HACKENSACK RIVER COUNTY PARK STUDY

OCTOBER 1987

SITE ANALYSIS FOR THE: PROPOSED HACKENSACK RIVER COUNTY PARK

prepared for:

* BERGEN COUNTY DEPARTMENT OF PLANNING & ECONOMIC DEVELOPMENT
* BERGEN COUNTY DEPARTMENT OF PARKS

with a grant from:

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prepared by:

DESIGN PROPERTIES OF LONG ISLAND, LTD.
Landscape Architects, Site Planners

* COLE HAYES - PRESIDENT
* DANA HEPLER - PROJECT MANAGER
* DONNA PLUNKETT - JOB CAPTAIN

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Issued November 18, 1987

PROGRAM

PROGRAM: As Defined by the Planning Director of Bergen County:

a) Purpose: This report details a concept plan for a 30 acre site. This park will be the only County park in the Hackensack River corridor and will provide much needed water-oriented open space in a highly urbanized section of Bergen County. This site is the second largest undeveloped tract in the Hackensack River corridor and is highly accessible, being adjacent to State Route 4. The proposed park will be an integral unit of the Bergen County Park System that serves a County population of 845,000. The site is located in the City of Hackensack which had a 1980 population of 36,0939. Directly across the river is the largest town in Bergen County, Teaneck, with a 1980 population of 39,007. Within a 3 mile radius of the site there is a resident population of 172,770 (1980). Population densities run from 8600 people per square mile in Hackensack to 6200 people per square mile in Teaneck. This park will be a true urban park in that it is located in the heart of State's most populous County adjacent to some of the most active land uses in the County. The benefits of having a water-oriented green oasis in the midst of the urban landscape are considerable and will add immeasurably to the quality of life for the region's people.

b) Background: The County of Bergen, using HUD Open Space and New Jersey Green Acres funds as well as County funds, acquired the proposed park site in the 1970's along with several other properties along the Hackensack River to preserve them for open space and conservation purposes. In addition approximately 3 acres were donated to the County by abutting property owners. In 1975 a coordinated Hackensack River Shoreline preservation and recreation plan was developed by the Bergen County Planning Board. The proposed park is endorsed by the City of Hackensack, the Bergen County Board of Freeholders, the Bergen County Department of Parks and is consistent with municipal and County master plans. Recent contact was made with the N.J. Green Acres office concerning funding who srongly recommended that a detailed design plan be prepared.

c) Location: See attached maps. The Hackensack River County Park will be located on a 30 acre site on the banks of the Hackensack River just north of State Route 4. At this location the River is subject to tidal flows. The site is in the approximate center of the County. The proposed park site is adjacent to the Riverside Square Mall shopping center who has entered into legal agreements with the County to provide parking areas and access roads to the park. In addition, restaurant and restroom facilities at the mall are open six days a week and will be available to park users. The site is presently vacant and is covered with trees, tall grass and shrubs. Many years ago most of the site was covered with dredged sand deposits. At the southern edge of the property is a 4½ acre tidal marsh that is being preserved in its natural state.

d) Project: The proposed Hackensack River County Park is being planned as an area of natural greenery and riverside tranquility in an otherwise congested, man-made environment. The many residents of the surrounding communities and the region can avail themselves of the recreational opportunities in the park as well as the many people working in and visiting the nearby commercial and office structures. The elements to be assessed in the park design work will be the water oriented activities such as boating and fishing, the potential for bikeways/walkways, landscaping to enhance the natural qualities of the site, open areas for play activities, picnic areas, etc. Also to be studied is the environmental sensitivity of the total site and especially the tidal marsh area.

SECTION 1

SECTION 1

A. The Site

The site is partially an old spoil area for dredged river channels which has been virtually filled over with manmade materials at the center and northern parts of the site. Most of the northern half of the site is covered with small shrubs and occasional large tree masses; while the southern portion is a relatively undisturbed marsh covered primarily with phragmities. The terrain is sloping gradually from elevation 8'± at the west to 3'± at the river's edge.

B. Historic Context

Low profile marquis, representative graphics and possible displays at appropriate locations within the project site would educate the visitor to Hackensack's early inhabitants (man and wildlife) through colonization to recent history. A canoe link could possibly be made to link the historic Steuben house to the north (Colonial period). Other items of interest include: antique shops, Old New Bridge, New New Bridge, New Bridge Inn, and the DeMarest House and Barn and Brett Park.

C. Preservation & Natural Environment

Although much of Bergen County shore line has been developed, only a few segments of undisturbed wetlands remain in their natural state. The project site is fortunate enough to have such a wetland. It is proposed that this area (see plan) be left in its natural state except for possible environmental walk on piers to allow a unique interactive experience with an environment that most people don't know about and most likely don't understand. The public's awareness, understanding and appreciation of such an environment would be an invaluable resource. Again, low-key markings would offer descriptions of ecological and functional qualities of wetland's specific plant species, also how man has affected this natural process.

D. Land Use of Subject Site

The impact of man is obvious and considerable along the Riverside Square Mall and the "bulb out" area to the north where substantial filling has resulted. The tidal wetlands as outlined on an areial survey supplied by the Division of Coastal Resources and Development Organization does not reflect current site conditions. Although a topographic survey of the property is beyond our scope of work for this project, an attempt is made using established RIM elevations to produce a base drawing that reflects the current site conditions. With concept approval, a complete survey would be recommended.

Manmade factors include fill, dumping piles of concrete, gravel, auto debris, concrete pads along shoreline which has a particularly negative impact from within the site and view from Andreas Park, as well as the Fairlegh Dickinson Athletic Field. The site has two outflows with concrete headwalls. The most southerly culvert has a 3'± weir. Both are unsightly, but with buffer planting can be mitigated. It is recommended that concrete pads at the river's edge be removed as they represent the most blatent eye sore. It is not clear whether the concrete pads were part of a stabilization effort or dumped as miscellaneous fill. Their current placement is random, without order. Other debris should also be removed, as required by site design.

E. Hackensack River Drainage Area

The headwaters of the Hackensack River are located in the west slopes of the Palisades (Haverstraw, NY), flowing is to the south, merging with the Passaic before entering the Atlantic Ocean. The Hackensack River drainage basin covers approximately 50% of Bergen and Hudson Counties and ½ of Rockland County (NY) (Hackensack Meadowlands, 1971).

F. Ecological Inventory

The wetland soil information on the project site was obtained through several sources. The U.S. Dept. of the Interior Division of Fish & Wildlife Service has prepared the National Wetlands Inventory Maps which indicate the southern portion of the site is relatively flat tidal Riverine. The northern portion is indicated as Palustrine with broadleaved deciduious scrub/shrub and forested areas. This is generally consistent with the actual site characteristics, except that the tidal flats border the project site and are not limited to the southern portion.

SECTION 2

SECTION 2

RESPONSE TO RULES ON COASTAL RESOURCES & DEVELOPMENT
(N.J.A.C. 7:7E-1.1 et seq.)

Finfish Migratory Pathways

7.7E-3.5a. Finfish Migratory Pathways are located in the Hackensack River corridor, as far north as the Oradell Dam. Although with water quality improving from point and nonpoint sources, the following anadramous fish population have been collected and would be expected to increase*:

- Yellow Perch
- Alewife (River herring)
- Mummichog
- Alosa sapidissima (American shad)
- White Perch
- Black Crappie
- Carp
- American Eel
- Blueback Herring
- Goldfish
- Golden Shiner
- White Sucker
- Killifish
- Pumpkinseed
- Pumpkinseed
- Largemouth Bass

7.7E-3.5b. The program for the proposed Hackensack Park does not lend itself to severe developments and site perturbations, which would adversely effect fish movement or migratory pathways. The possibility of a canoe boat launch has been suggested and is discussed further in Section Four. Insofar as a canoe launch and supporting pier structure, any disturbance would thus be installed in accordance with the N.J. standards for soil erosion and sediment control, and will be installed in proper sequences and maintained until permanent protection is established. Another alternative to be investigated is temporary floating docks attached to a permanent bulkhead of either wood or concrete. In respect to any construction in the corridor, the following timing restrictions for no turbidity are as follows: Spring spawning, April - June 30; Fall spawning, September 3 - November 30 (mainly herring).

There are a significant number of concrete slabs abutting the water's edge and although the visual profile is low from the majority of the site, an inspection from the water's edge reveals an ugly sight. Visual enhancement in the form of vistas would be limited, especially at low tide when slabs are most evident. The contrast between the white concrete and the mud flats is undesirable. It is recommended in high profile views those segments of concrete slabs (approximately 6' x 4' x 8") be removed. If removed, the N.J. Division of Fish, Game, & Wildlife should be consulted in this area of enhancement work prior to the removal of any structures.

* Collected by Division of Fish & Game & Shellfisheries and/or others.

Intertidal & Subtidal Shallows

7:7E-3.15b.1 Although it is recognized any disturbance is generally discouraged in the shallows, certain side slope improvements are suggested where the flats abutt severe edge conditions with slopes in excess of 20%. See N.J.A.C. 7:7E-4 and Site Analysis Drawing.

7:7E-3.15b.2 It is stated that in conditions where there is no feasible alternative route that would avoid disturbing the intertidal and subtidal shallows, an infrastructure is conditionally acceptable. The piers to support a proposed canoe dock would be constructed with acceptable standards to avoid washout/failure or any other hazard. It should be noted a canoe dock would not be obtrusive or as dominant as a typical "boat dock", for motorized transport.

Filled Water's Edge

7:7E-3.16a Although the Corps of Engineers still regard the Hackensack River as navigable at this point, the river has not been dredged in some time* and the alluvial deposits have raised the basin such that motorized transport above Route 4 is virually nonexistent. This, combined with the large inter-tidal shallows, renders marina activity impractical without dredging. It is, however, conceivable to provide small canoe boating activity in the project during periods of high tide. The Hackensack River Canoe Club has several landing locations from Stubens down to points south. (Documentation of actual landings pending Hackensack Canoe Club.)

7:7E-3.16b The waterfront portion of the filled water's edge is defined as a contiguous area at least equal in size to the area within 100' of navigable water measured from the mean high water line (MHWL). This conflicts with the definition in Section 7:7E-1.5(C8) which described "navigable", including by canoe, measured at mean low tide. For this analysis, MHWL has been delineated as per 7:7E-3.16. Although extensive inter-tidal shallows exist at low tide, it is believed the waterfront portion of the site can be developed with water dependent use, such as public waterfront recreation, including short term docking for canoes as per 7:7E-1.5(C11). On site servicing and storage of canoes is not recommended.

With respect to the rationale concerning canoe activity on the site, it is recommended that recreational boating (restricted to canoeing) be conditionally utilized. This is in conformance with the N.J.A.C. policy to allow and protect the public's right to use tidal waters for naviation, when environmental conditions permit.

National Water's Edge - Floodplains

7:7E-3.18 See analysis plan for delineation. Development other than water dependent uses are prohibited within 100' of a navigable water body. Again, a conflict arises concerning navigable. For the purpose of this analysis, the MHWL has been used.

*Fairleigh Dickenson University dredged approximately 485,000 cubic yards in project vicinity, 1970 (N.J.D.E.P.)

Concerning subsection b2, it is not recommended that ballfields and tennis courts be considered, as it is not consistent with the esthetics and character of the site; even though major portions have been filled and a mega commercial development abutts the site. Please note an area for intense use has been delineated if this use should be desired, but again is not recommended. Also, please note the floodplain delineation applies only to floodplains which have not been distrubed by filling.

Wetlands

7:7E-3.25 The tidal wetlands, as well as the fresh water wetlands, locations have been delineated on the analysis drawing. Development in these areas would constitute minor path crossings only.

Wetland Buffers

7:7E-3.26 As development in the subject area is very passive, it is believed that requirements for a buffer area are minimal. Buffers are suggested in the following areas:

1. Adjacent to the canoe dock on existing fill. (See plan)

2. Buffer between existing parking garage and proposed lookout deck. (Also on existing fill).

3. Visual and ecologic buffers should be located south of the site entry drive juxtaposition to the exisiting Mobil station. The existing gravel and miscellaneous fill piles should be removed and regraded to improve visual access and remove unsightly material.

Intermittent Stream Corridors

7:7E-3.30 Contributing manmade swales are identified on the analysis plan. Storm runoff and debris is collected via street flow to an asphalt swale which parallels their property and empties to the northwest portion of our site. This area, which is identified as a possible emergency entry, is a visual eye sore. Concrete remains, auto parts, gravel and miscellaneous dumped material frequent this area. Access to this area should be controlled and the feasibility of a catch bsin with a bubbler to prevent parking lot sediment, debris and garbage from reaching the outflow and into the Hackensack. Minor maintenance of the clean out would occur, but considering the enormous volume of debris from the adjacent owners parking lot, which ends up floating in the Hackensack River, a bubbler may be worth considering, even though such structures are generally not allowed in floodplain areas.

Historic & Archealogical Resources

7:7E-3.34 Although historic and archealogical resources have been researched in the site vicinity (by other sources*), no applicable artifacts have been documented. Considering a large portion of the site has been filled, coupled with the alluvial soil substrada, archealogical resources would not be likely. Vicinity historical landmarks are referenced on the site analysis plan.

* Miceli Weed Kulik, Inc., 1976.

Endangered or Threatened Wildlife or Vegetation Species Habitats

7:7E-3.36 In addition to the site analysis, preliminary field investigations were performed to determine endangered or threatened wildlife. Endangered wildlife was not encountered.

SECTION 3

SECTION 3

A-1. The Bergen County Soil Conservation District

The Bergen County Soil Conservation District has determined the project soils to be:

> Ur - Urban Land: Soils with a minimum of 85% hard surface (i.e. pavement, buildings). True soil type may be inferred from neighboring soil types or ocnfirmed by an on-site soil boring.
>
> Ue - Udorthent, wet substratum: More than likely wetland or hydric soil that has been filled with artificial soils a minium of 3'.

The Ur is obviously referring to the commercial development adjacent to our site. There are no hard pavements on the project site. The classification of Ue is more in line with the filled area of the site and is also supported by soil borings in the northern part of the site.

A-2. Soil Borings

On or about March 8, 1974, F.H. Lehr Associates Civil Engineers, performed several soil borings on the project site (See analysis plan for location).

A summary is described below:

> The borings indicate the surface is covered with miscellaneous fill ranging in thickness from 2' to 8'. The material varies in composition from clean granular soil to rubble and debris. The relative density ranges from loose to very compact.
>
> Below the fill there are organic silts, organic clays, and peat ranging in thickness from approximatley 2 to 10'. These soils have a soft consistency and are highly compressible. These soils were the surface deposits of the virgin ground.
>
> Underlying the organic layer and extending to depths ranging from 45' to 100' are varied silts, clays, silty fine sands and gravelly sands.
>
> Ground water was observed within 3' at all boring locations.

For usage on soils in the boring area and the site in general are limited to small structures on shallow spread footings. Typical paving systems should be natural porous or nonporous material while areas subject to heavy traffic and/or sensitive would be conducive to a boardwalk system on piers to minimize impact. Structure should be designed to allow light to reach plant material and wet areas below the structure.

It appears obvious that these fill materials have rendered the tidal wetland inventory obsolete.

B. Freshwater

Freshwater wetlands have been documented on the site analysis plan. The average amount of freshwater recharge available to the subject portion of the site varies on a daily basis. Flow from Oradell Reservoir, Coles Brook and others vary seasonably. Flows from storm drains on the subject site were active during site inspections.

C. Marshland Corridor (Hackensack Area)

Wetland plant material in the project area is listed but not limited to the following:

- o Phragmites communis (reed grass)

  The most dominant marsh vegetation, the reed supports large populations of aphids and lady bugs which in turn are food source for praying mantis and birds.

  Please note that throughout the project including the southern portion, the phragmities have entered an upland situation and cannot always be governing factors in determining wetland boundries.

In the Hacksensack River corridor the following were observed:

- o Blue Heron
- o Egret
- o Canadian Geese (Branta canadeusis)
- o Muskrat (Ondatra zibetheca)
- o Grey Squirrels (Sciurus carolinensis)
- o Black Duck (Anas rubripes)
- o Raccoon (Procyon lotor)
- o Opposum (Dielphis Virginiana)

D. Existing Pollution Problem

For the park to be used as a relief from the surrounding urban area, contact with the environment brings up potential problems. Point sources of pollution in the project area, as identified by Miceli Weed Kulik 1976, should be verified as to their status.

E. Wetland Hydrology

Bergen County's distribution of Palustrine wetland acreage is relatively low when compared to other N.J. counties (See figure).

The presence of water form flooding, surface water runoff, general water discharge, or tides is the driving force creating and maintaining wetlands. The hydrologic mechanisms determine the nature of the soils, types of plants, animals and general ecology of the wetland. To accurately define the hydrology in delineating the wetland requires extensive research of flood durations, water table fluctuations and ground water relationships. This information is normally gained through intense long-term studies, although for this analysis other techniques were utilized to determine the porject site's wetland hydrology. Their criteria are listed below in order of importance:

1. Elevation
2. Soil Characteristics
3. Plant Material
4. Water marks on vegetation
5. Water transported debris on base of vegetation.
6. Water stained leaves.

These items were used to approximate the delineation of the tidal wetlands on the analysis map.

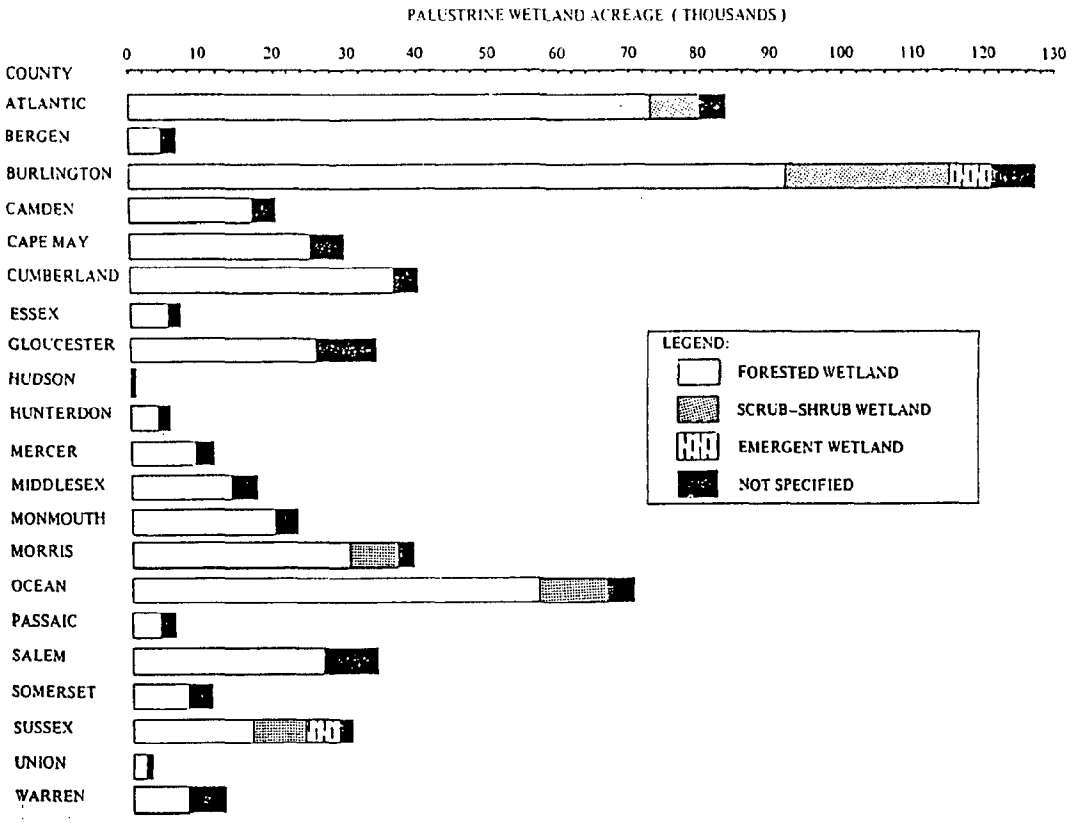


Figure 10. Relative distribution of palustrine wetland in New Jersey. *

Bergen County *

Bergen County was ranked 16th among counties in the extent of wetlands. Only about 7% of the county was covered by wetland (10,084 acres). Most of this resource was palustrine wetland (6,319 acres), with deciduous forested wetland comprising 43% of the county's wetland acreage. Estuarine emergent wetland was also extensive, accounting for about 33% of the acreage.

Estuarine Wetlands	
Emergent	3,230 a.
Other	494 a.
Estuarine Subtotal	3,724 a.
Riverine Tidal Wetlands	41 a.
Palustrine Wetlands	
Open Water	679 a.
Emergent	560 a.
Deciduous Scrub-Shrub	753 a.
Deciduous Forested	4,327 a.
Palustrine Subtotal	6,319 a.
Bergen County Total	10,084 a.

This county also possessed 7,749 acres of deepwater habitat. Most of this was estuarine water, with lacustrine water (e.g., reservoirs) also important.

* Source: U.S. Department of the Interior, Division of Fish & Wildlife: National Wetlands Inventory of New Jersey

The fresh water wetlands are subject to tidal flooding. The river flow and tidal flooding interact to create a rather complicated hydrology. Areas flooded and exposed at least once a day by the tides are considered regularly flooded like they are downstream, but the wetlands that are not subject to daily tidal flooding are generally thought to be classifed as temporary flooded-tidal.

Temporary flooded-tidal wetlands areas tend to be flooded infrequently and when flooded, water does not usually persist for more than a few days. These areas are conducive to most recreational activity although site structures such as gazebos are not recommended here. Walk systems and walk on piers would be acceptable.

F. Intertidal - Flats

These areas of mud and/or sand encompase the site periphery. They are typically flooded by tides and exposed to air twice daily. The mud flats seem to be devoid of macrophytes, although a smooth plant resembling clumps of cordgrass appear at higher elevation. It is recommended that this area remain in its natural condition except for pier construction associated with the canoe dock.

G. Palustrine Forested Wetlands

Palustrine Forested Wetlands are characterized by the presence of woody vegetation taller than 20'. It should be noted that the majority of the large plant material located on site is located on fill.

SECTION 4

SECTION 4

SITE INVENTORY/ANALYSIS

INTRODUCTION

The following is a written narrative of the existing conditions found on the site. Along with the existing conditions, some conclusions are made and recommendations for the types and levels of proposed uses are made. The narrative is keyed to the plan by assigning different names and numbers to the use areas. Letters are used to describe sub-use areas or to denote a particular element of interest that was encountered.

AREA ONE: Site Entrance

The site entrance area is presently visually displeasing. There is no smooth transition from the edge of the parking garage and the edge of the existing vegetation. There are piles of concrete rubble and garbage that should be removed. (See photo 1) Although many pedestrians would not actually enter from this point, it could be a strong visual cue that the park exists. This would then be reinforced when people see the promenade with its pedestrian link. It is advisable that some sort of sign announce the park and its uses.

This visual entrance is a very important feature of the entire system as without it people may not realize that it is for public use or they might not realize the extent of the system. A vegetative buffer at the edge of the parking garage is important because it will help to give the feeling of the park really being separate and of the natural environment. (See photo 2) With the site signage and some ornamental vegetation, as well as a site clean-up, this area could be a fine introduction to the area.

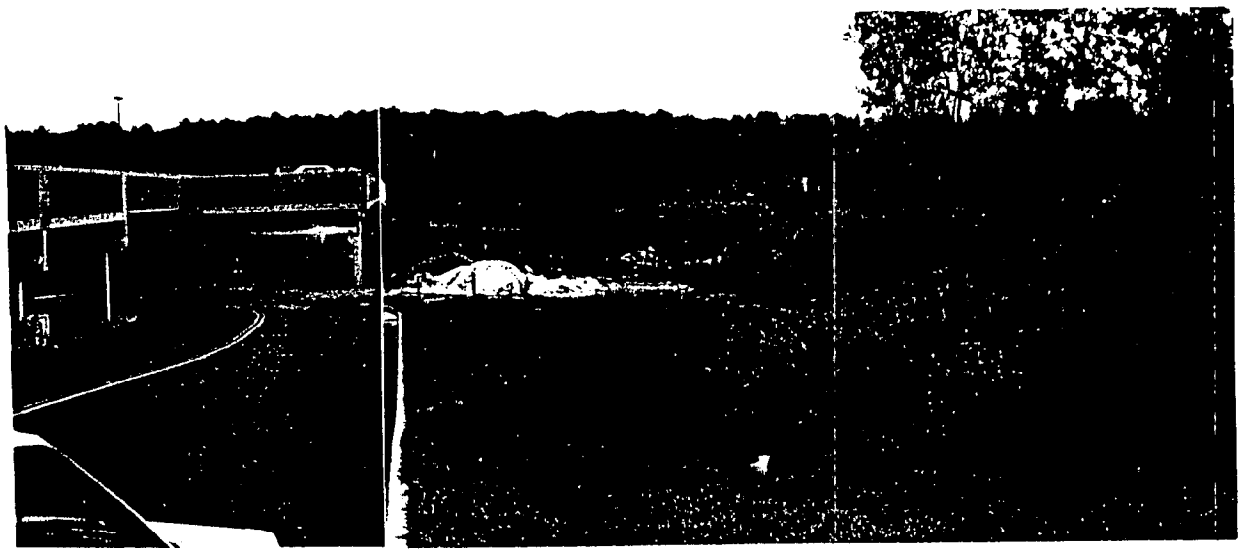


PHOTO 1

PROPOSED SITE FOR ENTRANCE SIGN

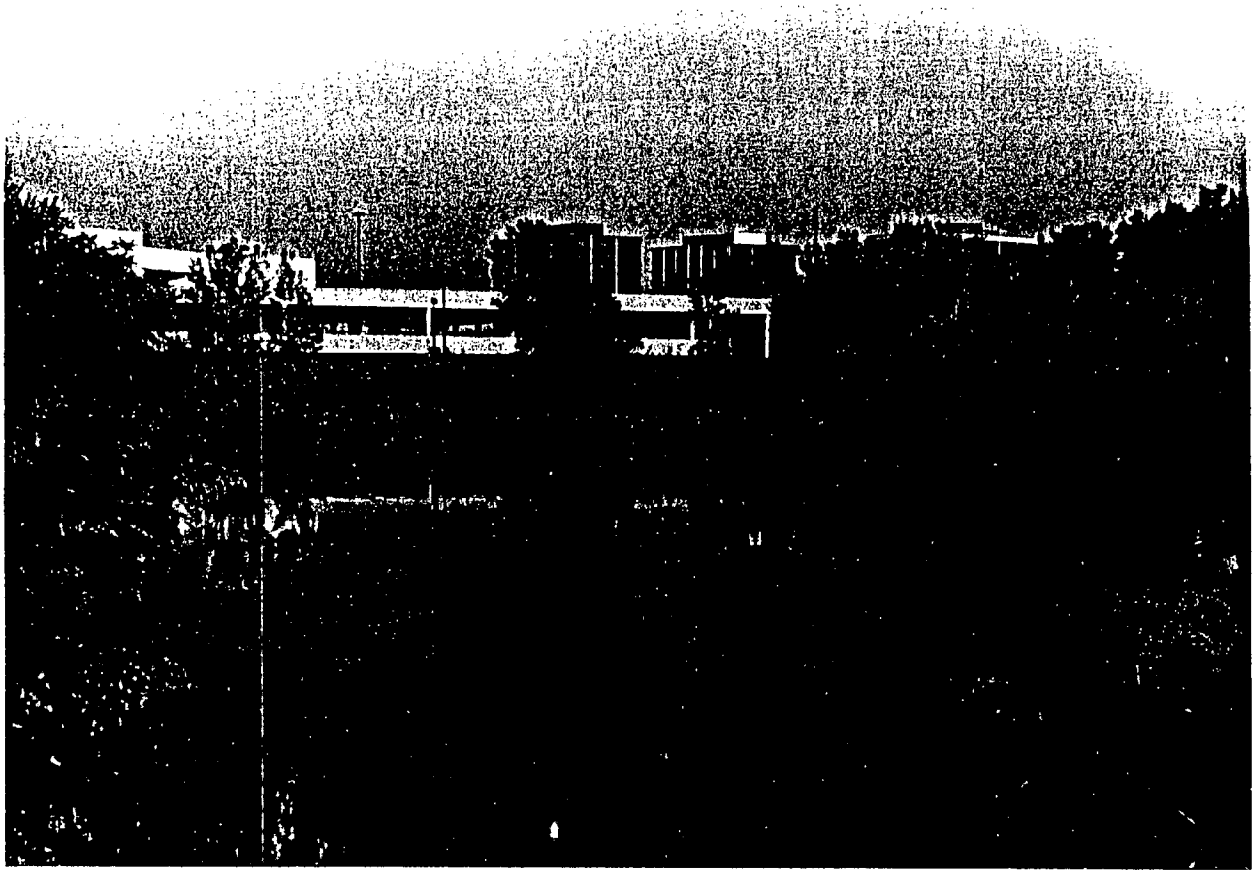


PHOTO 2

VIEW FROM ACROSS RIVER SHOWING EXISTING WETLANDS

AND THE NEED TO BUFFER PARKING GARAGE

AREA TWO: Detailed Site Description

The area directly behind the parking area is a linear waterfront space with the potential to connect the northern path systems with the wetlands to the south. (See Photo 3) Immediately adjacent to the concrete curb line of the Riverside Square Parking garage is a strip of planted turfgrass. Moving away from the structure, the indigenous flora is present. For distances of 100'-200', the primary vegetation is meadow like with knee high grasses, probably rye grass and switch grass.

Moving closer to the water's edge in the grass beds are a series of wildflowers, the predominant one being Solidago californica, California Goldenrod (See P-1). Goldenrod thrives in the full sun that is available here in this open grass zone and can always be found in moist soils, although it does well in drought or poor and heavy soils. The narrow, erect plant is somewhat arching with showy, golden vertical clusters of flowers in the summer and fall. On the outer edge of the grass zone, and in some areas in a zone by itself, is Artemesia dracunculus or tarragon (See P-2). This is a 2'-3' high species with long, narrow, dark green leaves. In midsummer tiny greenish-whitish flowers bloom, adding to the overall fine texture that is apparent. Tarragon is an herb used primarily in French cooking, with the leaves having a subtle anise flavor.

Beyond the grass zone, for a distance of between 10' and 25' is an area characterized by larger lowland vegetation including Fraxinus pennsylvanica lanceolata or Green Ash (See P-3), Morus alba or White Mulberry (See P-4), Ulmus americana or American Elm (See P-5), and some clumps of Populus deltoides or Eastern Poplar (See P-6) in the northern portion of the promenade area. These species are indicative of lowland ecosystems and here they are on the border or transition zone that is further characterized by a fairly abrupt change in grade that slopes down to the mud flats. These species do occur on the upper portion of the slopes, but are non-existent at the base of the slope and or the flats. The lowland vegetation creates a visual buffer to the water's edge in this area, however, because of the width of the river in this section, it is ever present. This edge has strong potential for a good visual-physical connection to the river at the ground level.

The mud flats are primarily characterized with phragmites. There is not much vegetation in this zone as it is probably submerged 50% of the time. There are exposed, however, clumps of dark green, narrow, upright foliage that is probably from the pond lily family.

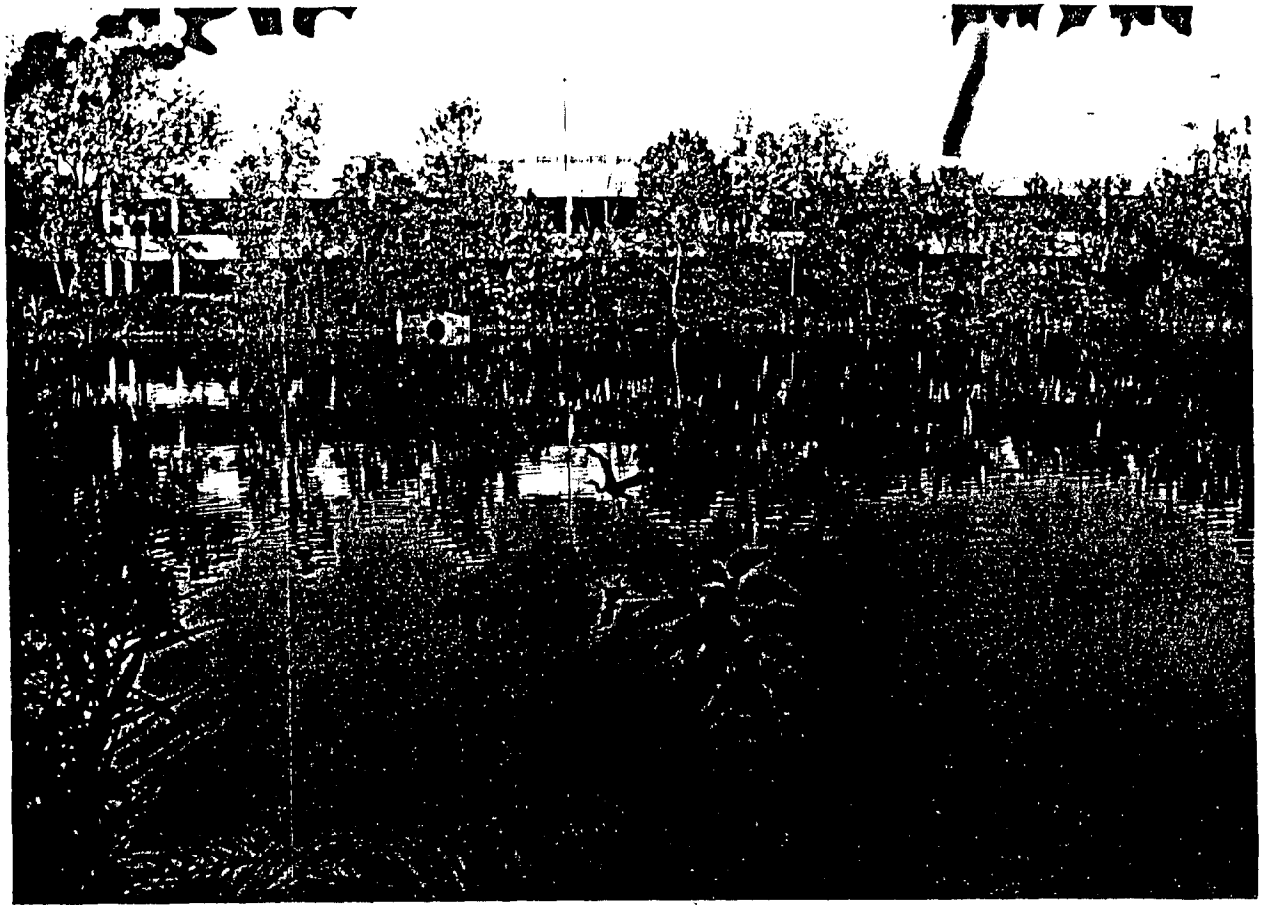
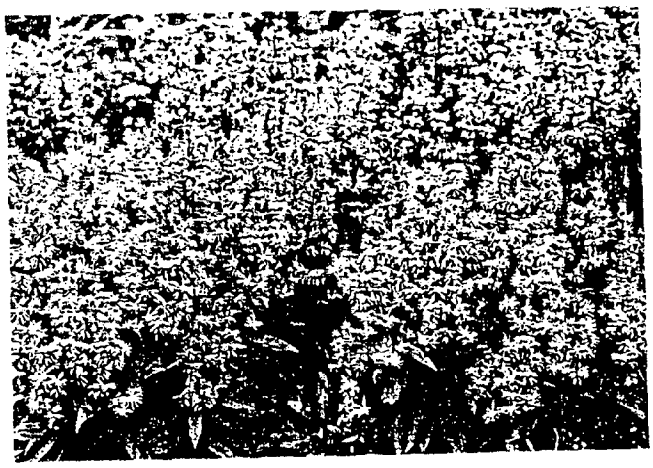


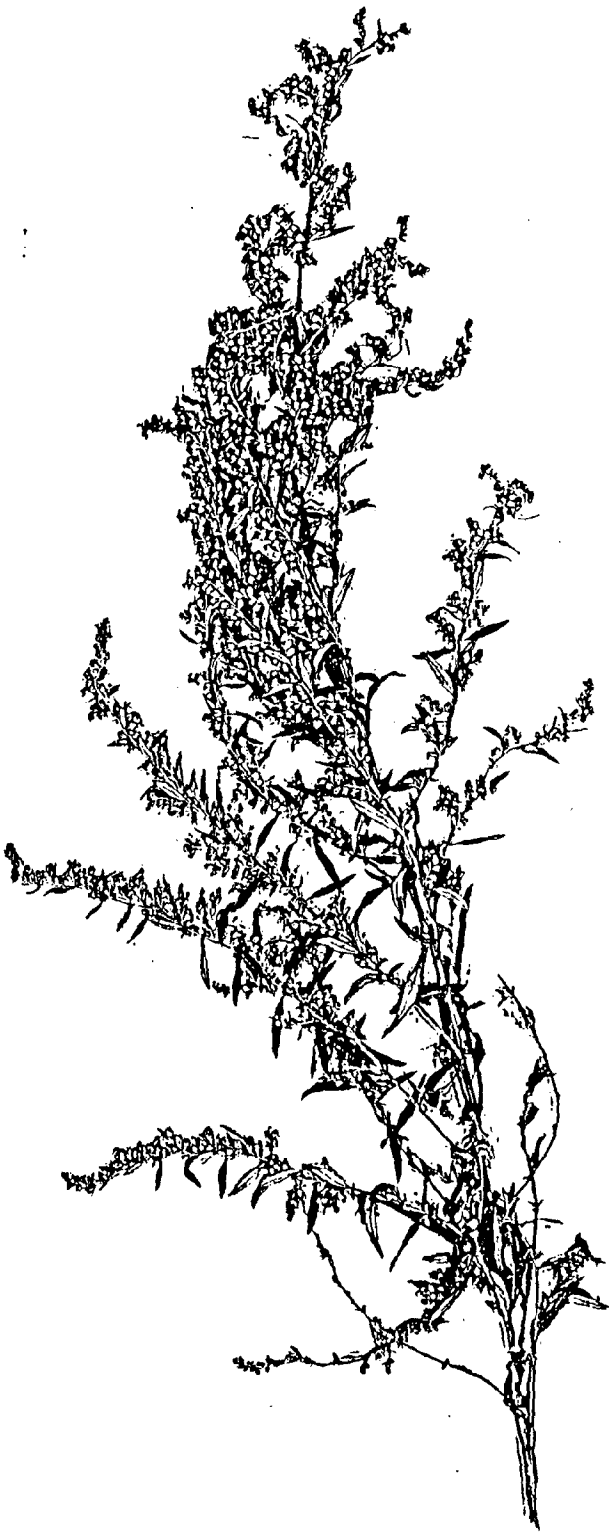
PHOTO 3

VIEW FROM ACROSS RIVER TO PROPOSED PROMENADE AREA.

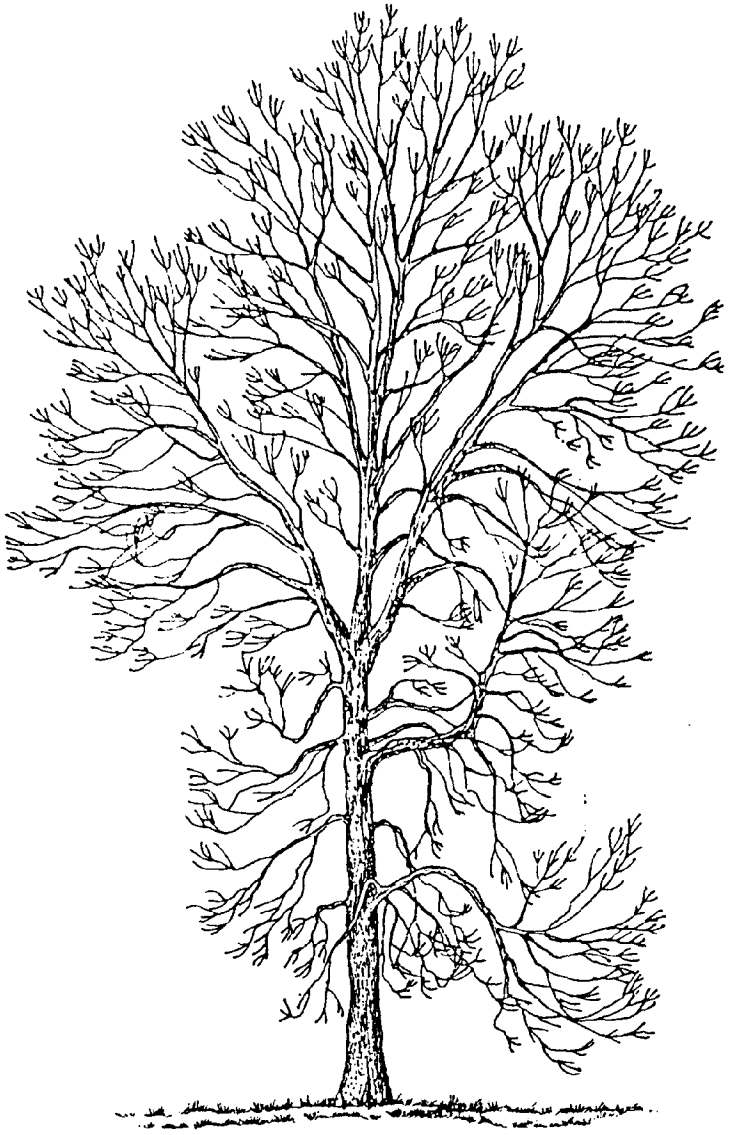
EXISTING VEGETATION WOULD REMAIN WITH SELECTIVE VIEWS CUT ONLY



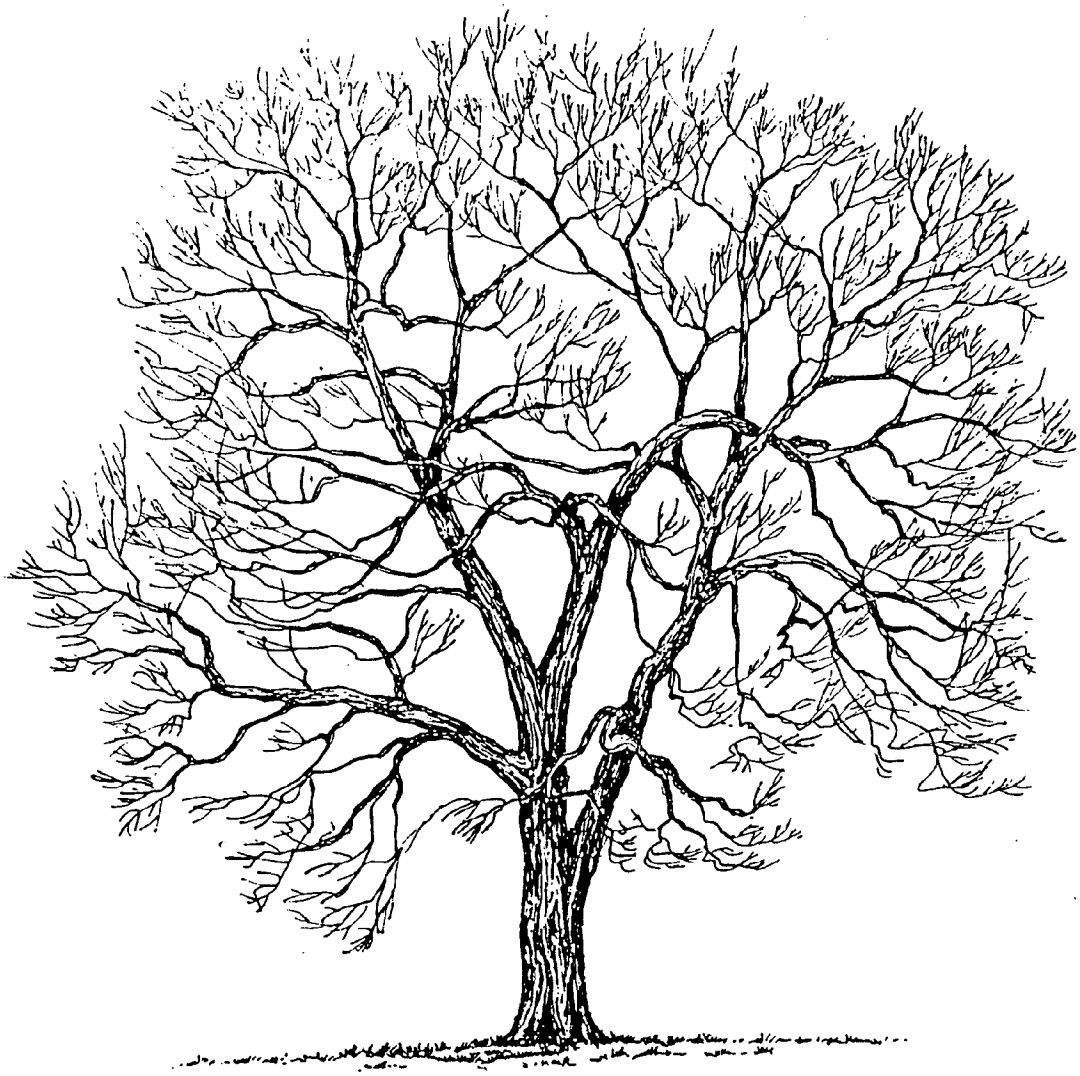
Solidago californica California Goldenrod



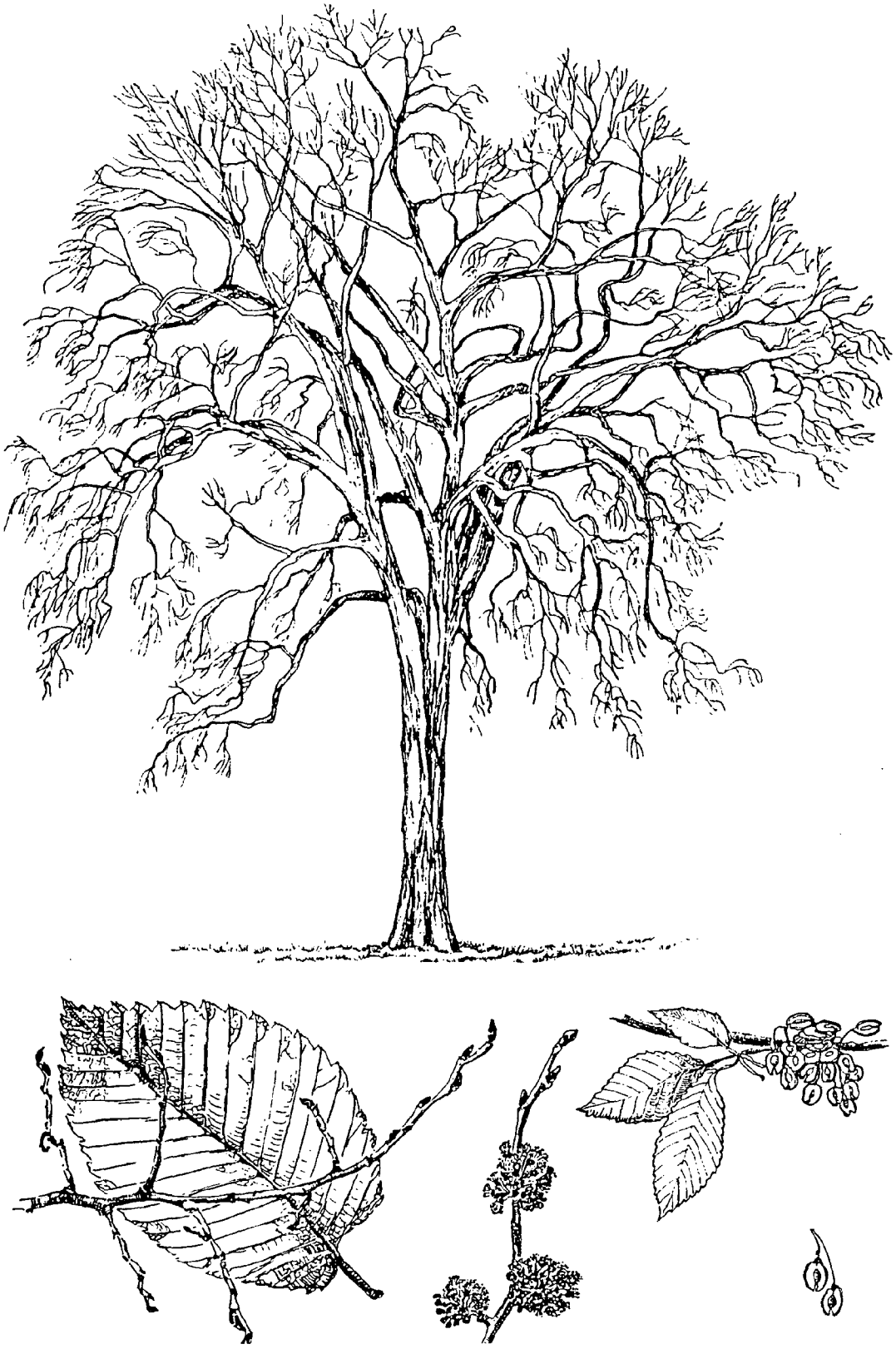
Artemesia dracunculus Tarragon



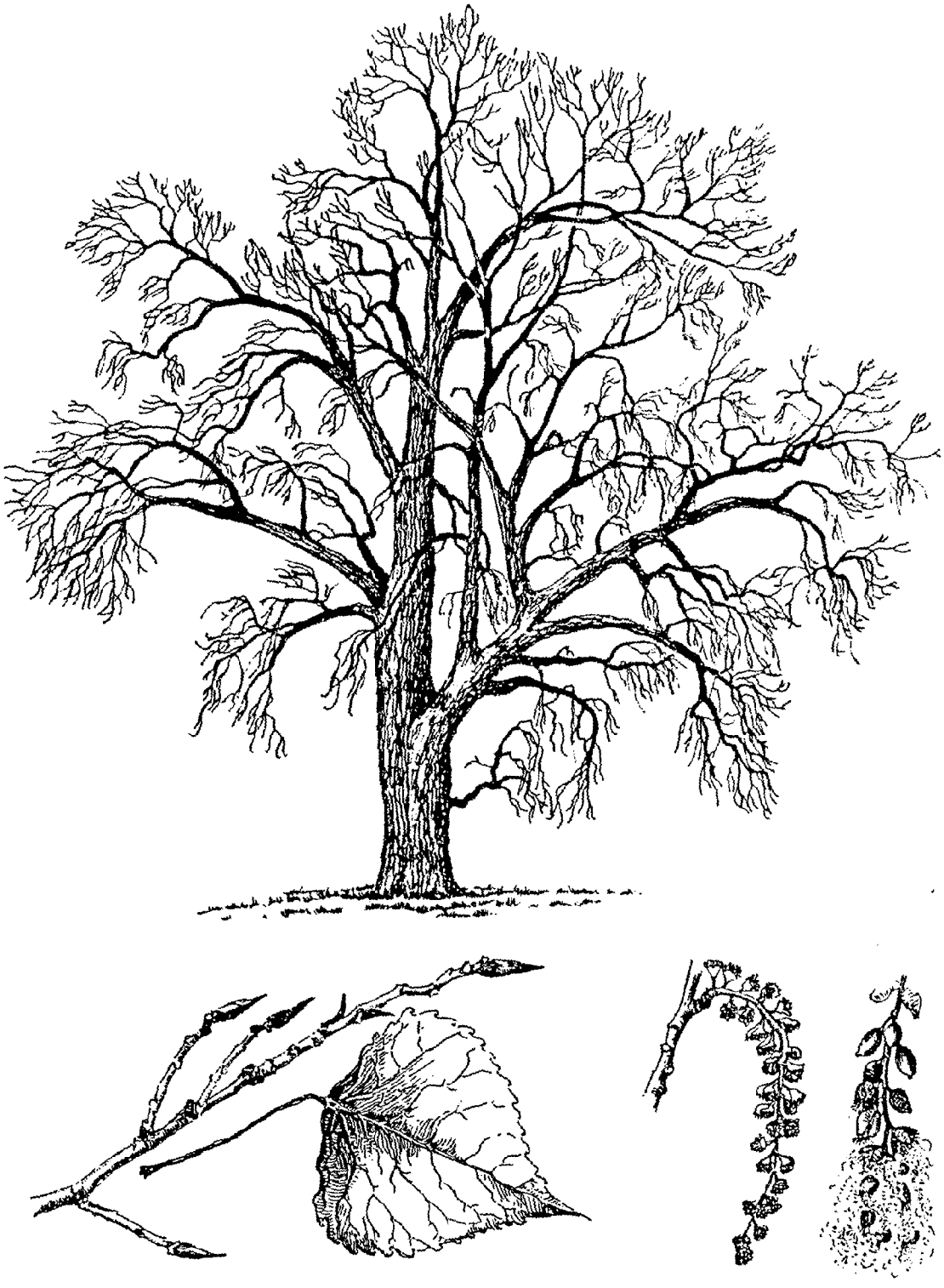
Fraxinus pensylvanica lanceolata Green Ash P-3



Morus alba White Mulberry



Ulmus americana American Elm P-5



Populus deltoides Eastern poplar **P-6**

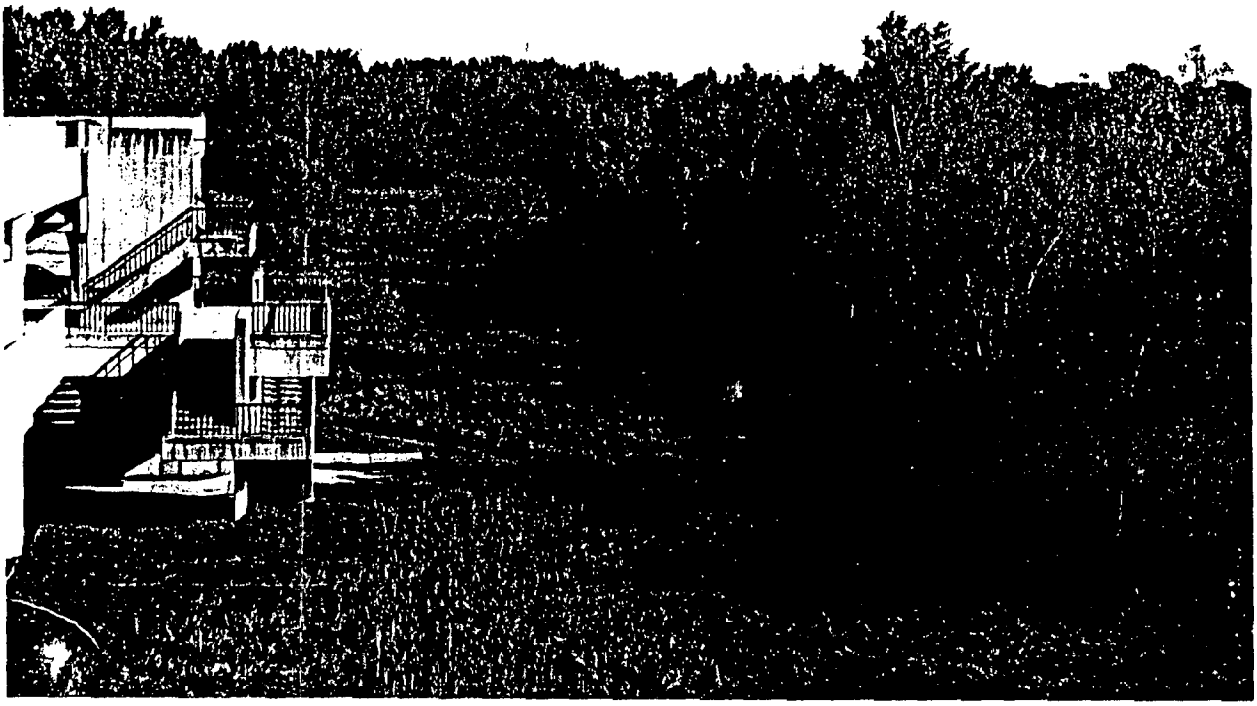


PHOTO 4

VIEW OF PROPOSED PEDESTRIAN LINK FROM MALL AND PROMENADE AREA

AREA THREE: Existing Vehicular Access

It is necessary to create a visual key or direction that denotes where users to the area would park since not everyone will use the pedestrian access from the mall. The area we are recommending is noted on the plan. (See photo 5) This particular area is presently completely outdoors and not under the parking garage. It stands out on its own because it is outside. It is a good area to bring people in because from here there could be a path up to the end of the promenade. Here there would be the option of going in three directions. One route could be to the trail system, another could be to the west to the canoe launch area, or one could enter the promenade area and travel south. This area should be denoted with signage and plant materials that buffer and soften the edge where the building and parking meets the natural grass areas. It is an appropriate area to bring vehicular users in because it will have its own sense of entry; which helps the user find their way and have a sense of direction.

PHOTO 5

VIEW OF EXISTING VEHICULAR ACCESS

AREA FOUR: The Existing Trail System*

Area four is existing as a mass of turf grass turning into phragmites with no apparent path going through. (See Photo 6) Presently there are spots where the water table may be high as the ground is wet. The entire network of foot paths that exists in the northern portion of the site are disconnected and need a viable link to the promenade. Point 4 could be this connection as it could also be the junction at which points 3 and 5 are connected. It is also a good possibility because it is the shortest distance from the mall structures to the existing path network, given the proposed access points 2 and 3. Point three should function as the transition from the built environment to the more natural. The entire path network should be enchanced to accentuate the feeling of an "oasis".

4a. As one arrived at this point along the existing path, it is advisable to have this be a wood deck structure to announce the feeling of beginning. This would be appropriate if the linkage path was also wood construction. Although the visitor would be able to go in either direction, for purposes here the discussion will go towards the west. Presently, at this point, there is a stand of Populus deltoides, Eastern Poplars (See P-6), approximately 10-15 trees; this is a noteworthy mass. They could function in creating a "shade space" that could have a sign describing the area and the idea of a self-guided nature trail. Particular plant species could be labeled in the field and described as to their relevance in this lowland ecosystem. (See Photo 7 which shows view of building at this point.)

4b. Moving westerly along the existing path where the wood path construction would continue, there is all phragmites. They are so overgrown at this point that the path is really not passable. Some sort of control would be necessary to maintain a path in this area. Hence, continuing the wood construction for the path would help create a hard edge that would control the phragmites to some degree. Routine cutting maintenance would be necessary in this section as the phragmites are a very vigorous species.

4c. This area of the existing path is characterized by larger, more upland type vegetation. (See Photo 8) The phragmites begin to fade out and the overhead canopies create a comforting shade as up until now the blaring sun was unavoidable. The feeling of a built environment is totally removed now, particularly as the mall buildings are not in sight. Among the vegetation present in this area are Betula nigra, River Birch (See P-7), Populus deltoides, Eastern Poplar, Liquidambar styraciflua, American Sweetgum (See P-8). The path here could be softer, possibly wood chips and the change in vegetation could be flagged with signage.

* The existing path system (established in part by dirt bikes over the years) was used for orientation of site conditions and accounts at this time. It is not intended to reflect what the trail system or any path system may look like in the final design.

PHOTO 6

AREA BETWEEN EXISTING PARKING LOT

AND EXISTING TRAIL SYSTEM

PHOTO 7

PHOTO 8

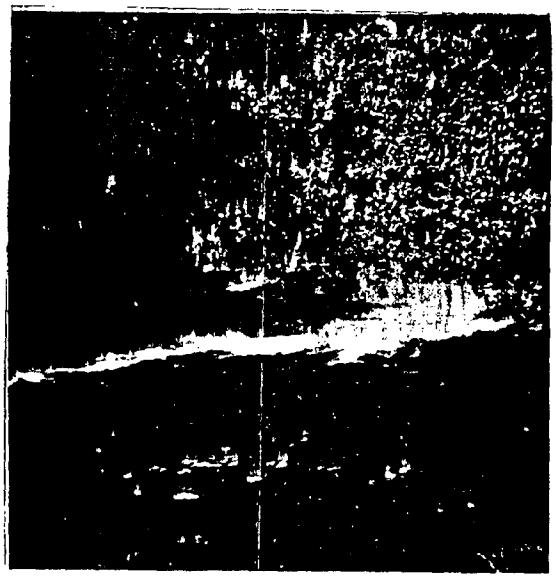
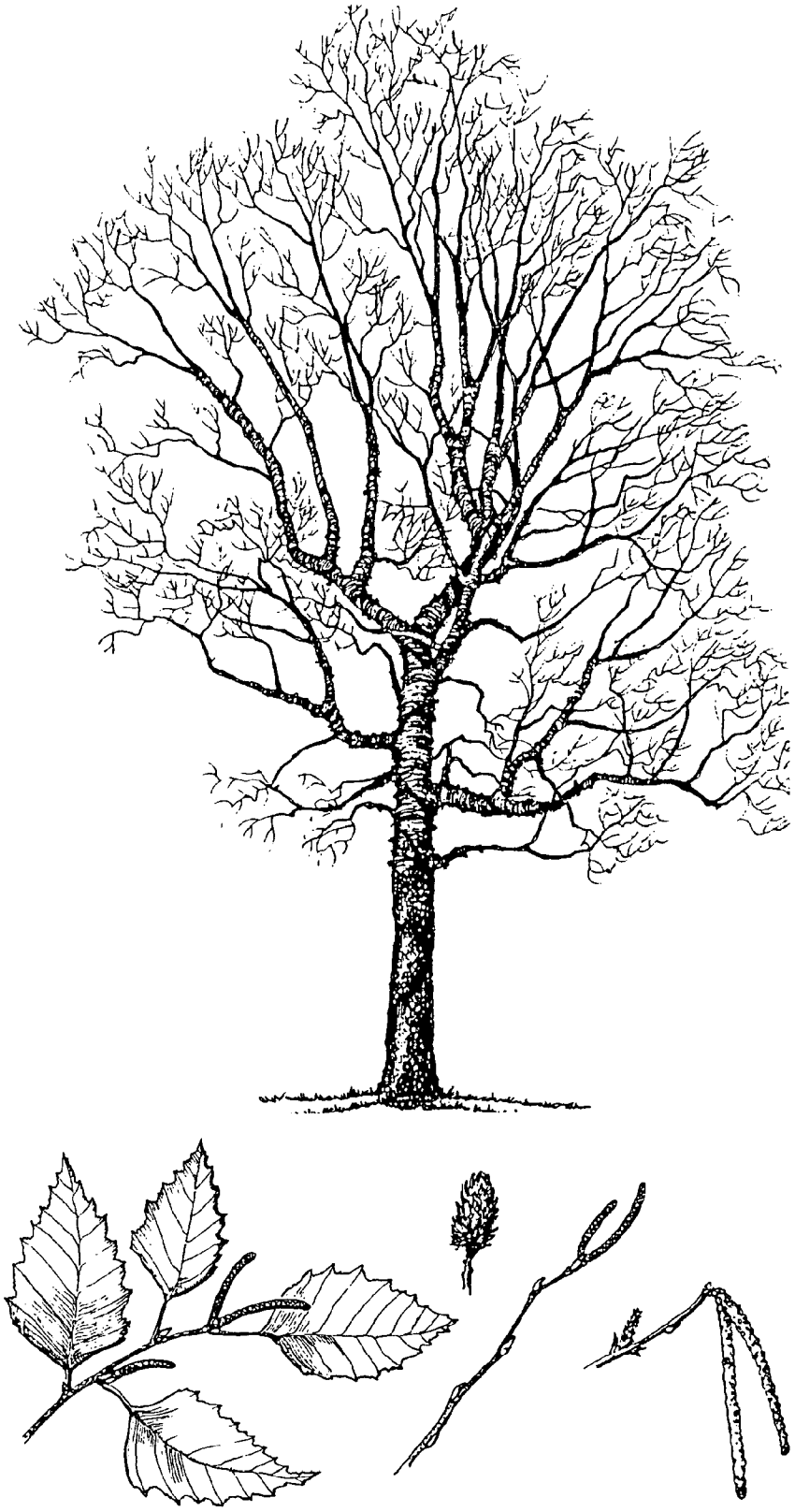
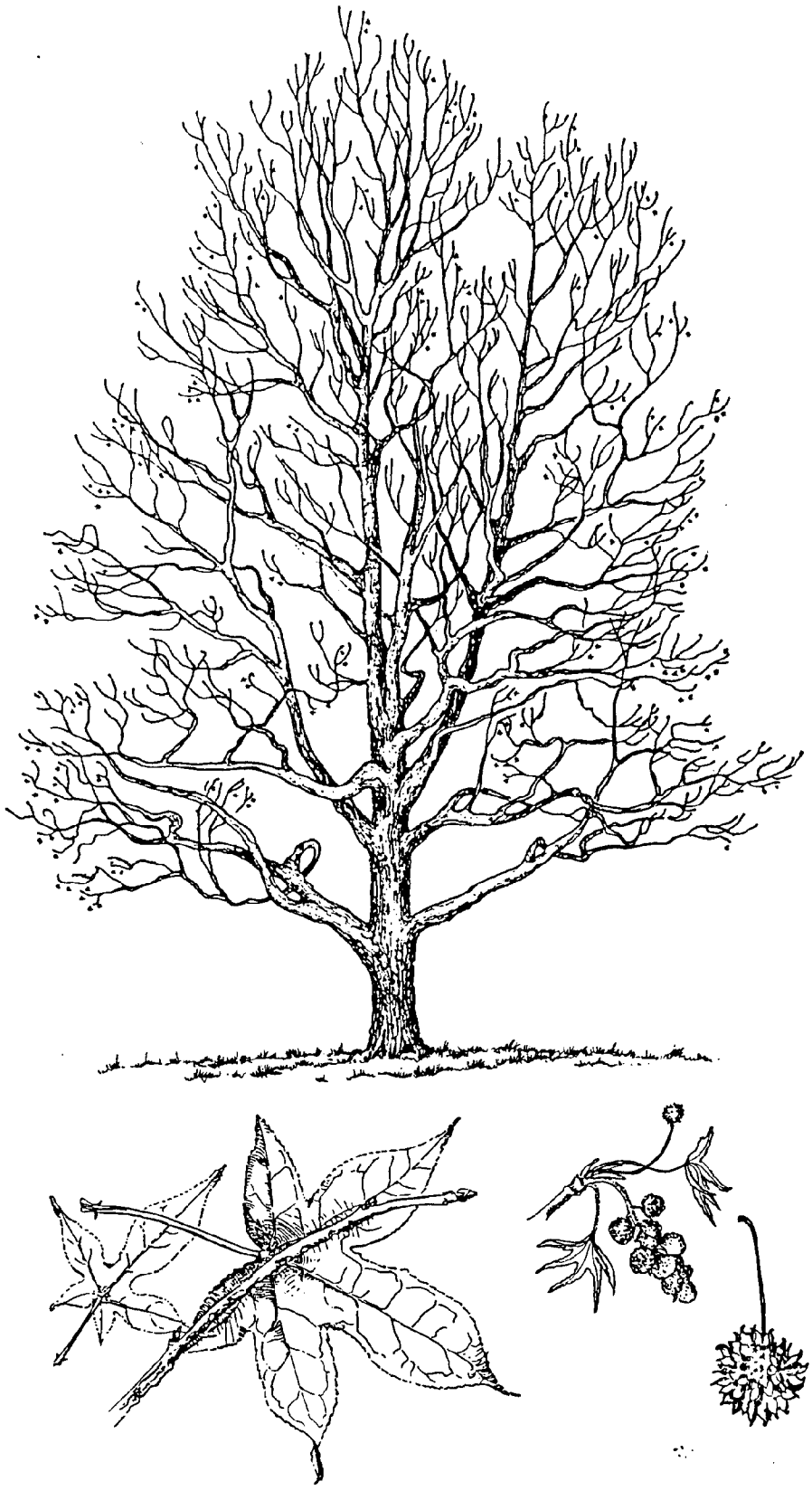


PHOTO 9

PHOTO 10

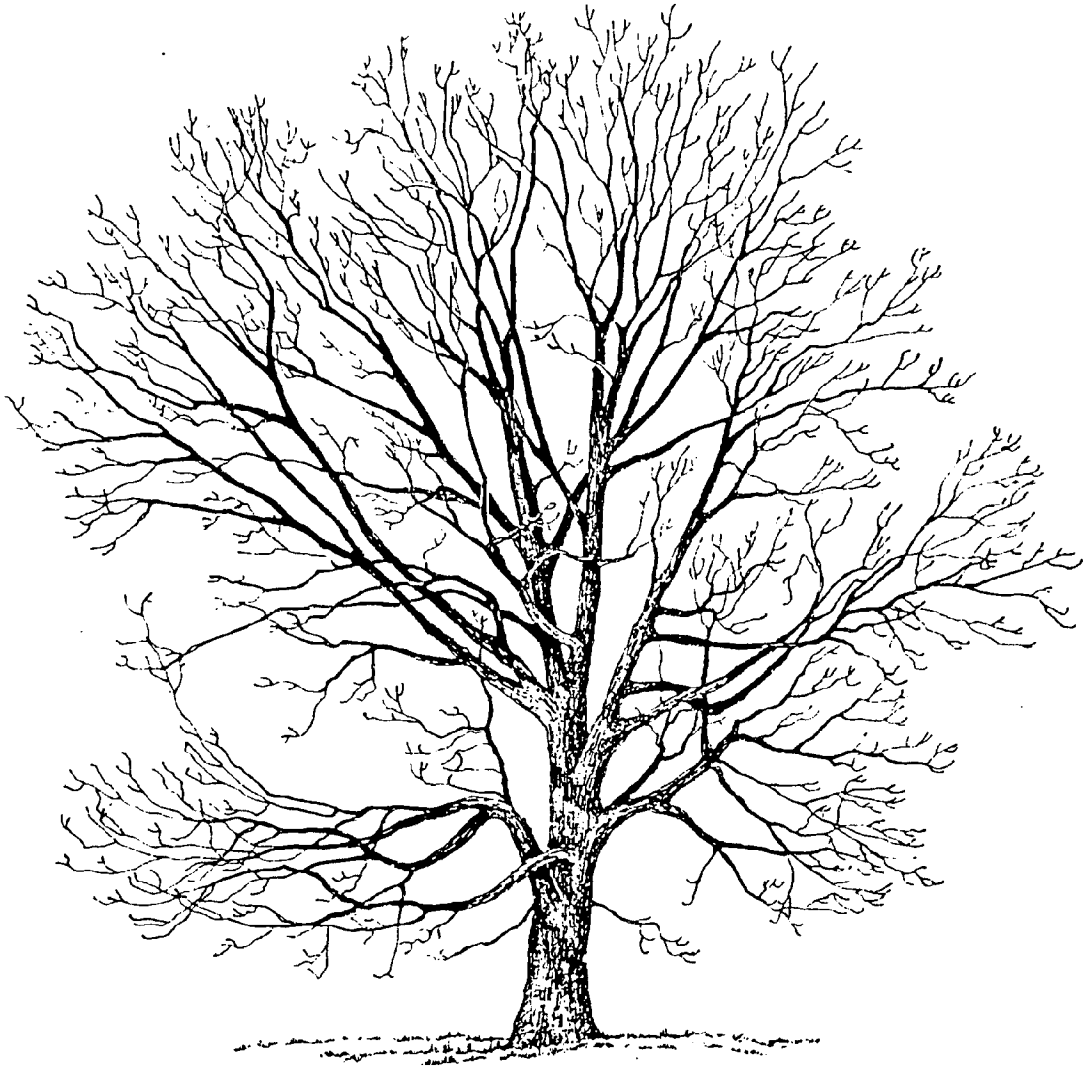


Betula nigra River Birch



Liquidambar styraciflua American Sweetgum P-8

Robinia pseudoacacia Black Locust



Quercus velutina Black Oak P-10

4d. Arriving at this node along the path system, the overhead enclosure is increased wth the mature woods that are encountered. This area is approximately at the center of the whole north portion of the site. The river is not apparent visually or from the existing vegetation. Here vegetation includes Liquidambar styraciflua, American Sweet Gum, Robinia pseudoacacia, Black Locust (See P-9), Fraxinus pennsylvanica lanceolata, Green Ash and Quercus velvtina, Black Oak (See P-10). This spot has an open sandy area approximately 20' x 20' (See Photo 9) that could act as a children's tot lot with timber climbing structures. This would be appropriate because it is away from the water's edge, shady and presently cleared with woods around it. This space also acts as the first junction where two directions are possible - one that loops back to the east or further west.

4e. Heading west to this point is another junction. The options are either to go west out to the further point jutting into the river or to the north. At this point the evidence of the shore line is more apparent with the soil being sandy and larger vegetation disappearing. The sun is full here and one is lead to the west as the openess lends a view to a larger open area. Walking through to the next point one encounters an entire grove of Robinia pseudoacacia, Black locust and 3' high grasses.

4f. This spot is named "the beach" because of its open sandy areas with soft clumps of grasses at the edge and interspersed throughout. (See Photo 10) Although the water is not in full view, it is apparent and this area could be used as a picnic area, sunbathing and passive games such as volleyball, frisbee, and the like. Although this a rather sunny spot, there is some shade relief nearby. Also the possibility for a children's play area exists here if it was desirable to combine the eating and play areas.

4g. A few steps to the west of "the beach" is the river view area. This is an appropriate spot for a viewing platform as this point juts out into the river and does afford views across and down the river. (See Photo 11) This is also a shade area with mature Populus deltoides, Eastern Poplar, Robinia pseudoacacia, Black Locust, and Rhus sp. creating nice overhead cover. As groundcover, Lonicers prostrata, Creeping Honeysuckle is evident. This area is important as there are not many areas to be directly related to the waterfront along the existing pathsystem and this view could allow for presentation of the waterfowl that are present along the river corridor.

4h. This section of path is noted as it has a character unique from any other stretch. There is a soft, but thick overhead created from two species: Robinia pseudoacacia, Black Locust and Rhus typhina, Staghorn Sumac. (See P-11) These are both growing up and arching over the path to create a pleasant, shady enclosure. (See Photo 12) Areas like this will, of course, be kept intact with wood chips added for a base and signage identifying the overhead. From here one travels north to a small junction where you can go to the west to another small island-like area or to the east which is the northern most loop path.

4i. Heading west to the furthest point there is a focal tree at this particular spot. It is a clump of Liquidambar styraciflua, American Sweet Gum and it really is noteworhty as a landmark in this area. At the tree it might be suggested to have a few benches for seating.

PHOTO 11

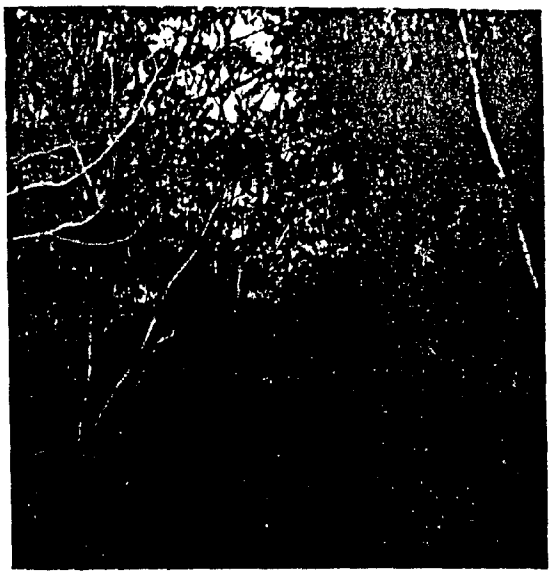


PHOTO 12

PHOTO 13

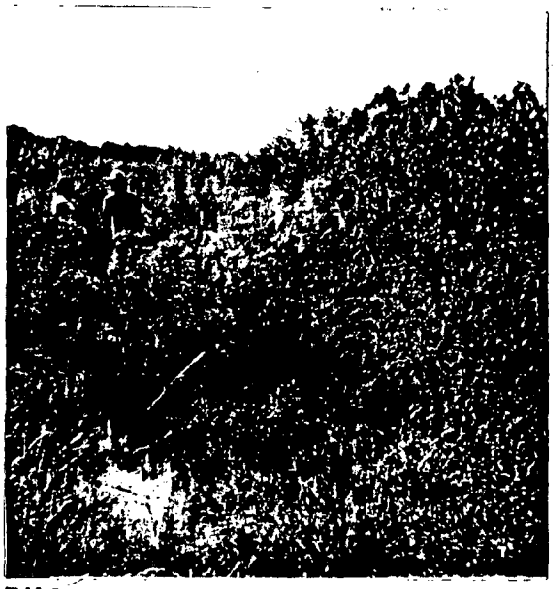
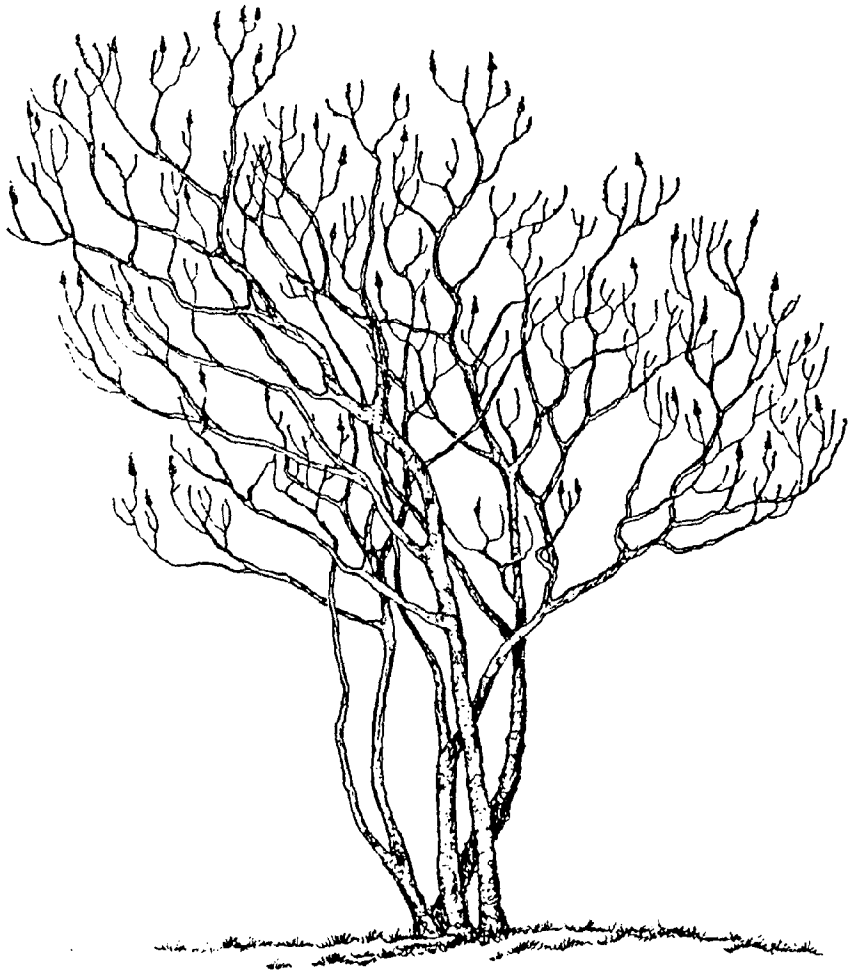
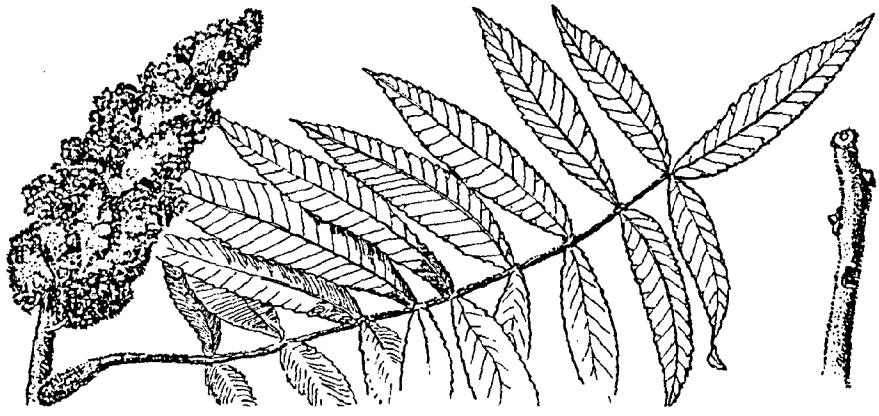


PHOTO 14





Rhus typhina Staghorn Sumac

4j. This is the northern most point along the trail system and is noteworthy because it is surrounded by water for 180 degrees. (See Photo 13) There is primarily Populus deltoides, Eastern Popular in this area and also phragmites are thick and prevent views to the river and creek that is to the east. There is an open sand area here, as well, and would be appropriate for more secluded picnics and possibly a stopping point for canoes that would be leaving from point 5. It is suggested that some selected views be cut to the creek area in this spot. This would be yet another type of ecosystem that has not occured on the site yet and would give a more well rounded educational coverage.

4k. This area is the northern most path that runs east/west and loops back to the main trail system. This is called the woodlands because it has a character unlike any other area on the site. The existing topography is more undulating in this area and the overhead canopies create a completely shaded walk. The rolling ground plane does not have a thick understory and there is predominantly sandy soil. This area might be a possible area for limited BBQ set-ups and some picnic tables. This area, however, would require some pre-maintenance as there are piles of concrete rubble that appear to have been dumped here. The area appears neglected and not in keeping with the natural environment. It is worthy of discussion as there is again another ecosystem occuring that adds to the overall site diversity.

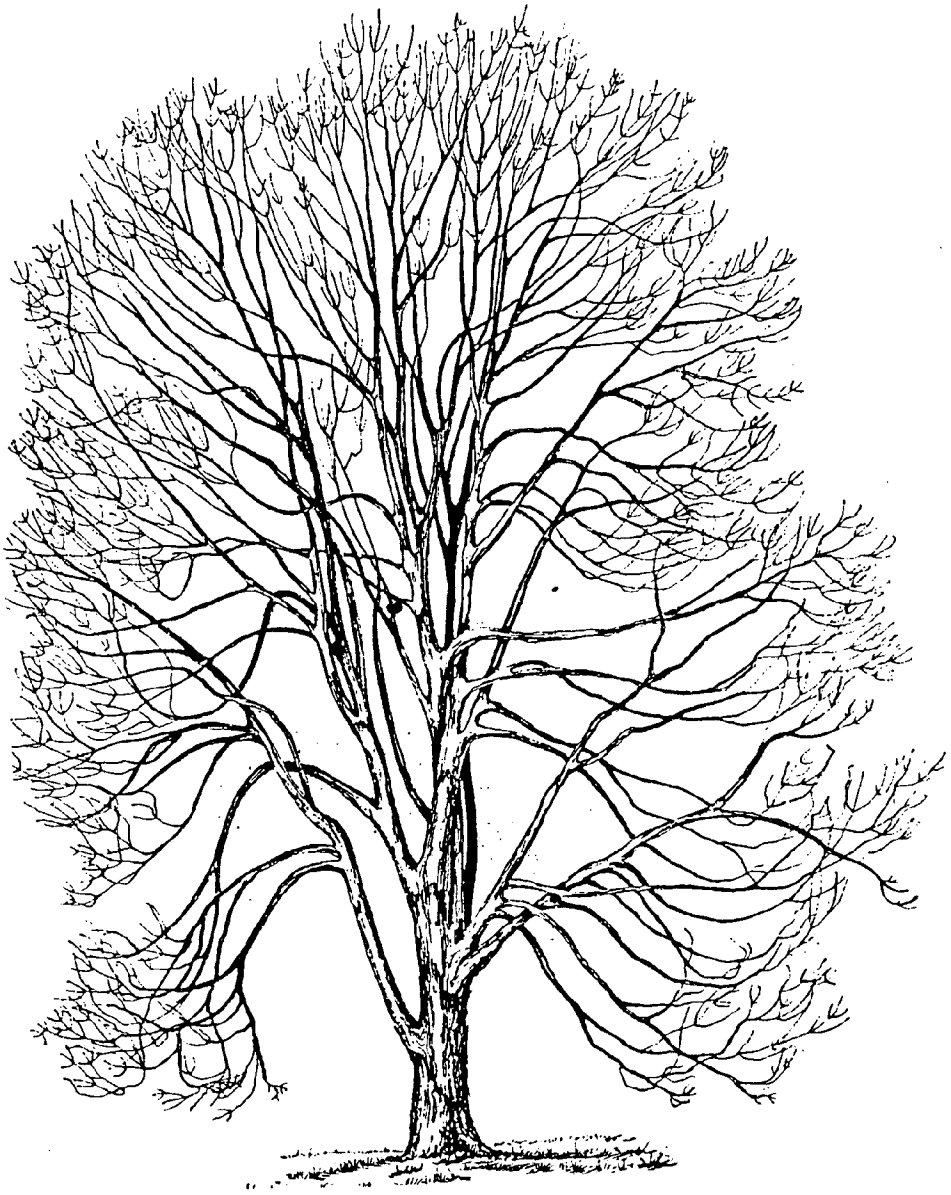
4l. This area has an indirect access from a parking area, however, because you cross a drainage easement, it is not recommended as such. This area would also require some cleaning up and some proposed plant materials to focus direction back onto the path.

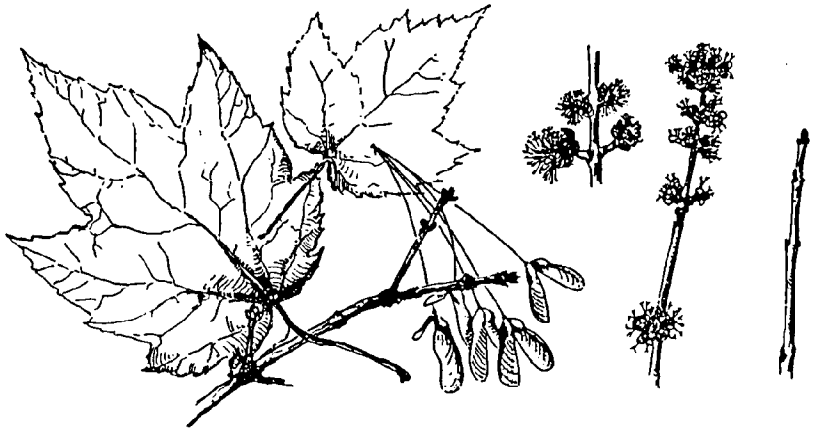
4m. Looping back southerly and coming out of the woods or actually on the edge where there is more light but still larger vegetation present. At this point there is a majestic Populus deltoides and a Salix nigra, Black Willow (See P-12) which indicates the transition to possibly a wetter soil. From this point one travels east with the edge of the woods to the right and the more open vegetation to the left. It is not possible in this area to perceive the built environment at all, as it has not been for a while along the trail sequence. This creates a strong feeling of being completely immersed in nature and reinforces and accentuates one's attention on the surroundings.

4n. Starting at this area and heading south back to the point of beginning, we encountered some wet areas in some areas making it impossible to pass. (See Photo 14) The vegetation corresponded with the wetter conditions and included Acer rubum, Swamp Maple (See P-13), Populus deltoides, Eastern Poplar, Cornus sanquinea, Bloodtwig Dogwood (See P-14) and Cephalanthus occidentalis, Button Bush (See P-15), along with phragmites. It is recommended that where wet spots are encountered a wood construction path be built that sits above grade with minimal disruption to the fragile ecosystem. To the north and east from these areas it is primarily a freshwater wetlands system that would remain untouched and the path system would only go along the fringe.

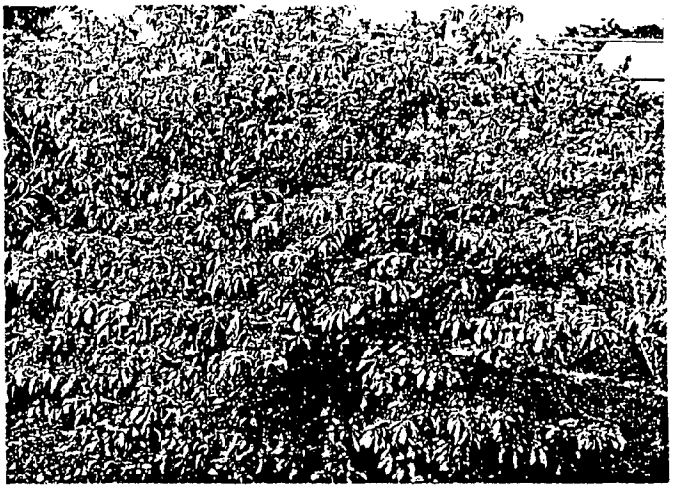
The trail system has made a complete and coherent loop back to the point of beginning which will help reinforce the promenade as the transition space linking north and south, as well as a viable area in and of itself. The existing path system is a viable route that affords a variety of uses and a varied educational experience. It did not seem appropriate to create any new path directions, but rather to fully enhance the existing one. Using paving materials, field markers, educational signage and a variety of indigenous vegetation, the entire system could really be a natural retreat in a semi-urban context.

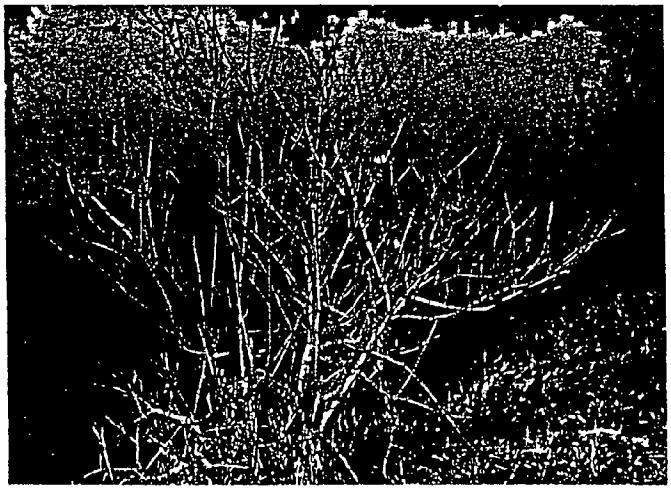
Salix nigra Black Willow





Acer rubrum Swamp Maple





Cornus sanguinea Bloodtwig Dogwood

Cephalanthus occidentalis Button Bush

AREA FIVE: Potential Canoe Dock

The preliminary location of a potential canoe dock has been identified on the site inventory plan. This proposed facility will be documented later in the conceptual phase of this project.

AREA SIX: Existing Marsh/Wetland
(Southern portion of project site adjacent to
Route 4 and the Hackensack River.)

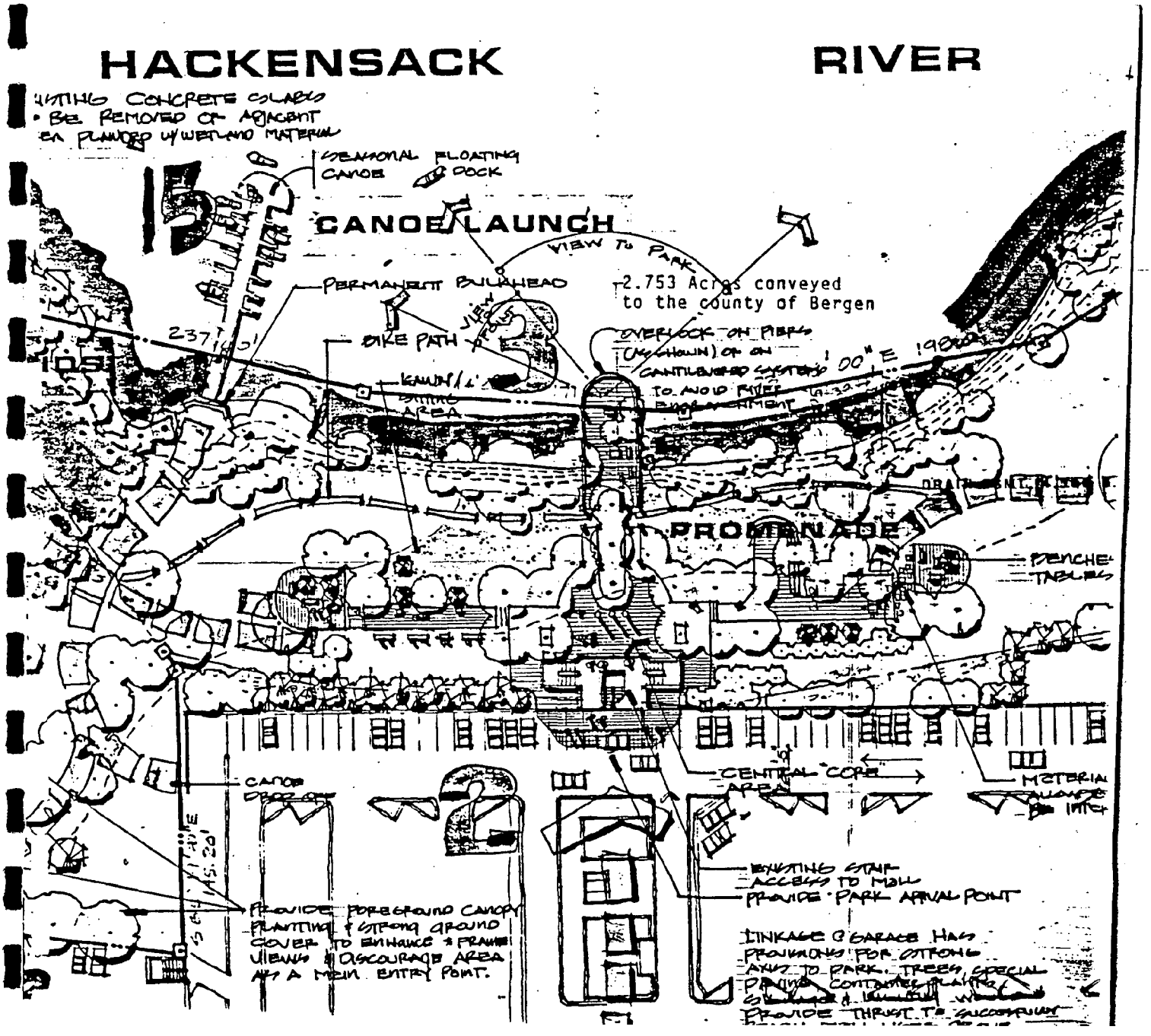
This area is the most established and characteristically true wetland on the subject site, as it has been relatively free of fill and disturbance for some time. The construction of Route 4 (1940's est.) to the south and the Riverside Square Mall to the north and west encapsulates the wetlands area which is dominated by phragmites. Although no borings were taken in this area, it is apparent, considering the topography, surface soil condition, and alluvial deposits at low tide, that this area exhibits classic wetland characteristics. The reeds support large populations of aphides and lady bugs which in turn are food source for larger species in the food chain.

Please note that within the project site, including the southern wetland portion, the Phragmites communis (Reed grass) have entered an upland situation which is the reason phragmites cannot be used as a primary basis for determining wetland delineations.

CONCLUSIONS

The essence of the Hackensack River study is to use the site analysis to create a coherent open space network for public use. The idea of having a defined entrance for people and cars, leading to a directed series of spaces that are all interconnected is imperative. Presently, the site is broken up and is not perceived as a complete piece. In order for it to function as a viable open space, the appropriate direction and order should be given to the users so they can utilize the spaces to the fullest. Again, though, the emphasis is placed on the site's inherent qualities and sensitivities and the preservation of these. The intent is not to transform the river front into something that is much unlike the present overall character. With the introduction of sensitive design, the site can be enhanced to give a higher educational level.

CONCEPT PLAN



SECTION FIVE

SECTION 5

RECREATION & AESTHETICS

Destruction or alteration of wetlands eliminates or minimizes their values, as well as contributing to the poor water quality and effects floodplain limits. It is thus very important to a densly populated county like Bergen, where extensive wetlands have already been lost due to over development, that the remaining wetlands be preserved as a public resource.

It is preferable that the ecology of the project site be preserved as much as possible, and the urban context be minimized outside of the "core" for the most part. (Area 2 & 3 of the concept plan, Sheet 3)
Comments on various issues are as follows:

A. ANALYSIS

Parking Lot Facade

Analysis:

The massive structure at times is camouflaged when viewing from across the river, but generally the mass of white concrete needs to be toned down.

Recommendation:

The facade parallel to the river which incorporates the main stair link to the shopping center is perceived as an active pedestrian area. Some unifying elements which could be implemented are:

1. Canvas awnings to facilitate seating/people watching areas.

2. "Old-fashioned" rolling security grills to limit access to specified areas.

3. Large uncluttered lattice work to allow espalier and fastigiate plant material to mimic the facade.

4. Large vegetation screen.

5. Combination of several methods.

Signage

Analysis:

No park signage exists from the mall or vicinity streets.

Recommendation:

1. Low-key signage consisting of raised wood or sand blasted wood signs, unilluminated.

2. All wood construction, with minor ornamentation.

3. Coordianted paint colors for educational signage, directions, etc.

Lighting

Analysis:

No lighting other than parking lights exist at present.

Recommendation:

1. Establish low-key lighting to link mall parking to park.

2. Establish low level lights on the main boardwalk for evening users and tired shoppers.

3. Establish low level lighting on major path system. This should be idealy limited to above ground circulation systems, other than security lighting.

Surface Materials

Analysis:

The site can be traveled by pedestrians with some difficulty, and in a few conditions, great difficulty.

Recommendation:

1. Enhance major path system ideally with porous materials or with impervious materials as park maintenance requires.

2. Use above ground system for sensitive areas (deck on piers).

3. Provide special paving and plant materials between mall and park access stairs at the parking lot.

Central Focal Point

Analysis:

No need to use site at present.

Recommendation:

1. A central focal point should be established near the parking lot access stairs.

2. Focal point size should be low-key, but urban and accommodate medium pedestrian surges.

3. Focal point should encompass a quality overlook from the river's banks, selective pruning and clearing to enhance views, interaction with canoes, etc. View to ice skating at Andreas Park would also be a seasonal point of interest from a gazebo-like structure.

Maintenance

Analysis:

Current site requires no maintenance, although erosion on river banks is evident as slope in excess of 20% exhibits undermining problems.

Recommendation:

All parties concerned evaluate for maintenance responsiblity and budget parameters. Wetland materials shall be used on sensitive areas subject to erosion. Establish additional wetland areas with approved plant material. The open spaces for park user may require unusual maintenance techniques to curb upland phragmities expansion.

Canoe Dock

Analysis:

Canoeing would be lmited to period of relative high water unless dredging is undertaken. Because of the environmental disturbance to existing wildlife, groundwater, as well as the expense and arduous approval process, this scenario seems unlikely.

Recommendation:

There are several locations which have steep banks and relatively narrow mud flats that would be suitable for a canoe dock (See site analysis plan). Further survey information would be needed to determine dock footage requirements. A dock which could accommodate 10 slips would seem reasonable. Confirmation of current usage volumes by the Hackensack Canoe Club is pending.

Alternative 1:

Due to environmental and maintenance limitations a permanent headwall or bulkhead with attachment for a floating canoe dock or a structured ramp is recommended.

Alternative 2:

An interim solution to facilitate phasing requirements or monetary constraints may be to provide a stone ramp on grade to meet MHWL with cut on side slope to be stabilized with rip-rap material. See analysis documents for seasonal construction limits for turbidity. Because of the eventual "double construction" with an interim and a permanent design, alternative one is obviously preferred.

Parking Facilities

Analysis:

Primary usage is expected on summer weekends and evenings during the week. Existing parking facilities are to be utilized as per an agreement with the mall developers (Approximately 90 spaces allocated).

Recommendation:

A drop-off area to enhance traffic circulation in the garage is recommended to provide park visibility/safety.

Canoe users will access the site at selected locations only.

SECTION SIX

SECTION 6

CONCEPT PLAN - AREA DESCRIPTIONS

Area 1: Site Entry

- Provide park logo and effective, but low-key, signage to increase park visibility to user groups:
  - Mall retail customers
  - Mall employees
  - Adjacent office park staff
  - Educational institutions
  - General public.
- Entry view to be cleaned up.
- Area of fill between garage and wetlands to be reestablished with combination of maintained grass area and reestablish wetland materials.

Area 2: Pedestrian and Vehicular Link to the Site (The Core)

Enclosed Facades:

The character of an outdoor urban space has great dependence on scale and character of its surrounding "walls", whether architectural or natural material. The facade enclosure at the garage needs to be addressed aesthetically. Failure to address this problem could adversely impact park image from an on site perspective, as well as a public opinion viewpoint.

- Garage: The 3 story concrete parking structure, an unsightly and brutal presence, coupled with the mature stand of poplars along the water's edge, create a strong linear enclosure that subtly reinforces the river's presence.

  An architectural solution to work with this arrangement is a series of pedestrian spaces juxtaposition along a linear system parallel to the garage. The linear "space" should be urban in its context as it is annexed by one of Bergen County's most successful retail developments. A strong axis perpendicular to the pedestrian space is sought to create a strong central pedestrian core, urban in character, which becomes less urban and more responsive to the environment as one moves away from the core. The farther one is away from the core, the more natural materials evolve. The end character sought is to be of an indigenous nature, with only a few gazebos and lawn areas as the exception.

It is recommended for the design direction of this area between the garage and the waterfront areas 2 and 3, with its orientation to the mall and mall functions to be urban in charactor. We have in this small, but critically located parcel, the potential for special recreational uses, for diverse social activity and for the spurring of local involvement for the creation of a new urban place in an environmental setting.

- o This parcel is the selling point of the park. It should be of quality design and function as it is an extension of the adjacent urban fabric.
- o The "Central Core" shall have a strong architectural flavor to be achieved, with progressive realization to take place so that the design becomes more indigenous with surrounding environment eventually to become almost indisguisable when moving through the spacial sequences.
- o Provide boardwalk to river, major sitting/watching areas, lunch areas, subtle trash facilities of natural materials.
- o Ecological path system nodes identified.
- o Park system/park site plan identified.
- o View enhancement.
- o Small lawn sitting area.

Area 3: River overlook

- o Boardwalk to extend into river on piers (or cantilevered system) to avoid river encroachment. A cantilevered system would result in a smaller deck than shown on the concept plan.
- o Provide benches/tables/ornamental vegetation and seasonal vegetation in waterproof planters. This area should be one of the features of the park.
- o Natural materials shall be used for overlook construction.
  - 0 Selective removal of existing plant material to enhance views as required by Landscape Architect.
- o Provide material change to allow jogging path to interact with boardwalk path system.
- o Tree canopy and architectural improvements to the garage stairs in recommended. Canvas canopy at the stairs could provide relief from strong sun and a possibly sudden rain shower, as well as reduce hard lines of the concrete facade.

- o Puncture existing vegetative "wall" with appropriate design so it appears the boardwalk has always been there. Again, the transition from the "urban core" to the boardwalk and more natural materials to prevail.

- o Boardwalk to be subdivided into weaving circulation pattern and finally open up to river view. Views to boat dock and other selected points of interest to be encouraged. Selective pruning/removal under directon of the Landscape Architect as conditions required.

Area 4: Overlook

- o Provide small gazebo structure and overlook to river views.

- o Character to achieve a "nestled in " feeling with views beneath existing free canopies.

- o Low profile - very natural area.

- o Walk system off main path shall be natural material with low shrub and ground cover intermittent with walk system.

Area 5: Wetlands walk

- o Provide boardwalk system to gazebo structure for river views and observation of wetland ecology, in all types of weather.

- o Encourage school education trips.

- o Provide ecology information with signage (see analysis report).

- o System designed with review from Fish and Wildlife departments.

Area 6: Trail system

- o Provide permanent map of site and site features.

- o Ecology signage for each significant area along path.

- o Install additional varities of wetland vegetation along path.

Area 7: Natural traffic circle

- o Environmental signage: importance of interaction of wetlands and upland ecosystems.

- o Material change.

- o Site plan.

Area 8: River walk

- o Path with views along river.
- o Provide sitting area.
- o Reestablish wetland material in flats.

Area 9: The Point

- o Natural path system through "the beach" to several small enclosures and boardwalk to provide the best view of the project site. This view needs selective clearing and with the boardwalk which should be frequently perforated by existing trees shall provide an excellent integration of man and nature.
- o Encourage and install ground cover on path system boarders.

Area 10: Active Area

- o This node which as a very interesting mix of emerging upland material including a superb allee of Black Locust. A gazebo terminus to this allee is recommended with an elevated boardwalk system to other small structures also on piers which is amongst various shrub materials overlooking a small open area to the east, and a larger area to the west. Note these open spaces are not to be connected as a natural barrier exists at present. One should have to walk through the "cover" to explore the other open area.

  Also, concerning potential vandalisim in this low visibility area, the gazebo structures of pressure treated wood with vandal proof hardware shall be installed. Metal roof structure is also an alternative. This area is also an ideal location for restroom facilities.

Area 11: Path Junction

- o Establish a grid system integrating existing shrubs and grass material and new grasses along with a paving system.

Area 12: Open Field

- o Paving area for sitting/cookouts adjacent to open lawn area.

Area 13: Jogging Trail

- o Stone dust (compacted) path for joggers and cross country skiers follow existing profile.

Area 14A: Vehicular Access

- o Controlled access for emergency and police use.

Area 14B: Canoe Access

- o Path system for canoe boats to dock area, canoes to be carried, vehicular possible for emergency situation.

Area 15: Canoe Dock

- o Permanent bulkhead/landing structure to be provided. *

Area 16: Future Boat Landing Area

- o Existing sand beach ideal for future canoe landings, cookouts and family functions.

* Structural type as per public hearing comments 11/30/87.