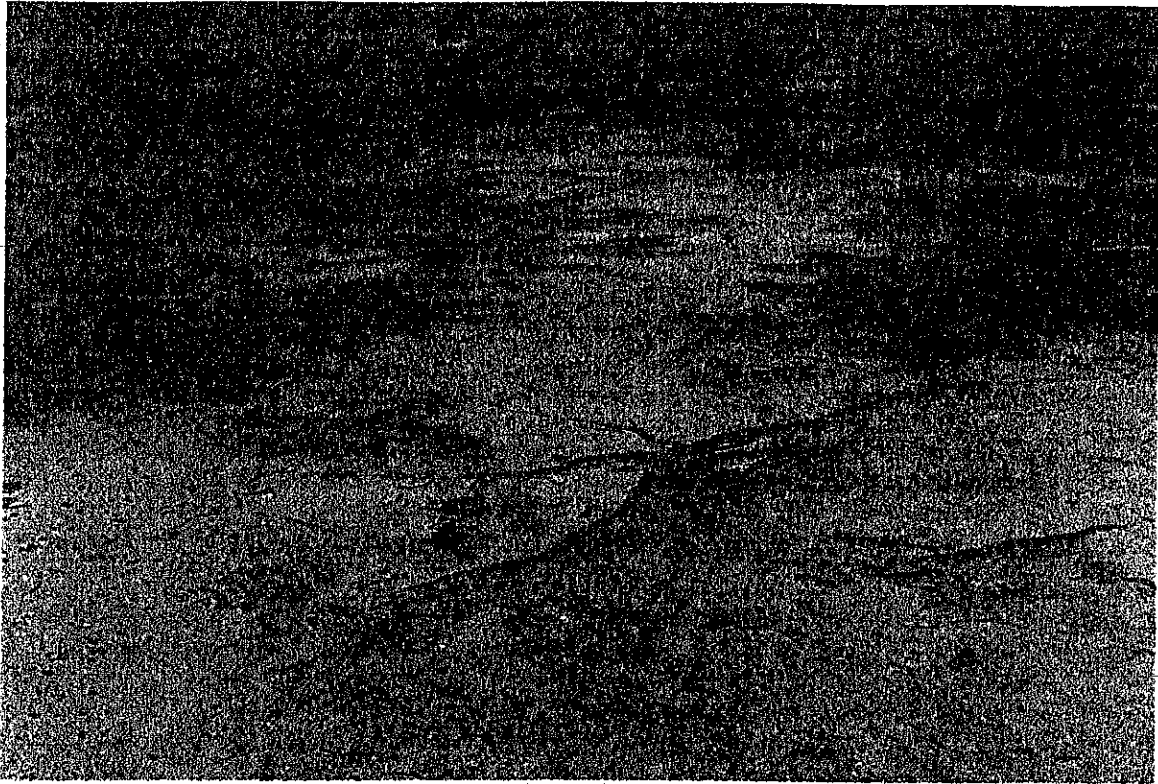
Photograph #26. Concrete poured at base of WH #46



Photograph #27. Top dieback, typical response to root environment damage, Vincent Clune Park



Photograph #28. Vincent Clune Park, vehicles can access entire site



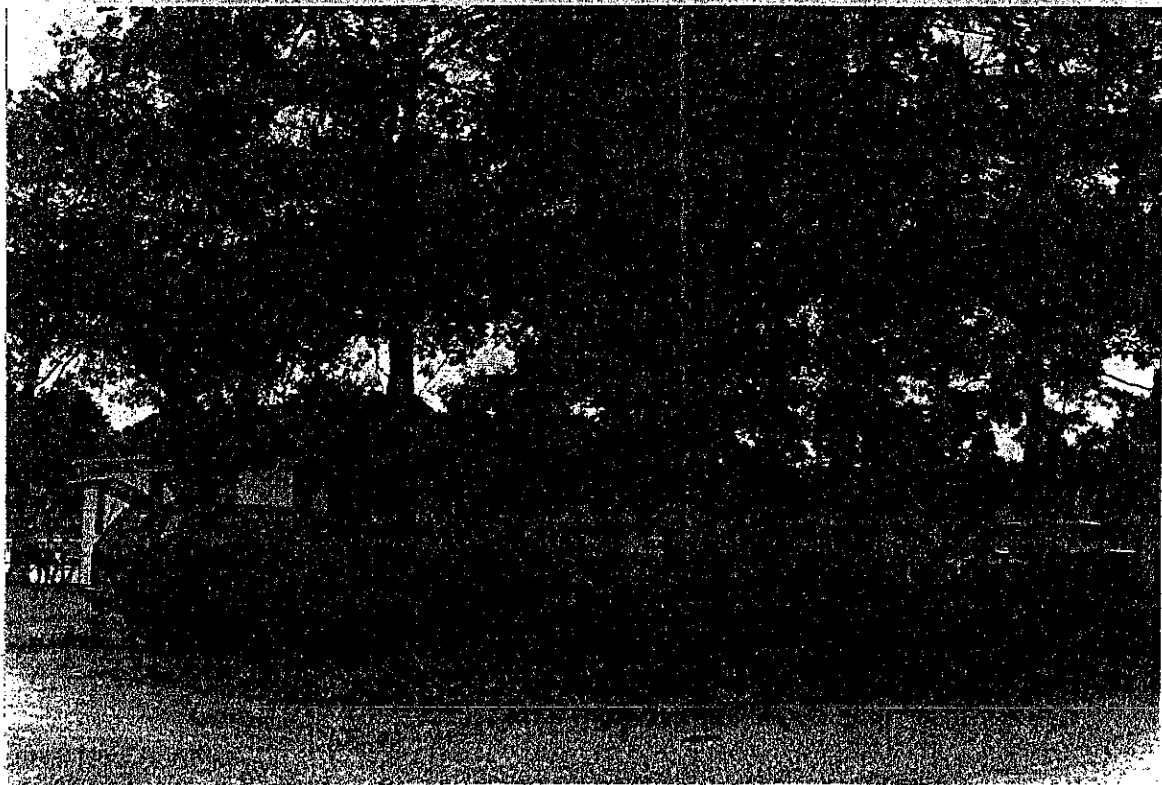
Photograph #29. Vincent Clune Park, traffic and erosion has removed organic layer and exposed roots



Photograph #30. VC #20 and VC #21, with marked leader



Photograph #31. HW #6 and HW #7 each contain large deadwood over picnic area



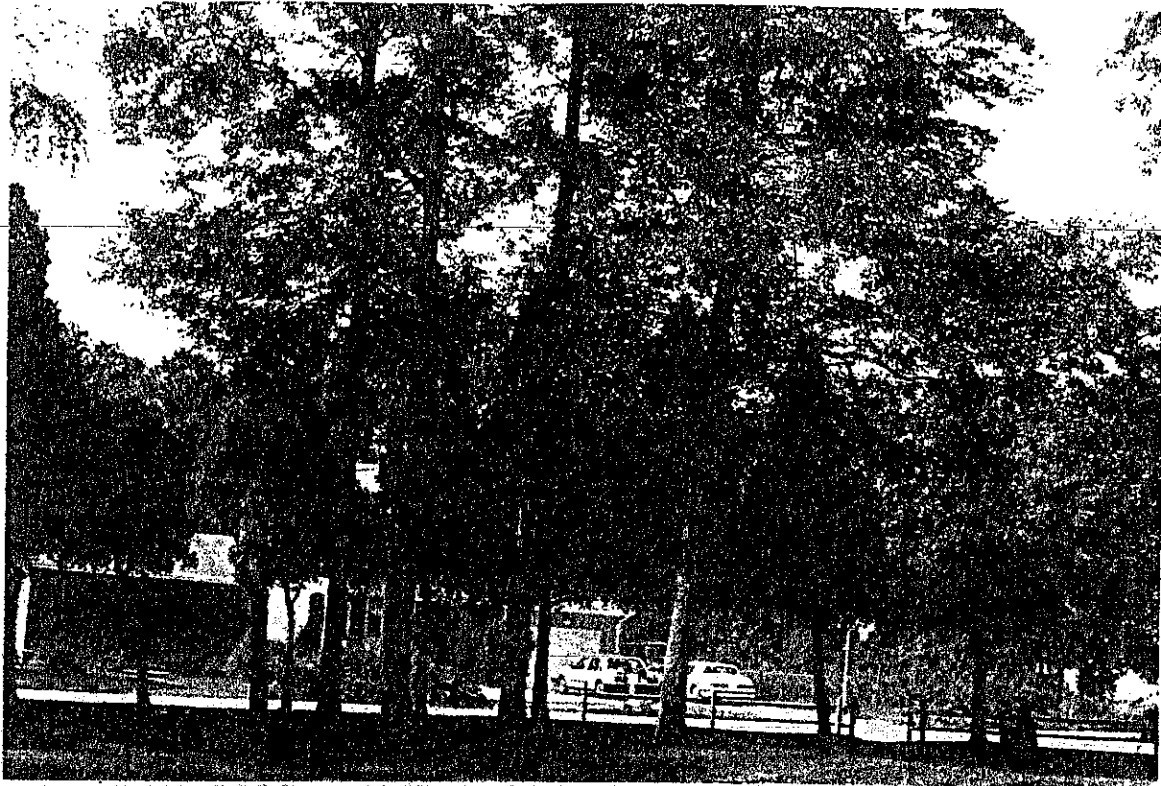
Photograph #32. Vehicle parking beneath HW #9, HW #10, HW #11 and HW #12



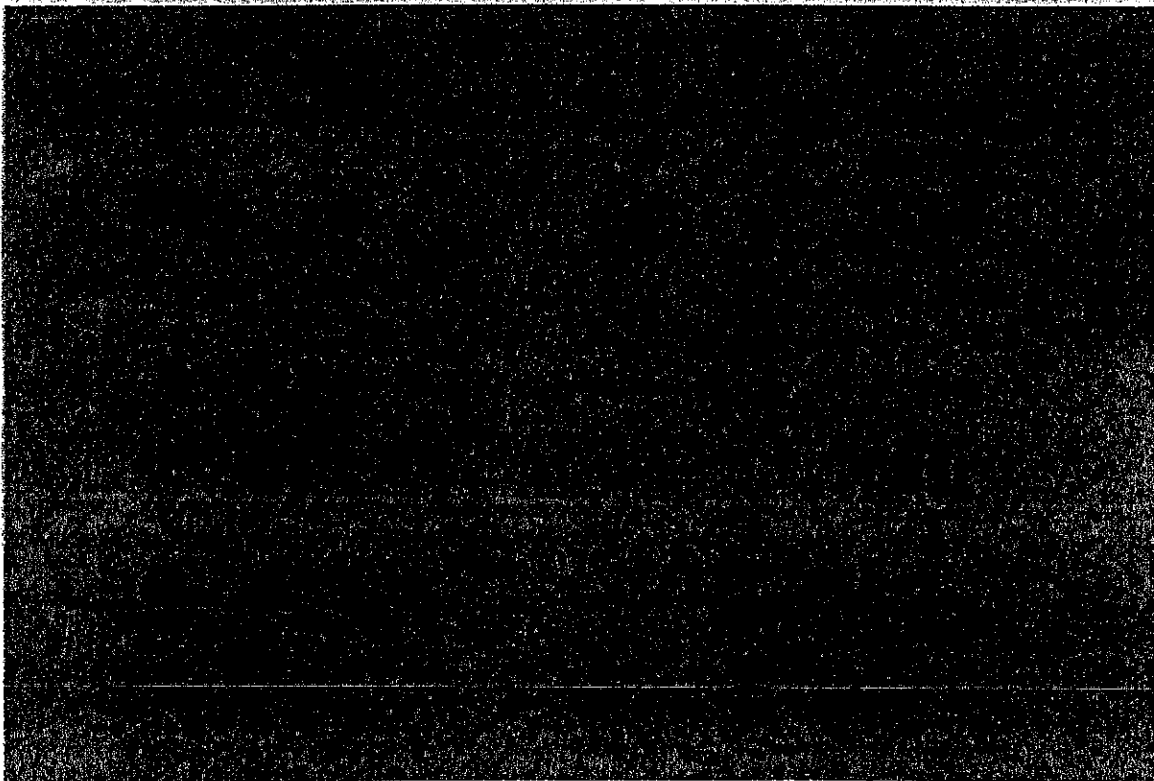
Photograph #33. Interfering leader in multi-stem red maple, Ash Road Park



Photograph #34. Basal rot leading to crotch on DL #3



Photograph #35. 4 Persimmons at Deerhead Lake Park, should receive a mulch bed



Photograph #36. Exposed roots following beach raking of Deerhead Lake Beach

